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DEVOTED TO THE ART, SCIENCE, AND BUSINESS OF BUILDING

Index for 1914

VOLUME TWENTY-THREE, JANUARY TO DECEMBER INCLUSIVE

ROGERS AND MANSON COMPANY, Publishers

NEW YORK : : : : : BOSTON

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THE BRICKBVILDER AN ARCHITECTVRAL MONTHLY

VOL. 23

JANUARY
1914

NO. 1

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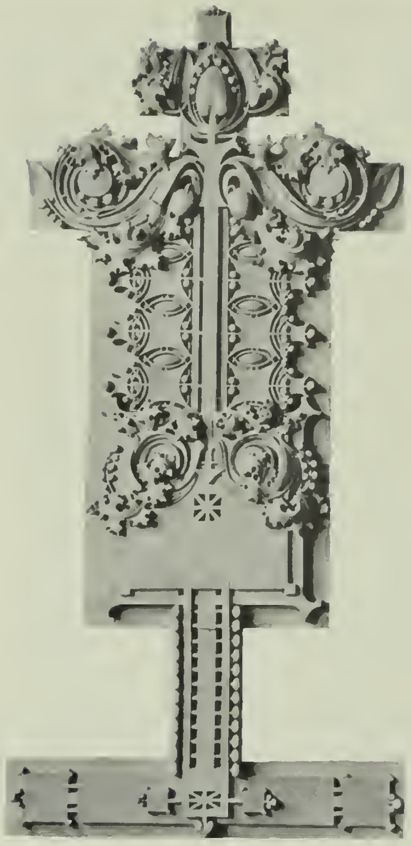

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Frank P. Nichols announces that he has opened an office at 501 Conover Building, Dayton, Ohio, for the practice of architecture.

Albert W. Burgren, architect, formerly of the firm of T. Patterson Ross and A. W. Burgren, announces that he has opened offices in the Holbrook Building, 58 Sutter street, San Francisco.

Charles H. E. Horn, formerly with Edbrooke and Horn, announces that he has opened offices for the practice of architecture at 712–714 Gas & Electric Building, Denver, Colo.

The partnership of Giesecke and Stevens is announced for the practice of architecture with offices in the Littlefield Building, Austin, Tex.

Edward Crosby Doughty, Ecole des Beaux-Arts, Paris, France, Frederic George Bates, formerly Associate Architect with J. Milton Dyer, of Cleveland, and James Allen Kane, formerly Chief Designer for Parker, Thomas & Rice, architects, of Boston and Baltimore, announce their co-partnership for the practice of architecture, under the firm name of Kane, Bates, & Doughty, with offices at 2203–13–14 Dime Savings Bank Building, Detroit, Mich.

Isadore Feldman, for the past seven years connected with the office of J. P. Hynes, architect, has opened offices for the practice of architecture at 44 Adelaide st., West, Toronto, Ont.

Wasmansdorf & Eastman, architects, Lewiston, Mont., announce the opening of an office at Great Falls, Mont.

William Carver, architect, announces the opening of an office in Phœnix, Ariz.

R. Maury Browne and Robert C. Lehman announce that they have formed a partnership under the firm name of Browne & Lehman for the practice of architecture at 1618 Bank of Commerce Building, Norfolk, Va.

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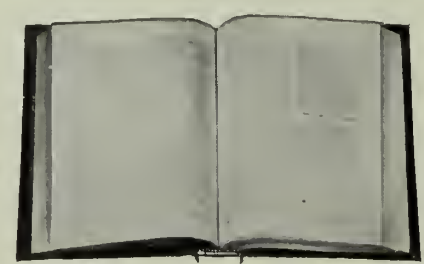

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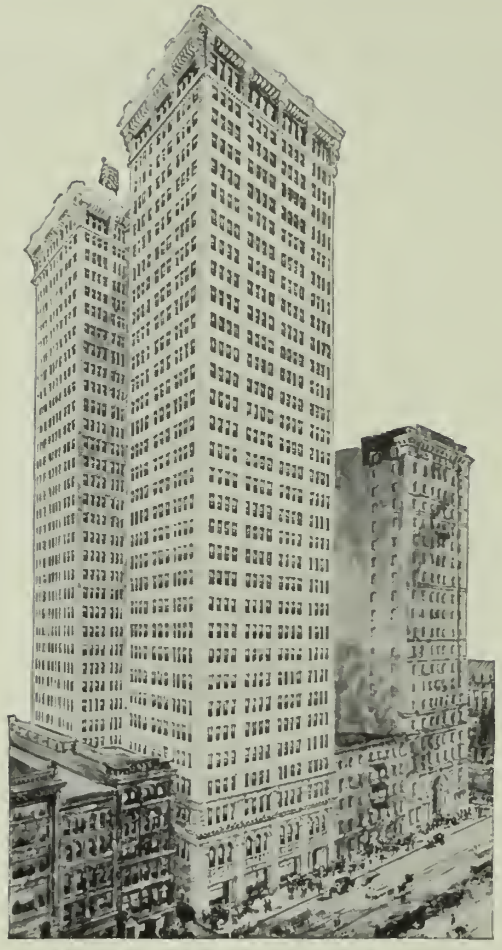

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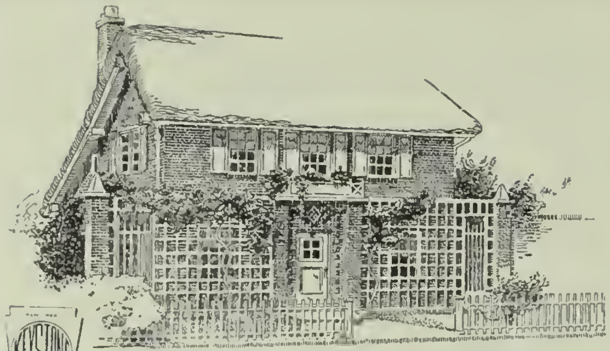

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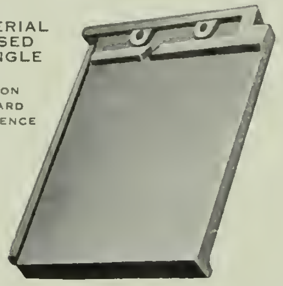

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NOTE—To those of the architectural profession interested in the competition for a $7500 residence faced with Hy-tex Brick, announced in this issue of The Brickbvilder, we shall be glad to send Hy-tex literature on request. Simply ask any of our offices for a "Competition Packet."

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Mentions

Third Prize, $150
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Competition Closes February 10, 1914

PROGRAM

THE problem is a detached house, to be faced with Hy-Tex brick at a cost not to exceed $7,500. The style of the house and plan arrangement is left entirely to the designer; it should, however, provide the usual accommodations and conveniences for a small American family of moderate means. It is especially desired that the design should show generous appreciation of good brickwork, and in this connection originality in the treatment of the facing possibilities of the material is courted. The location may be assumed in a town, small city, or suburb of a large city. Shape and size of lot may be established arbitrarily by the designer: the land is level.

The cost of the house complete, exclusive of the land, must be figured at 22 cents per cubic foot. This price must include cost of excavation, plumbing, heating, electric wiring, hardware and painting, in addition to the other costs of materials and construction. Measurements must be taken from the outside face of exterior walls and from the level of the basement floor to the average height of all roofs, measured to a point two-thirds of the distance from the highest cornice to the ridge. Porches, verandas, and other additions are to be figured separately at one-fourth (twenty-five per cent) of their total cubage, provided they project beyond the bearing walls, and at one hundred per cent if provided for within the bearing walls. All cubage and other dimensions will be checked before the drawings are submitted to the jury. Those designs which exceed the limit of cost or which do not meet the other requirements of the program will not be considered.

The jury will give consideration first, to the fitness of the design, to the material employed esthetically considered; secondly, to the excellence of plan.

On the drawing, in a space measuring 6 by 5 inches enclosed in border line, is to be given, at a size which will permit of three-quarters reduction, the cubage of the house multiplied by the cost per cubic foot, and the various items, enumerated with costs, which go to make up the total cost of the house. An additional value will be given to the work if the style and color of brick chosen are indicated on the drawing either by a key or a series of notes printed on the sheet.

This competition is being given for two distinct purposes. First: to encourage THE BRICKBUILDER in its effort to create a wholesome brick architecture in America and to give to architects and architectural draftsmen of the country an opportunity to measure their skill with one another. Second: to encourage a greater and more extended use of Hy-tex Brick in their various colors, textures, and forms. These brick are manufactured by the Hydraulic-Press Brick Company, the patrons of this competition and the contestants will be helped by a study of the catalogues and booklets issued by this company, which, upon application to the nearest office, will be sent to any architect desiring them. (See addresses on preceding page.)

CONSTRUCTION

Methods usually employed in the construction of brick walls as to bonding, anchorage, etc. may be followed, the exterior walls to be wholly faced with brick.

DRAWING REQUIRED. (There is to be but one.)

On a sheet of white paper measuring exactly 26 by 20 inches with plain black border lines drawn one inch from edges, giving a space within the border lines of 24 by 18 inches, give a pen and ink perspective of the house, without wash or color, drawn at a scale of 4 feet to the inch; plans of first and second floors at a scale of 8 feet to the inch; a detail showing bond or other points of interest on exterior walls; enough detail sketches, including treatment of main entrance, to fill out sheet. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit. The plans are to be blocked in solid. Height of floors to be given on section. A graphic scale must accompany the plans.

Very thin paper, mounted paper, or cardboard is prohibited.

The drawing is to be signed by a *nom de plume* or device, and accompanied by a sealed envelope, bearing the *nom de plume* and containing the true name and address of the contestant within.

The drawing is to be delivered flat, or rolled (packed so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before February 10, 1914.

Drawings submitted in this competition are at owner's risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five members of the architectural profession representing different sections of the country.

The prize drawings are to become the property of THE BRICKBUILDER and the right is reserved by THE BRICKBUILDER to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing, in the sealed envelopes containing their names, ten cents in stamps.

Designs submitted in this competition will be returned direct from the office of THE BRICKBUILDER to the contestants.

For the design placed first there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This competition is open to all architects and architectural draftsmen.
The prize and mention drawings will be published in THE BRICKBUILDER.
This competition is conducted under the patronage of the Hydraulic-Press Brick Company.

