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THE CARPENTERS' COMPANY

Organized in Philadelphia in 1724

BY CARL A. ZIEGLER, A. I. A.

IT was eminently fitting that the President of the United States should grace with his presence the meeting held in Carpenters' Hall, Philadelphia, on September 25th, celebrating the two hundredth anniversary of the founding of the oldest association of master carpenters in this country. On that occasion President Coolidge was the guest of honor and delivered the principal address.

Carpenters' Hall is situated on Chestnut Street, between Third and Fourth Streets, and is one of the finest examples of Colonial architecture in Philadelphia. The ground having a frontage of 66'-0" on Chestnut Street and a depth southward of 255'-0", was purchased in 1768 at an annual ground rent of one hundred and seventy-six Spanish milled "pieces of eight" of fine silver. The building was begun in 1770 and, although unfinished at the time, the first meeting was held in the Hall on January 21, 1771. Owing to the strenuous years that followed, the completion of the structure was delayed until 1792, during which period the future of America hung in the balance. The First Continental Congress met within its walls on September 5, 1774, and its action made possible the greatest Republic in history.

The plan of the building is in the form of a Greek cross with a cupola surmounting the intersection, the entrances being on the north and south elevations. At the north entrance is a vestibule 9'-0" wide with the stairway at the right. Passing

through the vestibule one enters the main hall which is 28'-0" x 48'-0" and about 13'-8" high. On the second floor there is a corridor running north and south, on the right of which is a library about 19'-0" x 28'-0". To the left of the corridor



DETAIL OF SOUTH ENTRANCE

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are smaller rooms for the custodian of the building.

The designing of the building is attributed to Robert Smith, a master carpenter who became a member of the Carpenters' Company in 1736. Very little is known of his career, but he is said to have been a native of Glasgow, Scotland, and also a member of the Society of Friends. Records show that he erected a number of buildings in Philadelphia and his name is associated with the building of Christ Church in that city, but it is doubtful that he erected that structure although he did rebuild the spire in 1771. He was, however, the designer of the original Nassau Hall at Princeton. He assisted in designing the defenses of Philadelphia during the Revolutionary War and died in 1777.

The walls of Carpenters' Hall are 13" thick, of brick laid Flemish bond with dark semi-glazed headers, and the entire atmosphere of the building is strongly reminiscent of English Georgian work, from which it was probably studied. Owing to the fact that it is almost completely surrounded by other buildings now, it is seldom seen by the

casual traveller and in true Philadelphia fashion, its virtues are not lauded, as they should be.

The record of the Carpenters' Company is unique in the history of American craftsmanship and its achievements are worthy of commemoration. Modeled somewhat after the Guilds of England, to whom we owe the great Gothic churches and bridges of that country, the Carpenters' Company of Philadelphia likewise stamped upon the early architecture of Philadelphia an atmosphere of craftsmanship that demands the admiration of architects.

The original intention of the founders of this organization was "to obtain instruction in the science of architecture and to assist such of the members as should by accident be in need of support and the widows and minor children of members" and also to adopt a uniform system of measurement and charges "so that every one concerned in building may have the value of his money and every workman the worth of his labor." Prices being uniform, a carpenter was selected in those days for his reputation as a craftsman and not in a competition of price. The cost of every portion of a building was calculated to a nicety and the standard price was recognized by every one in the trade.

On the completion of the building, the work was examined by measurers of the Carpenters' Company who attested to the correctness of the builders' account and they did not neglect, as a rule, to add the charges for "entertainment" or the "expenses of the evening" to the regular fee.

Many of the quaintly worded bills for the erection of early Colonial buildings are in the possession of the Pennsylvania Historical Society and some of these have furnished important historical data. The committee of the Philadelphia Chapter, A. I. A., having in charge the restoration of Independence Hall gained much valuable information from the bills rendered by the original builders of that structure, which aided them materially in making an authentic restoration of the building and proved certain statements made by historians to have been inaccurate.

The records of the Carpenters' Company date back to 1763, those from 1724 to 1763 having been lost, but from other documents and traditions the activities of the association may be traced from its organization up to the present day.



DETAIL OF NORTH ENTRANCE

The lamps and railings are modern

To establish an equitable scale of prices the Company compiled a "Book of Prices" which could only be referred to by a member, in the Company's hall. This led in time to form a monopoly and as was to be expected, competitive rival companies were formed such as the "Friendship Carpenters' Company" which was absorbed by the older organization in 1785 and the "Practical House Carpenters' Society" which was incorporated in 1811 although it was in existence long before that date.

It must not be supposed, however, that the fixing of prices was the only object of the Carpenters' Company. Were that the case, we would not be able to point with pride to our early American architecture. In those days pride in craftsmanship and a desire to hand down from generation to generation the secrets of their art inspired workers to excel in their craft and association in such a body as the Carpenters' Company led to a wholesome exchange of ideas and comparison of methods and also to a keen competition to outdo one's contemporaries.

There were no practicing architects in the early Colonial days and the drawing of plans was done by the master carpenters, for which a charge was made as shown by the following clause taken from the "Rule for Measuring and Valuing House Carpenters' Work."

"Drawing designs, making out bills of scantling, collecting materials and sticking up stuff, are to be charged by the carpenter in proportion to the trouble."

It is interesting to note that even at this early stage of architectural practice in America the difficulty of setting a specific price for the "drawing of designs" was recognized.

The designing of many of the notable early buildings of Philadelphia has been attributed to laymen, but it is very doubtful if these gentlemen did more than execute rough drafts of the buildings, the actual working drawings having been made by the master carpenters of the period. In the case of Independence Hall which is attributed to Andrew Hamilton, the recent discovery of a bill presented by Edmund Woolley, the builder of that historic building, shows an item for the drafting of plans which would tend to show that the rough sketch studied from a building in Gibbs' "Book of Architecture" published in 1728, was probably all that Andrew

Hamilton submitted, the working drawings having been prepared by Woolley.

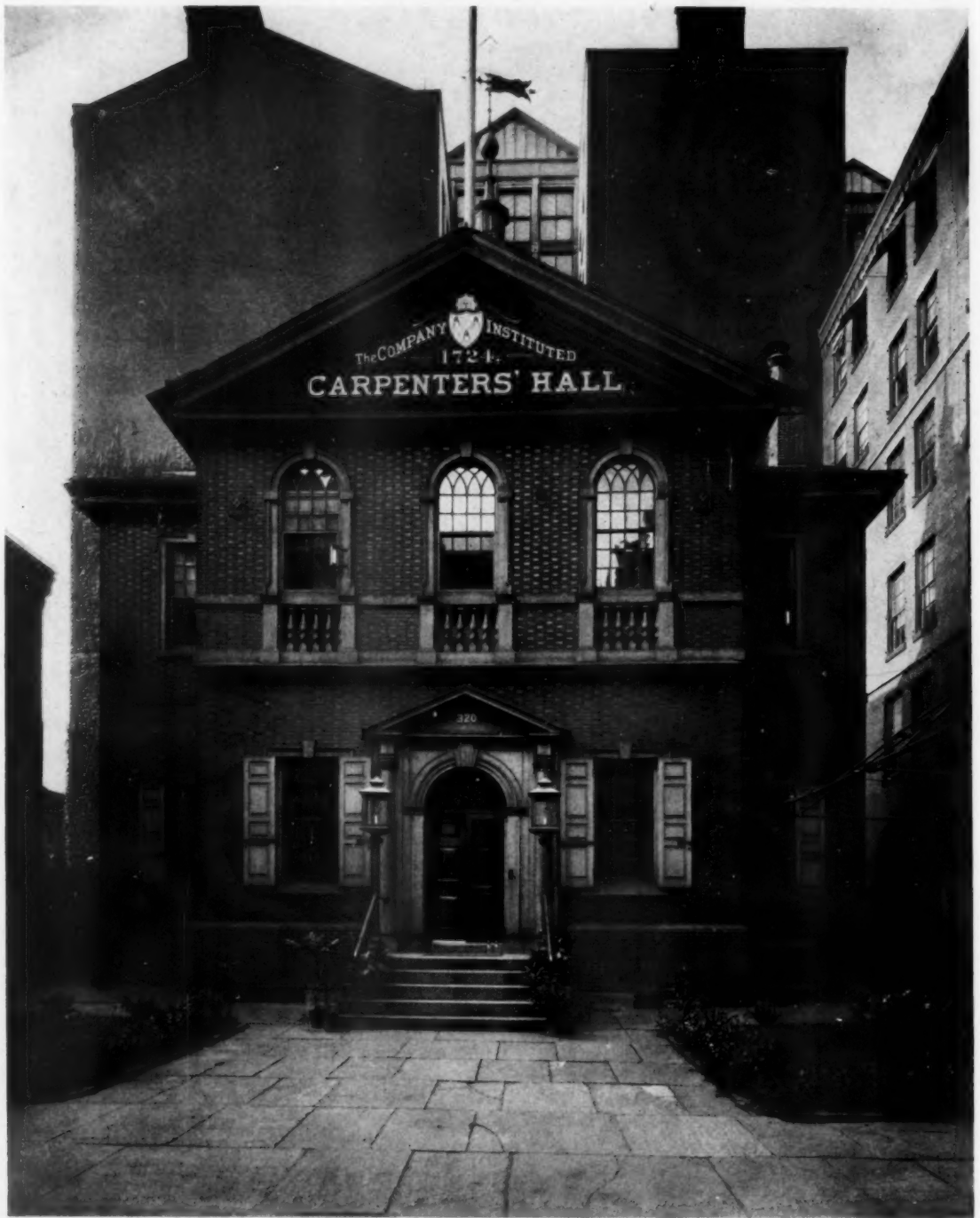
To the young carpenter of the period it was a matter of supreme importance to progress through the stages of apprentice and journeyman and achieve the rank of master carpenter. To do this it was necessary to burn much midnight oil over the books of Vitruvius, Palladio, Sir William Chambers, Sir Christopher Wren, James Gibbs, Batty Langley, etc., with which the carpenters of the day were entirely familiar. It intrigues one to contemplate what a fall from grace there has been in these latter days when the majority of carpenters would consider the perusal of a book on architecture as a matter quite outside the requirements of their trade.

In the books of Batty Langley and his contemporaries, one finds most carefully defined rules for the "proper proportioning of all the parts of architecture" and from the buildings that remain it is evident that the carpenters of that day applied all these rules to the work in hand.

Noble and self-respecting the trade of carpentry



VIEW TOWARD REAR ENTRANCE FROM MEETING ROOM



CARPENTERS' HALL, PHILADELPHIA, PA.

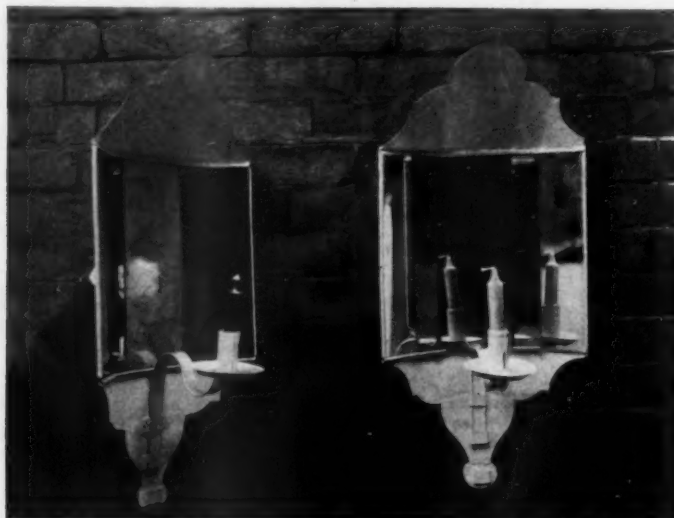


THE MEETING ROOM ON THE FIRST FLOOR
CARPENTERS' HALL, PHILADELPHIA, PA.

has always been and in no other structures in this country has the trade been more glorified than in the Colonial buildings of Philadelphia.

Concurrently with the two hundredth celebration of the organization of the Carpenters' Company was that of the one hundred and fiftieth anniversary of the First Continental Congress. This joint celebration, which took place but a fortnight ago in Pennsylvania, was one of great enthu-

siasm and a very wonderful display of patriotic sentiment. No more fitting conclusion could have been devised for this joint celebration than the ceremony that took place at Valley Forge. No oration, no ceremony could awaken the realization of the great debt which posterity owes to its Revolutionary forebears and to that group of competent master craftsmen who set the impress of their high endeavor on everything they attempted.



TWO OF THE ORIGINAL SCONCES USED IN THE BUILDING

THE INVENTION OF PORTLAND CEMENT

REPRESENTATIVES of the British and American Portland cement industries have recently celebrated the centenary of the invention of Portland cement, in 1824, by William Aspdin, to whose memory a tablet was unveiled in Leeds, his native town, reports *The Builder*, London. It is not generally known, however, that the material invented by Aspdin was what we now know as ground hydraulic lime, which he called "Portland cement" because of its resemblance in color to Portland stone. But it was Aspdin who commenced the process of development which in the course of a hundred years has resulted in the Portland cement of today. In view of the highly scientific methods of producing present-day Portland cement, it is interesting to note that in his original patent specification Aspdin specified the use of "road scrapings accumulated in the neighborhood of lime kilns," and that whereas nearly forty years after Aspdin's patent the strength of Portland cement at seven days was only 198 lb. per sq. in., modern British Portland cement attains a strength of 750 lb. in the same period. This year will probably also mark the issue of a further revision of the British Standard Specification for Portland

Cement in order to bring it into line with the increased strength of present-day cement compared with that manufactured in 1920, when the Specification was last revised; it is anticipated that by increasing the strengths specified users of cement will be able to make considerable economies.

MUSEUM PURCHASES COLONIAL WALL PAPER USED 130 YEARS

THE Metropolitan Museum of Art, New York, recently purchased from the present occupant of the old Imlay mansion at Allentown, N. J., the original Colonial wall paper hung in the parlor. This, it is stated, dates from 1794. It will be steamed from the wall and used in the Colonial Room in the new American Wing of the Museum. It is reported that the price paid was \$1,500, although officials of the Museum, in accordance with the Museum's rules, did not confirm this figure.

The mansion, erected late in the eighteenth century, is much the same as a century ago. The same is also true of many of its original furnishings. The wall paper is said to be of a conventional design, unlike many of the pictorial designs of the period.

TEXTURE in PORTLAND CEMENT STUCCO

PART III

BY SAMUEL WARREN, Associate Member, American Society of Civil Engineers

THE decorative value of texture in Portland cement stucco is the interesting quality which is apparent in all work where the craftsmanship is allowed to show. It is hand work as against machine work; the difference between timber sawed in a mill and that squared with an adze; between hand wrought iron

to get the mortar on the wall. But if you start "playing" with it after it is once on, the result will invariably present an artificial appearance. An analogy is possible in giving half-timbering an adzed surface. If you start with a round log and work it down to dimension with either an axe or an adze, it is almost impossible to secure a sur-



STUCCO DETAIL OF A HOUSE AT FLUSHING, L. I., N. Y.

JULIUS JACOBS, ARCHITECT

A texture distinctly in keeping with the Spanish type of architecture. Here, the texture is almost that produced in the old adobe work of the Southwest

and rolled steel bars; individuality as against quantity production.

The real texture is the unadorned result of a method of applying the mortar. An unsatisfactory result is usually secured by playing with a still plastic coat after it is once on. Again, the best texture shows the honest workmanship required

face that is not interesting and honest, but it takes the cleverest possible work to take a timber or plank already sawed to dimension and go over the already smooth surface with an adze and have it anything but a palpable imitation.

So with the stucco. To be satisfactory, it must accurately and truthfully show the method of

application and not be a smooth surface turned into a rough one.

Finishes with texture give to the exterior a quality beyond that of color or perhaps more correctly intensify and modify the color by introducing highlights and shadows. These differences of tone and shadows give the wall a feeling of depth and solidity. It gives the wall the look of being able to support something rather than a tinted "anythingness" dotted with windows. At a short distance, a smooth surface becomes just

cedent—and as I write this, there rings in my ears the sarcastic thunder of Mr. Magonigle—for in a sense, they are plagiaristic or imitative.

Characteristic of this is the texture most applicable to Spanish or Mexican architecture, that is the Mexican and Southwestern adaptation of the Spanish. Stucco here fulfilled a certain function and was applied in a certain way. It protected a wall construction incapable of withstanding weathering and it was often applied by the hand alone. So, to be in keeping, we strive for similar



FOUNTAIN ROOM, NEW BETHLEHEM HOTEL

An example of the interior use of white Portland cement stucco for large rooms. The coarser mortar made with Portland cement is more in keeping than the finer texture of interior plasters

a plane of color; a textural surface always maintains its individuality.

The acme of perfection in both exterior and interior mortar finish has long been a dead-smooth, "slick" surface; as near a machine product as possible. No imagination needed; nothing that is not apparent. So the first stucco textures caused almost as much comment as the first use of pallet-knifed pigment or tool-marked sculpture. And yet, textural stucco is almost as old as the material itself, for the simple reason that any but dead-smooth work must in itself have texture.

The textures are in many ways based on pre-

effects within the limitations of our material and workmen. The Spanish stucco was of a soft and very plastic consistency, while the modern stucco has more body. They applied it actually with hand while we must use a steel trowel, and where they smoothed by the palm, we use a burlap bag. To that extent, we have at least broken away from precedent and not too blindly followed ancient methods.

Again, in our adaptation of the English cottage, we have another tendency. Undoubtedly in those days, the houses were built almost from start to finish by the same men who turned strong hands



DETAIL OF A HOUSE AT SAN FRANCISCO, CAL.

J. K. BRANNER, ARCHITECT

A stucco texture in keeping with the Spanish concept of this house



HOUSE AT RIVERDALE, NEW YORK CITY

GEORGE B. POST & SONS, ARCHITECTS

An interesting surface texture and an artistic combination of materials



STUCCO HOUSE AT PAOLI, PA.

WALTER SMEDLEY, ARCHITECT

Like brick and stone, stucco is a natural background for clinging foliage

to almost any type of material or at least, one man was also brick mason, stone mason and plasterer, —a good workman in each, as the durability of his work testifies, but his conception of good work was the function of his material accomplished rather than his material finished to a mechanical neatness. So his stucco went on to accomplish its purpose of protection rather than to achieve a flatness or a mechanical bumpiness. When it was finished, his stucco showed how it got there. As every one had a different way of getting it there, endless effects were achieved. So any unaffected texture is in keeping with the English cottage type of work. There is a necessary relationship between the architectural classification of the structure and the design of the stucco.

Also, there are other factors. The degrees or mass of the texture must bear relationship both to the size of the house and the distance from which it is normally viewed, nor must the degree of texture be out of scale with the ornamentation of the house. Naturally, large surfaces will carry a heavier texture than smaller ones, as will a house normally viewed from a distance. In close surroundings, the texture must be subdued while if the house is surrounded by trees which cast broad shadows and is seen from a distance, the texture must be of such character as to make the stucco still keep its identity at that distance. A small fine texture will blend out to just a colored surface of some kind.

The degree of texture must not clash with the ornamentation. If fine mouldings or delicately carved lintels are used, the texture must be their background and limited accordingly.

The possibilities of textures are many. Keeping to a general scheme, there is a unity of the whole with an endless variation of detail.

Naturally, a texture in the stucco has a definite bearing on the color, for the texture introduces highlights and shadows. A certain mixture of stucco will have many variations of color, dependent entirely upon how much shadow the texture introduces and also whether the troweling action makes some parts comparatively smooth while leaving other parts rather rough.

The tearing of a surface even though very slight, tones that part much darker in shade than where the trowel leaves it smooth. It also brings to the surface and exposes individual grains of sand while a smooth spot is usually entirely covered with the cement matrix. So by even the slightest variations of trowel manipulation, it can be made to give various tone effects.

There are naturally as many kinds of stucco textures as there are stucco masons for it is practically impossible for two men to work in identically the same manner and variations in different sands and wall absorption always tend to make strict imitation impossible.

(To be concluded)



GARDEN OF ALEXANDER LOUGHLIN, SEWICKLEY, PA.

EDITORIAL COMMENT

AS TO PRECEDENT

A COMMUNICATION FROM IRVING K. POND, PAST PRESIDENT, A. I. A.

To The Editor,
THE AMERICAN ARCHITECT:

YOUR EDITORIALS of July 30 and September 24 have produced in me a "reaction" or a series of reactions, each quite definite and, I think, to the point. I am minded to write to you in matter thereof. But how shall I convey my sentiments to you? Two possible methods appear, each suited to a particular type of man; for, in the final analysis, it comes back to the man. First, there is the vivid soul who, keenly sympathetic with the past, yet lives frankly in the present, weighs it, and courageously faces the future. Second, there is the man who, through either timidity and self-distrust or an academic cast of mind, while moving in the present, sturdily keeps his face toward the past. I shall adopt the method suitable to one of the first type, and, acting in consonance therewith, shall set forth my "reactions" in the simplest and best English at my command; studying and restudying my words and phrases, and producing the most musical and rhythmical embodiment of my thought of which I am capable.

A man of the second type would, naturally, adopt the following method. Conscious (or perhaps unconscious) of his limitations in the field of thought, and in felicity of expression, he will, when confronted with this problem, immediately seek assistance from a phrase book which can put him in touch with what Shakespeare, or Milton, or Chaucer has had to say on some kindred topic, or, that wanting, on any topic whatsoever. Having abstracted pat, or to what one might call his mind, seemingly pat, phrases and sentences and paragraphs from the collected works of these masters of style, our friend of the second type will proceed to demonstrate his timidity or his lack of an understanding of the real merits of the problem, (though he may deceive himself into thinking that he is showing his culture and erudition) by piecing these borrowed parts into a highly academic composition. This, I must grant, is more difficult of accomplishment in literature than in architecture; possibly because the schools do not teach this method in the course of English composition as they do in the architectural course. Now, this second method is of the essence of plagiarism; of the essence of using precedent in its lowest and, in architecture, its most common form.

Shun the past? No! The man of the first type, keenly sympathetic with the past has studied deeply Shakespeare, and Milton, and Chaucer, and many another master, and knows much of them by heart,—to quote and to use in the proper time and place. But best of all he has caught their spirit, sensed the soul which breathes through the form and made it integrally part of himself. He has no need to quote the form for he can make visible the spirit after his, and its, own true nature.

Is there need to press the analogy further? Only to say that there is no such thing as an architectural "alphabet" in the sense in which the term is so generally misused. There are elements common to all architecture, of all climes and all ages. Magonigle is quoted as saying: "Mass and proportion, heights and widths, walls and openings, voids and solids, these are the simple elements of architecture." Proportion is a spiritual quality; the others are material attributes and are the elements of buildings. To be factors in architecture, these physical elements must enter rhythmically into the structure in consonance with the laws of Unity, Measure, and Purpose. When the elements, spiritual and physical, are fused in the fires of the imagination the resultant—architecture—will be bathed in charm and mystery.

To give to these elements, even to the material elements of mass, heights, widths, and so on, each its proper and appropriate form does not call for the use of precedent, except in a very narrow application of the term. Else there had been no Assyrian, no Egyptian, no Chinese, no Indian, no Greek, no Mediaeval, no Mahometan architectures. There had been but one world-wide expression based on the first definitely established type. But the spirit of nature, the spirit of life, intervened to save her human offspring from the despairing depths of monotony. She intervened with oceans, mountain ranges, rivers, plateaus, valleys, plains; she intervened with sunshine and shadow, with heat and cold, with dryness and with moisture, to break any possible widespread use of precedent. Her obedient children, on the whole, have been sensitive to her designs in their behalf.

I have discussed at length the matter of imitation, which is but another term for the misuse of precedent, in Chapter X of my book, "The Meaning of Architecture," and shall not elaborate here further than to say that the employment and development, by individuals in a certain time and place, of forms appropriate to and expressive of the genius of that time and place, from whomsoever

the forms may emanate, is a thoroughly justifiable use of precedent. That, however, is vastly different from applying forms peculiar to a remote time and environment to the surfaces of modern structures. In the book referred to I think I have shown why.

Just a word as to "proportion" and I shall comment upon the specific case which inspired your editorials and impelled the consequent rejoinders.

Magonigle again: "No man having something to say invents a new language to express his new thought; he uses the parts of speech familiar to us all, uses the alphabet of his race." Were certain everyday words of science, of medicine, of psychology, of any one of a hundred fields, known to us one, five, ten years ago; indeed, until a new, and heretofore undreamt of, thought came demanding a clear and complete expression? Proportion is, as I have said, a spiritual factor, establishing correct relationships. Are the relationships compelled in the case of steel or of ferro-concrete the same as those which have been satisfactory for stone or for brickwork? Would a man who had a real intellect, to say nothing of deep feeling, shape the steel or concrete to the forms appropriate to Monolith or Masonry or even cloak the steel and concrete in these forms and take pride in the lifeless dummy which he had set up? Anything which is worthy to be incorporated as a necessary structural element in a building is worthy of respectful treatment if the building is to be architecture. At the bottom of it all, again, is the man. If there is anything of virtue in him it will show in his architecture, or in what he is pleased to call architecture; and if his spiritual content is *nil*, his architecture will widely proclaim the fact.

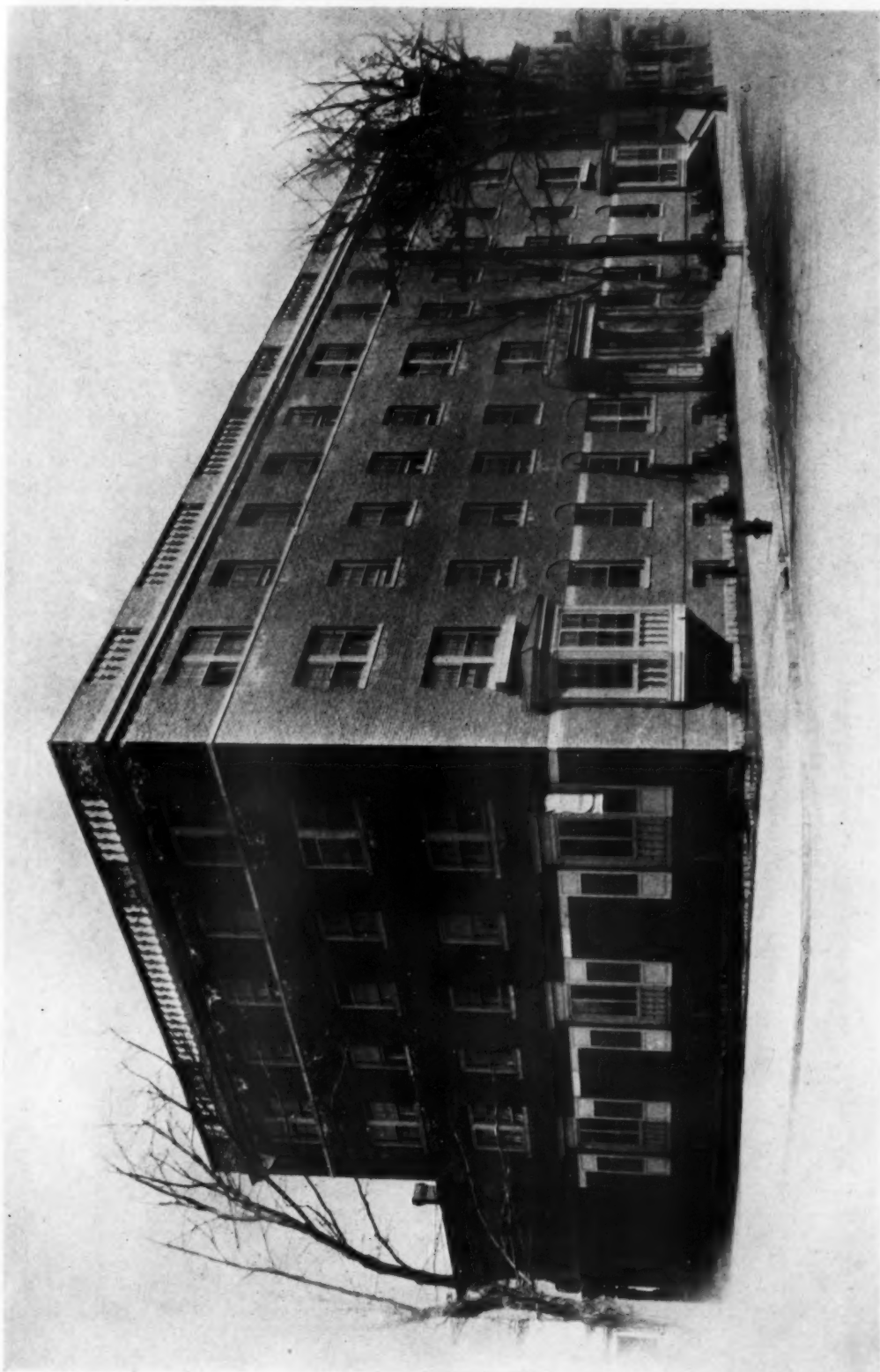
As to the Tower of the Madison Square Garden, the suggested salvaging of which brought forth this discussion, is it intrinsically a work of art, to be saved as a priceless heritage, or is it merely an expression of superficial beauty? I wish to eliminate the word "beauty" in this case and sub-

stitute prettiness. The Tower never could have been lovely—the material of which it was built stood against that. I do not feel that its form came in response to any real spiritual need or that its message has sunk very deeply into the American consciousness. It was a pretty thing and came in response to a desire on the part of its designer to give a pretty aspect to a world-famous campanile—the Giralda at Seville—itsself a powerful expression of the clashing of two powerful Old World civilizations, in Spain, where the tides met. I never have felt that it was just right to make that tower the basis of a "pretty" thing. But I am idealist enough to think that if the spirit of beauty inhabits this modern adaptation, that spirit never will be lost. It will live in influence even though the Tower be demolished in the advance of a supposedly unlovely civilization.

Just one more thought for the devotees of precedent and the lovers of the Old, as against the New, to ponder. A building based on precedent merely and not, when it might have been, a sincere expression of modern thought and conditions, need not necessarily be unlovely to look upon, nor again, need it necessarily be materially beautiful. Its superficial aspect will depend upon the character and attitude of its designer, who, however, succeed as he may, will have added but little to the sum total of human accomplishment. A new thing, an expression of what the designer sincerely conceives to be basic in modern life, need not, from the fact of its newness, be unlovely, nor need it necessarily be beautiful. That, again, will depend upon the soul of its designer. However, a thing, beautiful or ugly, conceived in the modern spirit stands the better chance of being vital, of being instinct with life. But, after all, the *thing* is little; the *man* is everything. Unfortunately offenses against the spirit of beauty must come; but woe unto the man, follower of the old or advocate of the new, through whom the offense cometh.