THE BRICKBVILDER

VOLUME XXIII NUMBER 1

CONTENTS *for* JANUARY 1914

PLATE ILLUSTRATIONS

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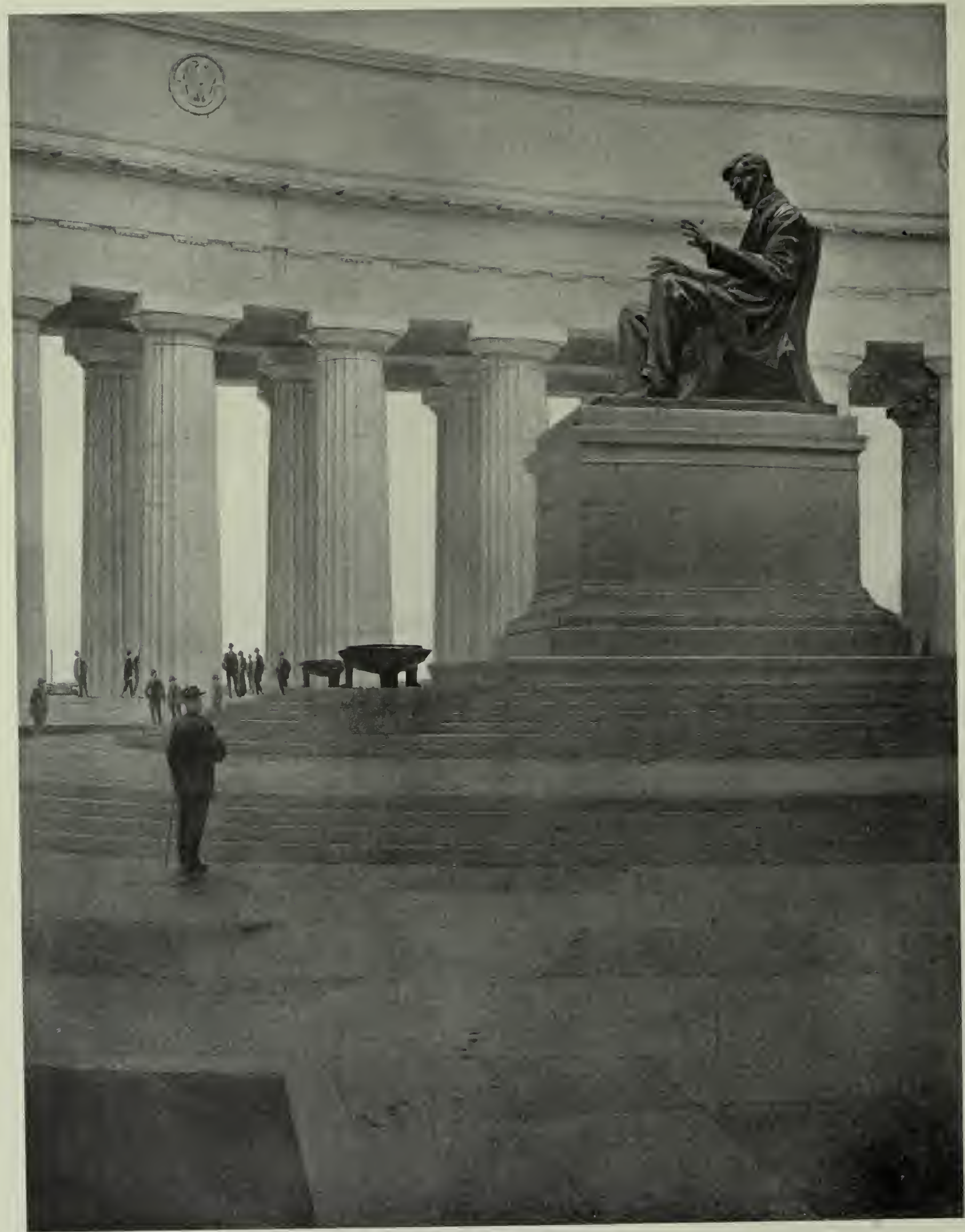


DESIGN SUBMITTED FOR THE LINCOLN MEMORIAL, WASHINGTON, D. C.
BY JOHN RUSSELL POPE, ARCHITECT.

OTTO R. EGGERS, DELINEATOR.

See article on page 7.

THE BRICKBVILDER

VOLUME XXIII JANUARY, 1914 NUMBER 1

Architectural Acoustics.

BUILDING MATERIAL AND MUSICAL PITCH.

By WALLACE C. SABINE.

Harvard University.

THE absorbing power of the various materials that enter into the construction and furnishing of an auditorium is but one phase in the general investigation of the subject of architectural acoustics which the writer has been prosecuting for the past eighteen years. During the first five years the investigation was devoted almost exclusively to the determination of the coefficients of absorption for sounds having the pitch of violin C (512 vibrations per second). The results were published in the *American Architect* and the *Engineering Record* in 1900. It was obvious from the beginning that an investigation relating only to a single pitch was but a preliminary excursion, and that the complete solution of the problem called for an extension of the investigation to cover the whole range in pitch of the speaking voice and of the musical scale. Therefore during the years which have since elapsed the investigation has been extended over a range in pitch from three octaves below to three octaves above violin C. That it has taken so long is due to the fact that other aspects of the acoustical problem also pressed for solution, such for example as those depending on form, — interference, resonance, and echo. The delay has also been due in part to the nature of the investigation which has necessarily been opportunist in character and, given every opportunity, somewhat laborious and exhausting. Some measure of the labor involved may be gained from the fact that the investigation of the absorption coefficients for the single note of violin C required every other night from twelve until five for a period of three years.

While many improvements have been made in the methods of investigation and in the apparatus employed since the first paper was published fourteen years ago, the present paper is devoted solely to the presentation of the results. I shall venture to discuss, although briefly, the circumstances under which the measurements were made, my object being to so interest architects that they will call attention to any opportunities which may come to their notice for the further extension of this work; for, while the absorbing powers of many materials have already been determined, it is evident that the list is still incomplete. For example, the coefficient of glass has been determined only for the note first studied, C, an octave above middle C. In 1898 the University had just completed the construction of some greenhouses in the Botanical Gardens, which, before the plants were moved in, fulfilled admirably the conditions necessary for accurate experimenting. Glass formed a very large part of the area of the enclosing surfaces, all, in fact, except the floor, and this was of concrete whose coefficient of absorption was low and had already been determined with accuracy. By this good fortune it was possible to determine the absorbing power of single-thickness glass. But at that time the apparatus was adapted only to the study of one note; and as the greenhouse was soon fully occupied with growing plants which could not be moved without danger, it was no longer available for the purpose when the scope of the investigation was extended. Since then no similar or nearly so good opportunity has presented itself, and the absorbing power of this important structural surface over the range of the musical scale has not as yet been determined. There was what seemed for the moment to be an opportunity for obtaining this data in an indoor tennis court which Messrs. McKim, Mead, and White, were erecting at Rhinebeck on the Hudson, and the architects undertook to secure the privilege of experimenting in the room, but inquiry showed that the tennis court was of turf, the absorption of which was so large and variable as to prevent an accurate determination of the coefficients for the glass. The necessary conditions for such experiments are that the material to be investigated shall be large in area, and that the other materials shall be small in area, low in power of absorption, and constant in character; while a contributing factor to the ease and accuracy of the investigation is that the room shall be so located as to be very quiet at some period of the day or night. The present paper is therefore a report of progress as well as an appeal for further opportunities, and it is hoped that it will not be out of place at the end of the paper to point out some of the problems which remain and ask that interested architects call attention to any rooms in which it may be possible to complete the work.

The investigation does not wholly wait on opportunity. A special room, exceptionally well adapted to the purpose in size, shape, and location, has been constantly available for the research in one form or another. This room, initially lined with brick set in cement, has been lined in turn with tile of various kinds, with plaster, and with plaster on wood lath, as well as finished from time to time in other surfaces. This process, however, is expensive, and carried out in completeness would be beyond what could be borne personally. Moreover, it has further limitations. For example, it is not possible in this room to determine the absorbing power of glass windows, for one of the essential features of a window is that the outside space to which the sound is transmitted shall be open and unobstructed. An inner lining of glass, even though this be placed several inches from the wall, would not with certainty represent normal conditions or show the effect of windows as ordinarily employed in an auditorium. Notwithstanding these limitations, this room, carefully studied in respect to the effects of its peculiarities of form, especially such as arise from interference and resonance, has been of great service.

Wall and Ceiling Surfaces.

It is well to bear in mind that the absorption of sound by a wall surface is structural and not superficial. That it is superficial is one of the most widespread and persistent fallacies. When this investigation was initially undertaken in an endeavor to correct the acoustics in the lecture room of the Fogg Art Museum, one of the first suggestions was that the walls were too smooth and should be roughened. The proposal at that time was that the walls be replastered and scarred with the toothed trowel in a swirling motion and then painted, a type of decoration common twenty years ago. A few years later inquiries were received in regard to sanded surfaces, and still later in regard to a rough, pebbly surface of untroweled plaster; while within the past three years there have been many inquiries as to the efficiency of roughened brick or of rough hewn stone. On the general principle of investigating any proposal so long as it contained even a possibility of merit, these suggestions were put to test. The concrete floor of a room was covered with a gravel so sifted that each pebble was about one-eighth of an inch in diameter. This was spread over the floor so that pebble touched pebble, making a layer of but a single pebble in thickness. It showed not the slightest absorbing power, and there was no perceptible decrease in reverberation. The room was again tried with sand. Of course it was not possible in this case to insure the thickness of a single grain only, but as far as possible this was accomplished. The result was the same. The scarred, the sanded, the pebbly plaster, and the rough hewn stone are only infinitesimally more efficient as absorbents than the same walls smooth or even polished. The failure of such roughening of the wall surfaces to increase either the absorption or the dispersion of sound reflected from it is due to the fact that the sound waves, even of the highest notes, are long in comparison with the dimensions of the irregularities thus introduced.

The absorption of sound by a wall is therefore a structural phenomenon. It is almost infinitely varied in the details of its mechanism, but capable of classification in a few simple modes. The fundamental process common to all is an actual yielding of the wall surface to the vibrating pressure of the sound. How much the wall yields and what becomes of the motion thus taken up, depends on the nature of the structure. The simplest type of wall is obviously illustrated by concrete without steel reinforcement, for in this there is the nearest approach to perfect homogeneity. The amount that this wall would yield would depend upon its dimensions, particularly its thickness, and upon the density, the elasticity, and the viscosity of the material. It is possible to calculate this directly from the elements involved, but the process would be neither interesting nor convincing to an architect. It is in every way more satisfactory to determine the absorbing power by direct experiment. A concrete wall was not available. In its stead, the next more homogeneous wall was investigated, an eighteen-inch wall of brick set in cement. This wall was a very powerful reflector and its absorbing power exceedingly slight. Without going into the details of the experiment, it will suffice here to say that this wall absorbed one and one-tenth per cent of the lowest note investigated, a C two octaves below middle C, having a vibration frequency of sixty-four per second; one and two-tenths per cent of sounds an octave in pitch higher; one and four-tenths per cent of sounds of middle C; one and seven-tenths per cent for violin C; two per cent for sounds having a pitch one octave above; two and three-tenths for two octaves above; and two and one-half per cent for sounds having a pitch three octaves above violin C, that is to say, 4094 vibrations per second, the highest note investigated. These may be written as coefficients of absorption thus:

C_1, .011; C_2, .012; C_3, .014; C_4, .017; C_5, .020; C_6, .023; C_7, .025.

There is a graphical method of presenting these results which is always employed in physics, and frequently in other branches of science, when the phenomenon under investigation is simply progressive and dependent upon a single variable. Whenever these conditions are satisfied — and they are usually satisfied in any well conducted investigation, — the graphical representation of the results takes the form of a diagram in which the results of the measurements are plotted vertically at horizontal distances determined by the variable condition. Thus in the adjacent diagram (Curve 1, Fig. I) the coefficients of absorption are plotted vertically, the varying pitch being represented by horizontal distances along the base line. Such a diagrammatic representation serves to reveal the accuracy of the work. If the phenomenon is a continuous one, the plotted points should lie on a smooth curve; the nearness with which they do so is a measure of the accuracy of the work if the points thus plotted are determined by entirely independent experiments. This form of diagrammatic representation serves another purpose in permitting of the convenient interpolation for values intermediate between observed values. The coefficients for each type of wall surface will be given both numerically and diagrammatically. In order to avoid confusion, the observed points have been indicated only on the curve for wood sheathing in Fig. I. It will suffice to say merely that the other curves on this diagram are drawn accurately through the plotted observations.

The next wall surface investigated was plaster on hollow terra cotta tile. The plaster coat was of gypsum hard plaster, the rough plaster being five-eighths of an inch in thickness. The result shows a slightly greater absorption due to the greater flexibility of a hollow tile wall rather than to any direct effect of the plaster. The difference, however, is not great. The numerical results are as follows (Curve 2, Fig. I):

C_1, .012; C_2, .013; C_3, .015; C_4, .020; C_5, .028; C_6, .040; C_7, .050.

C_1, is the lowest note, 64 vibrations per second; C_7, the highest, 4,096 per second; the other notes at octave intervals between.

Plaster on an otherwise homogeneous sustaining wall is a first step in the direction of a compound wall, but a vastly greater step is taken when the plaster instead of being applied directly to the sustaining wall is furred to a greater or less distance. In a homogeneous wall, the absorption of sound is partially by communication of the vibration to the material of the wall, whence it is telephoned throughout the structure, and partly by a yielding of the wall as a whole, the sound being then communicated to outside space. In a compound wall in which the exposed surface is furred from the main structure of the wall, the former vibrates between the furring strips like a drum. Such a surface obviously yields more than would a surface of plaster applied directly to tile or brick. The energy which is thus absorbed is partly dissipated by the viscosity of the plaster, partly by transmission in the air space behind it, and partly through the furring strips to the main wall. The mechanism of this process is interesting in that it shows how the free standing plaster may absorb a great amount of sound and may present a greater possibility of resonance and of selective absorption in the different registers of pitch. It is obvious that we are here dealing with a problem of more complicated aspect. It is conceivable that the absorption coefcient should depend on the nature of the supporting construction, whether wood lath, wire lath, or expanded metal lath; on the distance apart of the studding, or the depth of the air space; or, and even more decidedly, on the nature of the plaster employed, whether the old lime plaster or the modern quick setting gypsum plaster. A start has been made on a study of this problem, but it is not as yet so far advanced as to permit of a systematic correlation of the results. It must suffice to present here the values for a single construction. The most interesting case is that in which lime plaster was applied to wood lath, on wood studding at fourteen-inch spacing, forming a two-inch air space. The coefficients of absorption before the finishing coat was put on were (Curve 3, Fig. I):

C_1, .048; C_2, .020; C_3, .024; C_4, .034; C_5, .030; C_6, .028; C_7, .043.

The values after the finishing coat was put on were as follows (Curve 4, dotted, Fig. I):

C_1, .036; C_2, .012; C_3, .013; C_4, .018; C_5, .045; C_6, .028; C_7, .055.

It should be remarked that the determination of these coefficients was made within two weeks after the plaster was applied and also that the modern lime is not the same as the lime used thirty years ago, either in the manner in which it is handled or in the manner in which it sets and dries. It is particularly interesting to note in these observations, more clearly in the plotted curves, the phenomenon of resonance as shown by the maxima, and the effect of the increased thickness produced by the skim coat in increasing the rigidity of the wall, decreasing its absorbing power, and shifting the resonance.

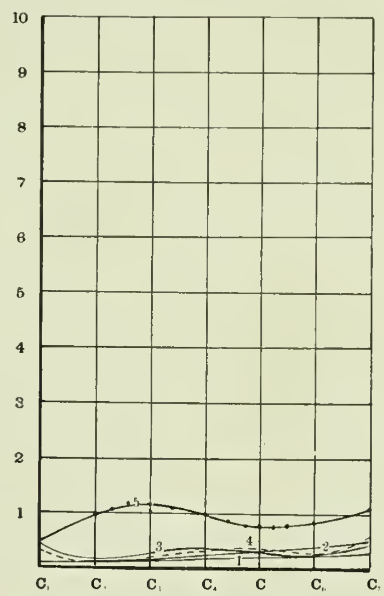


Fig. I.

Absorbing power for sounds varying in pitch from C = 64 to C = 4,096: 1, brick wall; 2, plaster on terra cotta hollow tile; 3, plaster on wire lath; 4, same with skim coat; 5, wood sheathing.

The most firmly established traditions of both instrumental and architectural acoustics relate to the use of wood and excite the liveliest interest in the effect of wood sheathing as an interior surface for auditoriums; nor are these expectations disappointed when the phenomenon is submitted to exact measurement. It was not easy to find satisfactory conditions for the experiment, for not many rooms are now constructed in which plaster on studding and sufficiently thin forms a very considerable factor. After long waiting a room suitable in every respect, except location, became available. Its floor, its whole wall, indeed, its ceiling was of pine sheathing. The only other material entering into its construction was glass in the two windows and in the door. Unfortunately, the room was on a prominent street, and immediately adjacent was an all-night lunch room. Accurate experiments were out of the question while the lunch room was in use, and it was, therefore, bought out and closed for a few nights. Even with the freedom from noise thus secured, the experiments were not totally undisturbed. The traffic past the building did not stop sufficiently to permit of any observations until after two o'clock in the morning and began again by four. During the intervening two hours it was possible to snatch periods for observation, but even these periods were disturbed through the curiosity of passers and the more legitimate concern of the police.

Anticipating the phenomenon of resonance in wood in a more marked degree than in any other material, new apparatus was designed permitting of measurements at more frequent intervals of pitch. The new apparatus was not available when the work began and the coefficients for the wood were determined at octave intervals, with results as follows:

C_1, .064; C_2, .098; C_3, .112; C_4, .104; C_5, .081; C_6, .082; C_7, .113.

These results when plotted showed clearly a very marked resonance. The more elaborate apparatus was hastened to completion and the coefficients of absorption determined for the intermediate notes of E and G in each of the middle four octaves. The results of both sets of experiments when plotted together give Curve 5 in Fig. I. The accuracy with which these fourteen points fall on a smooth curve drawn through them is all that could be expected in view of the conditions under which the experiment was conducted and the limited time available. Only one point falls far from the curve, that for middle C (C_3, 256). The general trend of the curve, however, is established beyond reasonable doubt. It is interesting to note the very great differences between this curve and those obtained for solid walls, and even for plastered walls. It is especially interesting to note the great absorption due to the resonance between the natural vibration of the walls and the sound, and to observe that this maximum point of resonance lies in the lower part, although not in the lowest part, of the range of pitch tested. The pitch of this resonance is determined by the nature of the wood, its thickness, and the distance apart of the studding on which it is supported. The wood tested was North Carolina pine, five-eighths of an inch in thickness and on fourteen-inch studding. It is, perhaps, not superfluous to add at this time that a denser wood would have had a lower pitch for maximum resonance, other conditions being alike; an increased thickness would have raised the pitch of the resonance; while an increased distance between the studding would have lowered it. Finally it should be added that the best acoustical condition both for music and for speaking would have been with the maximum resonance an octave above rather than at middle C.

Even more interesting is the study of ceramic tile made at the request of Messrs. Cram, Goodhue, and Ferguson. The investigation had for its first object the determination of the acoustical value of the tile as employed in the groined arches of the Chapel of the United States Military Academy at West Point. The investigation then widened its scope, and, through the skill and great knowledge of ceramic processes of Mr. Raphael Guastavino, led to really remarkable results in the way of improved acoustical efficiency. The resulting construction has not only been approved by architects as equal, if not better, in architectural appearance to ordinary tile construction, but it is, so far as the writer knows, the first finished structural surface of large acoustical efficiency. Its random use does not, of course, guarantee good acoustical quality in an auditorium, for that depends on the amount used and the surface covered.

The first investigation was in regard to tile used at West Point, with the following result:

C_1, .012; C_2, .013; C_3, .018; C_4, .029; C_5, .040; C_6, .048; C_7, .053.

These are plotted in Curve 1, Fig. II. The first endeavors to improve the tile acoustically had very slight results, but such as they were they were incorporated in the tile of the ceiling of the First Baptist Church in Pittsburgh (Curve 2, Fig. II).

C_1, .028; C_2, .030; C_3, .038; C_4, .053; C_5, .080; C_6, .102; C_7, .114.

There was no expectation that the results of this would be more than a very slight amelioration of the difficulties which were to be expected in the church. In consequence of its use, the tile may be distinguished for purposes of tabulation as Pittsburgh tile. Without following the intermediate steps, it is sufficient to say that the experiments were continued nearly two years longer and ultimately led to a tile which for the conveniences of tabulation we will call Acoustical Tile. The resulting absorbent power is far beyond what was conceived to be possible at the beginning of the investigation, and makes the construction in which this tile is incorporated unique in acoustical value among rigid structures. The coefficients for this construction are as follows:

C_1, .064; C_2, .068; C_3 .117; C_4, .188; C_5, .250; C_6, .258; C_7, .223

graphically shown in Curve 3, Fig. II. It is not a panacea. There is, on the other hand, no question but that properly used it will very greatly ameliorate the acoustical difficulties when its employment is practicable, and used in proper locations and amounts will render the acoustics of many auditoriums excellent which would otherwise be intolerable. It has over sixfold the absorbing power of any existing masonry construction and one-third the absorbing power of the best known felt plotted on the same diagram for comparison (Curve 4). It is a new factor at the disposal of the architect.

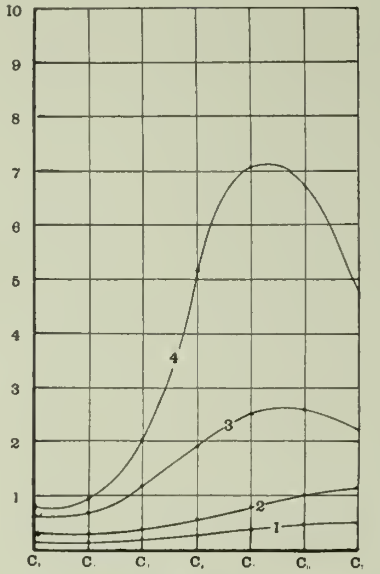


Fig. II.

Absorbing power: 1, West Point tile; 2, Pittsburgh tile; 3, acoustical tile; 4, best felt.

Chairs and Audience.

Equally important with the wall and ceiling surfaces of an auditorium are its contents, especially the seats and the audience.

In expressing the coefficients of absorption for objects which are themselves units and which cannot be figured as areas, the coefficients depend on the system of measurement employed, Metric or English. While the international or metric system has become universal except in English-speaking countries, and even in England and America in many fields, it has not yet been adopted by the architectural profession and by the building trades, and therefore these coefficients will be given in both systems.

Ash settees or chairs, such as are ordinarily to be found in a college lecture room, have exceedingly small absorbing powers. Such furniture forms a very small factor in the acoustics of any auditorium in which it is employed. The coefficients for ash chairs are as follows (Curve 1, Fig. III):

Metric.

C_1, .014; C_2, .014; C_3, .015; C_4, .016; C_5, .017; C_6, .019; C_7, .021.

English.

C_1, .20; C_2, .20; C_3, .21; C_4, .23; C_5, .24; C_6, .27; C_7, .30.

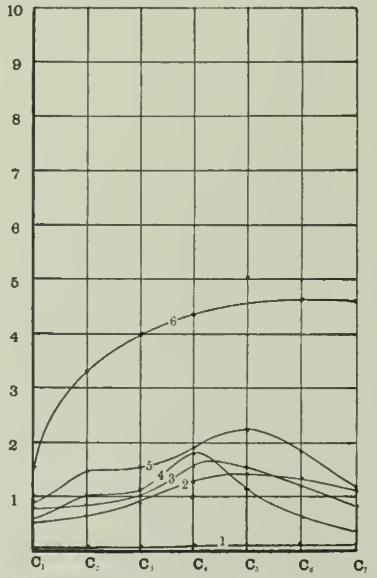


Fig. III.

Absorbing power: 1, bent wood chairs; 2, 3, 4, and 5, various kinds of pew cushions as described in text; 6, audience per person.

The coefficients for settees were also determined, but differ so little from those for chairs that this paper will not be burdened with them. When, however, the seats are upholstered, they immediately become a considerable factor in the acoustics of an empty, or partially empty, auditorium. Of course the chairs either upholstered or unupholstered are not a factor in the acoustics of the auditorium when occupied. The absorbing power of cushions depends in considerable measure upon the nature of the covering and upon the nature of the padding. The cushions experimented upon were such as are employed in church pews, but the coefficients are expressed in terms of the cushion which would cover a single seat. The coefficients are as follows :

Cushions of wiry vegetable fiber covered with canvas and a thin damask cloth (Curve 2, Fig. III) :

Metric.

C_1, .060 ; C_2, .070 ; C_3, .097 ; C_4, .135 ; C_5, .148 ; C_6, .132 ; C_7, .115.

English.

C_1, .87 ; C_2, 1.01 ; C_3, 1.40 ; C_4, 1.95 ; C_5, 2.13 ; C_6, 1.93 ; C_7, .166.

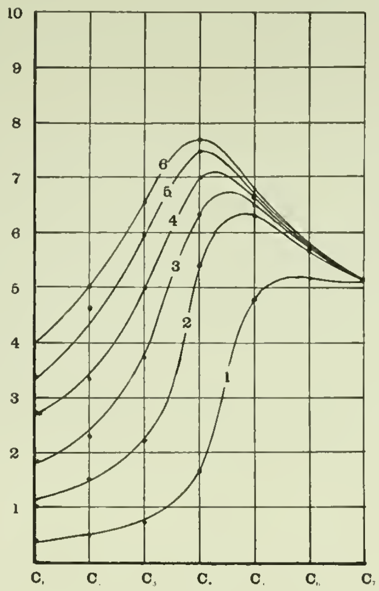


Fig. IV.