(Signed) IRVING K. POND



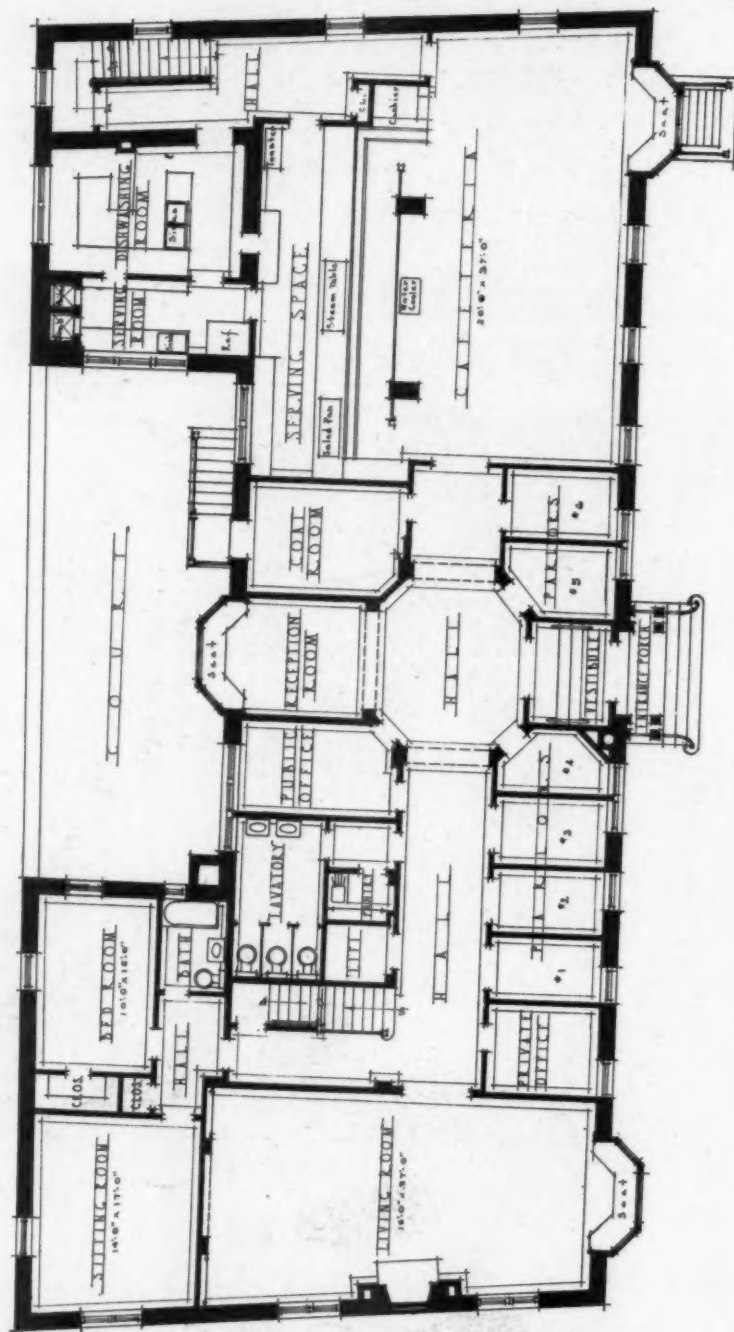


Y. W. C. A. BOARDING RESIDENCE, BRIDGEPORT, CONN.

EDWARD B. CALDWELL, JR., ARCHITECT—WILLIAM F. THOMPSON, ASSOCIATE

(Plan on back)

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October 8, 1924. Plate 113



FIRST FLOOR PLAN

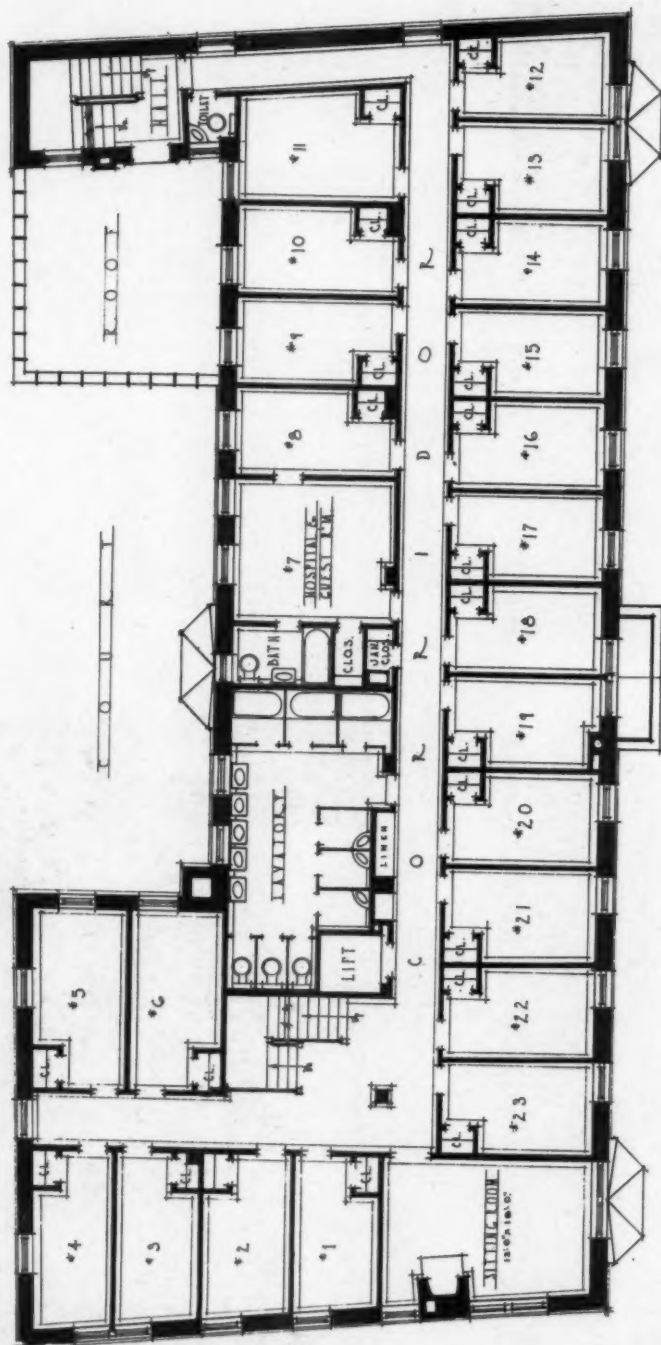
Y. W. C. A. BOARDING RESIDENCE, BRIDGEPORT, CONN.
EDWARD B. CALDWELL, JR., ARCHITECT—WILLIAM F. THOMPSON, ASSOCIATE



DETAIL OF PRINCIPAL ENTRANCE

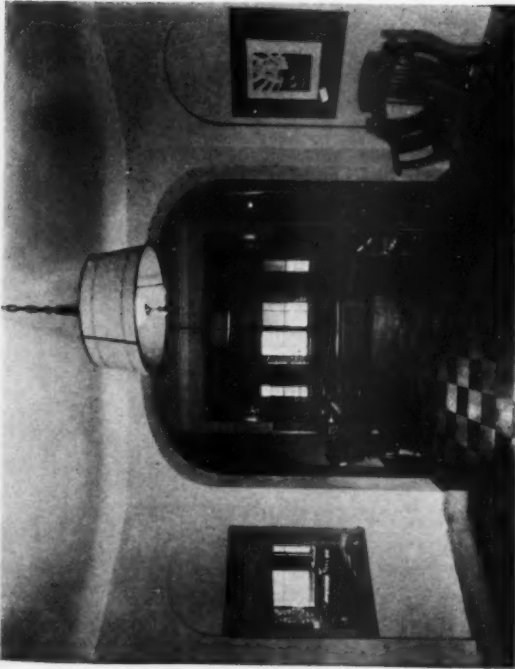
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(Plan on back)



SECOND FLOOR PLAN

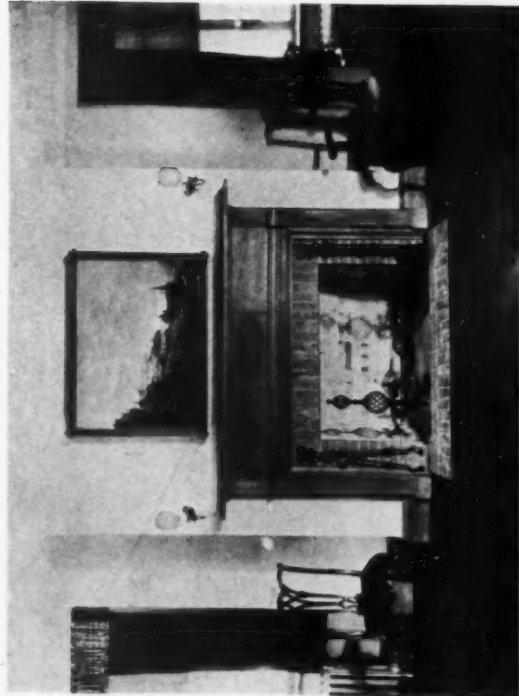
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ENTRANCE HALL



CORRIDOR

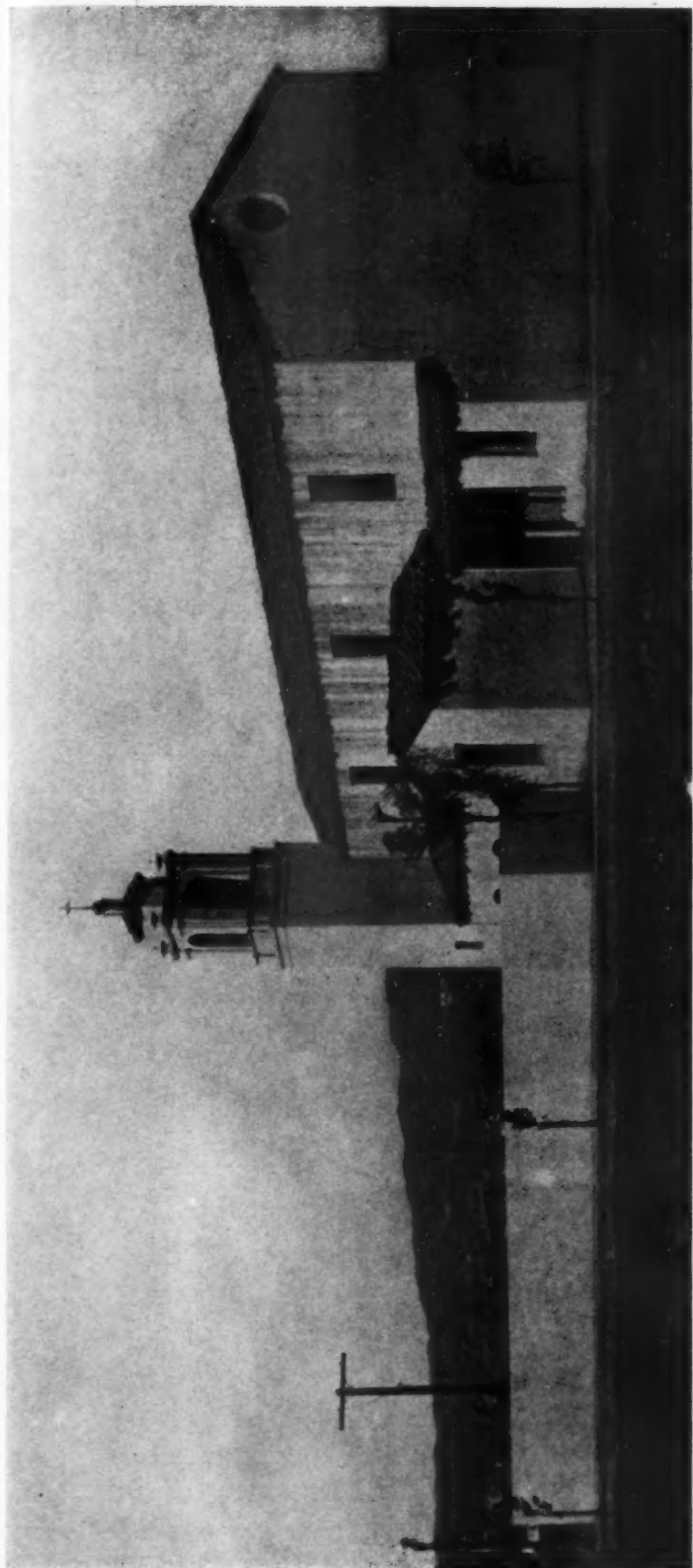


LIVING ROOM

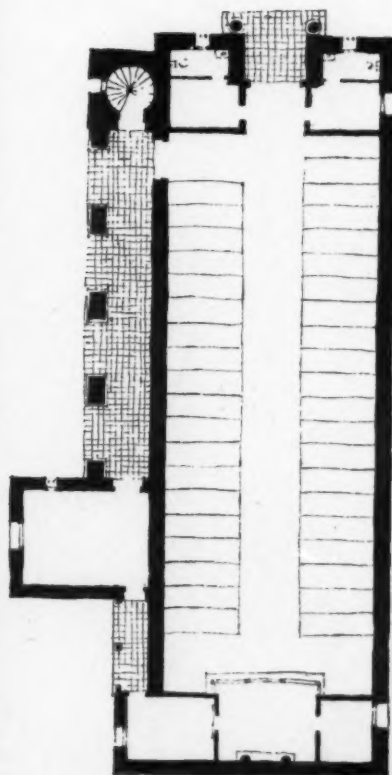
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Y. W. C. A. BOARDING RESIDENCE,
BRIDGEPORT, CONN.

EDWARD B. CALDWELL, JR., ARCHITECT
WILLIAM F. THOMPSON, ASSOCIATE

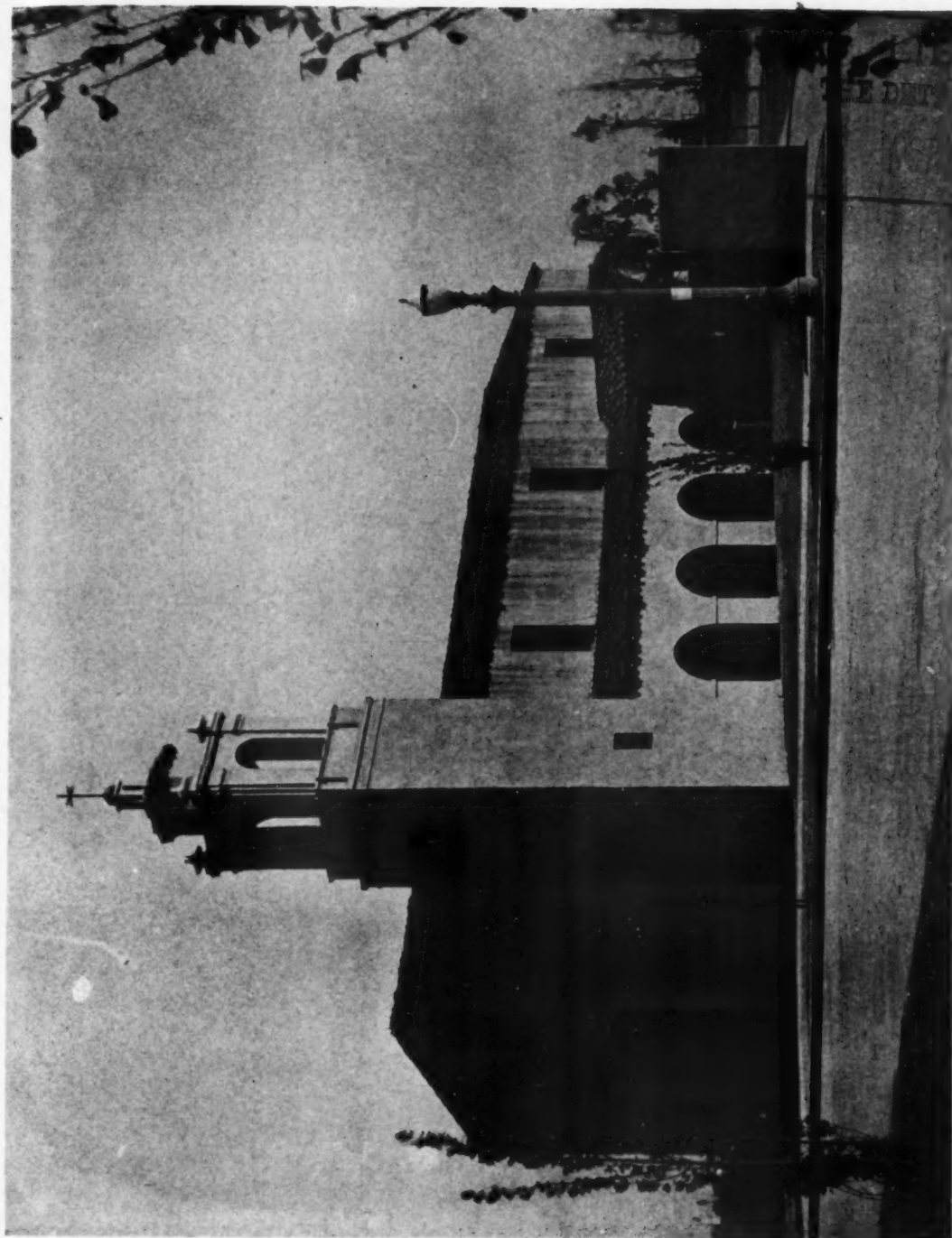


AMANDA ANDERSON MCCARTHY MEMORIAL CHAPEL, CARTHAY
CENTER, LOS ANGELES, CAL.



THE AMERICAN ARCHITECT
October 8, 1934. Plate 116

ALFRED EICHLER, ARCHITECT
H. W. BISHOP, SUPERVISING ARCHITECT

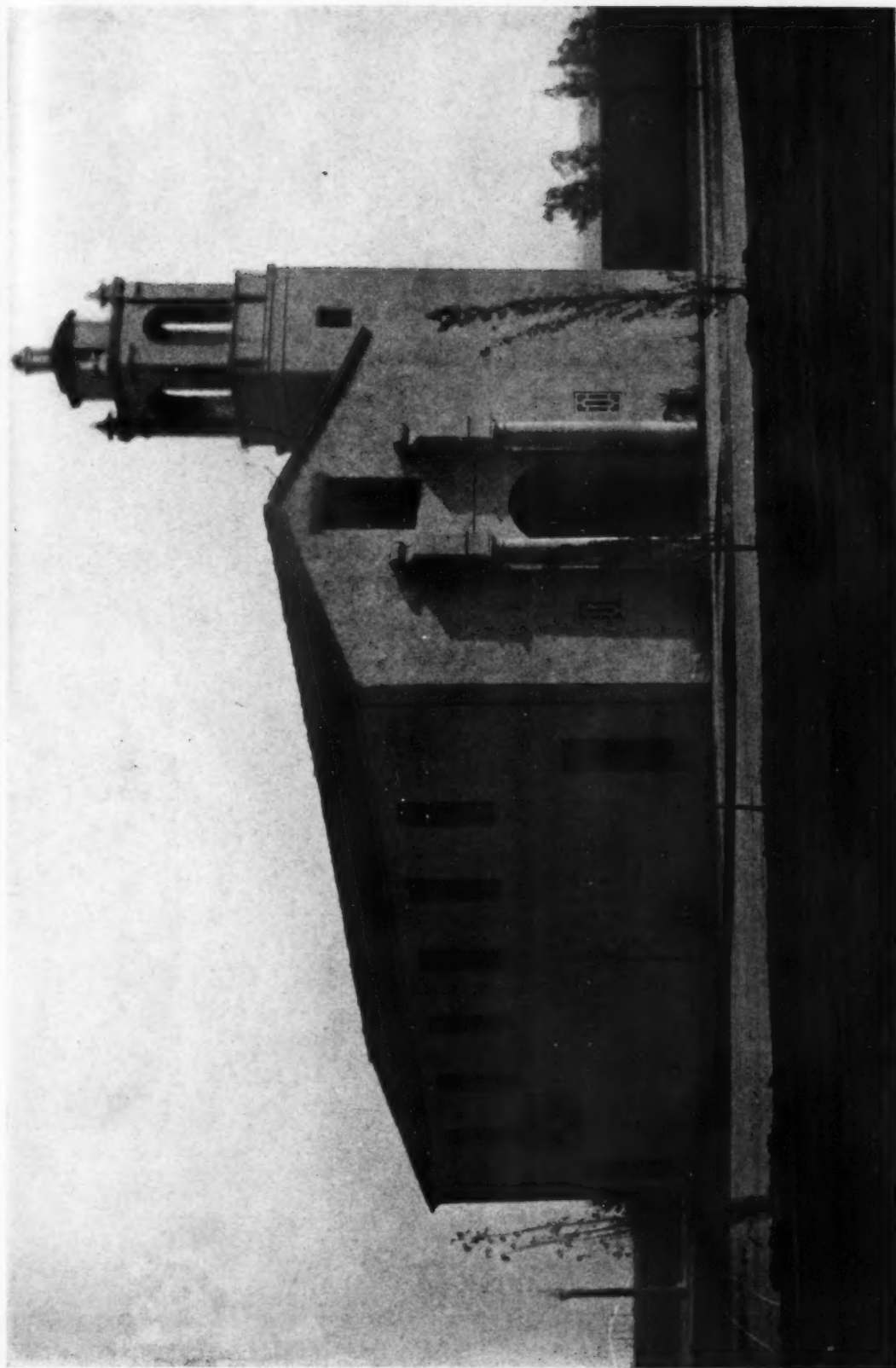


LIBRARY
THE DETROIT EDISON CO.
14 1924

AMANDA ANDERSON MCCARTHY MEMORIAL CHAPEL, CARTHAY CENTER, LOS ANGELES, CAL.

ALFRED EICHLER, ARCHITECT—H. W. BISHOP, SUPERVISING ARCHITECT

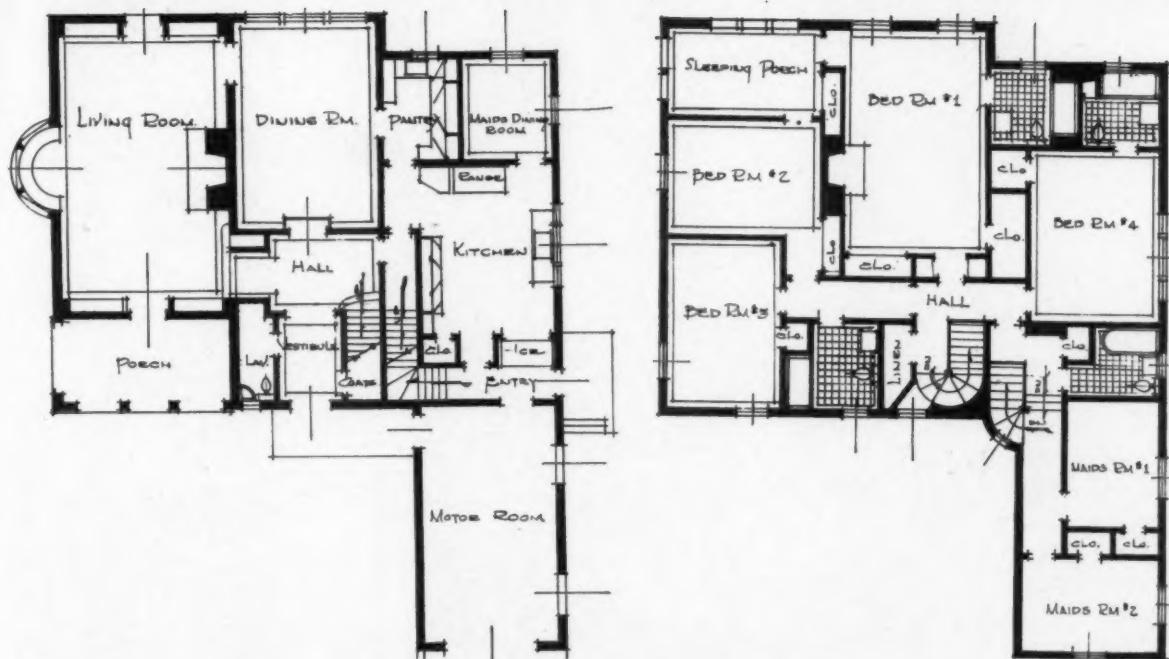
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AMANDA ANDERSON MCCARTHY MEMORIAL CHAPEL, CARTHAY CENTER, LOS ANGELES, CAL.

ALFRED EICHLER, ARCHITECT—H. W. BISHOP, SUPERVISING ARCHITECT

THE AMERICAN ARCHITECT
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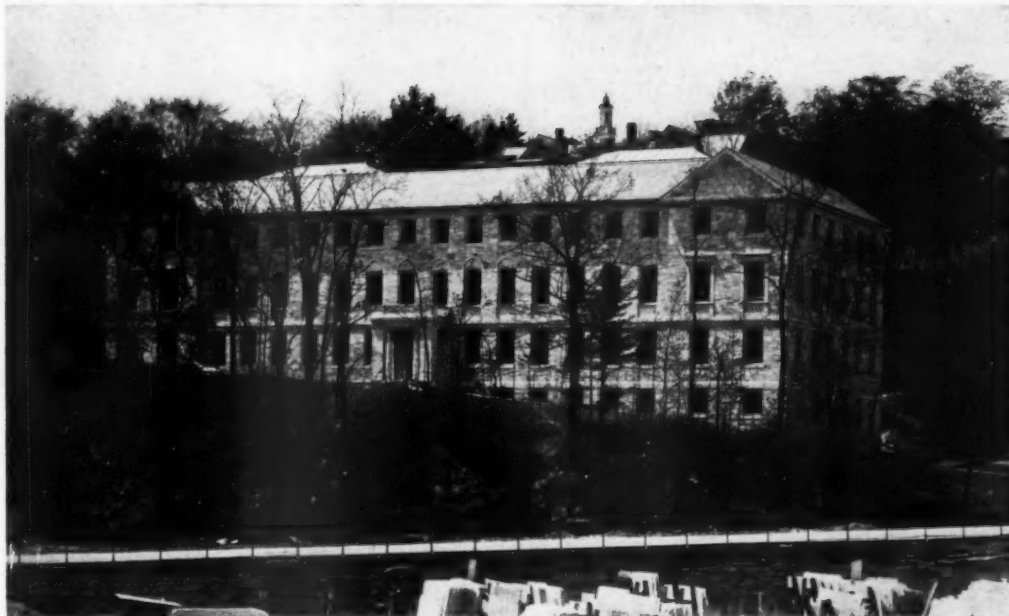
HOUSE OF JOHN C. DAWSON, LAKE FOREST, ILL.
 RUSSELL S. WALCOTT, ARCHITECT



HOUSE OF JOHN C. DAWSON, LAKE FOREST, ILL.

RUSSELL S. WALCOTT, ARCHITECT

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October 8, 1924. Plate 120



THE FINISHED BUILDING, SHOWING THE APPEARANCE OF RANDOM MARBLE ASHLAR, COMBINED WITH CUT MARBLE. THE OLD RETAINING WALL IN FOREGROUND IS OF SAME MATERIAL

DIGNIFYING A BY-PRODUCT

Office Building of Vermont Marble Company

THE OFFICE OF R. CLIPSTON STURGIS, F. A. I. A., Architect

Described by S. WINTHROP ST. CLAIR, A. I. A.

"The stone which the builder rejected is become the head of the corner."

THE use of structural materials during the past twenty-five years has been marked by a strong drift away from artificially perfect surfaces, to the natural variations inherent in materials selected more at random. This has been perhaps most marked in connection with the simpler masonry building materials.

McKim, in the Harvard College gates and elsewhere, was among the first to seal the doom of the pressed brick era and bring into delightful use the long discredited and neglected bench brick, with their splendid range of color and texture. These bench brick, now sought as the most desirable brick in the kiln, were once the least valuable.

Indiana limestone is passing through the same sort of change in use. Until very recently limestone specifications customarily called for very careful selection so that every stone would match the approved sample, either warm buff, cool gray or some intermediate shade according to the de-

sire of the architect. The result of this was huge piles of material in every stone yard discarded because of some combination of the different colors found in every quarry at certain levels. Another result of course was a definite item in the cost of the selected stones to cover the cost of quarrying and handling the discarded stones, sound but variegated in color.

Recent years have seen many important buildings built of this variegated stone at a very considerable saving in cost, and in the opinion of their designers with a definite gain in appearance due to the pleasant random variations in color.

The construction of the new office building at Proctor, Vermont, for the Vermont Marble Company, has brought this same policy into play with the use of marble, perhaps for the first time in this country in a building of any size and importance in the community.

The old shop buildings of the Vermont Marble Company at Proctor have been built, from time to time, during the last sixty years, and always of such local material as was thought to be the least valuable. Blocks of fine marble, which de-



SECTION OF AN OLD MARBLE WALL, MARKED AS AN APPROVED SAMPLE OF JOINTING

veloped some flaw of color or marking were thrown in the pile of rejected stone. Whenever the company needed new buildings for its own use, with true New England thrift, it built from this pile.

As has often occurred, under similar conditions, the old builders who erected these walls, with no other object than the best use of material at hand, developed a texture of marble ashlar which gave a wonderful combination of economy and beauty. The walls of the old structures which rise from the limestone cliffs of Otter Creek where that

river plunges over the hundred foot cascade of Sunderland Falls might well serve as the inspiration for an architectural pilgrimage.

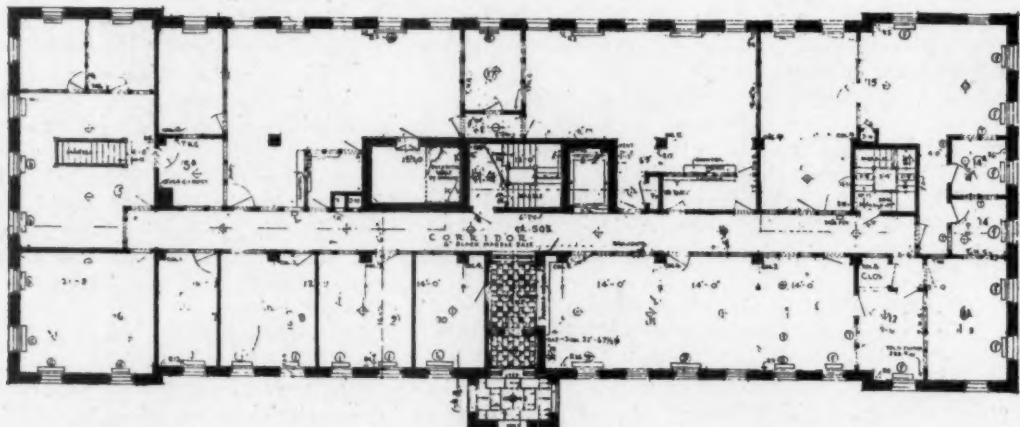
When the problem of the new administration



RANDOM BLOCKS OF MARBLE USED FOR THE ASHLAR, AS THEY LAY PILED IN THE SNOW

building was presented to Mr. Sturgis, the use of this local material naturally suggested itself. Sections of the ashlar in the old shops, where the old time workmen had been most happy in their selection of stones, were photographed and the photographs bound into the specifications as "approved examples" of jointing and arrangement. Samples of marble were selected for range of color, from pure white to clouded and gray. Any stone taken from the quarries producing these colors was accepted at random for the ashlar. Markings, chipped corners or other imperfections which made the marble undesirable for monumental work only added a pleasing texture to the mass of the exterior walls.

This marble is usually sold by the ton for various commercial uses. By taking advantage of this low cost of material a wall of great interest was



THE MAIN FLOOR PLAN



THE ENTRANCE PORCH
OFFICE BUILDING OF VERMONT MARBLE CO., PROCTOR, VT.
THE OFFICE OF R. CLIPSTON STURGIS, F. A. I. A., ARCHITECT

built of marble at only a little above the usual cost of good brickwork. The cornice, belt course and ornamental members were selected cut marble, but the plain ashlar was entirely made of the random blocks, with their surfaces as they came from the saws, built into the wall by stone masons who laid this material just as they would have laid an

monumental work customarily done in marble and demanding generally careful selection for uniformity of color, will continue to create a large amount of this by-product of variegated marble of random size, shape and color. The cost of quarrying this material is to a considerable extent a part of the cost of the selected material and it can be sold



THE SOUTH FRONT SHOWS THE MARBLE ASHLAR, THE COST OF WHICH RUNS ONLY A LITTLE ABOVE THAT OF GOOD BRICKWORK

ordinary random stone ashlar. The entire wall was of this material, not merely the facing. It was a straightforward job, only in this case the stone was marble.

It would seem that here is a valuable building material for many uses. The large amount of

for use in building work as described above at a price not usually associated with a marble wall facing. The use of this material is an opportunity that ought not to be overlooked by the building industry. It doubtless will not be overlooked by thoughtful designers.

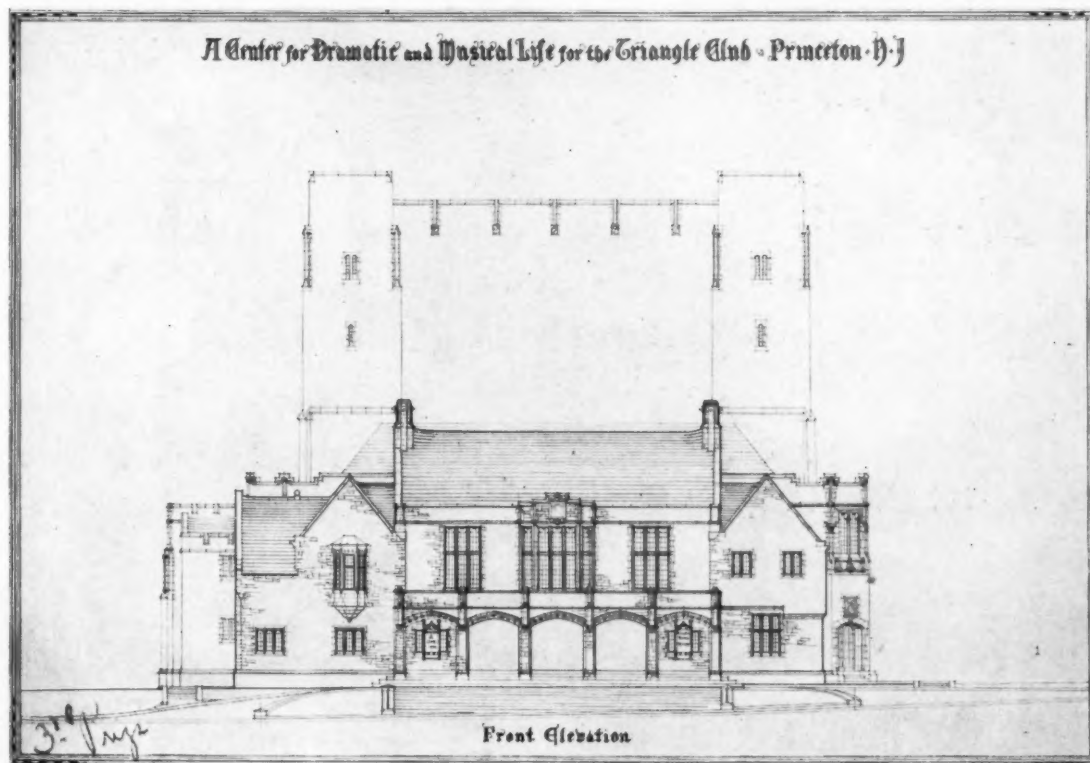
COMPETITION for a CENTER for DRAMATIC and MUSICAL LIFE, PRINCETON, NEW JERSEY

THE competition for a modern theatre at Princeton, to be erected under the auspices of the Princeton Triangle Club, was conducted under several unusual conditions. The competition was limited to architects who are properly qualified to execute the commission; who are graduates of Princeton University and members of the Triangle Club, and who maintain architectural offices within 200 miles of Princeton, New Jersey. The trustees of the Triangle Club appointed C. Howard Crane and Kenneth Franzheim, architects, to serve as consulting architects to conduct the competition and to act in the capacity of consulting architects throughout the progress of the work. The program stipulated that the commission must be executed by the winning competitor under his personal direction and name or name of firm in which he is a senior partner.

It was made mandatory that the cubic contents

of the building should not exceed 700,000 cubic feet; that the auditorium have approximately 650 seats on the first floor and a total balcony capacity of approximately 250 seats. In addition to the requirements of the auditorium, stage and the usual appurtenances of a theatre, it was required that there should be provided accommodations for the Triangle Club—these to consist of a meeting room (23' x 50' minimum), a room for the club records and a men's smoking room and toilet. It was further required that the design be carried out in a modified Tudor or Gothic style of architecture and that the interiors be treated in an intimate, cozy manner.

The winner of the competition will secure the commission to design the building. The sums of \$500.00, \$300.00 and \$200.00 shall be paid to the authors of the second, third and fourth prize designs, respectively.



THIRD PRIZE—CHARLES N. READ, ARCHITECT

The program was conducted in conformity to all of the requirements of The American Institute of Architects and the prizes were awarded to the following competitors:

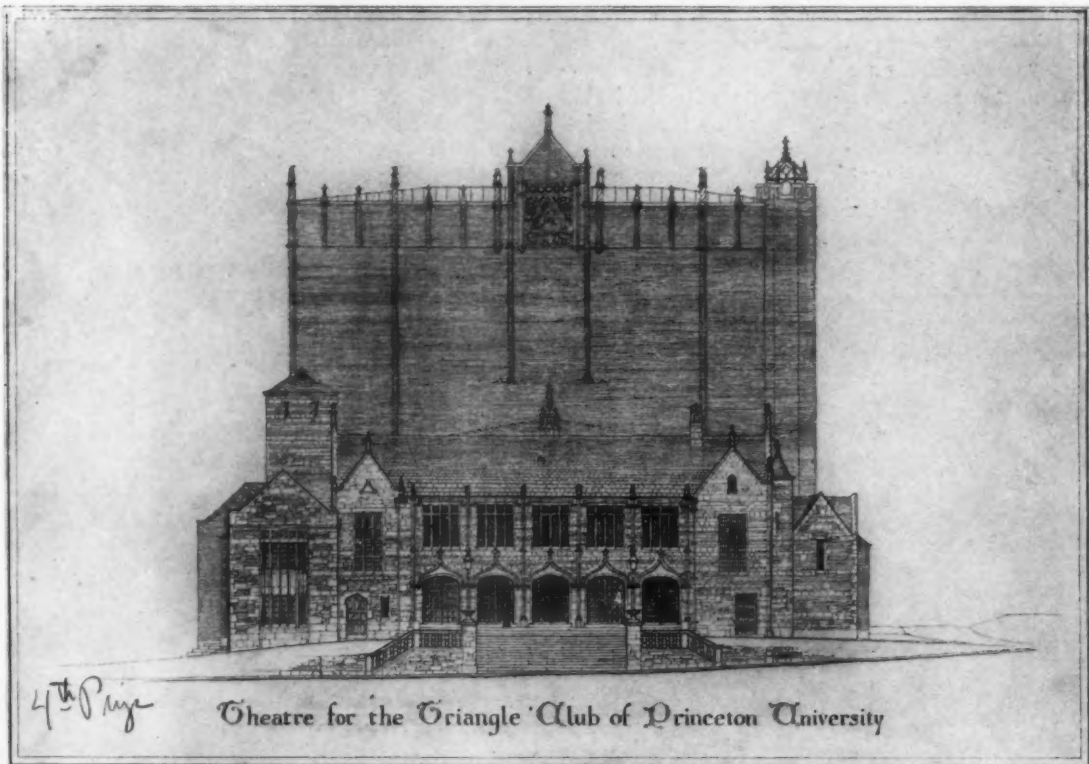
D. K. E. Fischer, Jr., Award
Caleb Peirce, 2nd Prize
Charles N. Read, 3rd Prize
H. O. Milliken, 4th Prize

The unusual features of this competition consist of the limited number of competitors and the style in which it was required that the building be designed. It is but natural that this building should be designed in a style which would harmonize with the other buildings which constitute the Princeton University group. This imposed a rather difficult problem upon the architect

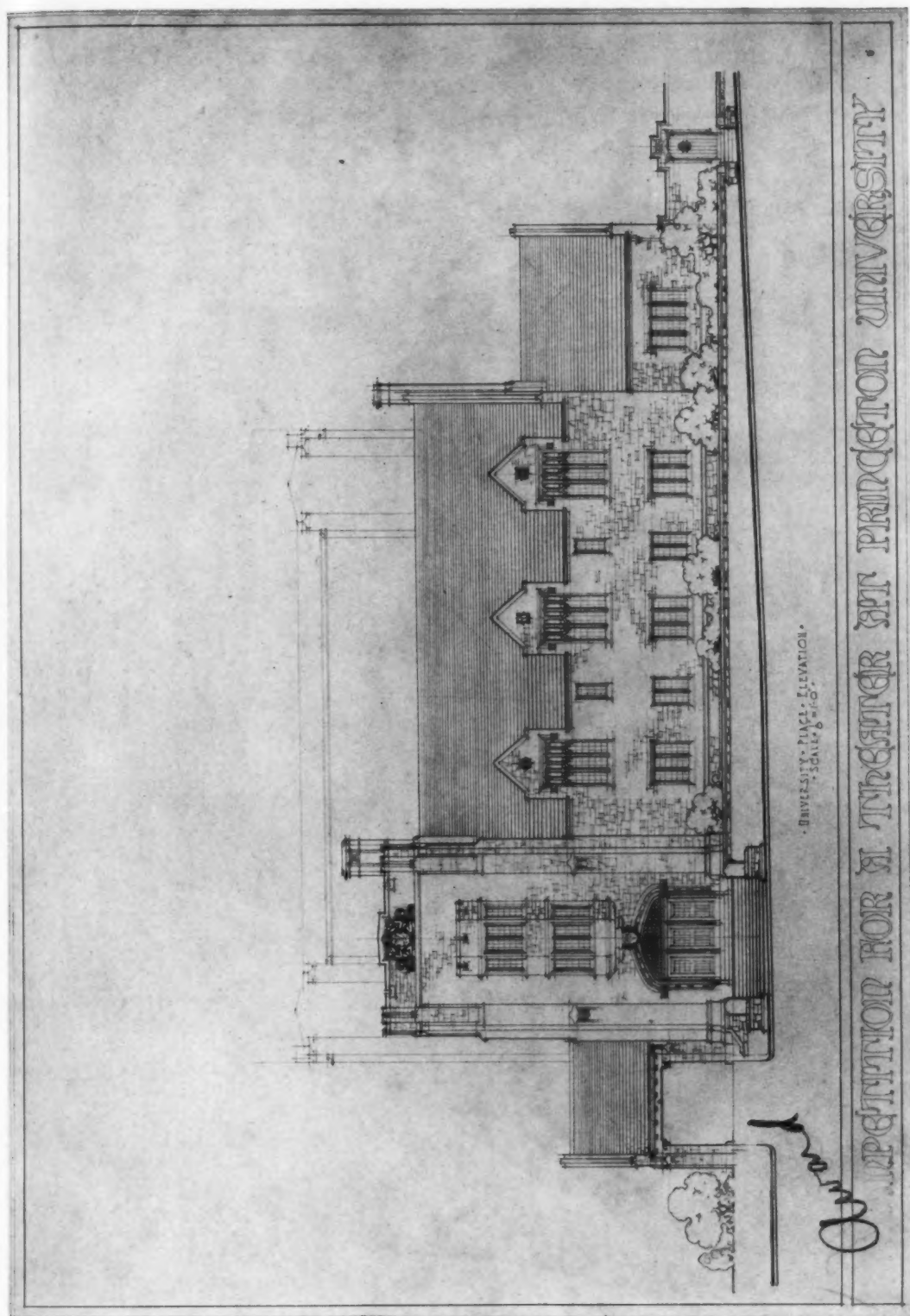
as the use of the Tudor or Gothic style of architecture is not common in theatre design and construction. Another unusual element of the design is that the theatre is not intended as a purely commercial enterprise but is to be combined with the activities and accommodations for a social club, making it a true center for dramatic and musical life.

The Jury of Award consisted of five members as follows:

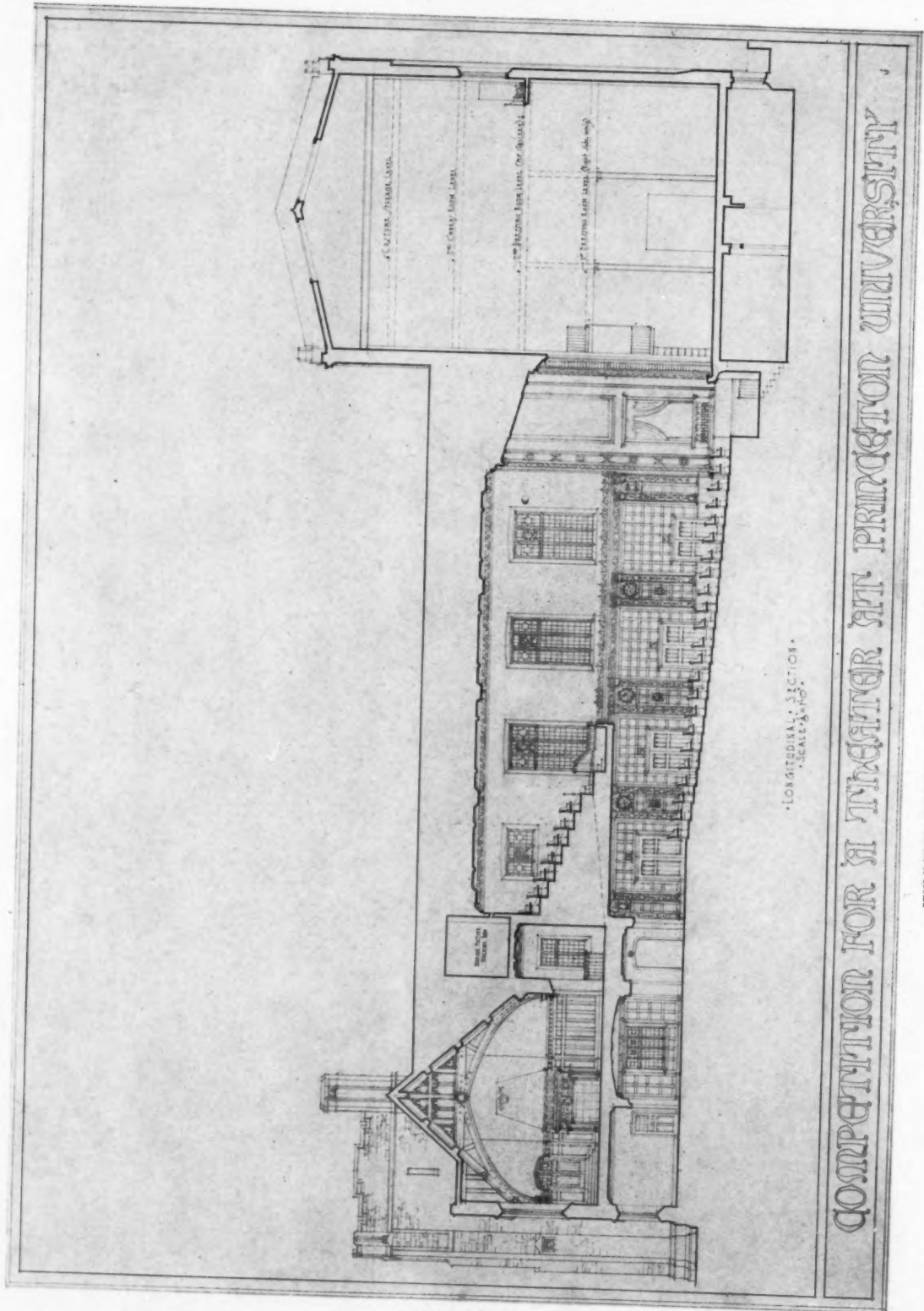
The Trustees of the Triangle Club, who
were entitled to2 votes
Ralph Adams Cram1 vote
Aymar Embury II1 vote
C. Howard Crane and Kenneth
Franzheim1 vote



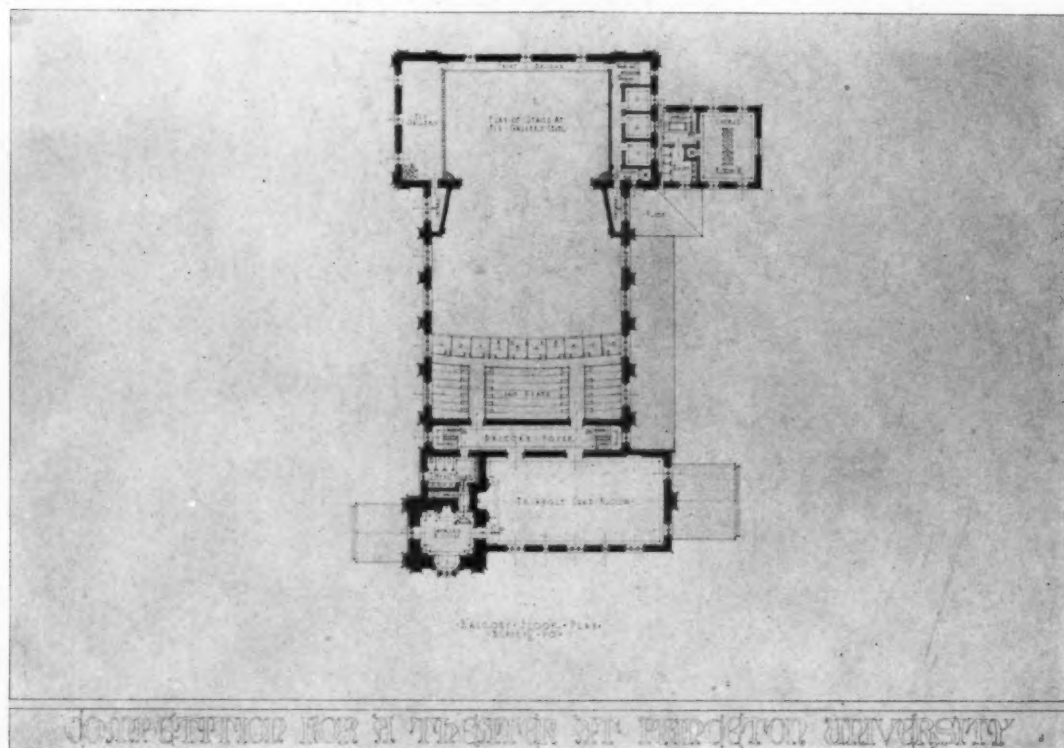
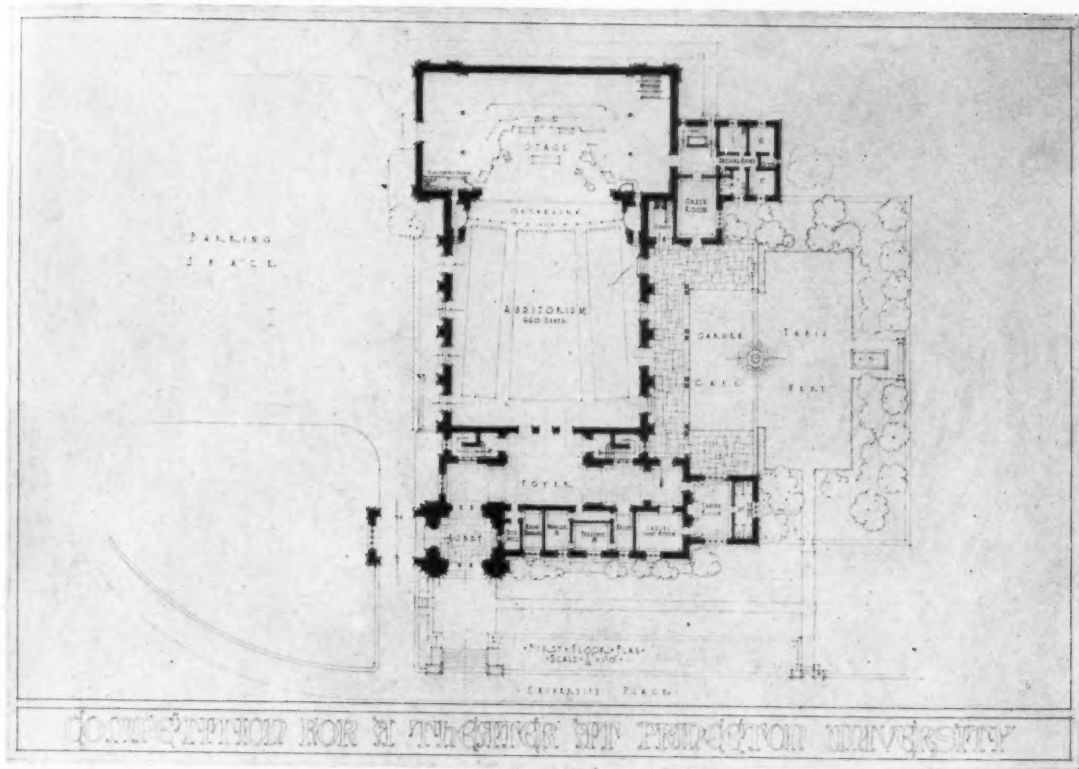
FOURTH PRIZE—H. O. MILLIKEN, ARCHITECT



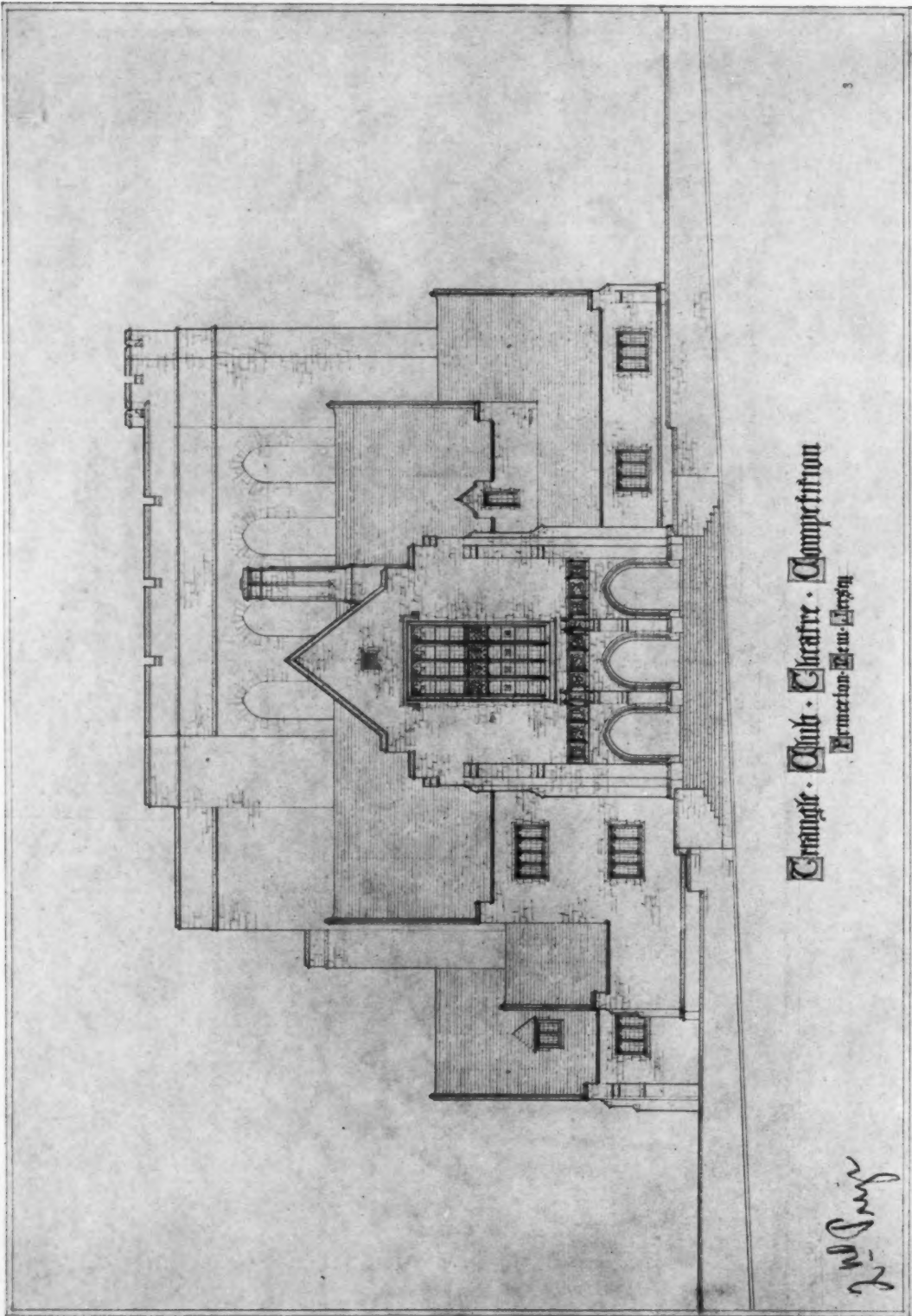
WINNING DESIGN—D. K. E. FISCHER, JR., ARCHITECT



WINNING DESIGN—D. K. E. FISCHER, JR., ARCHITECT



WINNING DESIGN—D. K. E. FISCHER, JR., ARCHITECT



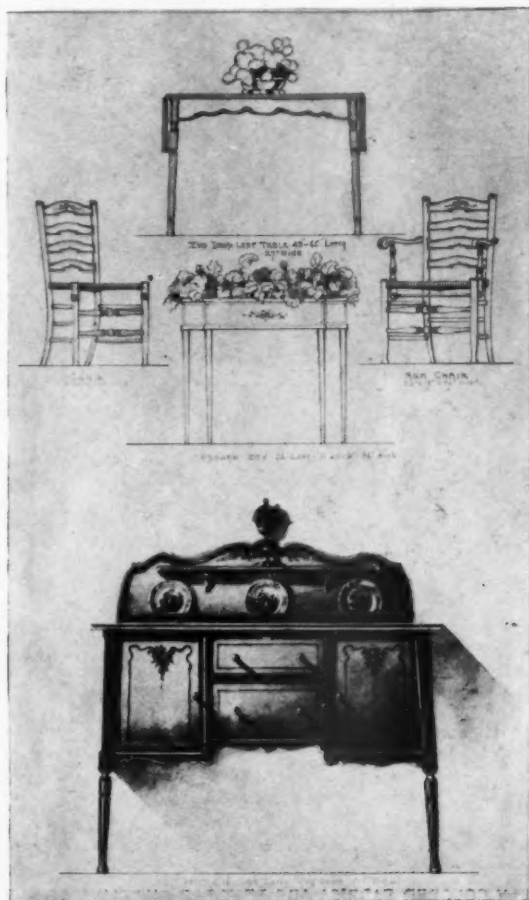
SECOND PRIZE—CALEB PEIRCE, ARCHITECT

INTERIOR ARCHITECTURE

Planning and Furnishing the Breakfast Room

COMplete elimination of the dining room is not necessarily forecast by the acquisition of a breakfast room. But, in the smaller house especially, the breakfast room, cheerful and cordial in its decorations and furnishings, and a saver of labor besides, tends to do just that. In many cases, the labor-saving quality may have had a very great influence on its installation, for with the servant problem now in an acute state, the saving of time and energy for the housewife becomes an important consideration. No matter where the advantage lies or to whom the credit belongs, the breakfast room has served to make people realize that they can much more enjoy a meal when served in appropriate and agreeable surroundings, and the old-fashioned dining room certainly did not provide that. This

realization has been brought home to them so forcefully that they see in its application to the dining room a complete revision of the plan and furnishings of that room, by which its ill-conceived and entirely inappropriate architecture, decorations and furniture, featured so conspicuously in the dining room of twenty-five years ago, will be a thing of the past.