Absorbing power of felt of varying thickness, from one-half to three inches, showing by extrapolation the absorption by thin fabrics of the upper register only.

Cushions of long hair covered with canvas and with an outer covering of plush (Curve 3, Fig. III):

Metric.

C_1, .080 ; C_2, .092 ; C_3, .105 ; C_4, .165 ; C_5, .155 ; C_6, .128 ; C_7, .085.

English.

C_1, 1.15 ; C_2, 1.32 ; C_3, 1.52 ; C_4, .238 ; C_5, .224 ; C_6, .185 ; C_7, .123.

Cushions of hair covered with canvas and an outer covering of thin leatherette (Curve 4, Fig. III):

Metric.

C_1, .062 ; C_2, .105 ; C_3, .118 ; C_4, .180 ; C_5, .118 ; C_6, .068 ; C_7, .040.

English.

C_1, .90 ; C_2, 1.52 ; C_3, 1.70 ; C_4, 2.60 ; C_5, 1.70 ; C_6, .98 ; C_7, .58.

Elastic felt cushions of commerce, elastic cotton covered with canvas and a short nap plush (Curve 5, Fig. III) :

Metric.

C_1, .092 ; C_2, .155 ; C_3, .175 ; C_4, .190 ; C_5, .258 ; C_6, .182 ; C_7, .120.

English.

C_1, 1.32 ; C_2, 2.24 ; C_3, 2.53 ; C_4, 2.74 ; C_5, 3.71 ; C_6, 2.62 ; C_7, 1.73.

Of all the coefficients of absorption, obviously the most difficult to determine are those for the audience itself. It would not at all serve to experiment on single persons and to assume that when a number are seated together, side by side, and in front of one another, the absorbing power is the same. It is necessary to make the experiment on a full audience, and to conduct such an experiment requires the nearly perfect silence of several hundred persons, the least noise on the part of one vitiating the observation. That the experiment was ultimately successful beyond all expectation is due to the remarkable silence maintained by a large Cambridge audience that volunteered itself for the purpose, not merely once, but on four separate occasions. The coefficients of absorption thus determined lie, with but a single exception, on a smooth curve (Curve 6, Fig. III). The single exception was occasioned by the sound of a distant street car. Correcting this observation to the curve, the coefficients for an audience per person are as follows :

Metric.

C_1, .160 ; C_2, .332 ; C_3, .395 ; C_4, .440 ; C_5, .455 ; C_6, .460 ; C_7, .460.

English.

C_1, 2.30 ; C_2, 4.80 ; C_3, 5.70 ; C_4, 6.34 ; C_5, 6.55 ; C_6, 6.60 ; C_7, 6 60.

Fabrics.

It is evident from the above discussion that fabrics are high absorbents of sound. How effective any particular fabric may be, depends not merely on the texture of its surface and the material, but upon the weave or felting throughout its body, and of course also upon its thickness. An illuminating study of this question can be made by means of the curves in Fig. IV. In this figure are plotted the coefficients of absorption for varying thicknesses of felt. Curve 1 is the absorption curve for felt of one-half inch thickness, Curve 2 of felt of one inch thickness, and so on up to Curve 6, which is for felt of three inches in thickness. It is interesting to contemplate what the result of the process would be were it continued to greater thickness, or in the opposite direction to felt of less and less thickness. It is inconceivable that felt should be used more than three inches in thickness and therefore extrapolation in this direction is of academic interest only. On the other hand, felt with decreasing thickness corresponds more and more to ordinary fabrics. If this process were carried to an extreme, it would show the effect of cheesecloth or bunting as a factor in the acoustics of an auditorium. It is obvious that very thin fabrics absorb only the highest notes and are negligible factors in the range of either the speaking voice or of music. On the other hand, it is evident that great thickness of felt absorbs the lower register without increasing whatever its absorption for the upper register. Sometimes it is desirable to absorb the lower register, sometimes the upper register, but far more often it is desirable to absorb the sounds from C_3 to C_6, but especially in the octave between C_4 and C_5.

The felt used in these experiments was of a durable nature and largely composed of jute. Because wool felt and ordinary hair felt are subject to rapid deterioration from moths, this jute felt was the only one which could be recommended for the correction of auditoriums until an interested participator in these investigations developed an especially prepared hair felt, which is less expensive than jute felt, but which is much more absorbent. Its absorption curve is plotted in Fig. II.

Location.

Such a discussion as this should not close without pointing out the triple relation between pitch, location, and apparent power of absorption. This is shown in Fig. V. Curve 1 shows the true coefficient of absorption of an especially effective felt. Curve 2 is its apparent absorption when placed in a position which is one of loudness for the lower register and of relative silence for the upper register. Curve 2 is the apparent coefficient of absorption of the same felt when placed in a position in the room of maximum loudness for all registers. It is evident from these three curves that in one position a felt may lose thirty per cent and over of its efficiency in the most significant register, or may have its efficiency nearly doubled. These curves relate to the efficiency of the felt in its effect on general reverberation. Its efficiency in the reduction of a discrete echo is dependent to an even greater degree on its location than on pitch.

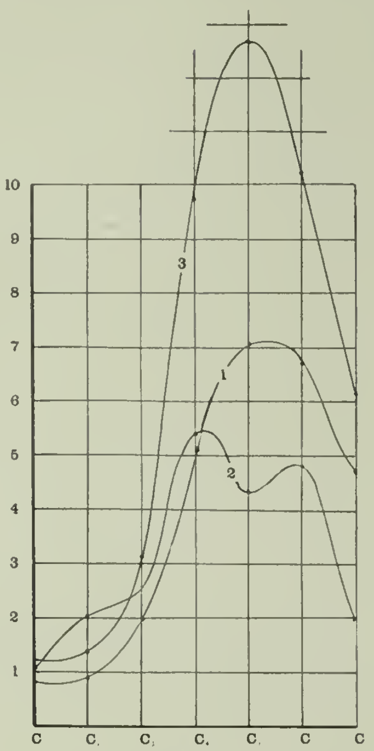


Fig. V.

Double dependence of absorbing power on pitch and on location, showing one of the sources of error which must be guarded against in the determination of coefficients of absorption and in the use of absorbing materials.

The above are the coefficients of absorption for most materials usually occurring in auditorium construction, but there are certain omissions which it is highly desirable to supply, particularly noticeable among these is the absorption curve for glass and for old plaster. It is necessary for such experiments that rooms practically free from furniture should be available and that the walls and ceiling of the room should be composed in a large measure of the material to be tested. The author would appreciate any opportunity to carry out such experiments. The opportunity would ordinarily occur in the construction of a new building or in the remodeling of an old one.

It may be not wholly out of place to point out another modern acoustical difficulty and to seek opportunities for securing the necessary data for its solution. Coincident with the increased use of reinforced concrete construction and some other building forms there has come increased complaint of the transmission of sound from room to room, either through the walls or through the floors. Whether the present general complaint is due to new materials and new methods of construction, or to a greater sensitiveness to unnecessary noise, or whether it is due to greater sources of disturbance, heavier traffic, heavier cars and wagons, elevators, and elevator doors, where elevators were not used before — whatever the cause of the annoyance there is urgent need of its abatement in so far as it is structurally possible. Moreover, several buildings have shown that not infrequently elaborate precautions have resulted disastrously, sometimes fundamentally, sometimes through the oversight of details which to casual consideration seem of minor importance. Here, as in the acoustics of auditoriums, the conditions are so complicated that only a systematic and accurately quantitative investigation will yield safe conclusions. Some headway, perhaps half a year's work, little more than a beginning, was made in this investigation some years ago. Methods of measurements were developed and some results were obtained. Within the past month the use of a room in a new building, together with that of the room immediately below it, has been secured for the period of two years. Between these rooms the floor will be laid in reinforced concrete of two thicknesses, five inches and ten inches, in hollow tile, in brick arch, in mill construction, and with hung ceiling, and the transmission of sound tested in each case. The upper surface of the floor will be laid in tile, in hardwood, with and without sound deadening lining, and covered with linoleum and cork, and its noise to the tread measured.

However, such experiments but lay the foundation. What is needed are tests of the walls and floors of rooms of various sizes, and of the more varied construction which occurs in practice, in rooms connecting with offsets and different floor levels — the complicated conditions of actual building as against the simplified conditions of an orderly experiment. The one will give numerical coefficients, the other, if in sufficiently full measure, will give experience leading to generalization which may be so formulated as to be of wide value. What is therefore sought is the opportunity to experiment in rooms of varied but accurately known construction, especially where the insulation has been successful. Unfortunately with modern building materials acoustical difficulties of all sorts are very numerous.

Design Submitted for The Lincoln Memorial, Washington, D. C., by John Russell Pope, Architect.
Otto R. Eggers, Delineator.

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

I. THE WORK OF OTTO R. EGGERS.

IN presenting the work of Mr. Eggers as the first of a series on American rendering, one feels that a peculiarly excellent choice has been made, for the two reasons, that Mr. Eggers is primarily a designer and not a specialist in rendering, and that the work presents so beautiful a blend of pictorial and architectural effects. Architectural rendering has of late years become more or less of a specialty, and the men who make the exhibition drawings and the color renderings for submission to clients have in the main become a specialized class, which does nothing else, and their ranks are recruited mainly from the architects' offices, but with occasional accessions from the painters. In the old days the perspective drawing (it was not then called a rendering) was almost invariably made in the office of the architect, or often by the architect of the building it depicted, and these old renderings, though oftentimes crude and unintelligent, were perhaps more interesting than the beautiful drawings of the present day because they were personal documents of the designers. This older method gave of course a certain advantage in the securing of work to the architect of pictorial talent — an advantage perhaps undeserved since the picture is not the ultimate aim of the architect. The professional renderer was developed to overcome this disadvantage.

The fact that it is now the habitual practice of most offices, even of large size, to have their rendering done by men outside of the offices, does not mean that the proportion of men among the practising architects, or of draftsmen in their offices who have ability in rendering, has decreased: in fact, the contrary is the case, and not only is there a larger proportion of men who are able to render with some approach to architectural skill, but also the work of these men is of a better grade than it used to be. Mr. Magonigle, for example, made a drawing for his proposed scheme for the Perry Memorial some years ago, which was quite as beautiful a thing as Mr. Long's wonderful drawing of the Hudson Fulton Competition. Mr. Seymour made a rendering of the winning scheme of the Perry Memorial (Friedlander and Seymour, architects), which was one of the best architectural renderings we have ever seen, and although it was a truly architectural rendering in black and white, it still was the type of drawing which could be submitted to a client. Mr. Hornbostel's facility with his pencil is as famous as it is extraordinary, and there is no one perhaps among the men whose business it is to render, who could so wonderfully indicate metal work and besides give the effect of distance, as Mr. Hornbostel has done in his bridge drawings. Mr. Pope, in his student days, and in the course of the earlier years of his practice, made some very lovely colored sketches; Mr. Cass Gilbert has often been represented in the exhibitions by his water-color travel sketches, which he continues to make even at the present day, and when he occasionally does make a rendering, as he did of the Chapel at Oberlin College some years ago, we at once realize that its author was no amateur; Mr. Platt of course was a painter before he became an architect, and has continued to paint to the present time; and while one cannot recall any particular architectural drawings of his, it is highly probable that he has made them and still could. These are but a few examples of practising architects who are called to mind; there are unquestionably as many more in New York, Chicago, and elsewhere of equal ability with those mentioned, as well as a very great number who are perfectly capable of making a drawing which would pass muster in any exhibition ; for example, as Lindeberg, Kiessling, LeBoutillier, Spencer, Wright, and Embury. Beside these men there are again a very great number who are known by the work of their offices rather than by their personal design, whose rendering is extremely familiar, such men, for example, as T. R. Johnson, John Almy Tompkins II, W. T. L. Armstrong, A. M. Githens, André Smith, and others who do make occasional renderings for outside architects, although most of their time is devoted to work in their own offices. From this latter list of names some have been selected for later articles in this series. Fifteen years ago, however, there was not such a crowd of talented names which instantly came to mind, either among the architects themselves or among the professional renderers. In the East Mr. Hughson Hawley had developed a style which was admirably adapted to catch the public eye, and was followed by a host of imitators. Other men of original force, notably Mr. Birch Burdette Long as an independent renderer, and Mr. Wilson Eyre in renderings of his own work, struck an original note which also created followings, but when Eggers' work first began to be shown to the architectural public, it realized that a man had arrived who was an imitator of no one of the three. His work had neither the transparent delicacy of Long's renderings nor the careless force of Mr. Eyre's. If there were any one that he followed, it was rather Jules Guerin. His art, however, was far more architectural than that of Guerin, who after all is an impressionist among renderers, and resembles Long's to the extent that he thoroughly understands architecture and is not afraid to work up detail, although subordinating it to the general color scheme.