PAINTED WOOD BREAKFAST SET OF UNUSUAL DESIGN, CHARACTERIZED BY INFORMALITY, AN IMPORTANT CONSIDERATION



IN THE VERY SMALL AND MODERATE PRICED HOUSE THE BREAKFAST ROOM CAN BE MADE ATTRACTIVE BY THE USE OF BUILT-IN FURNITURE. THE IMITATION TILE FLOOR AND THOROUGHLY HARMONIOUS CHECK PATTERN CURTAINS GIVE REAL DECORATIVE INTEREST TO THE SCHEME

At the outset and above all else, the breakfast room must be cheerful. Its most important function is to greet each arrival with a cheerful "good morning." To do that, expressed in more technical language, interest in its architectural and decorative schemes must be centered on simplicity and informality. Wall spaces should not be cut up; mouldings should be of simple contour; color schemes should not be confused; in other words, the doing away with elaborate and fussy details. This will all tend toward cheerfulness in design. In its planning, too, arranged to get the benefit of the bright rays of the morning sun, its cheerfulness can be further increased. But its loca-

tion in the floor plan of the house must be governed by more than that alone. Its accessibility to the kitchen must be considered, especially as a saver of steps. Besides, there is its opportunity for other uses, as a card room, for example, which must not be overlooked in its location. A small



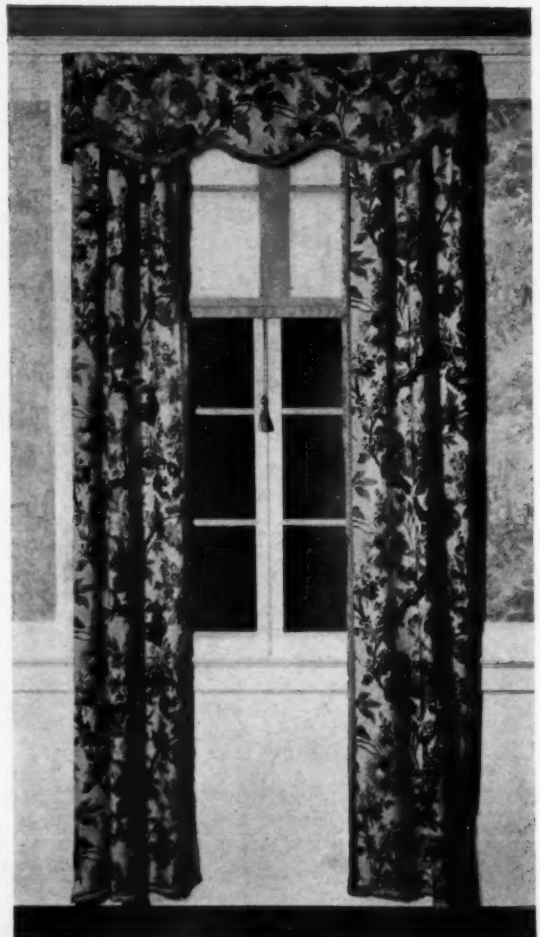
WALL PAPER DESIGN WHICH HAS ALL THE QUALITIES THAT MAKE IT APPROPRIATE FOR A BREAKFAST ROOM. IT IS PRINTED IN SEVERAL TONES OF ONE COLOR, ON A NEUTRAL TINT BACKGROUND. THIS ONE IS IN SHADES OF GRAY

room, too, is apt to be more cheerful on account of its coziness.

In the floor plan of the house shown on page 341, the location of the breakfast room is most fortunate, as regards both convenience and design. By its opening on one wall to the pantry and on another to the dining room, it becomes accessible to the only two rooms in the house that need be considered. It balances perfectly in the exterior elevation with the sun porch at the other side of the house, the room itself taking the form of an enclosed porch. This also allows it to be appropriately used for other purposes than a breakfast room when needed. The illustration shown on page 340 gives a view of this breakfast room, looking into it from the dining room. Small wonder that such an attractive and comfortable appearing room proves a strong competitor to the formal dining room. Natural colors, the colors with which Nature paints her pictures, are the most cheerful. To a great extent this is on account

of their brilliancy. Such colors require great care in their use. Few colors, with strong contrasts, make the most successful color schemes for the breakfast room, for simplicity in architecture and decorations goes hand in hand with simplicity in color arrangement. In fact, color to a very great extent determines architectural design, although often there seems to be no connecting link between them.

As frequently mentioned in the articles appearing in this Department, an appropriate wall paper does more than any one other decorative element to enhance the architectural, as well as the decorative scheme, of any room, on account of the interest which it attracts by its design and colorings, and the emphasis which it places on the proportion of the wall spaces. Again, it often serves to great advantage as the connecting link between the architectural treatment and the deco-



GAY COLORED FABRICS ARE BEST FOR CURTAINS OF THE BREAKFAST ROOM, A ROOM WHICH HAS NO PLACE FOR ANYTHING THAT IS NOT BRIGHT AND CHEERFUL. THE ILLUSTRATION SHOWS AN INTERESTING EFFECT MADE BY PRINTED MOHAIR

rative scheme. For a room that is so featured by informality, as is the breakfast room, wall paper designs which are strictly conventional in character have no place. Nor has the distinctly natural floral pattern, which, especially in its colorings, would show up to such poor advantage by its artificiality, in comparison with its natural surroundings. But the free and unconventional patterns, which lean decidedly toward the decorative, are entirely appropriate. Very often, on

ings natural. The background is of a neutral tone, tending toward cream, and the pattern,—a strictly decorative one—is printed in various shades of one color. In a most successful breakfast room in which this paper was used, the pattern was printed in shades of neutral gray, ranging delicate light tones to almost black. A low dado supporting the papered surface of the walls, was painted in a rich yellow, including the cap moulding, base and all the trim of the room.



BREAKFAST ROOM IN THE HOUSE OF MRS. EDNA A. HOFFMAN, RIVERDALE, NEW YORK CITY

DWIGHT JAMES BAUM, ARCHITECT

Lattice treatment on the walls gives an outdoor quality to the room which carries with it a cheerful atmosphere that is greatly to be desired. A tile floor and painted furniture are in harmony with this idea.

account of the small dimensions of the room, it is best, in order to effect good proportion, that the wall paper surface be supported by a dado, of twenty-seven to thirty inches, perhaps. The entire dado and the trim throughout the room may then be painted in a color that is entirely harmonious to the wall paper and merge the papered surface and the dado below into one wall. On the opposite page is shown a wall paper which is appropriate in every way for use in a breakfast room scheme. Its pattern is not conventional; neither are its color-

This yellow harmonized thoroughly with the cream color in the background of the wall paper, and further emphasized the decorative effect of it. Certain members of the trim and dado mouldings were striped with black, which tied them up again with the wall paper, and yet created sharp contrast with the yellow. The furniture used in the room, simple in every detail, was painted gray and picked out slightly in yellow and black. The floor was covered with linoleum, marked off in squares

representing black and gray tiles, and ecru sash curtains were hung at the one window. The effect of the room, which was small, about 8' x 11', was interesting, informal and inviting. A larger room would have perhaps required another color to function similarly, but the simplicity of this scheme was strictly in keeping with the simple plan of the room, as can be visualized.

It is not meant to insinuate that wall treatments for breakfast rooms should be limited to papers. An interesting lattice treatment is quite as appropriate, especially if the plan of the room is more on the lines of an enclosed porch, as it often is. In such instances, the room takes on an out-of-doors aspect, as described in detail in a recent article on the enclosed sun porch. Colors should still be few and brilliant, but materials, and, consequently, details, may change slightly to be more in keeping with the outdoor note. For instance, in the illustration shown on page 339, the walls are treated entirely with an attractive lattice design, the floor is laid in tiles, and the furniture is painted wood, with chair seats of coarse rush. Rough plaster walls, too, have a decided outdoor quality, and tinted in a shade of yellow, they are suited to the break-

fast room that is planned as an enclosed porch. A room with such a treatment is shown above. Wicker or reed furniture can be used most successfully in this type of room, and presents a fine opportunity for color. But iron furniture, while often interesting for the enclosed sun porch, cannot be so successfully applied here, as it is liable

by its austerity of line to shatter the simplicity of the scheme.

The character of the designs of upholstery materials and motives used for ornamenting furniture should bear out accurately the spirit of the room. Fruits and foliage are especially appropriate, and can be easily adapted to decoration. They may differ from the character of the wall

paper design, in that they are added as a decorative element, while the wall paper serves in a positive way as a part of the architectural scheme. The distinction is worthy careful consideration. The colorings of the decorations (speaking of the applied decoration, it must be understood), should have correct relation to the architecture. Materials used for draperies and furniture cushions should carry out the informal and cheery atmosphere of the room. Fabrics which meet this requirement best are of light weight goods, as a chintz, a printed linen or a silk. Its colorings and its pattern depend so markedly on the rest of the decorative scheme that it would seem inadvisable to specify any one class as best suited. A good selection, however, has the possibility of insuring a successful scheme, for the fabric, being stock goods, determines

more than depends on the rest of the scheme. Plain goods, especially combined in a scheme with a figured wall covering, are generally best for draperies. Yellows, from the deep orange to the light green, in all its intermittent hues, are appropriate to the conditions of the breakfast room, the reddish tints being prefer-



BREAKFAST ROOM IN HOUSE OF JOHN B. VAN HAELEN,
HARTSDALE, N. Y.

FRANK J. FORSTER, ARCHITECT

Walls are of rough plaster, tinted slightly toward the yellow, with a red tile floor and furniture painted gray, with decorations in various colors. Sash curtains of an ecru net allow the sun to flood the room for the early morning meal

able. Natural blues and reds, and blacks contrast favorably with it. Simplicity should still be evident in the arrangement of the hangings, a straight hung curtain on each side of the window being all that is desired, or, if proportion warrants, a valance of the same material above. In larger rooms the curtains may hang to the floor, but a more cozy effect and one more adaptable to the small room is obtained by hanging them to

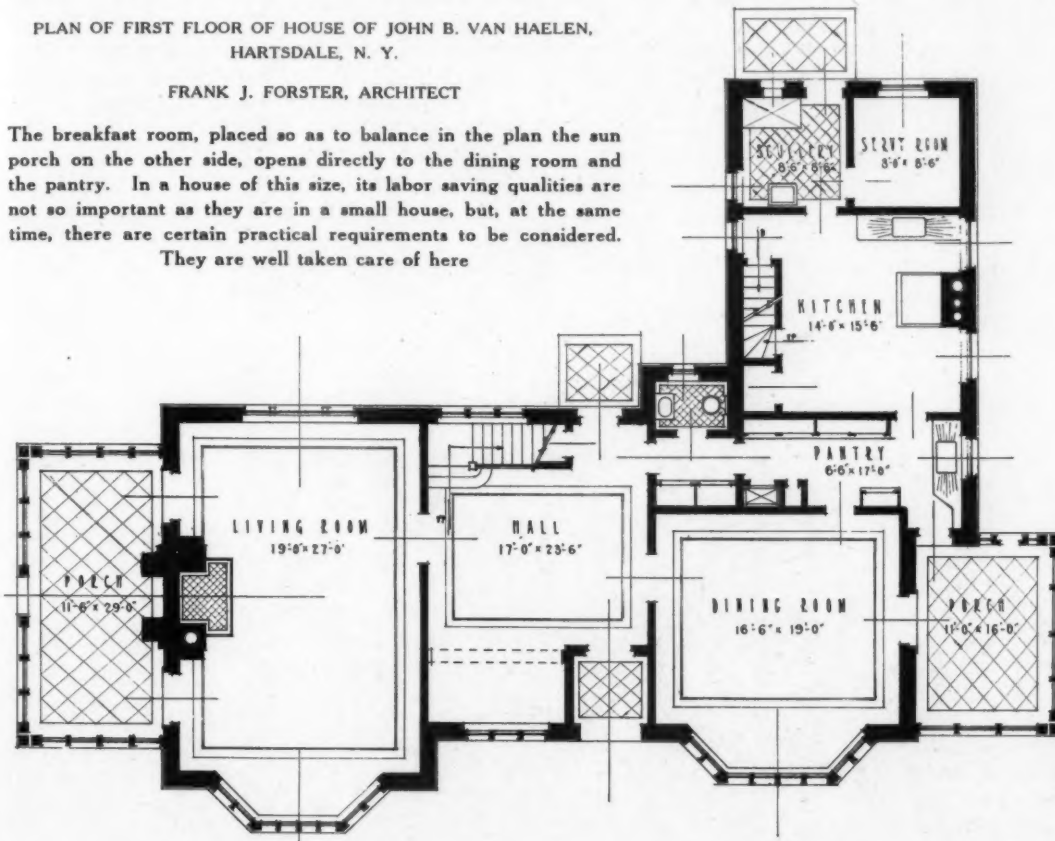
suggestions for color made in relation to the larger room hold good here, on a smaller scale, of course. In this connection, it is worth while calling attention to the value of built-in furniture. As shown in the illustration on page 337, two seats can be built into the wall on each side of an alcove leading to a window, and, between them, a table placed. The setting creates a complete breakfast room of its own, quite apart from the

PLAN OF FIRST FLOOR OF HOUSE OF JOHN B. VAN HAELEN,
HARTSDALE, N. Y.

FRANK J. FORSTER, ARCHITECT

The breakfast room, placed so as to balance in the plan the sun porch on the other side, opens directly to the dining room and the pantry. In a house of this size, its labor saving qualities are not so important as they are in a small house, but, at the same time, there are certain practical requirements to be considered.

They are well taken care of here



reach the sill only. Floors which suggest tile, with soft, comfortable feeling of cork or linoleum, are well adapted to the informal breakfast room, and, in the various patterns and colorings in which the market offers these products, they add materially to the decorative scheme.

Appreciating the value of the breakfast room, but prevented by lack of space and funds to enjoy one, the owner of the small house wishes his architect to incorporate into his plan the so-called breakfast nook, which serves all the practical purposes of the larger room and possesses many of its decorative qualities besides. It can often be planned as an alcove of the pantry between the main dining room and the kitchen, and, sometimes, can be a part of the kitchen itself. The

kitchen in its embellishments, although actually a part of its plan.

In this room, as in every room in which built-in furniture is used, there is an appeal to the architect, as well as to his client. Its placement materially helps solve a perplexing problem of the architect in retaining unity and harmony between architectural and decorative schemes, an element which is essential to the success of the finished room. From the client's point of view, its practical value alone assures its success, especially in the small house where floor space is at a premium. Very often one built-in piece will be of more practical use (and by such does the owner of the small house measure the success of its parts) than three or four pieces pur-

chased from stock at a considerably greater cost.

The changing peculiarities of the plan of the house are indications of the changes that are taking place in our daily habit of life. The breakfast room is perhaps a good example and indicates, as does no other room, the tendency to certain informalities of private life. Much of the objection that centered about suburban life was in the servant problem, particularly to those who lived in low cost houses where the daily routine of housework often devolved on the women of the family. The breakfast room or "nook" has solved the problem. It saves many steps, it obviates the necessity for unnecessary and time-taking formalities, and provides a certain intimacy that strongly recommends it. These rooms, of course, entirely replace the dining room only in small houses, for in larger and more pretentious ones the more formal dining rooms with greater seating accommodations will still prevail.

But the breakfast room is so inviting, presents so many decorative allurements that it is quite certain architects will be asked to provide for this room and it was to present information on its de-

velopment as seemed helpful, that this article has been prepared.

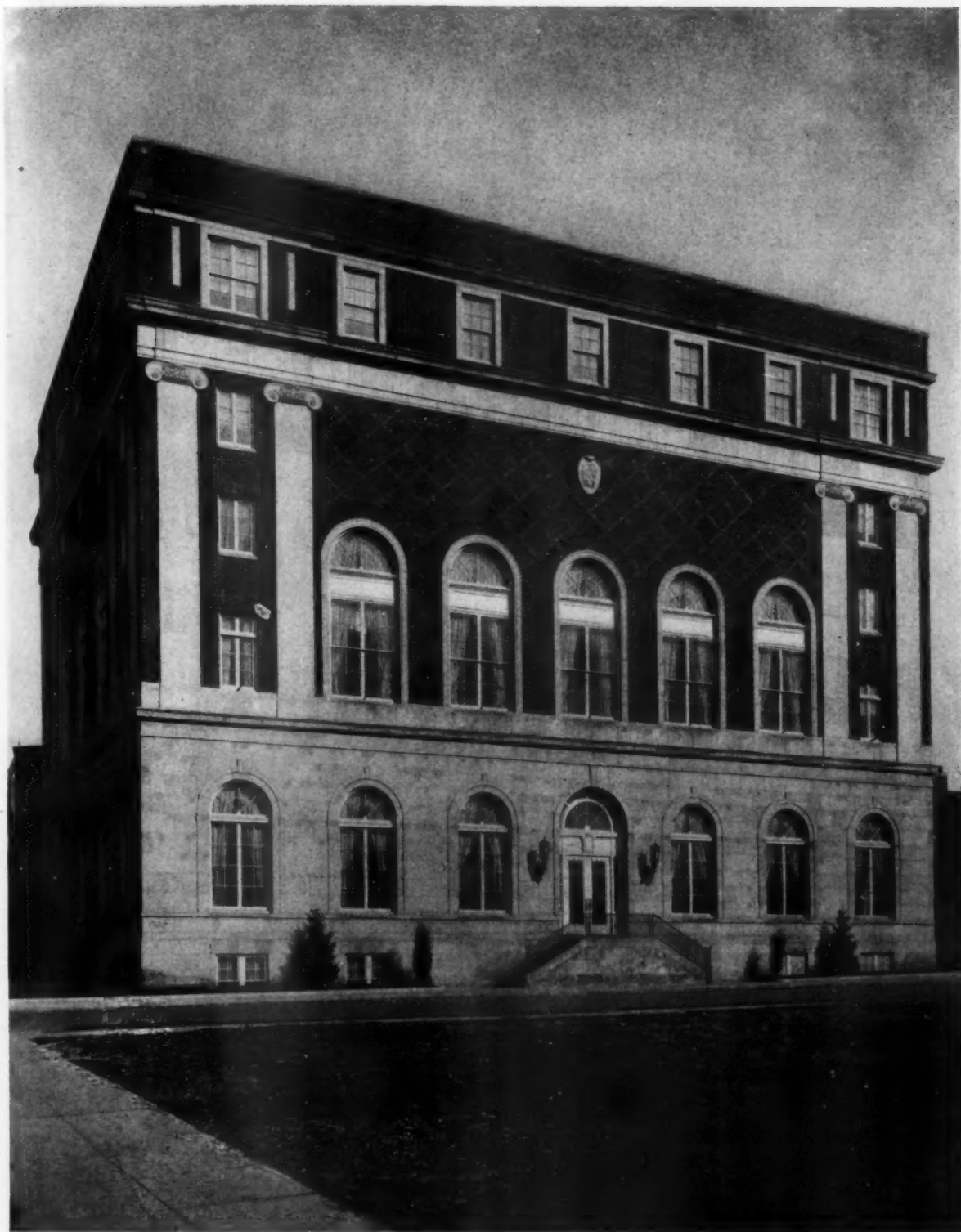
Social customs, of course, dominate planning in domestic architecture. The one-time parlor, that mysterious room of our youth, only opened to the light of out-of-doors on the occasion of funerals, weddings and more important social occasions, has given place to the living room. This change has really added another room to the house. The large bed chambers are now diminished in space and the floor area saved is used for dressing rooms and the added bath, another feature now deemed essential. The day of the single bathroom, poorly lighted and awkwardly placed, is past. And the attic, that harborage for derelicts of furniture and the discarded utilities of generations of occupancy, is now transformed and made livable. It is interesting to regard these changes in plan, and that is what gives present significance to the breakfast room and nook.

Acknowledgment is made to the following firms for their courtesy in supplying illustrative material: Curtis Companies Service Bureau; Decorators' Furniture Co.; Leshner, Whitman & Co., Inc.; W. H. S. Lloyd Co.



AN INTERESTING SETTING OF INFORMAL BREAKFAST ROOM FURNITURE AND ACCESSORIES

IN THE FRANKL GALLERIES, DECORATORS

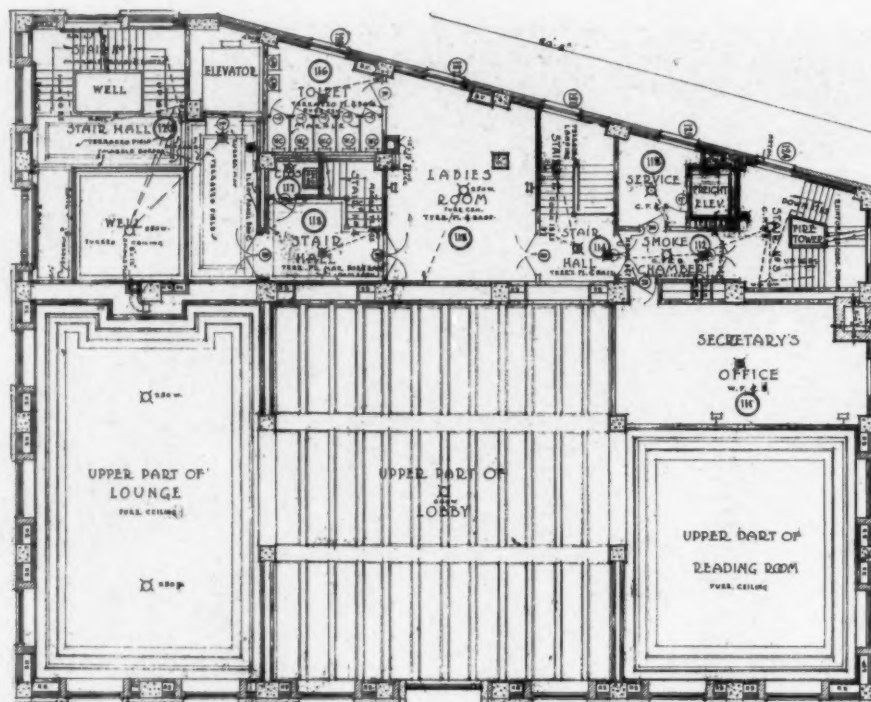


MASONIC TEMPLE, CHESTER, PA.

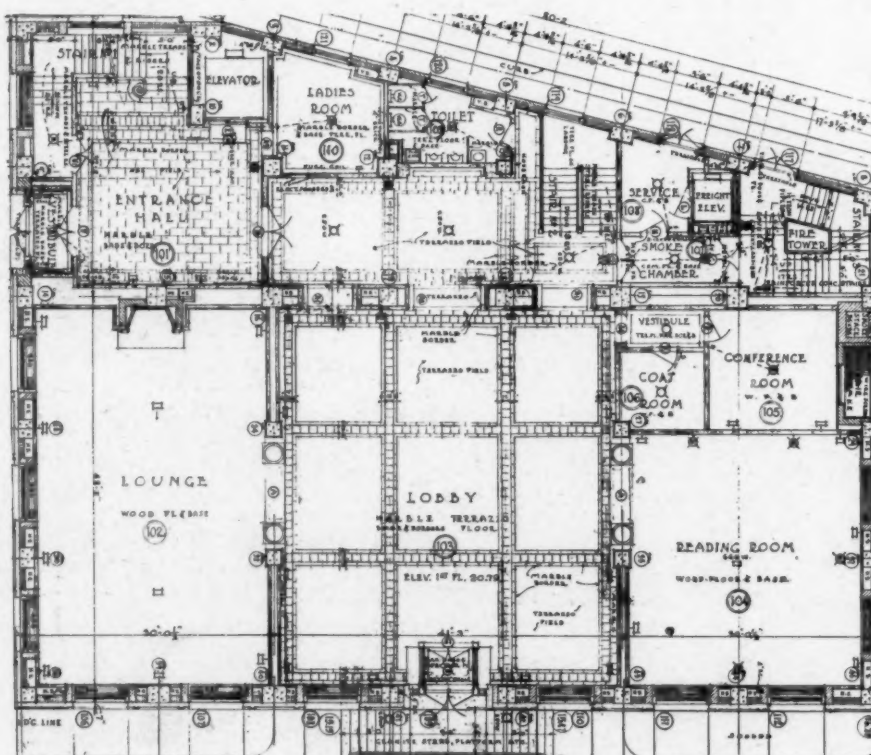
RITTER & SHAY, ARCHITECTS

(Plans on back)

THE AMERICAN ARCHITECT
October 8, 1924. Plate 121



FIRST FLOOR MEZZANINE



FIRST FLOOR PLAN

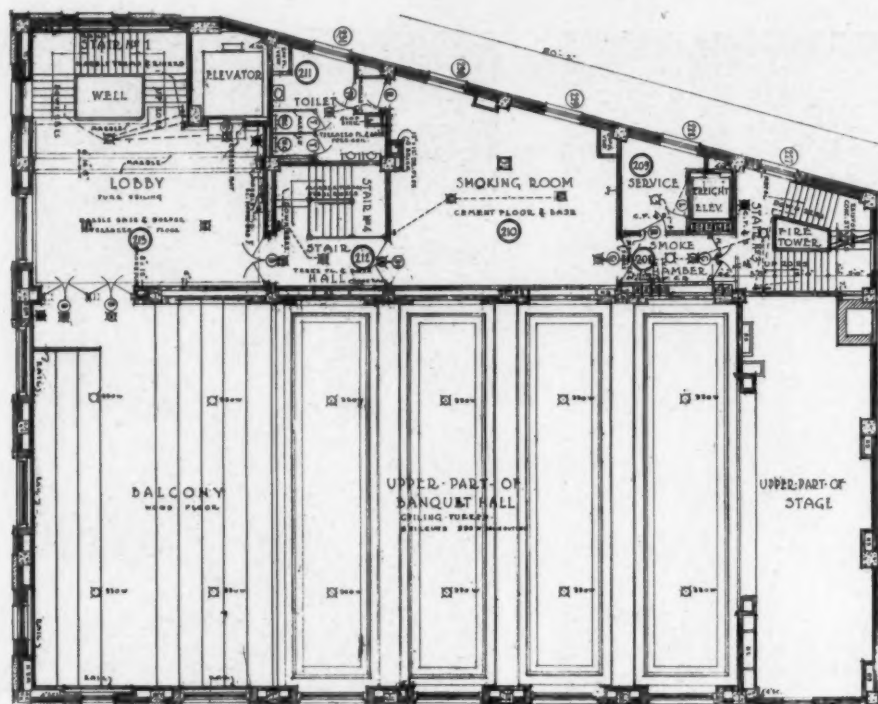
MASONIC TEMPLE, CHESTER, PA.

RITTER & SHAY, ARCHITECTS

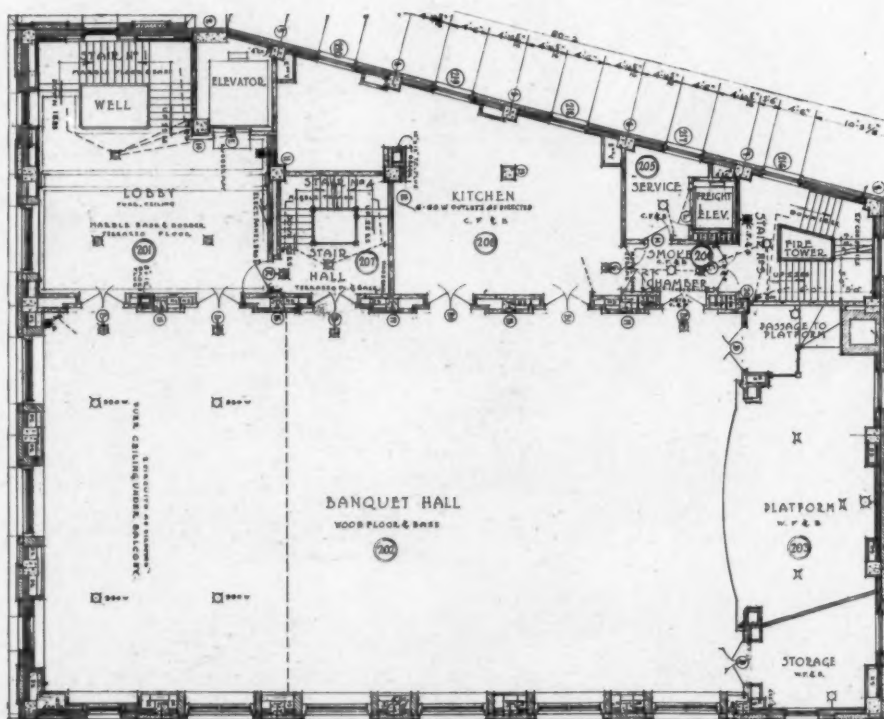


DETAIL OF ENTRANCE ON 9th STREET
MASONIC TEMPLE, CHESTER, PA.
RITTER & SHAY, ARCHITECTS

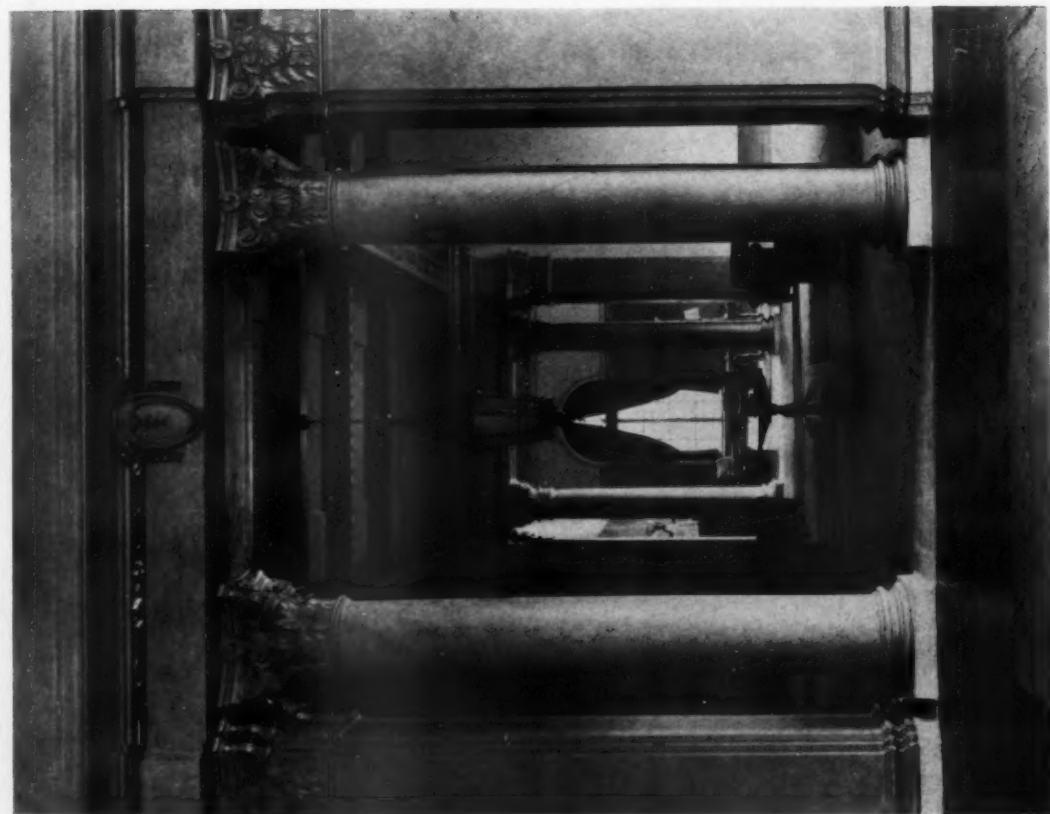
(Plans on back)



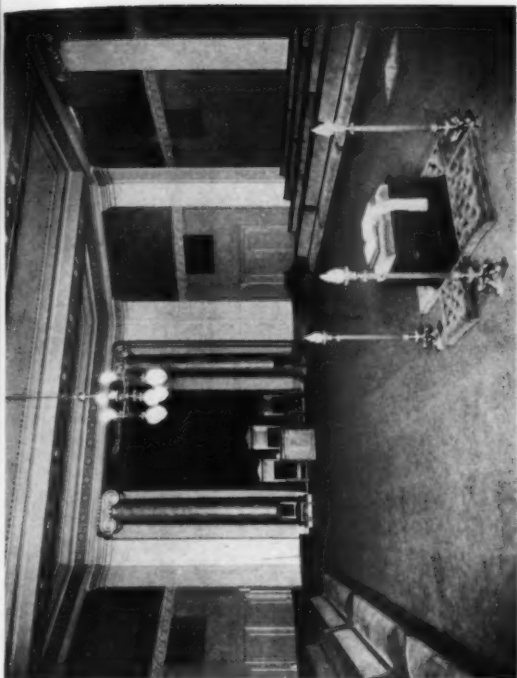
SECOND FLOOR MEZZANINE



SECOND FLOOR PLAN
MASONIC TEMPLE, CHESTER, PA.
RITTER & SHAY, ARCHITECTS



VIEW ACROSS LOBBY FROM LOUNGE TO READING ROOM

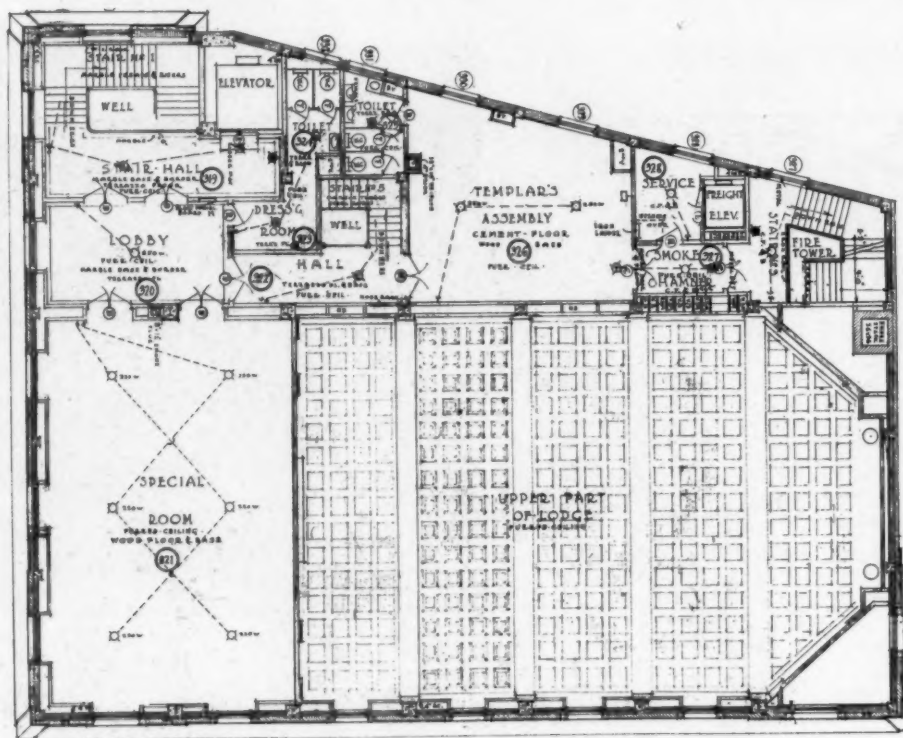


MASONIC TEMPLE, CHESTER, PA.

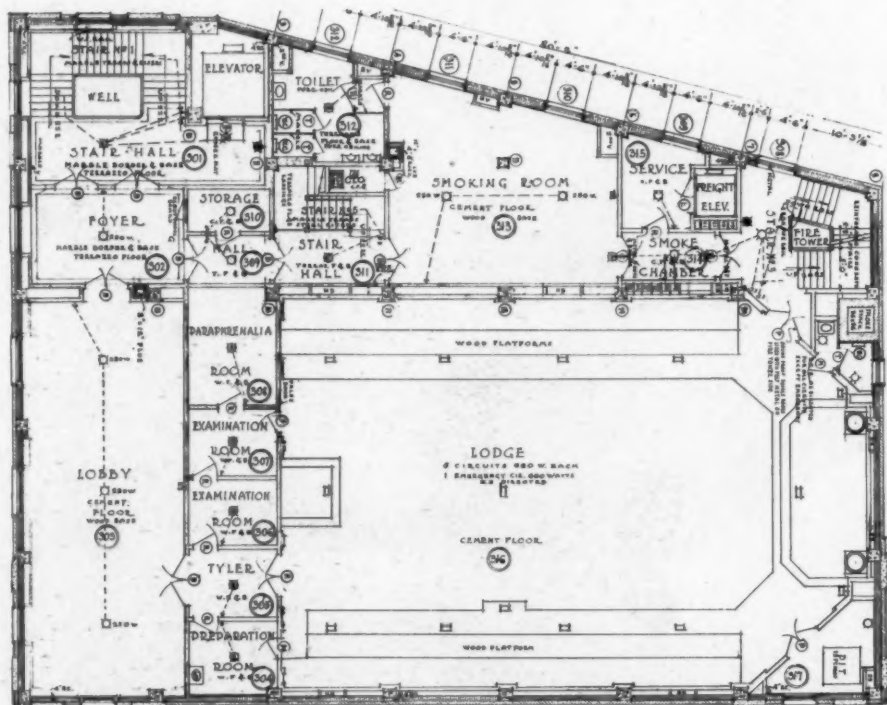
ITTER & SHAY, ARCHITECTS

(Plans on back)

THE AMERICAN ARCHITECT
October 8, 1924. Plate 123



THIRD FLOOR MEZZANINE



THIRD FLOOR PLAN
MASONIC TEMPLE, CHESTER, PA.
RITTER & SHAY, ARCHITECTS



HOUSE OF ELBERT GARY SUTCLIFFE, WINNETKA, ILL.

RUSSELL S. WALCOTT, ARCHITECT

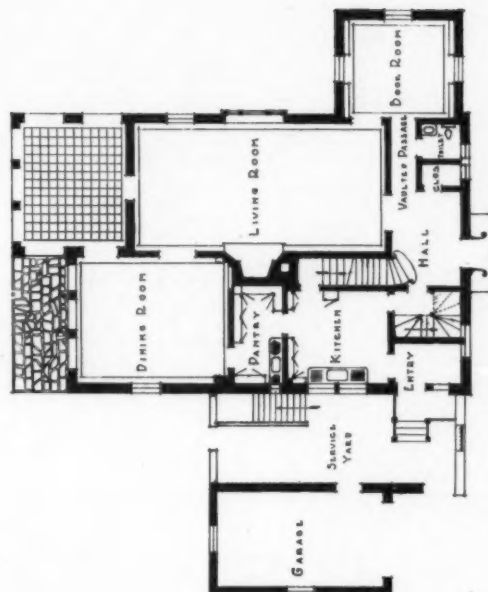
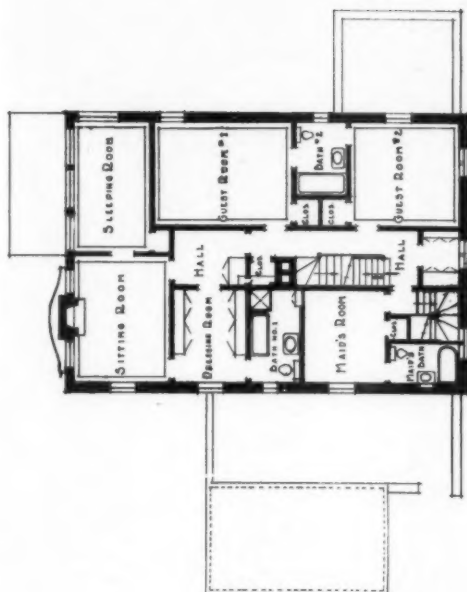
THE AMERICAN ARCHITECT
October 8, 1924. Plate 124



THE AMERICAN ARCHITECT
October 8, 1924. Plate 125

HOUSE OF ELBERT GARY SUTCLIFFE, WINNETKA, ILL.

RUSSELL S. WALCOTT, ARCHITECT

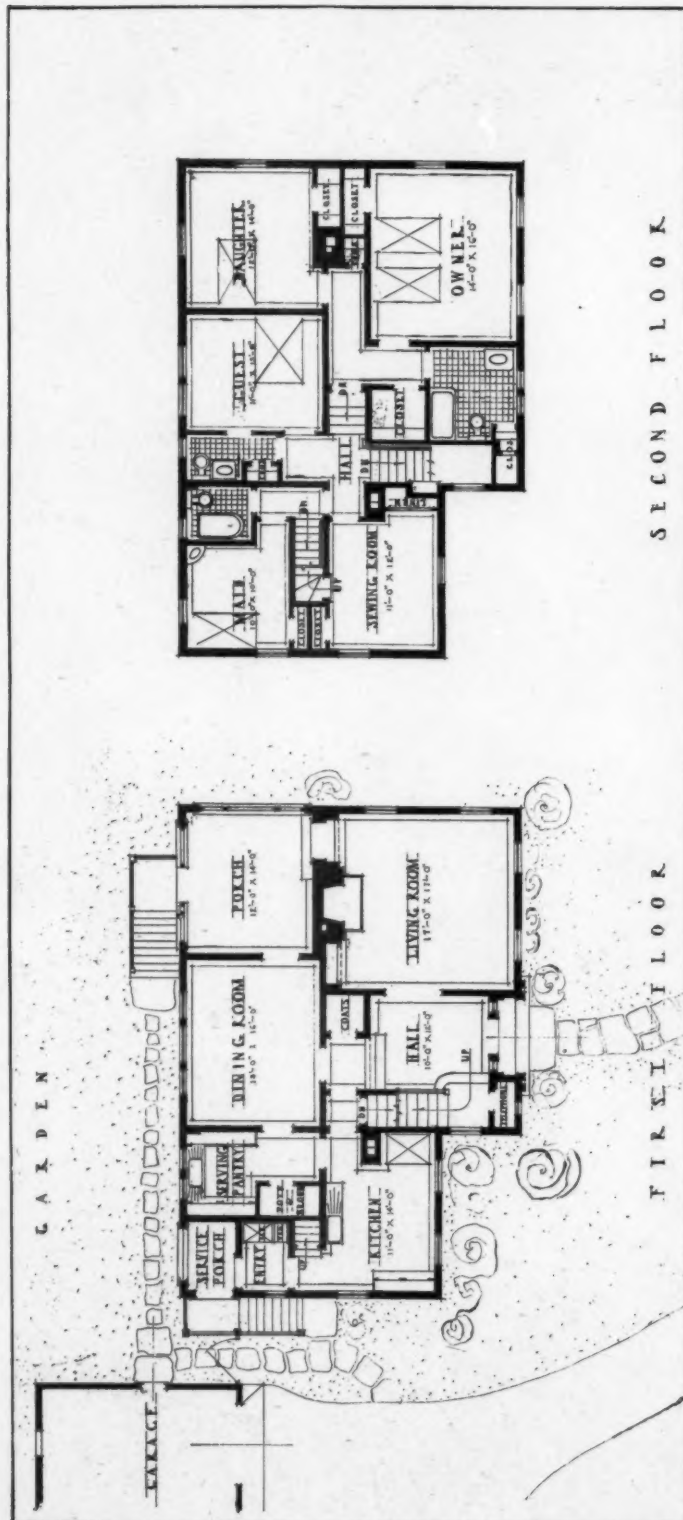




HOUSE OF EDWARD B. CALDWELL, JR., ARCHITECT, BRIDGEPORT, CONN.

(Plans on back)

THE AMERICAN ARCHITECT
October 8, 1924. Plate 126



HOUSE OF EDWARD B. CALDWELL, JR., ARCHITECT, BRIDGEPORT, CONN.

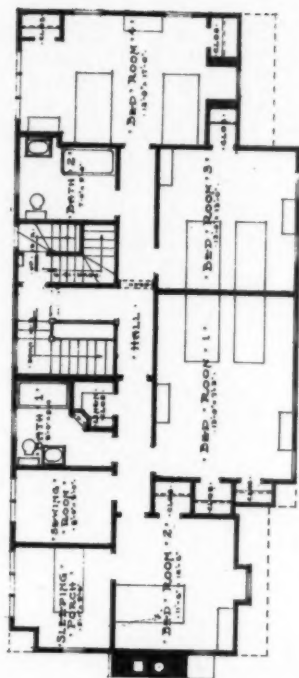


HOUSE AT PELHAM, N. Y.
LEWIS BOWMAN, ARCHITECT

THE AMERICAN ARCHITECT
October 8, 1904. Plate 127

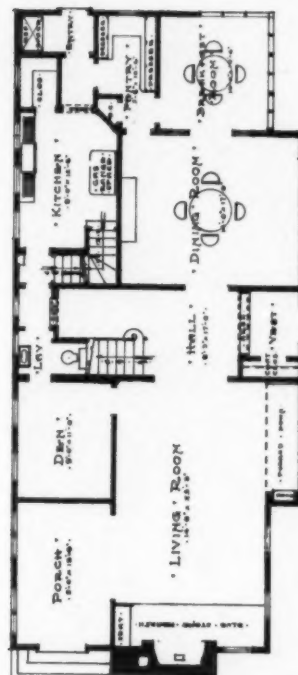


THE AMERICAN ARCHITECT
October 8, 1924, Plate 128



HOUSE AT PELHAM, N. Y.

LEWIS BOWMAN, ARCHITECT



The LAW as to ARCHITECTURE

BY CLINTON H. BLAKE, Jr., of the New York Bar

SECTION 79 of the General Business Law of the State of New York, relating to the registration of architects, has recently been amended. The first paragraph of the Section, as amended, now reads as follows:

"Sec. 79. *Qualifications; examinations; fees.* Any citizen of the United States, or any person who has duly declared his or her intentions of becoming such citizen, being at least twenty-one years of age and of good moral character, may apply for examination or certificate under this article, but before securing such certificate shall submit satisfactory evidence of having satisfactorily completed the course in a high school approved by the regents or the equivalent thereof and subsequent thereto of having satisfactorily completed such courses in mathematics, history and one modern language, as are included in the first two years in an institution, approved by the regents, conferring the degree of bachelor of arts or science. Such candidate shall in addition submit satisfactory evidence of at least five years' practical experience in the office or offices of a reputable architect or architects, commencing after the completion of the high school course. The board may accept satisfactory diplomas or certificates from approved institutions covering the course required for examination or, if the applicant be a disabled veteran of the world war, proof that the applicant, under the auspices of the federal rehabilitation board or bureau, has completed a four year course in the subject of the examination in an institution in this state. Upon complying with the above requirements, the applicant shall satisfactorily pass an examination in such technical and professional courses as are established by the board. The board in lieu of examinations may accept satisfactory evidence of any one of the qualifications set forth under either subdivisions one and two of this section."

The balance of Section 79 has not been changed. This is the portion of the Section which has to do with the alternative evidence of qualifications which the Board of Examiners may accept, in lieu of examination. These alternative qualifications are a diploma from an architectural college or school, together with three years' office experience, registration or certification as an architect in another state, where the requirements for qualification as a registered architect are the same as those in New York State, and the submission of proper

evidence of the applicant's character and qualifications and that he has been continuously engaged in practice for two years next prior to April 28, 1915, or as a member of his own firm for one year prior to that time, providing the application for certificate shall be made on or before January 1, 1923. This date has now, of course, expired. The amended section also contains the unchanged provision that any architect, who has lawfully practiced architecture for ten years without the state, shall be required to take only such practical examination as may be determined by the Board.

The change made in the first paragraph of Section 79 by the amended portion quoted above is the addition of the phrase,

"or, if the applicant be a disabled veteran of the world war, proof that the applicant, under the auspices of the federal rehabilitation board or bureau, has completed a four year course in the subject of the examination in an institution in this state."

Otherwise, the first paragraph, like the paragraphs following, remains unchanged. The effect of the amendment, as made, is of course to give the Board of Examiners the right, in the case of disabled veterans of the world war, to accept, in lieu of diplomas or certificates from approved institutions, proof that the applicant has completed the four year course in an institution in New York State and under the auspices of the Federal Rehabilitation Board or Bureau. It would obviously be impossible for many disabled veterans to pursue a course of study in the ordinary architectural schools or institutions approved by the Board. The amendment is made to meet this condition and to give disabled veterans who have talent for architecture an opportunity to secure their registration, upon complying with the provisions of the amendment.

The foregoing amendment is indicative of the increasing number of statutory provisions within the last few years which affect or are of interest to the architectural profession. The number of statutes passed by State legislatures has increased to an extraordinary extent of recent years. It is natural that this flood of legislation has been accompanied by an increase in the laws and regulations affecting architects and building operations in general. Some of the legislation has been sound and some, either proposed or adopted, has been unsound. It will well repay architectural

societies to have capable representatives keep in touch for them with proposed and pending legislation, to the end that improper proposals may be opposed and those which are sound encouraged.

If all the chapters of the American Institute of Architects and other architectural societies would appoint capable and aggressive committees on legislation, and if these committees would make it a point really to keep in touch with legislative action and proposals, to study the requirements for new legislation and above all to seek out proposed unsound legislation, the gain to the profession and to the public as a whole would be very great.

LEGAL DECISIONS

A SURETY bond provided that "no change shall be made in the plans, specifications, terms, covenants and conditions of such contract, which shall increase the amount to be paid the principal more than twenty per cent of the penalty of this instrument, without the written consent of the surety." In the case where this bond was given, changes were made which did increase the cost more than twenty per cent. These changes resulted almost entirely from orders given by the architect, which required the installation of larger beams than those called for in the plans and specifications. The construction contract provided that

"It is understood and agreed by and between the parties hereto that the work included in this contract is to be done under the direction of the said architect."

The contract further provided that

"The work shall be under the supervision and direction of the architect, and his decision in matters concerning the intent and meaning in interpreting drawings and specifications shall be final and binding."

The court held that the increase of over twenty per cent in the cost of the work, although without the written consent of the surety, was not vital to an action on the bond, inasmuch as the increase resulted from unauthorized action by the architect and the surety had signed the bond with knowledge that the changes contemplated in the plans and specifications would make the increases necessary.

With respect to the authority of the architect to make the changes, the court held that the mere fact that one is employed as an architect does not constitute him a general agent of his employer. The court said:—

"An architect is not, simply as such, a general

agent. He and all third persons dealing with him are bound by the general rules of agency. In the present case he had no authority to bind appellant beyond the terms of the contract with Schuster. The authority conferred was limited and defined. It was special and not general. The work to be done under the direction of the architect was the work mentioned in the contract which in the respect in question was made definite and certain by the specifications. His power to condemn and order taken down and removed from the grounds all material as unsound or improper, or as in any way failing to conform to the drawings and specifications, falls far short of giving him any right to recast the drawings and specifications, upon a matter already perfectly clear and explicit, by substituting something else so increasing the total cost that standing alone would threaten, if not defeat, his employer's rights under the literal terms of a bond given to indemnify and assure the employer that the cost of the work would not exceed the amount mentioned in the contract. It was provided that all materials should conform to the specifications, that is, the specifications which were a part of the contract; and, while it was agreed that the decision of the architect in interpreting the intent and meaning of the drawings and specifications of the work under his supervision should be final and binding, this cannot be considered as creating a sphere wherein the architect could, *sua sponte*, make radical changes in the specifications, already precise and certain, to the substantial disadvantage of the owner of the building."

Columbia Security Co. v. Aetna Accident & Liability Co., et al., 183 Pacific 137.

UNDER a state statute, providing that a corporation shall not be licensed to practice architecture, but may employ licensed architects, a corporation in Illinois contracted to furnish architectural work. The corporation employed a licensed architect to prepare the plans, and the plans were signed by him as architect. The corporation was fined for violation of the statute. On appeal, the court held that the corporation had the right to contract to furnish the architectural work, provided the work was done by or under the supervision of a regularly licensed architect, and that the making of contracts for architectural work and the collection of compensation therefor did not constitute the practice of architecture within the meaning of the statute governing the licensing of architects, where the work was done by a licensed architect. The court further held that the purpose of the statute was not to protect architects, but to protect the public against incompetent architects.

People against the Rodgers Company, 277 Illinois 151.

ARCHITECTURAL ENGINEERING

BRINGING DAYLIGHT THROUGH *the* WALLS

BY WENDELL S. BROWN*

PROGRESS in building construction is attended naturally by certain refinements in designing. These refinements are developed by public institutions, technical organizations or private individuals. THE AMERICAN ARCHITECT has been fortunate in being able, in the past, to present certain results of tests and research undertaken by F. P. Sheldon & Son, engineers and architects. During the past nine years they have maintained a department of research as an integral part of their organization, to enable them better to serve their clients. The service has been gratis; however, it has paid dividends—intangible to be sure—but not without personal recompense in gratification and further inspiration; and besides has contributed materially to the knowledge of the profession. Mr. Brown's article here printed pertains to a subject of great importance to which too little attention has been given in the past.—The Editors.

IT is no discovery that the wider a window is made, the greater is the amount of entering daylight, or that the higher it is carried, the more and also better distributed is the entering natural illumination. These facts need no elaboration.

However, the quantitative relationship existing between entering daylight illumination and width, height and depth of a window opening is not so obvious. For example, it is somewhat startling to learn that doubling the breadth of a given window,—height remaining the same,—may triple the actual quantity of entering daylight under certain conditions, besides materially increasing its general diffusion throughout the room, reducing shadows and thus raising the visual acuity *more than threefold*.

Again, doubling the window height,—width remaining the same,—not only doubles the total entering daylight, but may, on account of increased uniformity (depending on the original design), improve the illumination so that the minimum or governing intensity on a horizontal plane in the darkest work space, is actually quadrupled.

Consequently, in a case such as the above, doubling the height and doubling the width, which is equivalent to multiplying the original window area by four, may cause the effective illumination in the darkest part of the room to mount up to *over twelve times its original value*.

Some working knowledge of the general principles disclosing such measurable facts as the above, is needful in determining the rational window arrangement or fenestration of a façade. It is necessary to know the gain in order to count the

cost. If a compromise seems advisable between architectural considerations and daylighting requirements, relative values must be properly appraised, and the designer must be unfettered by "rule-of-thumb," sentiment, or prejudice if he is to give the facts their proper weight in the ensemble.

In spite of the rapid progress made in illuminating engineering with respect to the knowledge and application of artificial lighting, the fundamental principles governing natural illumination seem to have suffered from neglect. An all too large percentage of buildings has been designed with not only little realization of the benefits accruing from efficient natural lighting, but also with very primitive and uncertain ideas regarding proper methods for obtaining it.

The extreme variability of daylight from season to season, and hour to hour, need not preclude the possibility of critical analysis; and the fact that daylight is fast becoming a luxury should constitute a vigorous incentive for its more efficient utilization.

Questions which commonly arise in connection with designing and planning a daylighted building are:

- (1) Just how much is gained by placing the windows as near the ceiling as possible?
- (2) What relationship should story height bear to width or plan dimensions of a building?
- (3) Which is preferable from the standpoint of natural illumination, and why?
 - (a) The use of comparatively narrow individual windows separated by piers, as in the upper stories of the building shown in Fig. 1, or
 - (b) the use of two, three or more sash or windows in groups totaling perhaps the same glass area as before, but with larger piers between each group (See Fig. 2).

The solutions to these questions have been worked out and the relative illumination expressed in a definite way in Diagrams I and II.

Diagram I shows the variation of direct sky illumination opposite to and at various distances from a continuous line of windows. It has been

* F. P. Sheldon & Son, Providence, R. I.

derived on the theory of sky angles, the basic assumption being that—the intensity of direct skylight upon any point is directly proportional to the extent or solid angle of sky to which said point is exposed, and is, therefore, for equal horizontal exposures, directly proportional to the vertical or cross sectional angle to which said point is exposed.



FIGURE 1. THE FIRST FLOOR OF THIS OLD BUILDING WAS REMODELLED, RESULTING IN 150% MORE DAYLIGHT FOR 63% INCREASED WINDOW AREA. AT THE EXTREME RIGHT MAY BE SEEN ONE OF THE ORIGINAL WINDOWS

The above postulate involves the assumption that the sky is of uniform brightness throughout, whereas we know that its brightness is not everywhere the same, but that it varies with the position of the sun, and the condition of atmosphere and the earth's surface. However, any error on this account is on the low side, if anything, since the sky brightness near the horizon is, in general, of less intensity than that near the zenith, resulting in somewhat greater variation within the building than if the sky brightness was exactly uniform throughout. The endeavor is to establish fundamental relations and practicable methods for solving certain problems in natural illumination without the derivation of needlessly exact solutions too complicated to be of everyday value.

The curves for Diagram I are derived as follows from the postulate concerning sky angles. (See Fig. 3 representing a window opening in section.)

Let D = distance of the work from a vertical plane parallel to the window opening and through the outside edge of the overshadowing lintel.

Let H = the height of the top of window opening above the work and also the height of the top of window opening above window sill.

Note that in deriving these curves it has been assumed as typical that the work is at the level of the window sill, and that the working plane may be either horizontal or inclined toward the windows

at any angle. Similar curves can be prepared if necessary for cases where window sills are materially higher or lower than the working plane.

From the postulate, vertical sky angle a , referred to above, expresses the illumination on a plane* at right angles to the average direction of incident light rays, provided the horizontal exposures for varying values of D/H continue equal to each other or equal to 180° . In a practical sense, this proviso means that the source of illumination must be a continuous row of windows extending symmetrically for a considerable distance to the left and right of the point opposite which the values are being ascertained; and that the horizon is unobstructed by natural surroundings or buildings. (For unequal horizontal expo-

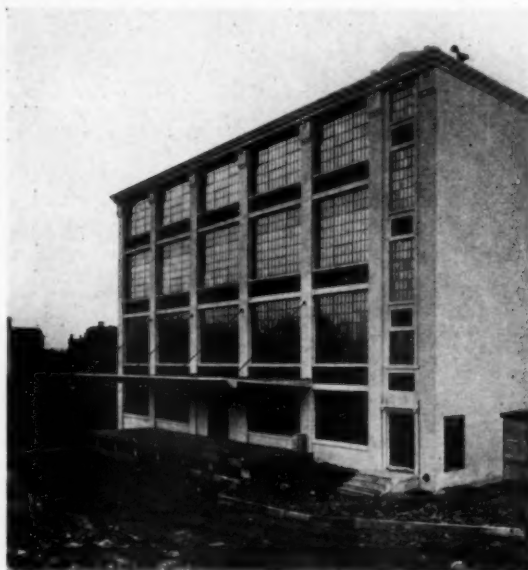


FIGURE 2. A MODERN INDUSTRIAL BUILDING CORRECTLY DAYLIGHTED

ures, the variation in illumination will be greater than shown by the curves—but only slightly so for wide horizontal angles of, say, between 90° and 180° .)

The measure of this sky angle (a) may be obtained by trigonometry or approximately by scale.

The solid curve, Diagram I, has been computed for various ratios of D/H and is constructed on the basis of 180° horizontal exposure, the illumination on a plane perpendicular to the average direction of the light rays being designated by 100, when $a = 45^\circ$, i.e., $D = H$.

The corresponding intensity on a horizontal

* Strictly this follows only for illumination on a point, rather than on a plane, but it is sufficiently accurate for our purpose in question, since for usual values of D , the angular variation of light rays from their average direction is not enough appreciably to affect the result. Further complication, such as the integration of sines is unwarranted here.

plane is graphically expressed by the dotted curve, being, according to the principles of illumination, proportional to the average sine of all the angles between the direction of said light rays and said horizontal plane, as said angle varies between the limits of 0 and a .† The average sine of all the angles between 0 and a is found by simple integration to equal $\frac{180 \text{ vers } a}{\pi a}$ where angle a is expressed in degrees.

For example, when the values, $D/H = 1$, and the intensity on the perpendicular plane = 100% respectively as above, the average sine of a between the limits of $a = 0^\circ$ and $a = 45^\circ$ is

$$\frac{180 \text{ vers } 45^\circ}{\pi \times 45} = \frac{180 \times .293}{\pi \times 45} = .374$$

In other words, the intensity on a plane perpendicular to the average direction of light rays having been assumed as 100% at point $D/H = 1$, the corresponding intensity on a horizontal plane at same point equals 37.4%. To find these values on Diagram I, trace vertically from base value $D/H = 1$ to dotted and solid curves, and then horizontally to illumination values at left hand scale of 37 and 100 respectively.

In a similar manner at $D/H = 3$, it was found that the sky angle, $a = 18.43^\circ$. Therefore, for the

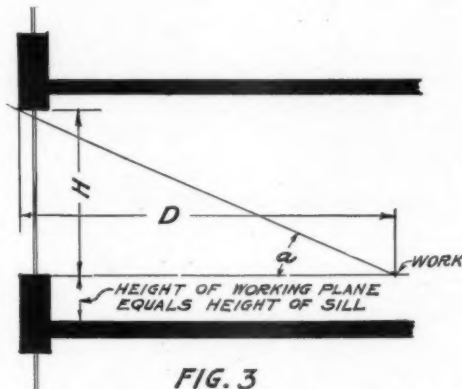


FIG. 3
VERT. CROSS SECTION THROUGH
BUILDING AT WINDOW

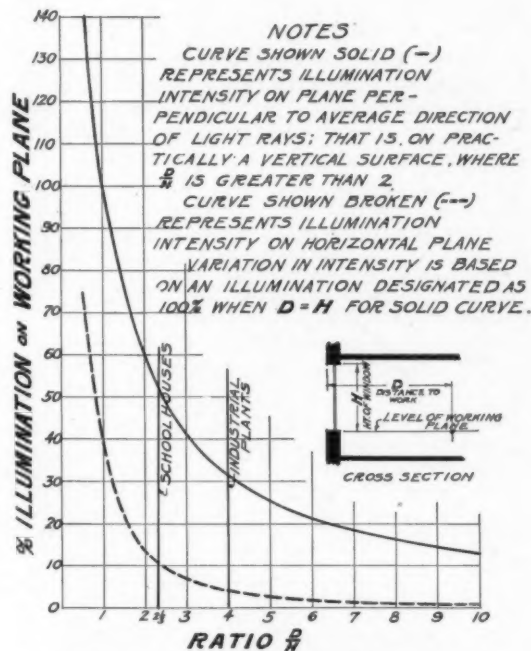
solid curve the intensity is $\frac{18.43^\circ}{45^\circ} \times 100\% = 41\%$ of what it is at $D/H = 1$ (this value being the maximum illumination at $D/H = 3$ and being taken, as before explained, on a plane perpendicular to the average direction of light rays).

† Usually a close approximation to this value is $\sin a/2$, that is the sine of the average value of the angle (a).

* For more complete description of method, see Brown, Wendell S.—"The Light of Day in Roof Penetration." Trans. I. E. S. Vol. XIX, page 209; 1924.