Mechanically his greatest innovation was in the use of the air brush, with which he secured the lovely vibrant quality of his skies, and not infrequently a large part of his painting was done in this manner with the details reinforced by the judicious use of pencil, charcoal, Chinese white or color applied in the usual way, as the case seemed to demand. His color schemes have usually been strong ones, brilliantly blue skies with a warm yellow lighting of the buildings, and in the architectural exhibitions they are inevitably placed at focal points, since they are far stronger and richer than most of the colored drawings which are hung ; but they are very rarely crude or garish in spite of the high key of his palette. There has been scarcely an exhibition, in New York at least, for the last half dozen years, which has not contained one or two examples of Mr. Eggers' art. The number has been limited, however, because of the fact above stated that Mr. Eggers is not a specialist in rendering, but is primarily a designer, and has been almost continuously employed in one or another of the New York offices since he began his work. It was as a member of one or the other of these offices that his most beautiful rendering has been done ; for Tracy and Swartwout, for example, two magnificent drawings of the armory and Denver Post Office, and one of the Denver cathedral ; while for John Russell Pope, where he now is and has been for the past few years, he made the drawings of Mr. Pope's scheme for the Lincoln Memorial, two of which are illustrated in this issue (see Frontispiece), as well as that of the Masonic Temple at Washington. No black and white reproductions can do justice to their charm, although they will serve to illustrate the varied character of his work, for he has not confined himself to the medium which he has made peculiarly his own, but is also equally facile in the use of pencil, relieved by flat washes, somewhat after Mr. Gregg's manner, and in pen drawing. In fact some of the most beautiful things that he has ever done have been in pen and ink for frontispieces, book plates, headings, and the like, for which his inspiration has evidently been drawn from the Renaissance etchers and engravers, with a certain leaning toward Piranesi.

Particular attention is called to Mr. Eggers' design and rendering for the new contents page of THE BRICKBVILDER, as an example of his pen and ink work.

There is one point in Mr. Eggers' career which is of notable interest — his style was self-evolved. He had, it is true, some school training both at the Art Students' League in New York and in the ateliers of the Society of Beaux Arts architects, but his period of

House at Wickatunk, N. J. John Russell Pope, Architect.
Otto R. Eggers, Delineator.

study at the Art Students' League was brief, and in the ateliers he was rather a teacher than a student, far advanced beyond the majority of his colleagues, and even of the men in charge of the ateliers in the use and management of color.

One does not find that very many men eminent in their own lines have ever been for a long time students in the sense that they were being taught by some one. In the true sense of the word, Mr. Eggers has always been a student, and probably always will continue to be, since he has carefully studied all art work from the time when he was a boy, and has drawn from all sorts of sources the elements which he has incorporated and made his own. If fault is to be found with his work, it is rather in the direction of over carefulness and of carrying a rendering too far, which is perhaps the last thing one finds to complain of in the present age of haste, and even when this happens as it does in some of his drawings, the picture never falls to pieces into a series of unrelated details, but only becomes a little hard and liney. His services are of course eagerly sought by men who have competitions to render, or hope to obtain a big commission through the presentation of a beautiful drawing, and it is a matter of general regret to the profession that his work does not permit of his giving much time to things outside the office, although it is perhaps best that the artistic side of his capabilities should not be extended too far at the expense of his professional side; and it is good to note that Mr. Pope, himself able to make an excellent rendering, as well as being a great architect, leans almost as heavily on Mr. Eggers' exquisite taste and skill in design as he does upon his ability to make an attractive rendering.

U. S. Post Office, Denver, Colo. Tracy & Swartwout, Architects.
Otto R. Eggers, Delineator.

House at Scarsdale, N. Y. Parker Morse Hooper, Architect.
Otto R. Eggers, Delineator.

The Lighting of Public and Semi-Public Buildings.

FIFTH PAPER.

ACCOMPANIED BY A SERIES OF ILLUSTRATIONS SHOWING SPECIFIC LIGHTING INSTALLATIONS.

By L. B. MARKS.
Consulting Illuminating Engineer, New York City.

HOTELS AND CLUBS.

IN the lighting of hotels the lobby, reception room, and dining and banquet rooms usually receive most attention.

The tendency has been to carry the scale of illumination in these rooms, especially in the lobby, far beyond the needs of good lighting, and to bedeck the ceiling, walls, and columns with brilliant lamps. Fortunately, improvement in the efficiency of lamps, both electric and gas, is now leading to the more extended use of diffusing glassware to cover the lamps and soften the light. Semi-indirect lighting and indirect lighting, either alone or supplemented by direct lighting, are being used to a much greater extent than heretofore. A very happy combination of lighting units results from the provision of a moderate intensity of general illumination by indirect or semi-indirect lighting and a higher intensity of local illumination produced by table lamps, brackets, or floor standards. Such an arrangement also lends itself well to the attainment of desirable color effects.

In Fig. XXXIX is shown the method of lighting the Palm Room (dining hall) of the Bellevue-Stratford Hotel, Philadelphia. The illumination is carried out by indirect lighting from the ceiling coves, supplemented by candelabra on tall uprights. The lights on the candelabra are shaded by brown silk shades which give a tinted, mellow light, the color of which harmonizes with the room decorations. This arrangement serves the double purpose of relieving any impression of "coldness" that may be due to the use of indirect lighting alone and affording a means of rest to the eye by virtue of the color difference.

The average ceiling height in this room is twenty-one feet; the finish of the ceiling is cream-white, broken by a very pleasing series of paintings appropriate to the surroundings. The cove lighting system permits of the effectual display of the paintings. The side walls are finished in terra cotta buff, and the chairs in old gold with green velour upholstering.

The current consumption was a secondary consideration on the part of the owners of the hotel, who sought first of all a lighting scheme which would lend itself to the decorative effect desired. The intensity of illumination on the tables averages 2.0 foot-candles, with a minimum of 1.6 and a maximum of 2.6. The power required for the indirect cove lighting, in which tubular tungsten lamps are used, is three watts per square foot.

Fig. XXXIX. Palm Room (dining hall), Bellevue-Stratford Hotel, Philadelphia, showing indirect lighting from ceiling coves, supplemented by direct lighting from candelabra on tall floor standards.

Fig. XL. Transportation Club, New York City.

Fig. XLI. Reception Room, Transportation Club, Denver, Colo.

Examples of Semi-indirect Lighting with Lamps Enclosed in Diffusing Glass Globes.

THE illustrations above show the semi-indirect bowl lighting fixtures in the dining room of the Transportation Club, New York City, and the reception room of the Transportation Club, Denver. The important point in semi-indirect lighting is to use bowls of relatively low brightness, as otherwise the glare of the bowl is apt to be trying to the eyes.

The illustration at the right shows a gas light illumination. Forty-five degree angle shades pointed towards the walls are used on reflex gas burners. The general illumination of the room is derived mainly from light reflected from the walls and ceiling.

Fig. XLII. Gas lighting installation at the Philadelphia Art Club.

Fig. XLIII. Ball Room of the South Shore Country Club, Chicago, showing large indirect lighting fixtures.

Ceiling Height............28 *ft.*
Dimensions............62 *x* 100 = 6,200 *sq. ft.*
Outlets .....3 *Watts*.....6,900 *Watts per square foot*, 1.1
Average Foot-candles............2.8
Ceiling Tint............*Ivory*
Wall Tint............*Dark Red Panels on Side Walls*
Distance to Ceiling............60 *ins.*

(NOTE.—Each fixture contains 23 100-watt lamps. The promenade on the side is also lighted by indirect lighting.)

Fig. XLIV. Drawing Room, Whitehall Club, New York City, illuminated by tungsten lamps in opaque (indirect lighting) fixtures.

Ceiling Height............14 *ft.* 9 *ins.*
Dimensions............50 *x* 66 3,300 *sq. ft.*
Outlets ....9 *Fixture*.....6 100-*Watt Lamps per Fixture*
Watts............*Total*, 5,400. *Watts per square foot*, 1.63
Average Foot-candles............1.25
Ceiling Tint............*Ivory*
Wall Tint............*Dark Woodwork*
Distance to Ceiling............36 *ins.*

Fig. XLV. Indirect lighting fixtures, Grecian Marble Café, Blackstone Hotel, Chicago.

Fig. XLVI. Lobby of Auditorium Hotel, Chicago, showing indirect lighting fixtures.

The following data apply to Fig. XLV:

Ceiling Height .... *16 ft.*
Dimensions .... *47 x 50 = 2,350 sq. ft.*
Outlets...*6 (20 40-watt lamps per fixture)*
Watts Total, 4,800. Watts per sq. ft., 2.05
Average Foot-candles *4.0*
Ceiling Tint .... *Ivory White*
Distance to Ceiling .... *4 ft.*

The following data apply to Fig. XLVI:

Ceiling Height .... *24 ft.*
Dimensions .... *18 x 96 = 1,608 sq. ft.*
Outlets...*12 (5 100-watt lamps per fixture)*
Fixture .... *Special*
Watts Total, 6,000. Watts per sq. ft., 1.3
Average Foot-candles *3.50*
Ceiling and Wall Tint .... *Ivory White*
Distance to Ceiling .... *5 ft. 4 ins.*

(NOTE — Size of bay, 16 ft. x 24 ft. Indirect lighting also used in parlor on second floor, Masonic Lodge, and barber shop in this building.)

WITH the type of chain system used in the San Antonio Hotel shown in the illustration below there are no ceiling shadows such as frequently occur when using a short fixture suspended by several chains hung from a ceiling canopy. The lamps in these diffusing bowl fixtures project horizontally inward from the bolts in the rim of the bowl.

FIG. XLVIII shows a rather unique method of lighting by the indirect method of illumination. The lighting is carried out exclusively by lamps mounted on floor pedestals. Inside of the large shade at the top of each of these pedestals is mounted a 250-watt tungsten lamp centrally located and pointed towards the ceiling. A silvered mirror reflector which surrounds the lamp, except at its lower portion, directs most of the light to the ceiling through the open top of the shade. The illumination of the room is thus carried out mainly by light reflected from the ceiling. A portion of the light from the lamp is permitted to escape downward and sideward to light up the art shade. A stronger downward direction of the light and a greater transmission through the art shade may be accomplished by supplemental lamps mounted inside of the shade.

Fig. XLVII. Semi-indirect lighting in Dining Room, San Antonio Hotel, Texas.

This scheme permits of a combination of direct and indirect lighting elastic enough to produce lighting effects of widely different character to suit the needs of different rooms. It has the further advantage of providing color tone to the illumination and of completely screening the lamps themselves.

The following data apply to the above installation :

Interior ---------------------- *Tea Room*
Place -- *Hyde Park Hotel* *City* -- *Chicago*
Ceiling Height -------------------- *12 ft.*
Dimensions --------- *56 x 23 = 1,288 sq. ft.*
Fixture ------------------- *Floor Pedestal*
Watts, 2,000 -------- *Watts per sq. ft., 1.55*
Average Foot-candles ---------------- *3:5*
Ceiling Tint --------------- *Light Gray*
Wall Tint ------------------ *Light Pink*
Distance to Ceiling ----------- *5 ft. 10 ins.*
(NOTE. — Each pedestal contains 1 250-watt tungsten lamp.)