And for the dotted curve at $D/H = 3$, the average sine of angle 18.43° is found to be .16. Consequently, $.16 \times 41\% = 6.56\%$ represents the intensity on said horizontal plane as compared with the "standard intensity" on a perpendicular plane at $D/H = 1$.

Now what conclusions may be drawn from Diagram I?



GRAPH SHOWING VARIATION IN DIRECT SKY
ILLUMINATION OPPOSITE TO AND AT DIFFERENT
DISTANCES FROM A LINE OF WINDOWS

DIAGRAM I

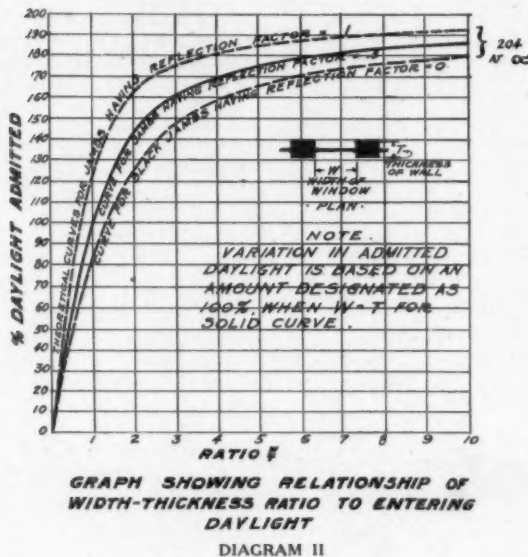
First, it shows the variation in direct sky illumination opposite to and at various distances from a line of windows. It also shows the effect of the window height and the relationship of the window height to the width of building. It shows that for every foot added to the window height not only is the amount of light within the building increased, but also the uniformity of light distribution is improved and that this betterment is especially noticeable on a horizontal plane.

For instance, it reveals that if the height of the window above the working plane in a room whose width is 100', measured perpendicular to the line of windows, be changed from 10' to 15' that the light intensity at the center of the room will be 148% of its original value on a vertical plane, and 220% of its original value on a horizontal plane.

The above values were obtained as follows: (Refer to Diagram I.)

Ratio D/H for a 10' window equals $50/10 = 5$, and for a 15' window equals $50/15 = 3 \frac{1}{3}$. Now from the value $D/H = 5$ on the horizontal scale trace vertically to the solid curve, and then trace horizontally to the vertical illumination scale at the left, reading the value of 25. In a similar manner for the higher window, $D/H = 3 \frac{1}{3}$, we find a corresponding intensity of 37. Therefore, the ratio of the new value of illumination, on a perpendicular plane, to the original value before the window height was increased is $37/25$ or 148%. In a similar manner the new value for the horizontal illumination is obtained from the dotted curve and equals $5.5/2.5$ or 220%.

It should be borne in mind (and the foregoing example is worked up on this basis), that Diagram I shows a variation in intensity of illumination



from windows located on *one side of the room* only. If windows are on both sides of the room, this same diagram may be used by making proper allowance for the light coming from the other side. For instance, the illumination on a horizontal working plane in the middle of a room would be doubled, and that at the quarter points would equal the total represented by the sum of the illumination from each side of the room as read from the dotted curve for the proper respective values of D/H . Similar increased illumination also results, but to a less degree, by reflection from a light tinted interior wall facing the line of windows.

Figure 4 illustrates windows placed as high as possible in an ordinary "mill construction" building, the head of the window being level with the ceiling, thus utilizing the full story height and reducing the ratio D/H to its lowest possible value,

so as to obtain the maximum illumination on both the vertical and the horizontal working planes.

The dotted curve, as before noted, demonstrates that the intensity on a horizontal plane, besides being considerably less than that on a perpendicular plane, is subject to much sharper variation. Obviously this is due to the fact that as the interior of the room is approached, referring to direct light only, it is only the increasingly horizontal rays which penetrate, these rays becoming more and more nearly parallel to a horizontal working plane.

It is quite evident, therefore, with a given story height and required light intensity, that a building which houses processes largely vertical, such as cotton spinning, may be made wider than for an occupancy like weaving, where the work is horizontal.

The two heavy vertical lines located on Diagram I at $D/H = 2 \frac{1}{3}$, and $D/H = 4$ respectively, constitute limits more or less arbitrarily fixed by general practice. For school buildings there are often legal or code restrictions to be followed. For instance, the tentative "Code of Lighting School Buildings" of the Illuminating Engineering Society, recommends on page 13 that "no work space is more distant from the window than twice the height of the top of the window from the floor." Making allowance for the width of the aisle, thickness of the walls, and the height of the working plane above the floor, it will be found that this ratio is approximately the same as set by the vertical line on the diagram at $D/H = 2 \frac{1}{3}$. Of course, in school rooms the window sills may be somewhat higher than the working plane, but this difference from the diagram is usually not enough appreciably to affect the result.

In the case of buildings lighted by a series of narrow windows separated by *deep piers*, the variation in intensity will be somewhat different from the theoretical variation opposite a *continuous* line of windows, because those windows at a considerable distance from the point opposite to which measurements are being taken do not come into play until the rear of the room is approached. This is especially true with small ratios of W/T (see Diagram II), and tends somewhat to reduce the variation. It also effects a reduction in the total illumination as explained later. On the other hand, the variation opposite a *single* window in a room with only *one* window is considerably greater than that opposite a *row* of windows (as represented by the diagram) for the reason that as the interior of the room is approached, the horizontal as well as the vertical sky angle is reduced.

Then there is also the levelling effect due to diffuse and other reflection from interior surroundings, such as walls, floors, ceilings and equipment.

Diagram I conforms with the conclusion reached

photometrically by other investigators, that pulling down a shade over the upper sash of a window not only greatly reduces the *total illumination*, but also results in much increased variation in this reduced illumination on a horizontal plane throughout the room. This is explained by the fact that shading the upper sash cuts out 75% to 99% of the light entering this portion of the window (depending upon the transmission factor of the shade used) and has practically the same effect as reducing the window height correspondingly; and reducing window height, as has been demonstrated by Diagram I, reduces the total illumination and increases the variation of its intensity on a horizontal plane.

Natural surroundings or adjacent buildings may also lessen the total illumination and impair its uniformity by shutting off a relatively large proportion of the light entering from the lower sky angles.

Prism glass, properly used, may effectively improve the distribution of daylight, especially in the lower stories of a building which are shaded by adjacent structures or hills, and whose windows are consequently exposed only to a small sky angle near the zenith. It is equally possible, of course, to use prism glass in windows having unobstructed horizons, to distribute a portion of the entering light more to the interior of the room. But in any event, careful consideration must be given to the question of glare, especially if the windows are exposed to much direct sunlight. The writer is familiar with a weave room in which the top sash of the windows, having an unobstructed easterly and westerly exposure, were glazed with horizontally ribbed prism glass. This caused excessive glare, the operatives finding it necessary to wear long-visored hats to protect their eyes. Finally the prism glass had to be removed and replaced with plain glass.

Diagram II shows the relationship of the width-thickness ratio of a window to the *entering daylight*.

These curves are worked up on a somewhat different basis from those of Diagram I. This is due to the fact that they necessarily disclose the comparative amount of light flux passing a given opening rather than the variation in intensity of illumination at different points within the building, which latter is the case with the curves in Diagram I. For this purpose it becomes necessary to carry the postulate for Diagram I a step farther, to read that: *The amount of skylight transmitted through any point in space is directly proportional to the extent or solid angle of sky to which said point is exposed, and is, therefore, for equal vertical exposures, directly proportional to the horizontal angle to which said point is exposed.*

Here again, any variation in sky brightness is ordinarily negligible, since the side wall windows usually embrace the extremes, and also a fair average of sky brightness from zenith to horizon.

See Fig. 5, representing a window opening in plan.

Let W = the width of the window opening, let T = the thickness of the pier. From the above postulate the amount of direct skylight admitted through the window opening to the working space, (i.e., not including that reflected by the window

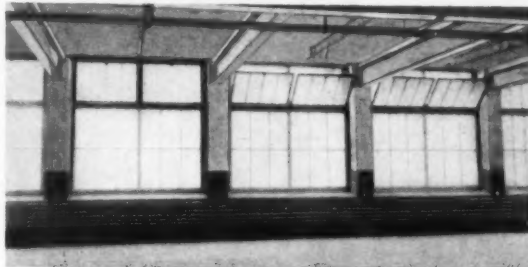


FIGURE 4. THE HEADS OF THE WINDOWS ARE PLACED LEVEL WITH THE UNDERSIDE OF THE CEILING, TO GIVE AS MUCH DAYLIGHT ILLUMINATION AS POSSIBLE ON BOTH VERTICAL AND HORIZONTAL WORKING PLANES

sills, jambs, etc., is directly proportional to the sum of the total number of degrees of horizontal sky angle which each small unit area of the "true effective" window opening passes. It may, therefore, be expressed by the summation of the products of the above unit areas and their respective horizontal sky angles.

In Fig. 5 the horizontal sky angle varies between the limits of h_1 and h_2 , for either azimuth. Let the average value of this angle equal h .

For parallel light rays making a horizontal angle x with the plane of a window opening, the "true effective" lighting area equals $G \sin x$, where G equals the area of the opening. But in this case, by inspection, and since average sky angle = h , the angular direction of rays for either azimuth varies with respect to the lighting area plane, between the average limits of c and $c + h$. Therefore, the corresponding "true effective" window opening equals G times the average sine of this variable angle x between the limits of c and $c + h$. This "true effective" area may be expressed, therefore by

$$\frac{G}{h} \int_{x=c}^{x=c+h} \sin x, dx.$$
 The entering light

(L), therefore, which is to be expressed by the summation of the product of the "true effective" unit areas and their respective sky angles is

$$L = \frac{hG}{h} \int_{x=c}^{x=c+h} \sin x, dx = G \int_{x=c}^{x=c+h} \sin x, dx *$$

* A sufficiently close approximation to the method of integration may be arranged by obtaining arithmetically, from tables, the actual average of $\sin x$ between the measured limits in question.

The solid curve in Diagram II has been computed for various ratios of W/T , L the entering light, being designated as 100 when $W = T$.

There has also been included in the computations for the solid curve a certain amount of light reflected from window jambs on the assumption of diffuse reflection with an average reflection factor of .5 and on the theory that the lighting area transmits to the jambs that portion of the

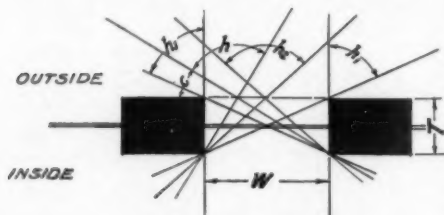


FIG. 5
HORIZONTAL CROSS SECTION
THROUGH BLDG. AT WINDOW

complete 180° horizontal angle not included under direct lighting in angle h .

Limestone or other light-textured masonry reflects about one-half of the daylight falling upon it, as does also the ordinary combination of red brick exterior and "mill-white" interior jambs. Consequently, the solid curve probably approximates such average window jamb. The lower dotted curve is computed for black jambs transmitting no light whatever, while the upper one is for diffusely reflecting jambs with a reflection factor equal to 1. Between these two dotted curves, expressing purely theoretical limits, lie all actual cases.

Now what conclusions may be drawn from Diagram II?

For one thing it demonstrates the effect of relatively thick walls in reducing daylight. It shows, for instance, that starting with a window opening whose width equals 1.25 times the pier thickness (that is, $W/T = 1.25$), if these same windows were arranged in a series of banks of five each (W/T then equaling $5 \times 1.25 = 6.25$), the total glass area and wall thickness and wall area remaining the same, that the total actual illumination entering the building would be increased 56%. That is, referring to Diagram II, the corresponding values for $W/T = 1.25$ and $W/T = 6.25$ are found to be 113 and 176 respectively. And the ratio of the new value of illumination to the original value is $176/113$ or 1.56.

The vital importance of such a principle is obvious, this additional light constituting a net gain involving no increased expense for window area or wall area, no additional heat loss, and

consequently no greater outlay for heating system or for fuel.

As an interesting example, let us consider a type of building which is finding some favor, being constructed without exterior piers, except possibly a few for architectural reasons. First, compare an extreme case of such a building having absolutely no outside piers, with a "standard" reinforced concrete building having a ratio say of $W/T = 20'/2' = 10$. In the latter case, according to the solid curve, the corresponding illumination value is 186, and for the ideally lighted building having no piers, $W/T = \infty$ with a corresponding illumination value of 204. That is, the comparison on the basis of width-thickness ratio is for identical window areas $204/186 = 1.09$.

But the new window area, due to omitting piers (considering same 3' wide) on the "standard" concrete building would be in the proportion of $23/20 = 1.15$.

That is, the comparative new theoretical illumination would be $1.15 \times 1.09 = 1.25$ or a 25% gain on the original value. Actually, the measurable gain will usually be nearer one-half of this, say 12%, on account of allowances which must be made for the introduction of wall piers for architectural effect and because of the interference from columns ordinarily located 6' to 8' back of the line of windows in this type of construction, to support floors—the latter being designed to overhang as cantilevers. Also there is the reduction due to the effect of sash bars which intercept light at wide angles, and to "glint" of the glass which is the latter's property of wastefully reflecting a large proportion of that light received at wide angles of incidence.

The curves further show that the rate of gain in illumination due to increasing the width-thickness ratio is extremely rapid for small values of this ratio, but slows up considerably for values of W/T greater than 5 or 6. In fact, there is little to be gained from large ratios of W/T (i.e., greater than 10), except insofar as increasing window area itself is concerned. More than two-thirds of the additional light received at such wide angles is lost as "glint" and a further amount is lost by interference of vertical sash bars.

As illustrating the application of this width-thickness principle, compare some of our more modern educational institutions or industrial buildings, having a series of banked or grouped windows, with certain venerable or even recent governmental and commercial structures having individual or comparatively narrow deep-set windows.

Of course, the grouping or banking of windows must conform to the requirements of uniform lighting, but this ordinarily is not a difficult

matter and is treated below in greater detail.

Application of the foregoing principles is outlined in the following typical example which combines the use of both Diagrams I and II. Fig. 1 is a photograph of a building which originated during the "stone age" of mill architecture, the bottom story having been remodelled. Increased business made it imperative to utilize the first floor, and demanded materially improved daylighting therein. The original wall piers were 3'3" wide and 24" thick, the window openings between them being also 3'3" wide. (See original window at right hand of the illustration.) The openings were 10'6" high, the top being about 1'6" below the ceiling. The building is 60' wide with a 16' story. Plans for remodelling called for every other pier to be removed and the head of the window raised 1'6", making the total height of window opening above the sill 12', and resulting in a new window area equal to 165% of the old area. The building is largely lighted from one side due to obstruction from closely adjacent buildings on the opposite side.

From Diagram I, the gain in illumination at the center of the room, due to increased window height, is as follows:

The original ratio was $D/H = 30/10\frac{1}{2} = 2.86$ giving a lighting value on a perpendicular plane of 43, and on a horizontal plane of 7.5.

The ratio of D/H remodelled is $30/12 = 2.5$ giving a lighting value on a perpendicular plane of 49 and on a horizontal plane of 9.5. That is, the improved illumination on a horizontal plane due to increased window height (but not including the effect of increased window width) equals $9.5/7.5$ or 1.26 times the original amount. Similarly the improved illumination on the perpendicular plane equals $49/43$ or 1.14 times the original amount.

A more complete solution would embrace similar comparative values taken, for instance, at the quarter points according to the same method.

From Diagram II the gain due to increased width-thickness ratio or W/T is as follows:

The original ratio was $W/T = 3.25/2 = 1.62$ corresponding to an entering daylight value of 130 on the solid curve. The remodelled lighting discloses a ratio of $W/T = 9.75/2 = 4.87$ corresponding to an entering daylight value of 174 on the same curve. The new lighting, therefore, due to this change equals $174/130 = 1.34$ times the original lighting.

There has been added, however, window area over and above that obtained by increasing the window height. This is due to increased width, and after allowing for mullions, etc., the new area amounts to 1.46 times the original area. Its effect is additional to that of the W/T ratio.

The new conditions of illumination, therefore,

on the horizontal plane, due to the new window area 1.65 times the original amounts to $1.26 \times 1.34 \times 1.46 = 2.46$ times the original. And the new conditions of illumination on a vertical plane equals $1.14 \times 1.34 \times 1.46 = 2.23$ times the original.

In this particular case the gain in illumination from increased window height alone does not show up as much as usual due to the fact that the story was comparatively high to begin with.

In many instances, old buildings have been effectively modernized as to daylighting requirements, and surprising economies demonstrated as compared with the alternative of wrecking the original and building a new structure.

The foregoing analysis for W/T concerns the relative amount of light admitted rather than its distribution. However, grouping and banking of windows often involves, for structural or architectural reasons, the enlarging of piers which in turn brings up the question of the "shading effect" or the variation in natural illumination behind these wider piers.

Ordinarily there will be little difficulty in this respect. It can be demonstrated analytically that the illumination on a given working plane at a distance, $y = (T+P)/2$ from the inside face of the wall (see Fig. 6), will not be less than 50% of the maximum value which occurs in front of a window. This variation which rapidly diminishes at greater values of y , is ordinarily insignificant in view of the inherently greater variation in daylight intensity over the remainder of the room, as shown in Diagram I.

At a point $y = T + P$ from the wall, the variation in daylight intensity is practically nothing.

The foregoing values are conservative at whatever single level the comparison is made, and cover a range of from minimum intensity at points chosen directly back of center line of pier, to maximum intensity at points chosen directly back of the center line of window—said pier being assumed to have a window on each side of it. In other words, the values $y = (T+P)/2$ for 50% variation and $y = T + P$ for uniform lighting can be shown to be on the safe side for every building designed with daylighting as an object,—that is, where W is not less than P .*

The above values are applicable to mullions. They show, for example, that for 2' by 3' mullions

*NOTE: To be exact, from the theory of horizonal sky angles, the amount of light from two windows adjacent to a pier on a point distant y directly back from and on center line of said pier is equal to the amount of light from one window only on a point located the same distance y back from and on the center line of said window when

$$y = \frac{TW + TP + \sqrt{(TW + TP)^2 + PW^2 (2W + P)}}{2W} - T$$

The distance y for all usual values of T , W and P comes out less than $T + P$. Hence the approximate assumption that $y = T + P$ for uniform illumination embraces a margin of safety for practically all conditions. The above formula is based on the assumption of black, non-reflecting window jambs, which is again on the safe side, as y would be still less with reflecting jambs.

or piers, the shading effect 5' away from their inside face is 0, and the shading effect is negligible $(2+3)/2 = 2'6"$ away.

Of course, there are other factors which enter into a thorough consideration of a problem of this kind and which must often be taken into account. Such factors involve interference from adjacent natural surroundings and from other buildings; or the effect of curtains and shades in shutting out direct sunlight; or the amount of light reflected

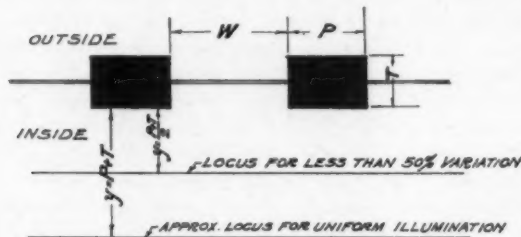


FIG. 6
HORIZONTAL CROSS SECTION
THROUGH BLDG. AT WINDOWS.

from floor, ceiling, walls and also from interior equipment itself. With relation to the latter, there seems to persist a custom among machinery builders to paint their machinery in certain glossy stock colors of green, red or black, most of which colors absorb 90% of the light intercepted. The general atmosphere and cheerfulness of a room may be greatly improved, eye strain lessened, and a marked betterment in overall illumination and safety-first features obtained by adopting for such equipment a flat or semi-gloss paint tinted so as diffusely to reflect to the working space about one-half of the incident light. This tends toward

greater uniformity of illumination as well as increased intensity.

Sometimes the floor itself is useful as a diffusing medium especially in occupancies where it is kept clean. The same is true of a light colored rear wall.

End walls at right angles to a line of windows also have their effect. Such walls may cut off adjacent to them, up to one-half of what otherwise would be the total direct illumination (that is, obliterate all the direct light from one azimuth), but this detrimental effect may be considerably modified by painting the wall in light tints so as to make up for the deficiency as much as possible by diffuse reflection from the opposite azimuth.

There are certain more or less vital natural resources on this earth which we are bound to treasure,—or at least to use more or less frugally on account of their very scarcity. Some of these may be left untouched for a time without deterioration and perhaps even with gain or profit. Other natural resources, like the run-off from a great watershed, cannot be hoarded for long. They must either be utilized for the benefit of mankind or wastefully dissipated as occasion dictates.

Still others, like the air we breathe and daylight with which the world is flooded, are by comparison "super" resources. We take them for granted,—they are necessary for life—they are in a category by themselves. Light in its continual outpouring from the sun is not subject to ordinary incentives and restraints of competitive economies. Its prodigal use *now* does not create a present or future deficiency in the total supply, but rather with proper application, acts to the benefit of this generation, and more deeply to the lasting good of posterity. All the greater stimulus for its effective utilization!

INVESTIGATIONS AT THE BUREAU OF STANDARDS

AMONG the investigations under way at the U. S. Bureau of Standards, which will develop useful and interesting data for architects and engineers are the following:

INVESTIGATION OF PHYSICAL PROPERTIES OF BUILDING STONE

In studying the weathering qualities of natural stone under actual conditions of use, frequent examples have been noted where disintegration occurred on comparatively new buildings of limestone, sandstone and even granite. Such cases could not be attributed to the action of frost or the usual destructive agencies of the weather because under ordinary conditions the stone should not show signs of decay sooner than 40 or 50 years. These cases could nearly always be attributed to the formation of efflorescence due to the leaching of water through the parts of the masonry. About a year ago a series of tests was started at the Bureau of Standards to determine how severe the effect of efflorescence is on masonry. Twelve limestone panels which had been previously constructed for another test were utilized for this purpose. Blocks of stone with cup-shaped holes in the top were placed on the panels to catch the rain water and cause an excessive amount of leaching through the stone work below. In a

short time considerable efflorescence formed where the water leached through to the surface of the stone and within a year, decay of the stone at these places was noted.

These experiments were contrived to accelerate the action which actually occurs in buildings where the rain water is allowed to penetrate the masonry in excessive amounts as through window sills, the cornice or coping and brings the water-soluble matter to the surface. The crystallization of the dissolved matter in the pores of the stone during the drying process causes decay similar to that due to frost, but much more rapidly.

FIRE TESTS OF ROOFING MATERIALS

Flame tests have been conducted on wood shingles from a number of species, laid on open and on closed board decks. In some of the tests the brands from the burning deck were allowed to fall on another larger shingle deck. No fire on this deck resulted. It was built of red cedar shingles laid on open board decks. Measurement of the brand hazard by this means was therefore abandoned, and the brands developed in all flame tests will be caught in the brand collector. The latter has been improved so that it now retains all but a small percentage of the brands given off. Carbon dioxide gas has been substituted for carbon tetrachloride as an extinguishing agent for the brands.

SPECIFICATIONS

THE development of the standardized specification will not involve the elimination of the intimate personal touch that seems necessary to many architects and specification writers in order that the sufficiency of the specification for the work in hand will be amply presented. On the other hand, an effort toward accumulating a set of paragraphs or clauses which can be used in building after building will involve at the outset a much more intimate and personal study of the various materials and methods involved than would be exercised in the hurried preparation of a specification subject to the completion of the drawings.

The general conditions of the contract and all other contract documents of The American Institute of Architects or of local architectural societies are standardized documents if there ever were any, and their preparation was predicated on their absolute necessity, while their use is admittedly predicated on their value because they have been standardized, and such use is a very wise thing for cautious architects. Architects who have developed their own general conditions and other contract forms have spent a great deal of time and money especially if legal advice has been secured to develop standardized stipulations that will cover adequately their own peculiar requirements.

The development of standardized specifications should not contemplate a fixed policy of not tolerating deviations from the material that has been established as a standard specification. The correct method to follow will be that which will permit of changes from time to time either by recourse to alternative paragraphs or through the development of such alternatives as their need arises. The constant changing of standardized specifications will be necessary until experience has verified the specification writer's judgment as expressed in the clauses covering one particular subject or one step in that subject. The specification writer should consider that no standard has been established irrevocably unless or until its value has been determined definitely through use on at least two buildings of different character.

The standardization of specifications may be commenced gradually. Perhaps the first step would be to devise a uniform arrangement of parts of the document. Some specification writers have been accustomed to prepare their documents as a complete unit, evidently expecting the work to be done by one general contractor. It seems better by far after studying this subject of standardiz-

ing specifications to separate the document into sections which will be determined by trade rules or local customs. These sections may be bound together as one complete document while at the same time they will stand separately as documents complete in themselves for the work which they are to cover. For instance, in the matter of specifications for ornamental iron—in the use of steel windows it is probably true that in most specifications they were called for in the ornamental iron or the miscellaneous iron specification. It is possible, however, that in some cases, especially where they were to be used for residence work they were specified in the carpentry specification, as they were displacing wood windows. However, in the larger development of metal sash it has been found necessary in many instances to write a specification for this item as a separate document in order that the contract may be let direct to the window manufacturer, not only for fabrication of the work but for installation in the building. As a matter of fact, there is no reason why specifications for steel windows, especially where there are a sufficient number to make a sizable contract, should not be treated as a separate branch of the work and be given as much importance, relatively, to the whole operation as masonry or terra cotta or roofing.

After the determination has been arrived at respecting the arrangement of the specification as to sections,—and these sections should of course be arranged in chronological sequence as to their installation in the building—the philosophy of specification thought should be studied to insure a uniform sequence of the parts of each section. Paragraphs should then be taken under consideration, one at a time until some sort of standard has been established. The complete document then can be gone over to study the general relation of one part to the other and additions or other changes made from time to time as convenient, and as the value of such changes will have been suggested by construction use.

If at the time the specifications are brought up to some standard form, the determination of standardized equipments and standardized drawings has been commenced, a coherence between the two documents will come about that is almost impossible to secure in any other way.

For instance—many architects will have frequent use for specifying the equipment of office floors in a building regardless of whether these floors are in a many storied building or in a build-

ing of six stories or less. This same philosophy may be applied to the specifications of wood trim for apartment hotels or similar structures where a simple, standardized unit is necessary to insure economical construction and equipment as well as ease in reconstructing or repairing such as renewals after the building has been occupied for some years. Let us consider the equipment of a typical office floor.

Such a space will have exterior windows, corridor doors, doors between offices and doors in subdividing partitions in one office. The windows will have to be trimmed, base and picture mould and perhaps chair rail will be required, all doors and borrowed light openings must have jambs and trim. The corridor side of the office entrance doors must be trimmed and arrangements must be made to provide raceways for telephone wires which is usually accomplished by the design of a wood moulding which forms a trough. The office floor corridor will have marble wainscot with tile or marble floors for the better class of buildings and with wainscoting and floors of a more economical material in buildings which cannot secure a high rental. One will find in an apartment hotel and in other structures floor space in which all of the items mentioned above may be used with as good grace and as economically—perhaps more economically—as in the office building. Then why not design a simple form of trim for all purposes, this form to be studied to facilitate concealment of wires, to provide a minimum number of sharp corners to be broken by furniture and to form a pleasing framework for the doors or windows in the plastered surfaces? The standardizing of door sizes, especially widths, for the various door uses will come about naturally after the preparation of such a series of standardized forms. The character of glass to be used in corridor doors and in communicating doors will be determined and all in all, every question involved in the correct, economical and aesthetically pleasing equipment of the office floor can be determined to the lasting benefit of the architect. If the architect believes that each building must be trimmed and equipped in a manner different from that which he has ever before done, he cannot of course arrive at any standard and for such an architect the suggestion that a standard would be of value would be like waving a red flag. But the common-sense architect who is looking forward to the satisfied client and the possible repeat order, will see to it that sane design and construction will be placed in his building. The simplification of standardization in this one respect will enable a building owner to accumulate a sufficient number of linear feet of trim to make all necessary alterations or repairs without having to jumble up the trim in one office or without

necessitating the production of a few feet of trim to match the old trim whenever a piece or two is required.

One other thought that occurs to the specification writer in this connection is the possibility of standardizing on hardware for doors of similar or identical uses. Everything in connection with the hardware may be standardized with the exception of the ornamental features of the knob and escutcheon and the keying of the locks. These, of course, can be standardized to some extent, but there must always be a reservation to determine the particular phases for each building. The development of a standardized specification should occupy at least a year's time in order that careful thought and study may be given each phase of the work. The mere fact that an attempt is being made to standardize specification requirements will create a tendency to study more thoroughly the design of the construction features. This will develop a more thorough study of all of the elements entering into the construction and will create a wider horizon for the specification writer. Such work of course must have the support of the drafting room and the construction superintendents as the specification writer cannot go it alone without whole-hearted co-operation from his confreres in the office. In the study of any element of specifications, investigation should be made as to methods followed by other architects, methods followed by contractors, methods suggested by government departments or technical societies in order that the consensus of best usages may be procured. Catalog data furnished by many manufacturers and dealers contain a wealth of information both as to the historiography of the material and its use as well as the inherent qualities of design or economy.

In all of this discussion on the question of standardizing specifications the reader must maintain the reservation that so far as design or ornament is concerned, where it comes in contact with the aesthetic phases of the work, no attempt at standardization is suggested. But it should be borne in mind that where standardization has developed a certain method of providing ground work to which or against which the design is to be applied, more thought can be given to the matter of design than is sometimes possible. For instance—a design may be created that calls for certain methods of construction or other detail work that is not possible to accomplish without a radical change. Countless instances can be referred to where design has been minutely studied and fixed with utter disregard of the possibilities of construction. Even though the matter of brick courses has been fairly well determined by the standardization of brick sizes, instances are known where the design called for methods of laying up brick that were either impractical or not to be expected

because of the knowledge of workmanship that it would be possible to have. As in all questions of better methods of doing things, a sane perspective must be had of all factors and it is believed that the projection of the mental processes of the architect or specification writer in the question of standardization and its possibilities will induce more careful deductive reasoning, thus securing far more happy results in accomplishment.

SPECIFICATIONS FOR ORNAMENTAL AND MISCELLANEOUS IRON

Very little advice has been published on the preparation of specifications for ornamental and miscellaneous ironwork, and as a matter of fact, it is possible that the less said on this subject the better off some specification writers will be unless they make more detailed study of the points that will be discussed. In the first case, it is believed that the specifications for this branch of the work are the most difficult to write for they must be explicit and extremely accurate in every detail if they are to be of any value whatever. The writing of these specifications involves to a greater extent than the writing of any other section of the work, the study of a standardized specification of the items that are to be furnished by the contractor. After a number of years spent in the painful writing of specifications for this branch of the work—which by the way was always, and for that matter still is, put off until all others have been written—it was not possible to write a good specification until the absolute necessity of a comprehensive list of items that were to be furnished by the ornamental and miscellaneous iron contractor had been prepared. It is believed that the writing of these specifications after all other specifications are completed, is the proper method, as the study of the drawings for the writing of other specifications will bring to the attention of the specification writer various items or various suggestions as to the necessity for particular specification clauses on items that might not have been thought of if the specification was written in its natural sequence.

In the writing of the specification for an office building, the following outline of ornamental and miscellaneous iron items was made as a first step in the process—this by the way, is a part of a collection of work sheets which covered all sections of the specification, and it will be seen that the standardization of this outline has assisted in the writing of intelligent specifications—for instance—it will be observed that the items that are seen outside the building generally starting at the first floor and looking up the walls and over the roof, are listed first. Then the specification writer has, in a way, entered the basement and has progressed up through the building, covering each

item that he has observed in his travels. In this way, this outline is not a heterogeneous collection of items but is really a logical itinerary. The outline is as follows:

SCOPE:

- A—Cast iron fills for openings 101 to 112 inclusive in first story with display cases for fills in openings 107, 108, 109 and 111; fills in second story openings 210 to 212 inclusive with bolts for window cleaners' harness on the mullions and jambs of frames in openings 208 to 212 inclusive; steel sash in all cast iron fills with glazing beads on outside for appearance sake.
- B—Two (2) cast iron coal hole frames with covers.
- C—Two (2) access doors to oil storage tanks.
- D—Flag pole—tilting type—40 feet high.
- E—Steel trap doors over basement lift.
- F—Channel bumper for shipping platform.
- G—Fire escape.
- H—Steel channel frames for rear doors.
- I—Pipe rails at exterior steps to basement.
- J—Channel frames for elevators and lift openings in basement, for door between receiving room and boiler room, for door to waste paper room, for door to Stairs F in basement.
- K—Channel sills with non-slip treads for doors to lifts, for door between receiving room and boiler room in basement.
- L—Guides for coal dam planks in openings between coal room and boiler room.
- M—Pipe rails in boiler and mechanical equipment rooms and for Stairs F and G to first floor.
- N—Steel plate door in opening No. B-17.
- O—Underwriters fireproof doors—automatic closing type—into transformer room.
- P—Corner guards in receiving room, receiving passage, boiler and machinery rooms.
- Q—Elevator doors to freight lift No. 5 and lifts No. 4 and 3 in basement.
- R—Directory board frame in elevator lobby.
- S—Door frames in cast iron for doors between elevator lobby, Stair Hall C and Stair Hall A with transom and sidelights.
- T—Steel stair construction with pan treads, visible risers, cast iron newels and wrought iron railings.
- U—Pipe hand rails for Stairs B, C, D and H.
- V—Door frames with glazed doors for fire extinguisher recesses in office corridors and elevator lobby in first story.
- W—Radiator grilles with recess linings in elevator lobby.
- X—Subway grading walks over second story suspended ceilings.
- Y—Cast iron jambs, cast iron sills with non-

- slip treads and door hanger supports for passenger elevators No. 1, 2 and 3.
- Z—Brass mat frames in front of elevator door openings in all stories.
- Aa—Subway grating walks in attic space with grating steps to penthouse floor.
- Ab—Channel frames with steel plant door in penthouse opening to attic space.
- Ac—Steel plate doors with cast iron frames in floor of penthouse elevator machine room and in floor of sheave space below penthouse floor.
- Ad—Ladder on penthouse wall to roof, ladders to subway grating over second story and ladders in basement where indicated.
- Ae—Sash for saw-tooth skylights with manual operation.
- Af—Hardware.

NOT INCLUDED:

1. Steel window frames and sash in masonry openings (note that steel frames and sash in cast iron fills are included above).
2. Mail chute.
3. Safety treads for all stairs.
4. Hollow metal doors, hollow metal jambs and trim.
5. Revolving doors in main entrances.
6. Illuminated signboard feature at main entrance.

Perhaps of equal importance as a correct list of materials or items that are to be included, is a correct list of drawings that the contractor must have. This is in order that the contractor may know that the drawings he has present all the information the architect has prepared covering the work included in this contract. If the architect has prepared any standard drawings for items listed in the scope, these standard drawings should be listed in the drawing paragraph.

Since there is a great variation in the methods of preparing shop drawings specification writers should be explicit as to the character of shop drawings for this work, that is, how they are to be prepared before submission to him. He should also specify that the drawings as submitted cover the items that will be required first, such as those items that must be built into masonry work as the work progresses, so that as each sheet of shop drawings is released to the shop with the architect's approval, the work may be carried forward continuously without causing delay to other contractors.

The quality of workmanship varies so greatly

in the production of ornamental cast ironwork that the specifications should be explicit not only in the paragraph covering the general quality of workmanship, but in succeeding specific paragraphs wherever it seems necessary. It is to be expected that workmanship under this branch of the work will be done by mechanics who are skilled in their trade in order that the production of first class work may be expected. Perhaps a definite establishment of work standards may be had by referring specifically to some building already constructed that has similar work which meets the approval of the architect for the building in question. A definite clause that sub-standard or mediocre workmanship will not be accepted is a wise precaution, and one to which recourse might be had quite a few times.

In this connection, however, the specification writer must have the co-operation of the person who solicits bids in order that only those bidders who are competent to furnish the work desired may be called upon, and to keep out of the bidding lists of incompetent contractors.

In respect to the quality of materials a general clause that they must be the best of their kinds obtainable in the local market, or in other markets that the specifications may require for use in the class of work specified, or say in first-class work, while presenting the matter in a general fashion, is rather specific and may be referred to in the case of an argument. Only the best grade of pig iron should be used for iron casting and it is believed that castings made in the finest quality of moulding sand that is in use for purposes similar to that contemplated in the specifications should be used.

Structural steel will of course consist of standard rolled shapes and they should be specified to be of sizes or sections as shown on the drawings or as required to sustain the work or to meet the requirements of the work as indicated.

Paint should be a good steel protective paint as it is just as important in this work to have a good ground coat of paint as it is in any other work in building construction.

Other items in ornamental and miscellaneous ironwork may be covered by specific reference to manufacturers, such as safety treads of stairs, radiator grilles if the manufacturer's standard design is desired, and so on.

It will be noted that since this subject is restricted to ironwork and steelwork, no mention is made of bronze or the precise requirements for the use of this material, its quality, etc., all of which will be covered in subsequent articles.

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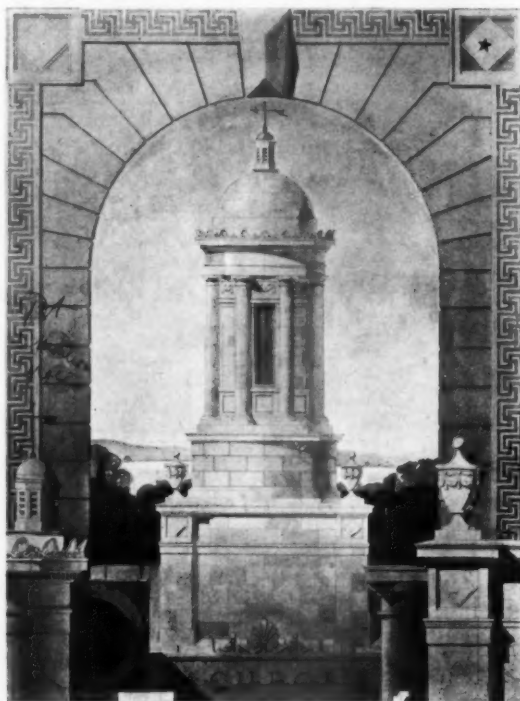
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CLASS "B"—V ANALYTIQUE "A CUPOLA"

The city hall in a small city closes the vista at the end of the main street. As a crowning motive to complete the design, the building is to have a cupola of marble. The architecture of the city hall is classic. The cupola may be considered as either surmounting a dome or placed on a pedestal that rises from the roof. The maximum width of the cupola shall not exceed 20'-0". Its height is not fixed.



FIRST MENTION PLACED

J. C. BYERS COLUMBIA UNIV.
CLASS "B"—V ANALYTIQUE—A CUPOLA

JURY OF AWARDS:—H. O. Milliken, W. Warren, E. A. Dennison, F. L. Pell, F. S. Swales, F. J. Robinson, and A. E. Flanagan.

NUMBER OF DRAWINGS SUBMITTED:—141.
AWARDS:—

FIRST MENTION PLACED:—A. Halasz and J. C. Byers, Columbia Univ., N. Y. C.; R. C. Dean, Mass. Institute of Tech., Boston.

SECOND MENTION:—R. S. McCaffery, Jr., R. A. Kimball, H. Merz, J. E. Richter, and L. K. Morrissey, Columbia Univ., N. Y. C.; D. Wilson, E. P. Nowlen, and L. Zaitzevsky, Mass. Institute of Tech., Boston.

THIRD MENTION:—C. E. Light, Atelier Arbor, Ann Arbor; A. LaGiglia, Atelier Blum, N. Y. C.; N.

Granger, M. Lapidus, S. Shleman, H. Bassett, T. V. Henry, C. H. Baldwin, E. W. Mandeville, H. E. Lindstrom, M. Sharp, M. Merksamer, C. E. O'Hara-II, O. I. Silverstone, P. J. Wacker, A. P. Koman, W. Jezierski, J. Syracuse, L. Fiske, and J. H. Jewett, Columbia Univ., N. Y. C.; H. B. Holt, H. B. Clark, R. P. Bullinger, P. M. Bott, G. W. Kelly, H. L. Schwartz, M. M. Leibowitz, N. F. Six, and A. C. Wingold, Carnegie Inst. of Tech., Pittsburgh; P. O. Danforth and C. B. White, Atelier Cunningham, Wash., D. C.; B. L. Lichtig, Cleveland Sch. of Art, Cleveland; H. Johnson and W. Livaudais, Atelier Cairns, Memphis; J. R. Musick, Atelier Denver, Denver; G. E. Beatty, B. Edelin, J. S. Cromwell, A. T. Edwards, J. H. Abel, R. B. Hobbs, M. J. Schaub, and Margaret Kane, George Washington Univ., Wash., D. C.; E. H. Grigge, M. G. Sowder, O. H. Godwin, J. A. Davis, J. A. Gramling, L. W. Pitts, C. W. Heery, Jr., F. M. Daves, T. Horan, and M. H. Boots, Georgia Sch. of Tech., Atlanta; R. E. Harrison and E. V. Hatch, Atelier Hiron, N. Y. C.; G. H. Dey, W. B. Durand, C. Gutmann, F. D. Baker, J. Oetzel, P. C. Weimer, A. F. Surre, R. B. Johns, and R. Smith, John Huntington Poly. Inst., Cleveland; H. B. Smith, L. S. Alexander and P. Kutz, Los Angeles Archtl. Club, Los Angeles; R. H. Brunton and E. Parsons, Mass. Institute of Tech., Boston; H. Crews, Atelier Northrup, Winston-Salem; J. A. Barrows and G. Hibbs, Atelier Norfolk, Norfolk, Va.; G. Riehl and C. C. Kenney, New Orleans Arts and Crafts Club-Atelier Feitel, New Orleans; C. D. Seaman, Pa. State College, State College; B. Olson, Atelier Parsons-Chicago Archtl. Club, Chicago; W. N. Reynolds and G. H. Schaefer, Atelier Rectagon of Buffalo, Buffalo; T. Vierra, R. H. Corliss and J. E. Boden, San Francisco Archtl. Club, San Francisco; E. J. Conner and A. M. Davis, "T" Square Club, Philadelphia; R. P. Bailey, Jr. and R. E. Bounds, Univ. of Texas, Austin; J. B. Eldridge, E. C. Burke and M. H. Linscott, Univ. of Kansas, Lawrence; L. J. Hofheimer and O. B. Flannagan, Univ. of Virginia, Charlottesville; R. W. Hunn, Jr., Univ. of Louisville, Louisville; A. H. Waldo and W. C. Wurdeman, Univ. of Washington, Seattle; R. S. Johnson, Univ. of New Hampshire, Durham; H. D. Palmer, J. W. Folger and R. Everett, Jr., Yale Univ., New Haven.

CLASS "B"—V PROJET "A MARRIAGE CHAPEL"

A municipality desirous that the civil marriage ceremony be performed in a more decorous way than is usual and believing that beautiful and impressive surroundings will tend to greater respect for the rite of marriage, has assigned a plot of ground in the city park near the City Hall for the erection of a building to be used for this purpose only.

There will not be many guests at these ceremonies, so the chapel proper need not be large; but there may be a number of couples married on the same day; therefore, an ample vestibule should be provided for them to wait in, with their friends and relatives.

The plot is 75'-0" x 75'-0", and the requirements are:

1. The chapel, with space for about forty (40) guests and a civil altar at which the magistrate will officiate.
2. The ante-room or vestibule.
3. A small robing room for the magistrate.
4. A small room for the bride and groom.

It is important that the character of the building should not be ecclesiastical, as religious services will not be held in it. The ceremony is short and therefore there is no necessity that the guests should be seated.

THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW

JURY OF AWARDS:—H. O. Milliken, J. M. Howells, H. R. Sedgwick, D. Barber, F. L. Pell, E. A. Dennison, F. S. Swales, H. W. Corbett, F. J. Robinson, J. V. Van Pelt, L. C. Licht, F. C. Hirons, G. M. Simon, and O. Faellton.

NUMBER OF DRAWINGS SUBMITTED:—258.

AWARDS:—

FIRST MENTION PLACED:—L. Swiger and U. Schoenberger, Carnegie Inst. of Tech., Pittsburgh; P. Sanfilippo, Atelier Corbett-Koyl, N. Y. C.; N. P. Thompson, Georgia Sch. of Tech., Atlanta; S. C. Haight and P. M. Duncan, Yale Univ., New Haven.

FIRST MENTION:—R. P. Hughes and C. H. Jagemann, Columbia Univ., N. Y. C.; J. Paul, Carnegie Inst. of Tech., Pittsburgh; A. R. Mohr and F. A. Denz, Atelier Corbett-Koyl, N. Y. C.; R. McLaughlin, Princeton Univ., Princeton; W. Woollett, Univ. of Minnesota, Minneapolis.

SECOND MENTION:—R. H. Walter, M. B. Tubby, Jr., H. Steinkohl, P. V. Obninsky, F. Calamita, J. J. Schlick, B. Boerum, K. C. Kruchten, A. I. Goldberg, G. S. Dudley, L. V. Schelski, D. E. Milone, A. W. Lloyd, J. Black, and E. G. Friedlander, Columbia University, N. Y. C.; A. M. Feinstein, D. S. Garber, C. A. Markley, J. S. Douglass, F. C. Boldry, A. H. Rousseau, E. R. Roller, E. Butler, P. H. Sload, E. G. Wheeler, A. F. Muhl, J. F. Glover, E. I. Love, H. W. Damon, Jr., S. Fiordelise, R. V. Harkless, W. B. Simboli, L. Fink, A. C. Lackey, M. N. Goodwin, R. H. Cutting, H. N. Kelly, D. C. Doig, J. P. Crowgey, Livonia C. Osborn, K. Fulmer, and M. W. Bastian, Carnegie Inst. of Tech., Pittsburgh; E. A. Dacey and M. C. Hobson, Atelier Cunningham, Wash., D. C.; W. H. Sypher, C. A. Smart, E. F. O'Connell, F. J. Ryan, J. Boehle, A. G. Schwarz, A. N. Kanka, S. N. Ackerman, and M. L. Beck, Atelier Corbett-Koyl, N. Y. C.; R. M. Hovanetz, Cleveland Sch. of Art, Cleveland; J. E. Pierson, R. Stanley Hall, A. P. Almond, J. L. Robeson, J. W. LeMay, W. H. Breen, G. A. Boyle, Jr., R. R. Nash, T. W. Cothran, O. W. Long, W. I. Gresham, B. C. Norton, S. Seki, G. A. Chandler, D. L. Spooner, W. F. Wells, A. Shulman, P. F. Rosenblath, D. G. Graves, J. R. Britt, M. O. Saggus, R. J. Conover, and J. O. Stakely, Georgia School of Tech., Atlanta; M. Peele, R. Gittelman, F. L. Soars, C. N. Wentworth, and C. A. Hough, George Washington University, Wash., D. C.; J. M. Judge, R. T. Leslie, Jr., and L. A. Turcotte, Atelier Hirons, N. Y. C.; Adelberte Shrimpton and B. Krinsky, John Huntington Poly. Inst., Cleveland; H. R. Astheimer and J. P. Otte, Atelier Licht, N. Y. C.; G. B. Briney, Los Angeles Archtl. Club, Los Angeles; I. van der Gracht, M. C. Fleming, and G. B. Dudley, Princeton University, Princeton; H. Shacklette, Pa. State College, State College; W. Nevara, Atelier Parsons-Chicago Archtl. Club, Chicago; E. J. Parnum, Reading Archtl. Society, Reading; Henrietta E. Schmandt, Atelier Spangenberg, Buffalo; G. H. Ketcham, Syracuse University, Syracuse; E. K. McNinch, San Francisco Archtl. Club, San Francisco; F. J. Duane, J. E. Jackson, and J. J. Kohler, "T" Square Club, Philadelphia; H. Sobel, R. H. Kloppenbury, K. Helms, F. R. Roberson, C. T. Paul, J. W. Gregg, S. K. Kwan, W. I. Hamby, Mary T. Worthen, A. F. Kanahan, A. Wupper, E. W. Vollenline, W. E. Fraser, F. H. Naegele, L. C. Hedrick, and H. J. McKee, Univ. of Illinois, Urbana; W. R. Johnson, B. F. Hart-III, E. T. Dunlap, J. L. Orrick, and M. Wells, Univ. of Virginia, Charlottesville; C. P. Erickson, J. E. Isted, W. C. Bon-sall, H. A. Magoon, G. W. Smith, R. Rosenberg, A. Johnson, M. L. Nelson, E. E. Olson, E. W. Krafft, P. E. Nystrom, C. R. Barnum, and I. W. Silverman, Univ. of Minnesota, Minneapolis; J. Beldon, and G. Colcord, Univ. of Southern California, Los Angeles; G. M. Shigaki, and J. I. Mattson, Univ. of Washington, Seattle; W. P. Cunningham, and C. Paulsen, Univ. of Kansas, Lawrence; E.

C. Lea, Univ. of Louisville; F. C. Johnson, E. E. Studts, L. B. LaFarge, M. B. Smith, W. H. Schilling, S. Dukler, M. B. Ives, and H. G. Lindsay, Yale Univ., New Haven.

HORS CONCOURS:—R. N. Tourtellotte, Columbia Univ., N. Y. C.; D. K. Morrison, G. T. Popiden, and V. G. Tilbrook, Carnegie Inst. of Tech., Pitts.; G. Long, Georgia Sch. of Tech., Atlanta; K. Jacobson and D. Nor-kaitis, Univ. of Illinois, Urbana; R. Allison, N. Belford, and E. Abrams, Univ. of Southern California, Los Angeles; G. M. Cohen, R. C. Cordon, C. F. Chowenhill, P. Petrofsky, and N. E. Iovanna, Yale Univ., New Haven.

CLASS "A" AND "B" ARCHAEOLOGY—VI PROJET "A PUBLIC SQUARE IN THE FLEMISH STYLE"

In the 15th and 16th Centuries Flemish civil architecture in the portion now known as Belgium, arrived at a rich colorfulness which has no rival in the northern European Countries. In the Gothic Period it already showed a greater variety and elasticity of design than any other portion of Europe. The influences acting on it from outside its boundaries were Germanic, French and Spanish. The country was rich from trade; the internal government, thanks largely to the powerful trades guilds, was highly developed.

Around the public squares of the towns were usually grouped the public buildings such as City Hall, Market, Court of Justice and the houses of these guilds as well.

The side of one of these squares was 150 ft. long and was divided unequally among 5 guilds. All of these buildings were destroyed by fire and it is desired to reconstruct them in the style of the period.

The general effect of such buildings was extremely pictorial, the windows numerous and wide filling the frame of the structure. The style was hybrid perhaps, using motives which were classic or Baroque intermingled. The facades were colored and gilded usually rising to extraordinary gables, masking high peaked roofs. This made a wonderful background for fetes and processions of the guilds as it does nowadays for the flower markets held in the similar squares in Brussels and in Antwerp. This style had the virtues of a robust and florid imagination.

JURY OF AWARDS:—H. O. Milliken, W. E. Shepherd, Jr., F. L. Pell, E. A. Dennison, F. S. Swales, and A. E. Flanagan.

NUMBER OF DRAWINGS SUBMITTED:—17.

AWARDS:—

SECOND MEDAL:—B. Schlanger, Columbia Univ., N. Y. C.; F. Fredericks, John Huntington Poly. Inst., Cleveland; A. B. Gallion, Univ. of Illinois, Urbana.

MENTION:—A. E. Klueppelberg, Columbia Univ., N. Y. C.; D. K. Frohwerk, Atelier Hirons, N. Y. C.; R. W. Pearson, and J. Schlosser, John Huntington Poly. Inst., Cleveland; R. A. Mattson, F. W. Lang, D. Kosvich, E. Mittelbush, E. I. Harrison, and W. E. Armantrout, Univ. of Illinois, Urbana.

CLASS "A" & "B" ARCHAEOLOGY—VI Measured DRAWINGS

JURY OF AWARDS:—H. O. Milliken, W. E. Shepherd, Jr., F. L. Pell, E. A. Dennison and F. S. Swales.

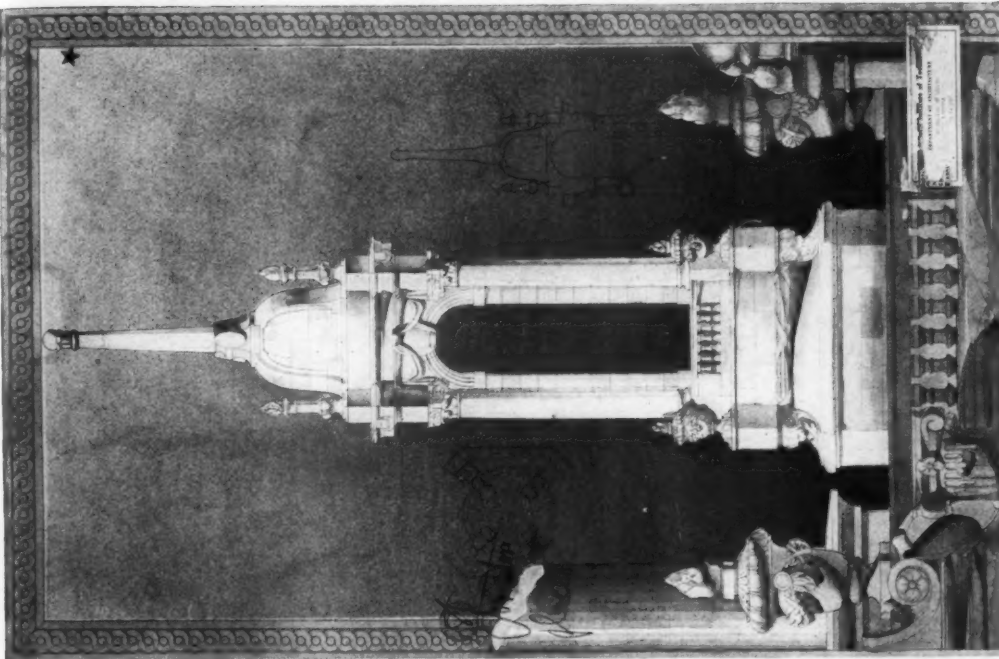
NUMBER OF DRAWINGS SUBMITTED:—2.

SUBJECT:—Doorway of house at Syracuse, N. Y.

AWARD:—SECOND MEDAL:—E. Weiner, Syracuse University, Syracuse.

SUBJECT:—The Doorway of Perry Hill Inn near Oswega, N. Y.

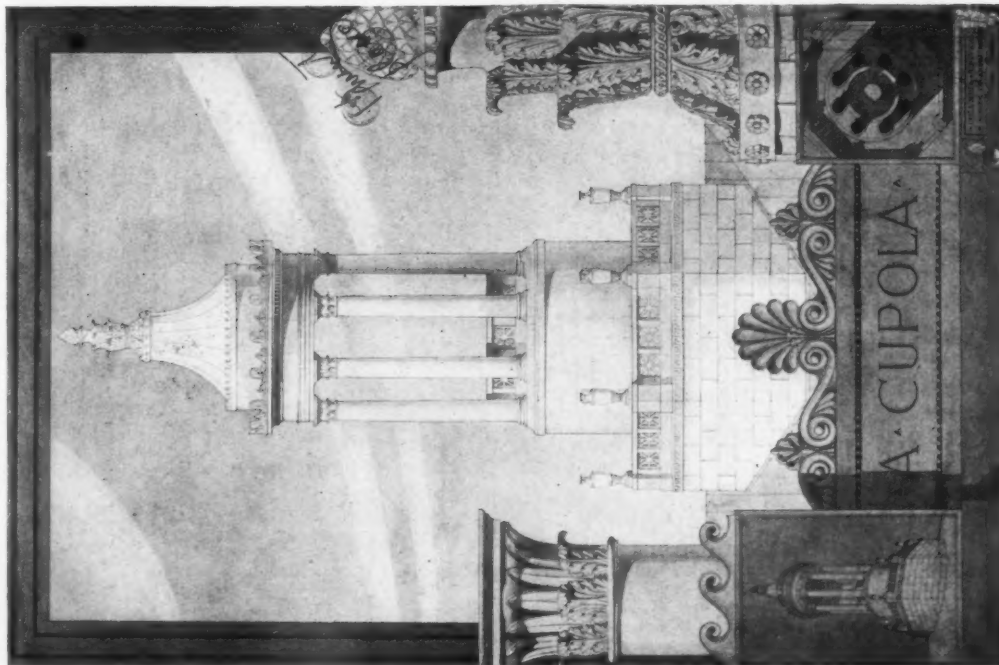
AWARD:—SECOND MEDAL:—C. H. Fournier, Syracuse University, Syracuse.



MASS. INST. OF TECH.

FIRST MENTION PLACED

R. C. DEAN



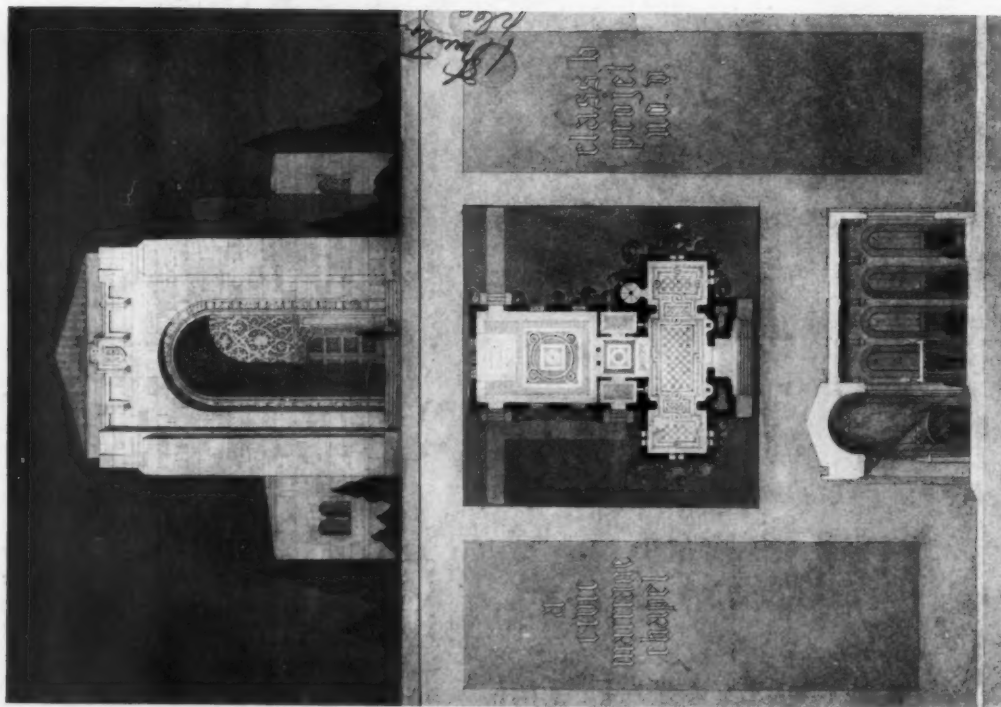
A. HALASZ

FIRST MENTION PLACED

COLUMBIA UNIV.