Fig. XLVIII. Night view of the Tea Room, Hyde Park Hotel, Chicago, showing combined indirect and direct lighting in a standing lamp.

THE three lighting fixtures shown at the right are adaptable for various forms of indirect and semi-indirect lighting. Fig. XLIX shows a lighting standard (Three Graces) supporting an urn in which the lamps are housed. The urn may be opaque as in indirect lighting or translucent as in semi-indirect lighting. This type of standard is well adapted for either electric or gas light, and has been very effectively used in hotels and clubs. A decorative bowl fixture with chain suspension, in which a single large lamp furnishes the light, is shown in Fig. L. This type of fixture has found favor in hotels and clubs and can be advantageously used either in semi-indirect or in totally indirect lighting. Fig. LI is designed in Louis XV style and used mainly for indirect lighting.

The following data apply to Fig. LII :

Ceiling Height, 20 ft. Dimensions, 38 x 95 ft.
Outlets ---- *8* *Fixture* ---- *Floor Pedestal*
Watts, 8,000 -------- *Watts per sq. ft., 2.22*
Average Foot-candles ---------------- *5.0*
Ceiling and Wall Tint ------ *Ivory White*
Distance to Ceiling ----------- *12 ft. 6 ins.*
(NOTE. — Pedestals stand about 7 ft. 6 ins. from floor. Old rose carpets and curtains. Bracket lamps not used.)

Fig. XLIX.

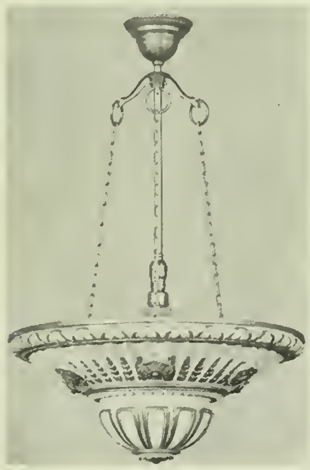


Fig. L.

Fig. LI.

Fig. LII. Louis XVI. Dining Room, Congress Hotel, Chicago, showing floor pedestals with tungsten lamps for indirect illumination.

HOSPITALS.

THE operating room and the hospital ward are perhaps the two most important portions of the building from a lighting standpoint. The general principles of illumination, as hereinbefore discussed, cover the fundamental requirements of a lighting installation designed to meet this service, but special requirements, as in the operating room, render the lighting of such a room a problem apart from most others.

Dr. W. M. L. Coplin, of Philadelphia, in a paper on the subject of hospital lighting,* thus describes the lighting of a typical operating room :

The walls are white; the side light and the skylight are fitted with diffusing glasses. In other words, an attempt has been made to adapt the photographer's method to the lighting of an operating room. The lighting fixture is made of steel with the lamps arranged radially around the center, and with one central pendent light. There are no shadows in the room ; the table legs cast no shadow. Often the lighting engineer considers he has accomplished what is necessary in lighting if he has obviated the shadows, but still it is far short of what is desired in the way of lighting. As arranged, the light is of no value in illuminating the intestines of a patient.

Commenting on the location of the fixture for lighting the operating table, Dr. Coplin calls attention to the fact that this fixture should not be placed directly over the operating table as in most hospitals, even though the fixture be provided with the best diffusing glass shades. He favors having the light come from the side or sides,—a direction which not only usually results in more effective lighting, but also in avoiding the shadows caused by the interposition of the hand or body of the operator, between the light and the patient. Mr. W. S. Kilmer who has made a careful study of the illumination requirements in hospitals recommends that available intensity on operating table be not less than 25 foot-candles and that the quality approximate daylight. In some of the foreign hospitals the problem of securing a directed light from either one direction or simultaneously from several directions, has been solved by locating a series of mirrors above and at the sides of the operating table and reflecting a powerful beam of light to the table from each of these mirrors.

*Trans. Illum. Eng. Soc., Jan., 1912.

Fig. LIII. Night view of Hospital Ward, illuminated by general indirect and local direct lighting.

SUPPLEMENTING the indirect ceiling units are wall brackets at the head of each bed. Such brackets, if used, should be provided with opaque shades to shield the eyes of the occupants of opposite beds. Indirect lighting when used for this purpose should be designed for a low intensity of illumination, as otherwise the brightly lighted ceiling would be objectionable to patients lying in bed.

RAILWAY TERMINALS.

FIG. LIV represents a night view of the waiting room of the Union Station, Washington, D. C., showing indirect illumination by concealed arc lamps. This station, including the concourse and train sheds, covers more than eighteen acres of ground space. The following description of the system of illumination in the main waiting room, and the data of illumination tests in this room, are given by Mr. W. D'A. Ryan :

The architectural features of the waiting room called for concealed lighting from the ceiling or for indirect lighting. The latter system was decided on, use being made of the alcoves on either side and ends of the room. The lighting units consist of inverted series arc lamps placed on top of the colonnades back of the balustrade. The lamps are placed in especially constructed boxes with corrugated mirrors, the whole arrangement so designed to throw the light on the barrel shaped ceiling which is approximately one hundred feet from the floor. Cathedral glass screens were placed in the path of the rays to soften the light. The use of these screens entailed a loss of about fifteen per cent of light.

The following are the data of illumination tests in the main waiting room :

Dimensions of room	210 x 120 ft.
Area of room	25,200 sq. ft.
Height of lamps	25 ft.
Height to center of arch	95 ft.
Cubic feet	2,072,000

Energy :

14 arc lamps per bay (10 bays)	140
Ends east	14
Ends west	4
Total arc lamps	158

Total kilowatts...75.9
Watts per sq. ft....3.01
Watts per cubic ft.... .0366

Intensity of illumination on horizontal plane along major axis of room ....1.1 to 2.0 foot-candles

Along minor axis........ 1.0 to 1.7 foot-candles

Direct current 6.6 ampere series lamps with special reflector.

The lighting of the waiting room of this terminal is in striking contrast to the lighting in the new Grand Central terminal, N.Y. City, in which exposed lamps are used practically throughout.

Fig. LIV. Night view of Main Waiting Room, Union Station, Washington, D. C., showing indirect illumination by concealed arc lamps.

DETAIL OF ENTRANCE FRONT

HOUSE AT WASHINGTON, D. C.
JOHN RUSSELL POPE, ARCHITECT

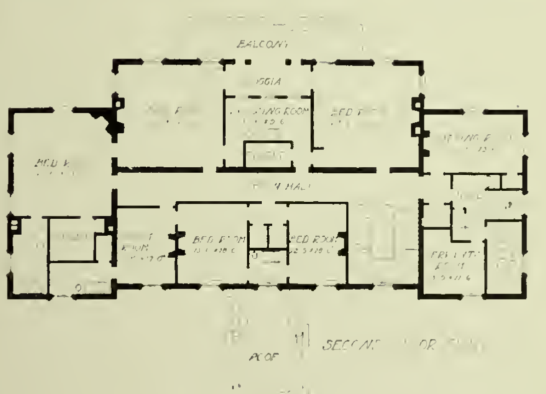
VIEW FROM APPROACH

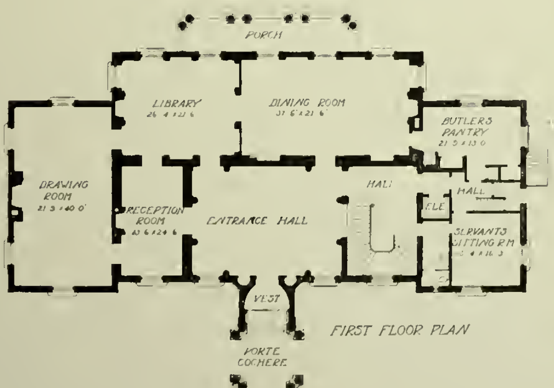
VIEW OF TERRACE FRONT

HOUSE AT WASHINGTON, D. C.

JOHN RUSSELL POPE, ARCHITECT

VIEW OF SOUTH PORCH AND TERRACE

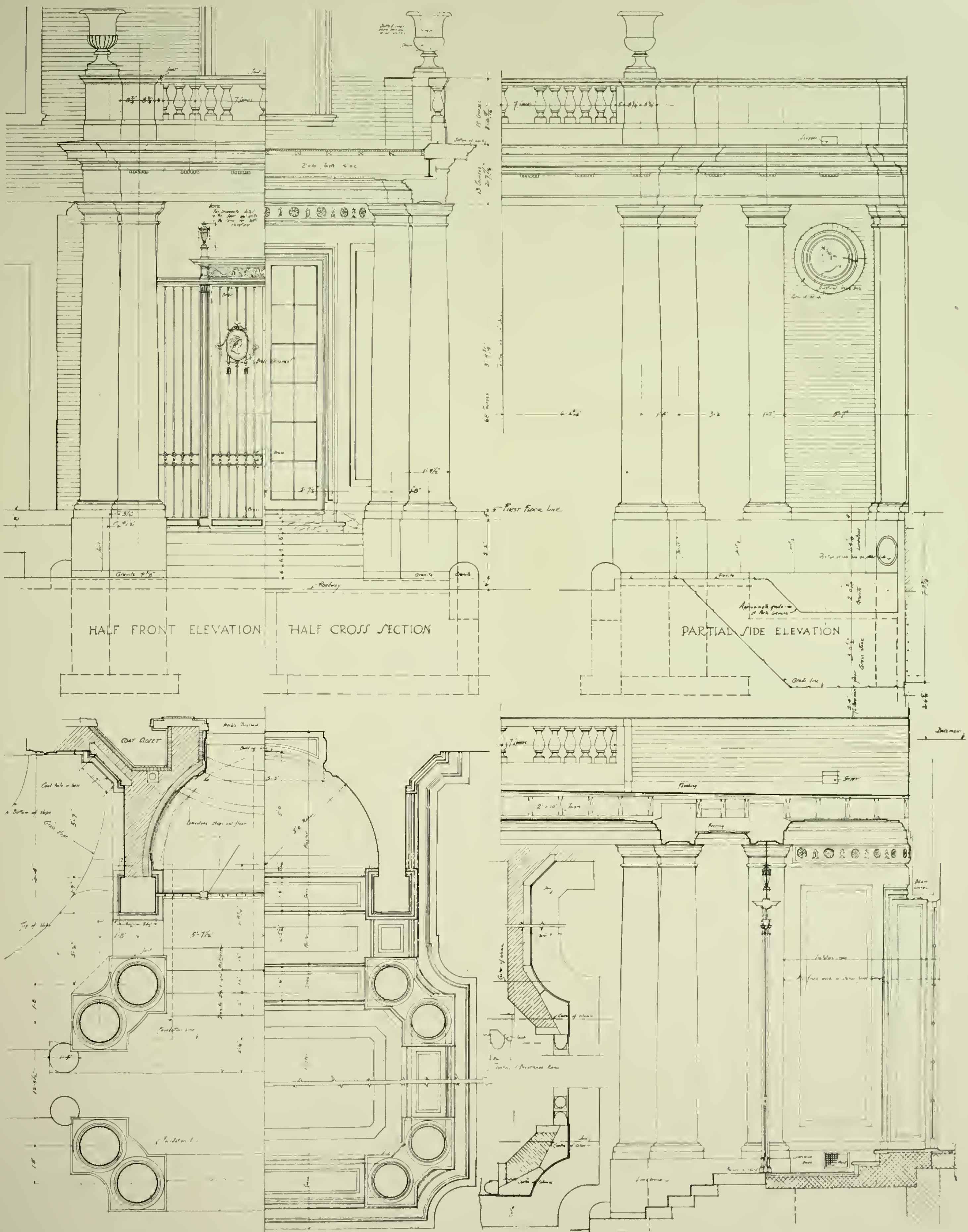




DETAIL LOOKING TOWARD GARDEN

HOUSE AT WASHINGTON, D. C.

JOHN RUSSELL POPE, ARCHITECT



DETAIL OF PORTE COCHERE

HOUSE AT WASHINGTON, D. C.

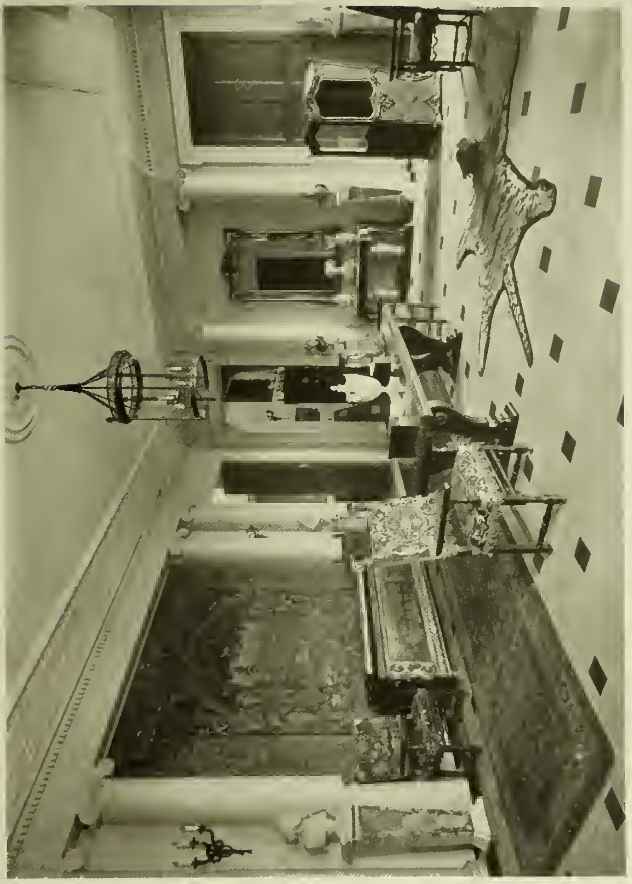
JOHN RUSSELL POPE, ARCHITECT

DINING ROOM

LIBRARY

HOUSE AT WASHINGTON, D. C.