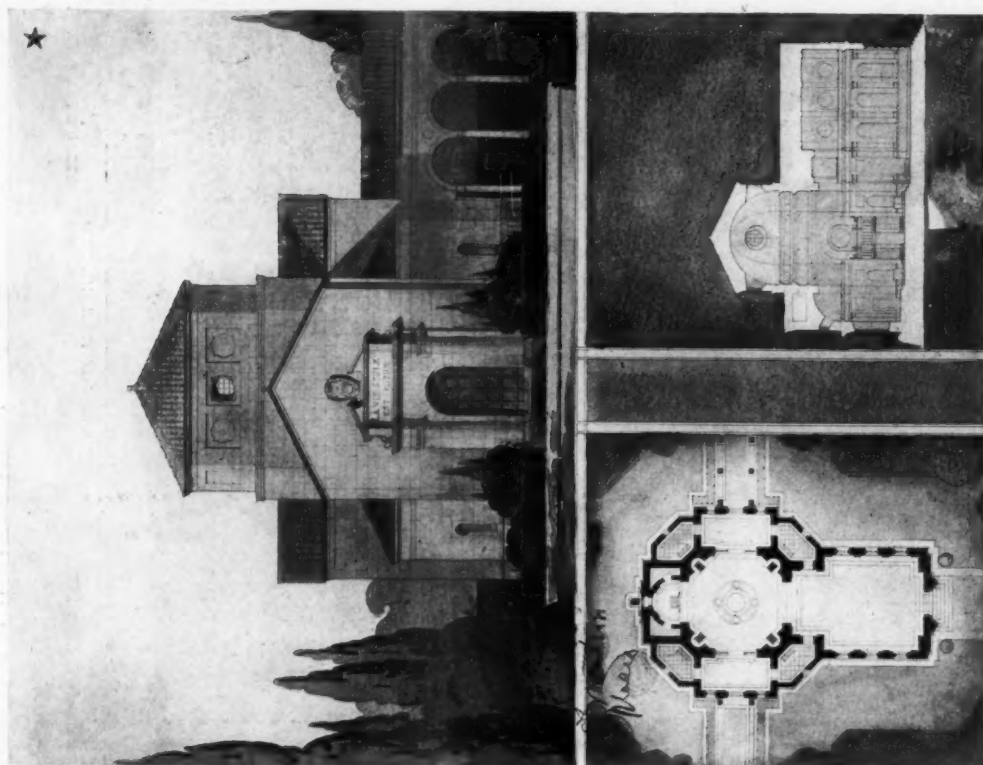
CLASS "B"-V ANALYTIQUE—A CUPOLA

STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



P. M. DUNCAN

FIRST MENTION PLACED

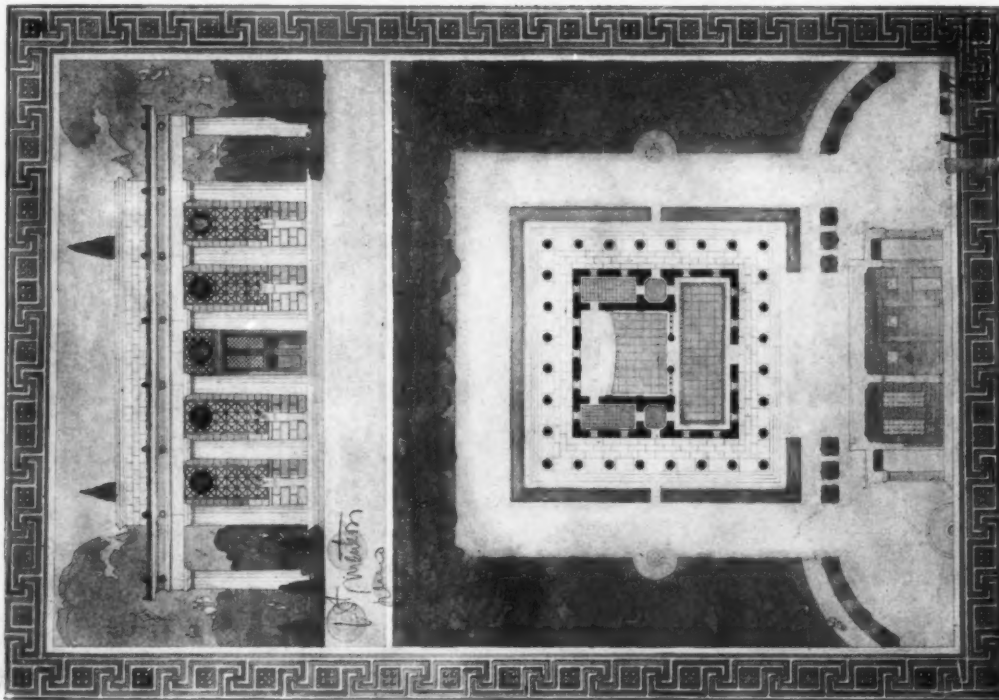


L. SWIGER

FIRST MENTION PLACED

CARNEGIE INST. OF TECH.

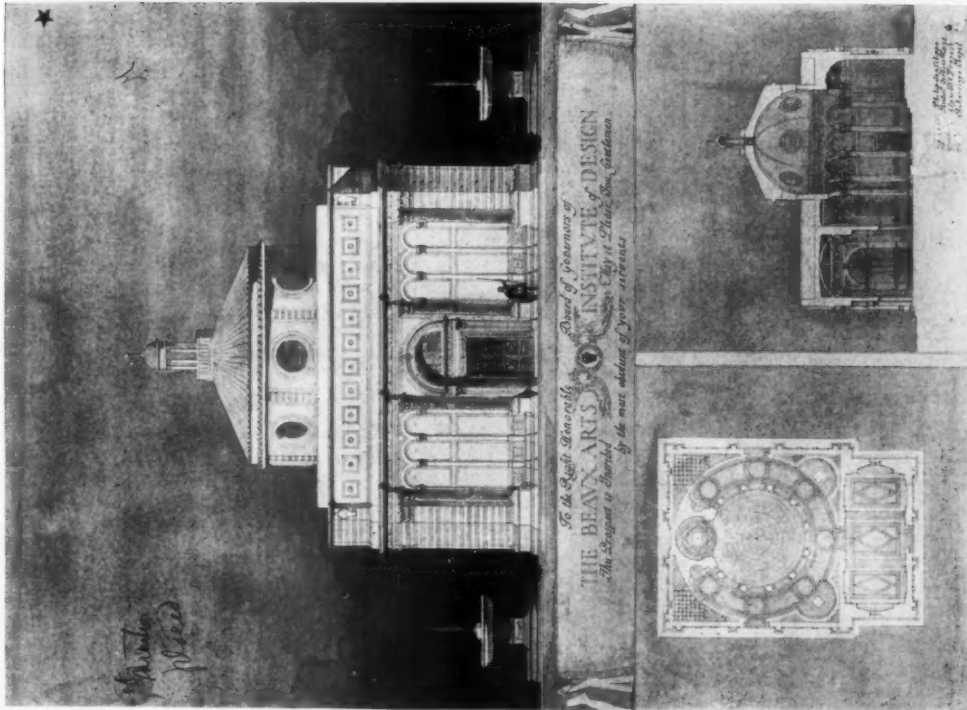
CLASS "B"-V PROJET—A MARRIAGE CHAPEL
STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



N. P. THOMPSON

FIRST MENTION PLACED
GEORGIA SCHOOL OF TECH.

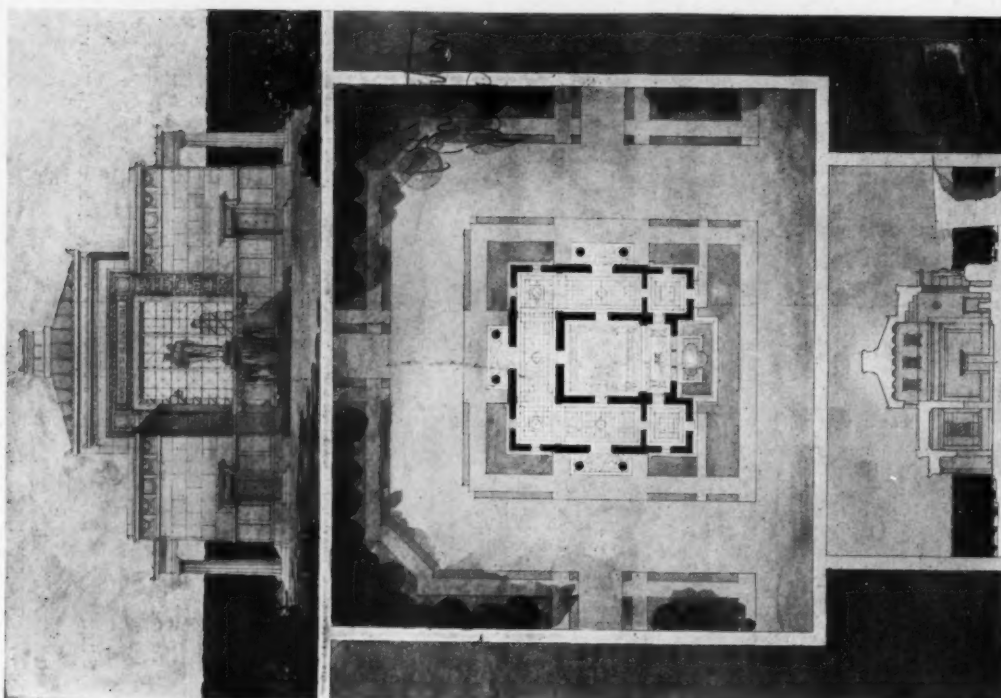
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STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN



P. SANFILIPPO

FIRST MENTION PLACED

ATELIER CORBETT-KOYL

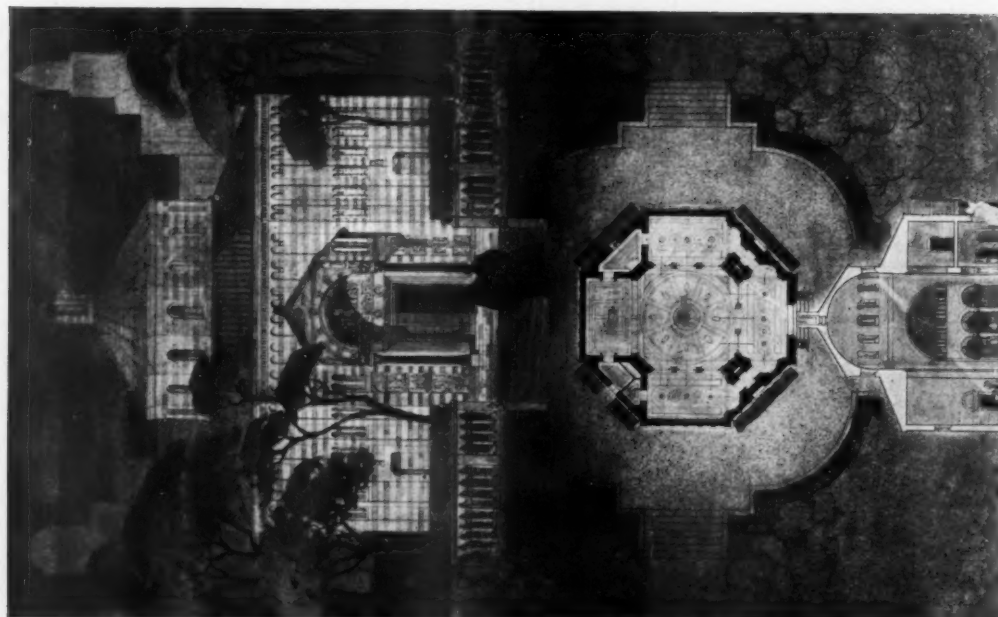


FIRST MENTION PLACED
CARNEGIE INST., OF TECH.

U. SCHOENBERGER

CLASS "B"-V PROJET—A MARRIAGE CHAPEL

STUDENT WORK, BEAUX-ARTS INSTITUTE OF DESIGN

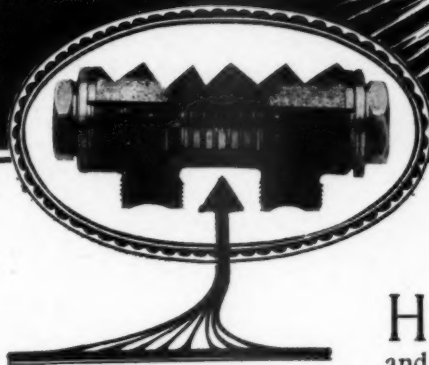


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BOOK NOTES

THE AUTOBIOGRAPHY OF AN IDEA*

THE death of the writer of this book coincident with its publication, gives to it the significance of being his last word. That the word is one that will be accorded sincere study by those who feel the importance of architecture, is not to be doubted. After all is said and done, it becomes more apparent that it enriches our literature. It has a historical value because it describes the times when modern construction was discovered and developed and it also presents word pictures of many of the men who controlled the early expressions of modern American architecture. The characterizations are frank, without any personal animus, and very human. Architecture and, in a greater degree, architects themselves are usually considered in a very unhuman manner. Perhaps if we knew more about the personality, the foibles and virtues and the training and environment of these men we could better understand their architectural expression. We know all too little of the architects of the past ages and it will be unfortunate if we fail to make a record of those of today.

Some persons rather impatiently class Sullivan as an egoist. He was. It would be a dreary world indeed and decidedly unprogressive, if there were no egoists to disturb the dullness of conventional mediocrity—architectural and otherwise. Sullivan felt the urge to create and not copy. Had he been satisfied to have ridden on the tide of conventional architectural good form, great financial success would have been his, for he was a consummate draftsman whose hand was guided by a very keen, perceptive mind. To do so and trail along with those who adapt rather than originate was impossible. He has left, however, a written record of the development of an architectural philosophy which will be better appreciated as years pass.

It is possible that the example of the engineer solving new problems and satisfying every demand yet made—without any precedents because there are none—has stimulated some architects in the past and some younger ones today to seek some reasonable basis on which to build an architecture worthy of *today* rather than to repeat one that was entirely fit for *yesterday*.

Sullivan's basis for architectural design is very simple and reasonable. To construct an architecture on it involves real work and the exercise of a creative ability. Those who would avoid hard work and the effort to create, can resort to that refuge of the ignorant or impotent which is found in that safe, sure and very respectable occupation

of trying to house modern needs in classic clothes. He issues a challenge that cannot always be ignored.

As a student at the Massachusetts Institute of Technology, he soon tired of the "Five Orders of Architecture" because "his faith ever lay in the oft-seen creative power and glory of man." At the Beaux-Arts in Paris "there came the hovering conviction that this great school, in its perfect flower of technique, lacked the profound animus of a primal inspiration." Perhaps these are the egotistical sayings of an immature student who rebelled against the prevailing idea that the power to create perished with the ancients and that architecture was finished.

Quoting from the book:

"Every problem contains and suggests its own solution. A postulate which does not contain and suggest its solution is not in any sense a problem, but a misstatement of a fact or an incomplete one. * * * * this formula is universal in its nature and in application.

"That the function *created* or organized its form. Discernment of this idea threw a vast light upon all things within the universe, and condensed with astounding impressiveness upon a mankind, upon all civilizations, all institutions, every form and aspect of society, every mass-thought and mass-result. Hence, all functions in nature are powers, manifestations of the all-power of Life, and thus man's power comes into direct relationship with all other powers. The application of the idea to architecture is manifest enough, namely, that the function of a building must predetermine and organize its form.

"The problem of the tall office building had not been solved, because the solution had not been sought within the problem itself—within its inherent nature. And it may here be remarked after years of observation, that the truth most difficult to grasp, especially by the intellectuals, is this truth: That every problem of whatsoever name and nature, contains and suggests its own solution; and, the solution reached, it is invariably found to be simple in nature, basic, and clearly allied to common sense.

"That masonry construction, insofar as tall buildings were concerned, was a thing of the past, to be forgotten, that the mind might be free to face and solve new problems in new functional forms. That the old ideas of superimposition must give way before the sense of vertical continuity."

Axiomatic and simple. If we accept this theory of design, then each problem should, after the function of the structure is clearly understood, in itself be a sufficient source of inspiration for design. When we see a designer muddle through musty tomes, collections of photographs and illustrations seeking "inspiration," is it not evi-

*The *Autobiography of an Idea*, by Louis H. Sullivan. Foreword by Claude Bragdon. 330 pages, 6 1/4 x 8, cloth. Published by The Press of the American Institute of Architects, Inc., 250 West 87th Street, New York City. Price \$3.00.



The OLYMPIC HOTEL, Seattle, Wash.: Geo. B. Foss & Sons, New York, Architects; Seattle Plumbing Supply Co., Jobbers; Ashwell & Twist, Seattle, Plumbers

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dence that he does not comprehend the function of his problem and is it not safe to wager that he will house a wolf in sheep's clothing? What should be more logical, reasonable and honest than architecture?

The Autobiography of an Idea is well written, in fact so well so that it honors American architects and inspires a hope that others may show equal competence. Its reading cannot fail to induce straight thinking and perhaps some self-examination, both desirable things, and at least be a courteous acknowledgment of respect for one who had faith in himself. Those who do not read it will find themselves outside of a discussion that vitally affects the future of American architecture.

ARCHITECTURE IN ENGLAND

THE varied architecture of England is well described in this book, which is written by an architect. An adequate, but brief account is given of the Roman and Saxon architectural remains which is followed by the three great periods of English architectural history; the Norman, the Gothic and the Renaissance. References are made to the contemporary political history of England which aid the reader to trace the influences that caused the birth and development of the architectural periods. Sufficient detail is given to make clear the features that distinguish the styles and their sub-divisions in a general way. It is not a book that an architect would use as a medium for designing, but rather one that will give him a broad and comprehensive understanding of the subject.

It will appeal to the general reader who has any appreciation of the subject of architecture and will be an aid to those who visit the cathedral towns. Brief and concisely written, it serves as a refresher of the memory that the architect and student will enjoy and appreciate. It is illustrated with sixty-five drawings by the author and eight halftones. Each chapter closes with a bibliography of the period which will enable the student to make more extended studies. This, with a glossary and index, makes the book very usable.

Architecture in England. By Cyril Davenport, F. S. A., with 65 drawings by the author and 8 halftones. 154 pages, 4¼ x 6½ inches. Published by E. P. Dutton and Company, 681 Fifth Avenue, New York City. Price \$2.40.

ARCHITECTURAL DETAILS

THE need for a suitable book on architectural drafting has long been recognized and this is intended to supply that want. It has accomplished

that purpose and it can be recommended to students of architectural drafting. Not only is this book of service in the drafting classrooms, but it can also be found of use in the architect's drafting room. A short introduction on the technique of instrumental drawing precedes the seventy-one plates of details. Facing each plate is a short text explanation which is often illustrated by a photograph of the thing detailed. The range of the book is very complete and was prepared with the aid of some of the best known architects in this country. This book, aside from its original purpose of serving students, is also designed to meet a demand from architects, builders and home-makers for definite and comprehensive information upon building construction details.

Architectural Details. By Louis Rouillion, Director of Mechanics Institute, New York, and Charles George Ramsey, architect. 132 pages, 10¾ x 8 inches, cloth. Published by John Wiley & Sons, Inc., 432 Fourth Avenue, New York City. Price \$3.00.

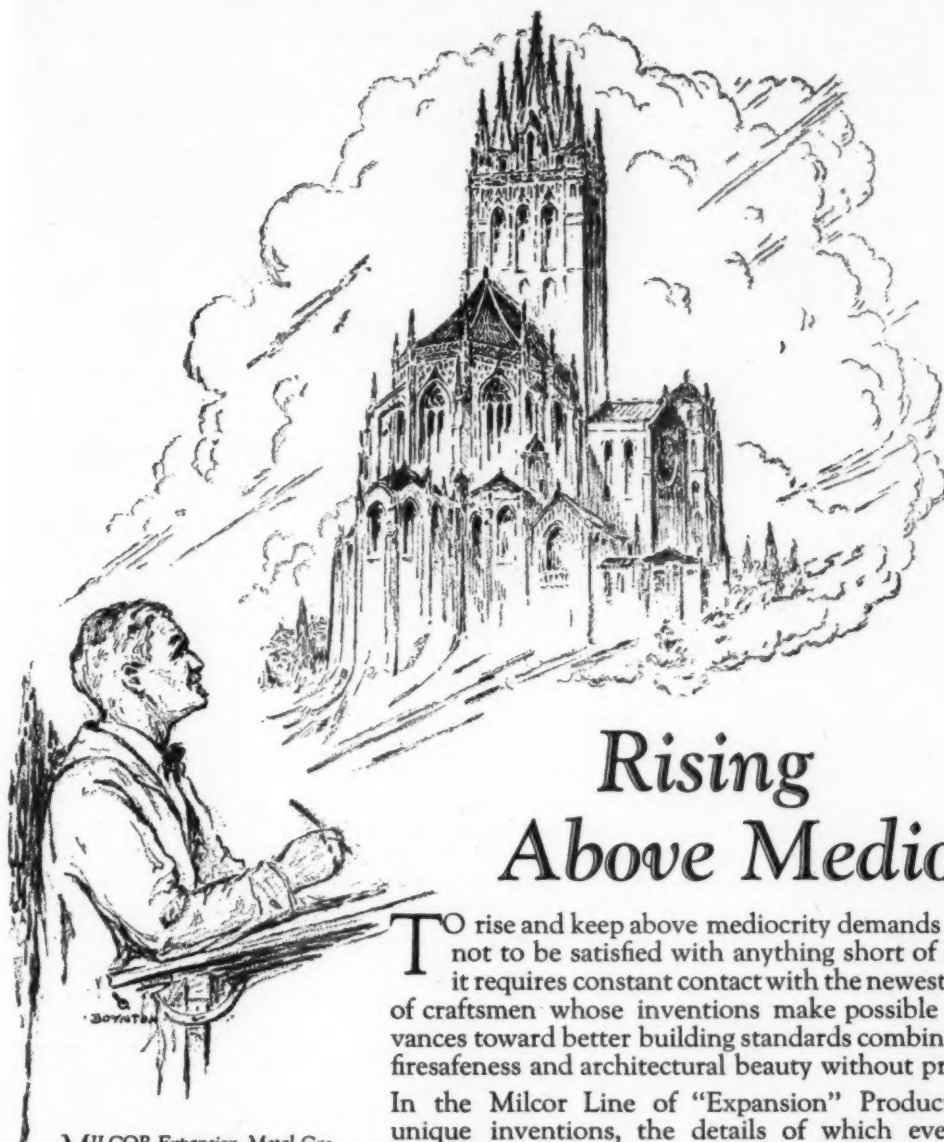
REINFORCED CONCRETE DESIGN

THIS is a very complete work on the subject of reinforced concrete, and although written in England it is as usable by Americans as our own books. It gives the Chicago Flat Slab Ruling which is the first of its kind and finds favor wherever engineers design that class of construction. The notation is based on that adopted by American text books, which are appraised as "at present the best literature on the subject." It is apparent, then, that the use of this guide to reinforced concrete will not be burdensome to the American engineer.

The general principles of design are fully explained and working tables and diagrams are included. This book is especially valuable because of its containing a wide range of special kinds of designing. The design of the building and arch in all of their phases is very completely presented. Among the special structures whose designing is fully explained, are circular tanks, piles and sheet piles, hopper bottoms, domes, staircases, water towers, reservoirs, bunkers and silos, retaining walls and chimneys.

The various parts of this volume are arranged in proper sequence, the language is clear and definite, the typography is well selected and executed and the illustrations are adequate. It is a book to be recommended.

Reinforced Concrete Design. By G. P. Manning, Assoc. M. Inst. C. E. With diagrams. 484 pages, 5½ x 8½, cloth. Published by Longmans, Green and Co., 55 Fifth Avenue, New York. Price \$7.00.



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A SKYSCRAPER CHURCH*

WE understand it is intended to erect (at a contemplated cost of £800,000) the Broadway Temple, New York, with its cruciform auditorium accommodating 2,000 people, rising in the form of a skyscraper building, to be surmounted by a tower terminating with a revolving cross illuminated by electricity as a sky-sign advertisement. The "church" will be set just above the street level. The special accompanying features of the structure include an assembly hall fit for concerts and dances; a gymnasium for 800 persons; a swimming pool with removable toilet cubicles for both sexes; a stage and a cinema. No Sunday school provision is mentioned, but shower rooms and arrangements for aquatic events are included. The upper floors of the establishment will be devoted to sleeping apartments and kitchens, with catering contrivances above the fifth story level. This unusual scheme of so comprehensive a character should furnish a prime opportunity for a fresh form of architectural treatment. The cruciform church laid out on a big scale and its varied parochial accommodation thus contrived on a restricted site combine to render the composition very distinctive, if not perhaps entirely unprecedented in its details. Double historic churches built one above the other are more or less familiar, as at Sainte Chapelle, Paris, the upper one in that case being connected as an accessory to a palace. St. Francesco, at Assisi, is another splendid example. Others come to mind, as the twin groined upper and lower churches at Schwarzhof, with the square belfry rising at the crossing supporting its tall spire. Or, again, witness the double chapels of Eger Castle, Bohemia. Collegiate, ecclesiastical, or monastic establishments, with their adjacent buildings, mostly covered considerable sites, and included many purposes grouped round their church, which dominated the whole composition, as also happened, of course, in most of our large modern parochial centers.

This American project, set on so limited a plot, obviously renders the skyscraper form inevitable in such a city. This must be so, whatever uses were applied to the subordinate parts of the scheme. Moreover, apart from these precise considerations in relation to the novelty of the particular program thus briefly described, it may be incidentally remembered that in the Middle Ages plays were periodically performed in churches and certain Psalms before then were accompanied by dancing. Usually, early basilican church plans provided cloistered baptisteries with a pool or

spring set in the midst of a garth for the total immersion of the catechumens who congregated in the western narthex, which is still to be seen, marked off by a line crossing the nave next to where the font stands at Durham Cathedral. The swimming bath and gymnasium connected with the projected Broadway Temple at New York for promoting physical displays and aquatic events, arise, of course, from quite different ideals, and the absence of any school accommodation is equally distinctive. The architect cannot fail to recognize these conditions, and the lighting of such a building, and the provision of elevators to the several floor levels, as well as ample contrivance of emergency exits, must manifestly influence the architectural treatment irrespective of the ethical or religious aspects of the problem. Structurally, too, the weight of the swimming bath and its adjuncts naturally will determine the design, besides controlling the layout of the auditorium or cruciform "church" situated in the substructure just above the street level below which the basement will possibly be contrived after the manner of a crypt.

PERSONALS

Leonard L. Broida and Maurice G. Usan have opened an office for the general practice of architecture at 701 Century Building, Pittsburgh, Pa. Manufacturers' catalogs and samples are desired.

Edward M. Adelson, architect and engineer, is now located in his new offices in the Municipal Bank Building, Pitkin and Stone Avenues, Brooklyn, N. Y. Mr. Adelson's former address was 1778 Pitkin Avenue.

Bertram N. Marcus, having discontinued his association with Simon I. Schwartz and Arthur Gross with whom he was practicing architecture under the firm name of Schwartz & Gross—B. N. Marcus, announces the opening of architectural offices at 145 West Fifty-seventh Street, New York City.

C. Howard Crane, architect, and Elmer George Kiehler, associate, Huron Building, Detroit, announce the admission of Ben A. Dore, for four years associated with them as chief designer, as a member of the firm. Prior to his connection with Mr. Crane, Mr. Dore was chief architectural designer for the Dominion Government.

* Reprinted from *The Builder*, London.

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The purpose, simply stated, is to afford an organization which, it is believed, will become a most important element in architectural practice and building operations, a medium through which it may, without expense to itself, reach a class of readers that are most intimately identified with the field of the activities of The American Specification Institute.

Publishers, THE AMERICAN ARCHITECT AND THE ARCHITECTURAL REVIEW.

OUTLINE OF TENTATIVE SPECIFICATIONS FOR FURRING, LATHING AND PLASTERING

(A. S. I. Serial No. 36.10)

I. CONTRACT AND LEGAL

1. Parties:
2. Drawings:
3. Agreement:
4. Terms of Payment:
5. General Conditions:
6. Regulations and Codes:
7. Standards:

II. ECONOMICS

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 - 8-1. Work Included:
 - 8-2. Work Not Included:
9. Methods of Analysis and Comparison of Bids:
 - 9-1. Methods:
 - 9-2. Basis:

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 - 11-1. Units of Ornament to be Modelled:

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- 13-12. Hair:

- 13-13. Gypsum Plasters:

- 13-14. Keene's Cement:

- 13-15. Casting Cement:

- 13-16. Caen Stone Cement:

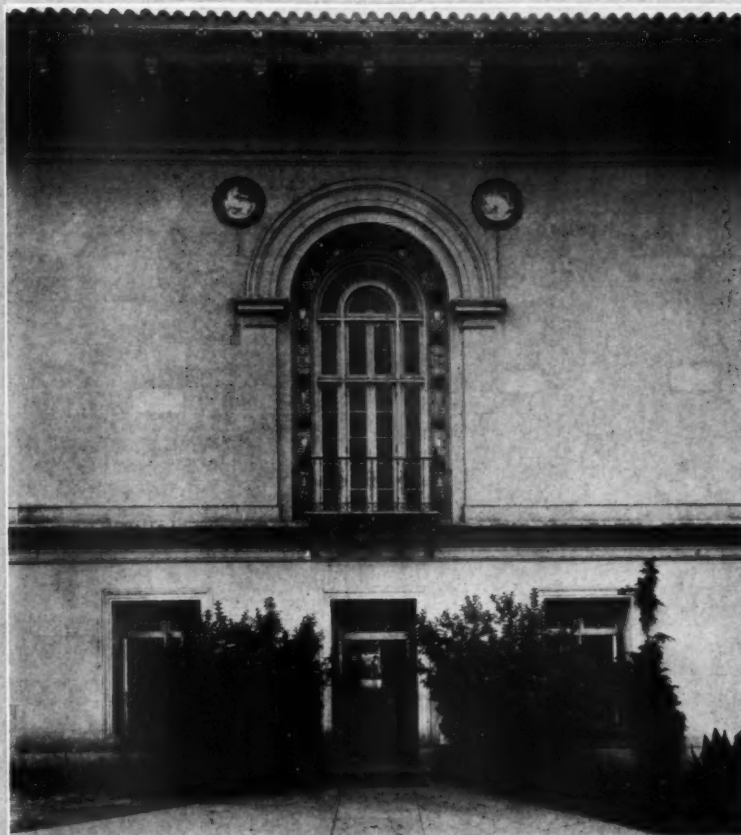
- 13-17. Other Special Cement Finishes:

- 13-18. Other Prepared Plasters:

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- 13-20. Sgraffitto:





Details of Facade, Library, University of Texas, Austin. Cass Gilbert, Architect.
Terra Cotta frieze, rondels and architraves mainly in blue, yellow and white glazes
with buff limestone walls. Cornice wood.

COLOR IN ARCHITECTURE

Color as an element in design is receiving widely increasing recognition as an essential in the future development of architecture.

Early in October the National Terra Cotta Society will issue a revised and enlarged work on this subject featuring many fine instances of recently completed buildings with many suggestive color plates for the treatment of the facade in polychrome and examples of early Italian work in color.

Distribution will be made upon application from architects interested in the subject. Address

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- 13-21. Scagliola:
- 14. Sizes, Weights, Gauges:
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- 21. Grounds:
- 22. Dampproofing of Masonry Surfaces:
- 23. Treatment of Concrete Surfaces:
- 24. Ceiling and Other Hung Furring:
- 25. Wall, Partition and Standing Furring:
- 26. Painting of Furring:
- 27. Lathing:
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- 29. Installation of Other Plaster Bases:
- 30. Corner Beads, Base, Trim, Etc.
- 31. Surfaces to be Plastered:
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OUTLINE OF TENTATIVE SPECIFICATIONS FOR SLATE ROOFING

(A. S. I. Serial No. 33.10)

I. CONTRACT AND LEGAL

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- 2. Drawings:

- 3. Agreement:
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- 5. General Conditions:
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- 7. Standards:

II. ECONOMICS

- 8. Scope of Contract:
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- 12. Degree of Permanency of Color.

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- 16. Reference Examples:

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VI. DESIGN AND CONSTRUCTION

- 19. Graduation and Character of Laying:
 - 19-1. Regular or Irregular Graduation:
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 - 22-5. Ridges:
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- 23. Protection of Work:

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- 25. Inspection:
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 - 25-2. Architect's Approval:
- 26. Guarantees:
- 27. Rejection:

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