JOHN RUSSELL POPE, ARCHITECT



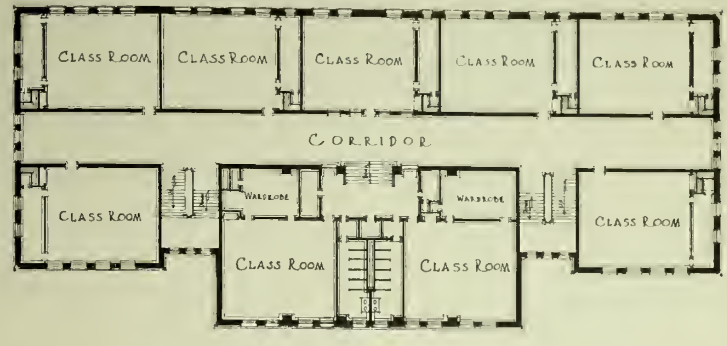
ENTRANCE HALL

CORNER OF ENTRANCE HALL

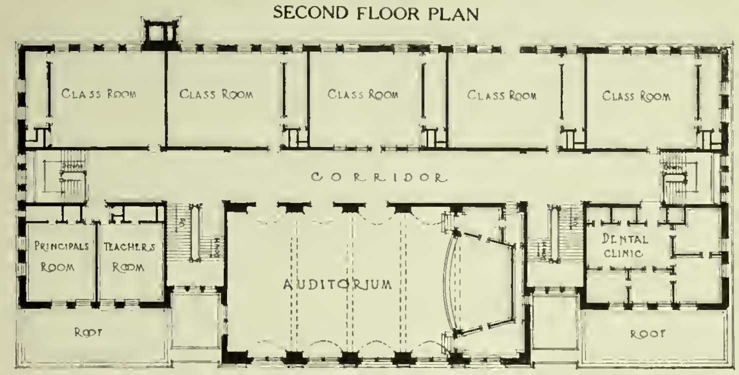
STAIR HALL

HOUSE AT WASHINGTON, D. C.
JOHN RUSSELL POPE, ARCHITECT

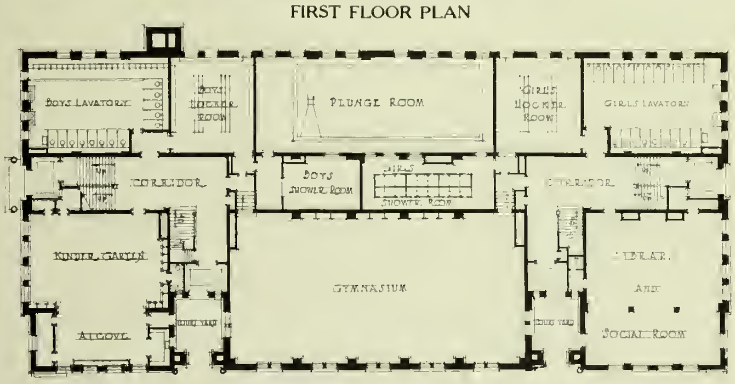
GUILFORD PUBLIC SCHOOL, CINCINNATI, OHIO
GARBER & WOODWARD, ARCHITECTS



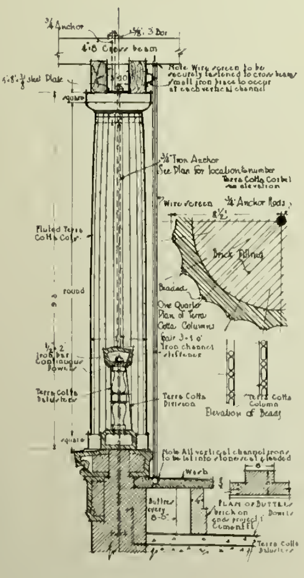
SECOND FLOOR PLAN



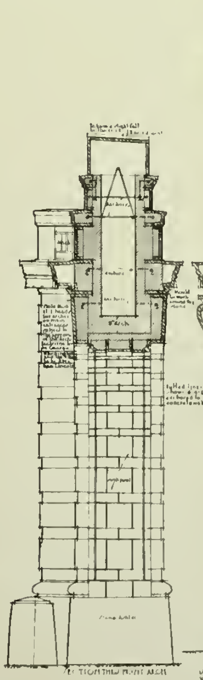
FIRST FLOOR PLAN

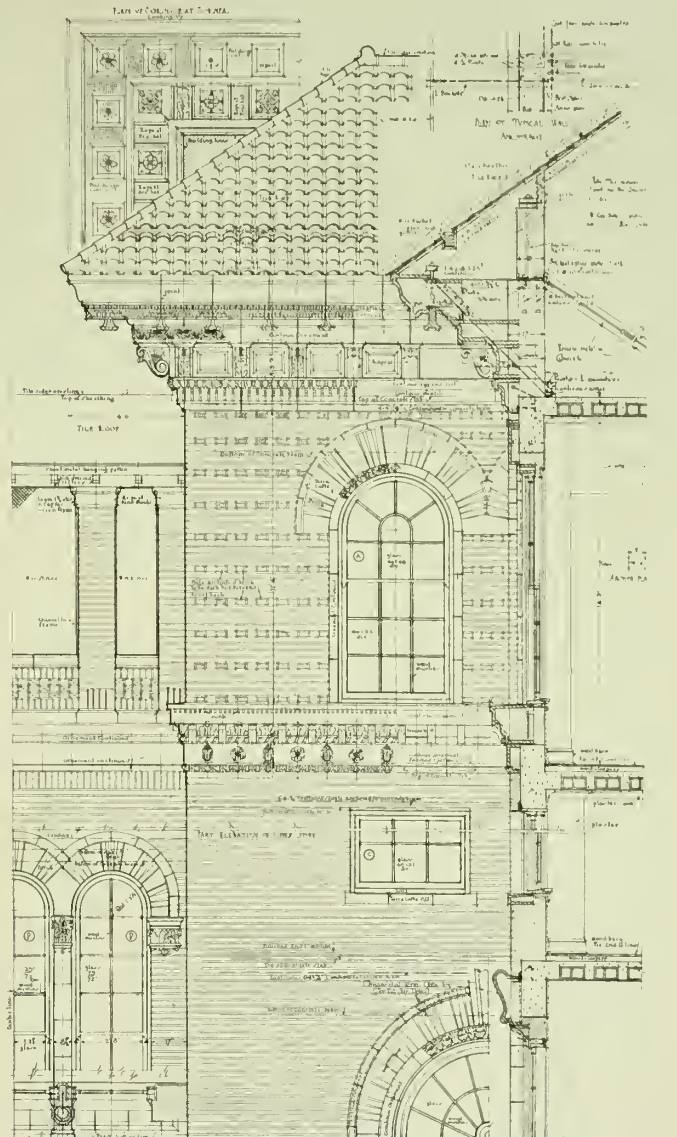


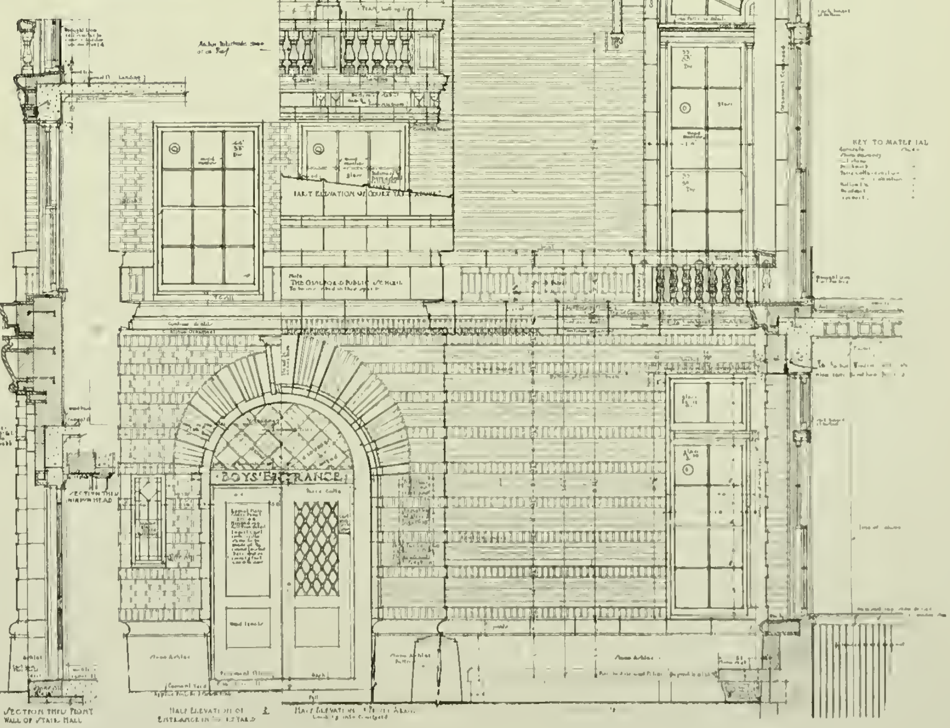
BASEMENT FLOOR PLAN



DETAIL OF COLUMN AND BALUSTER
Showing connection of Wire Screen



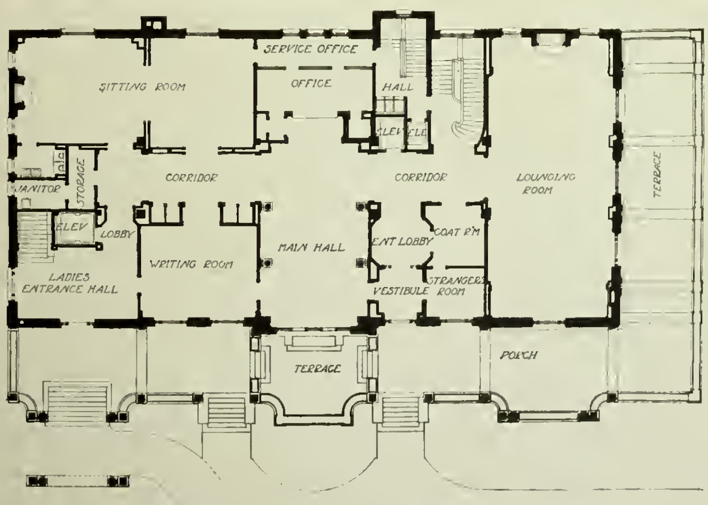




DETAIL OF MAIN ELEVATION

GUILFORD PUBLIC SCHOOL, CINCINNATI, OHIO

GARBER & WOODWARD, ARCHITECTS



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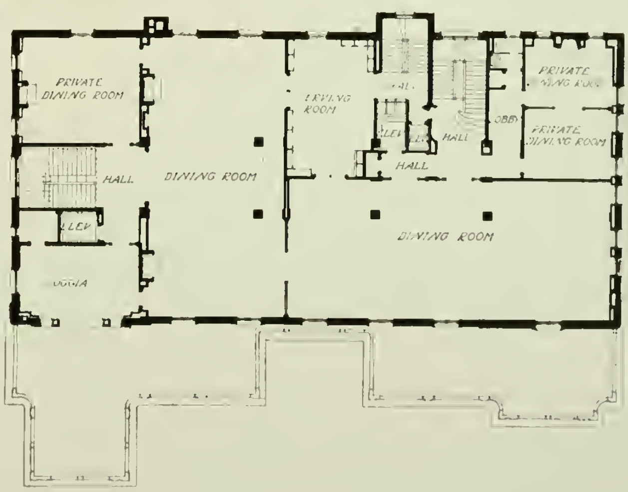
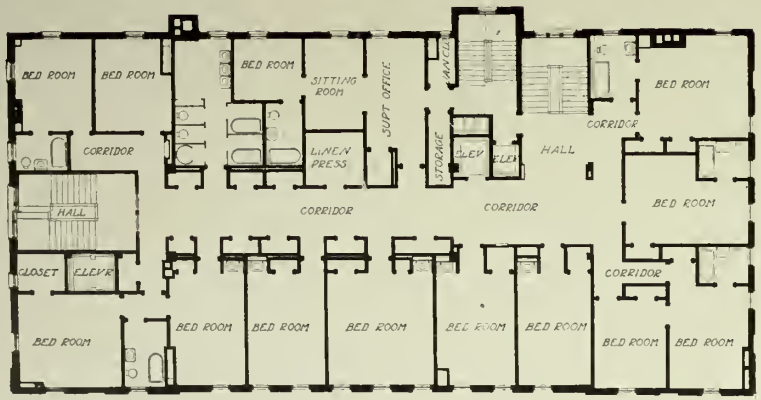


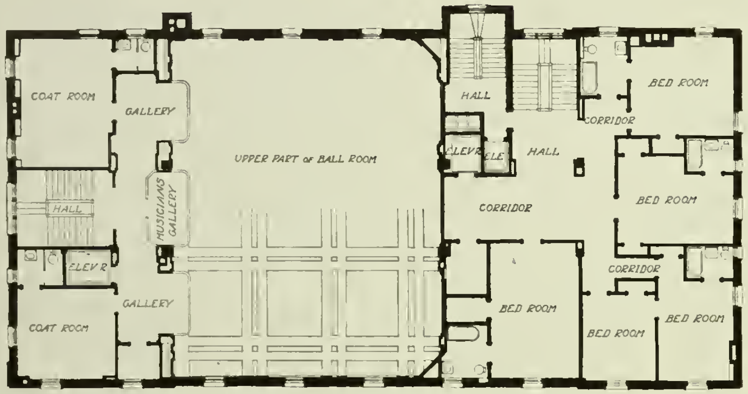
SECOND FLOOR PLAN

CAPITAL CITY CLUB, ATLANTA, GA.

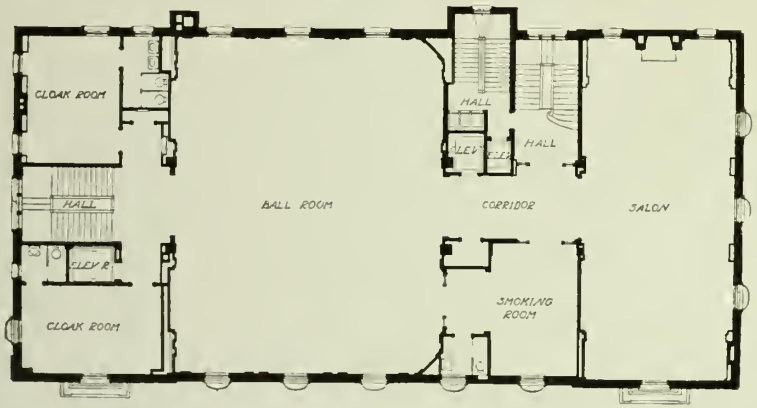
DONN BARBER, ARCHITECT



FIFTH FLOOR PLAN



FOURTH FLOOR PLAN



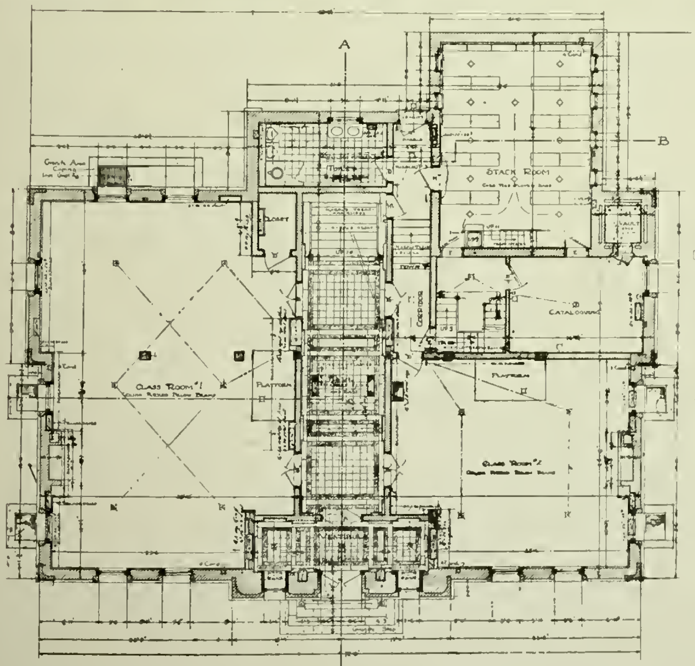
THIRD FLOOR PLAN

DETAIL OF LOGGIA

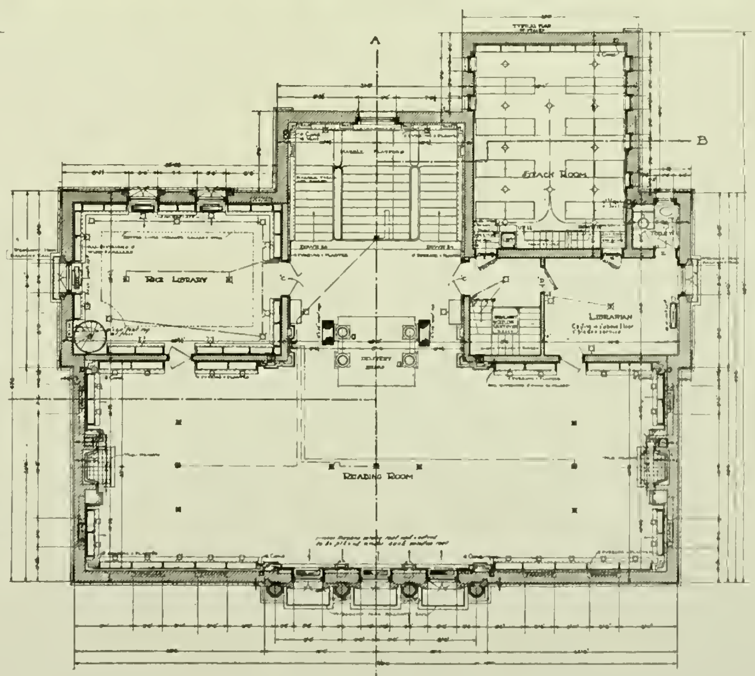
CAPITAL CITY CLUB, ATLANTA, GA.

DONN BARBER, ARCHITECT

CAPITAL CITY CLUB, ATLANTA, GA.
DONN BARBER, ARCHITECT



FIRST FLOOR PLAN

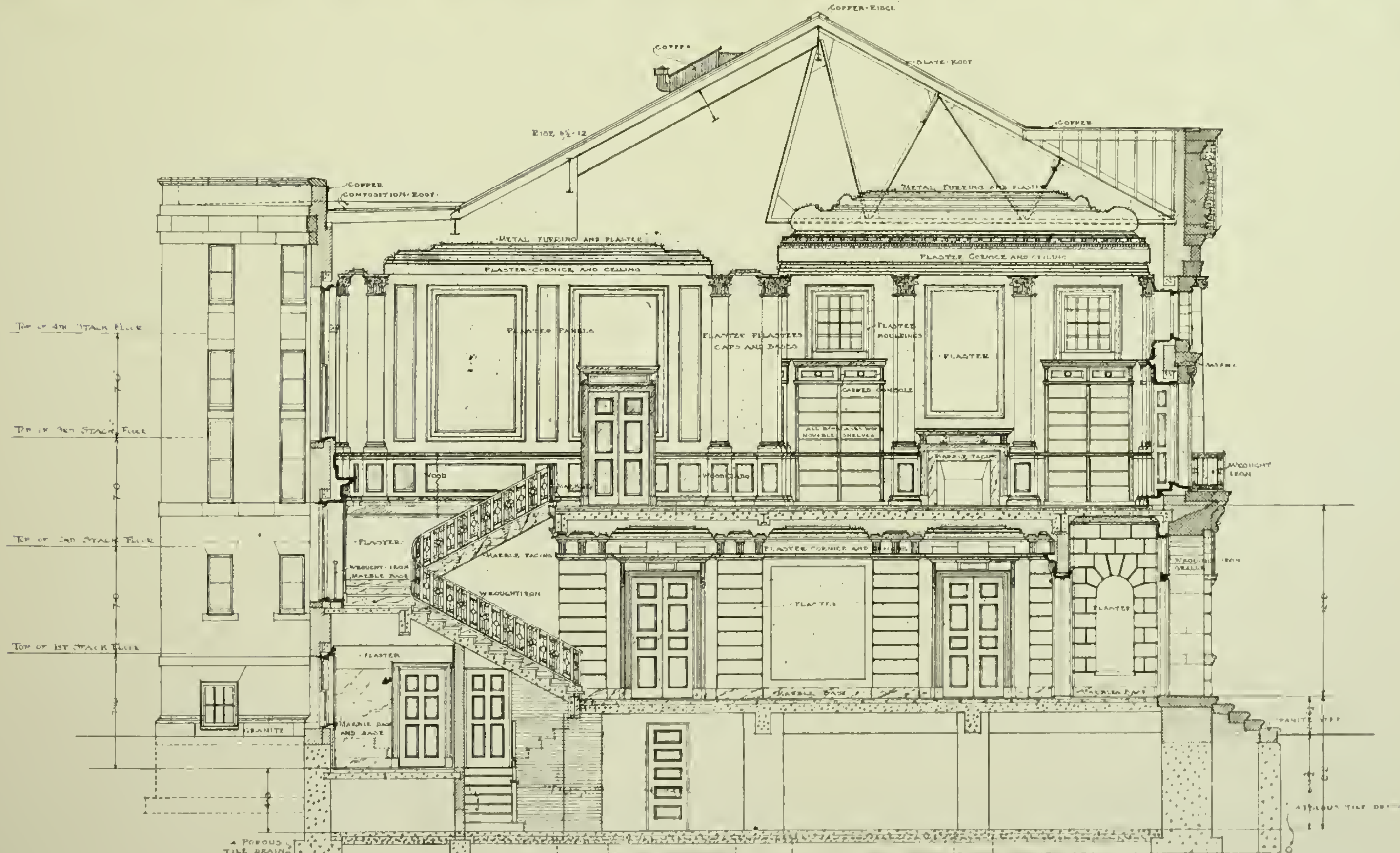


SECOND FLOOR PLAN

DAVIS LIBRARY, PHILLIPS EXETER ACADEMY, EXETER, N. H.

CRAM, GOODHUE & FERGUSON, ARCHITECTS

READING ROOM

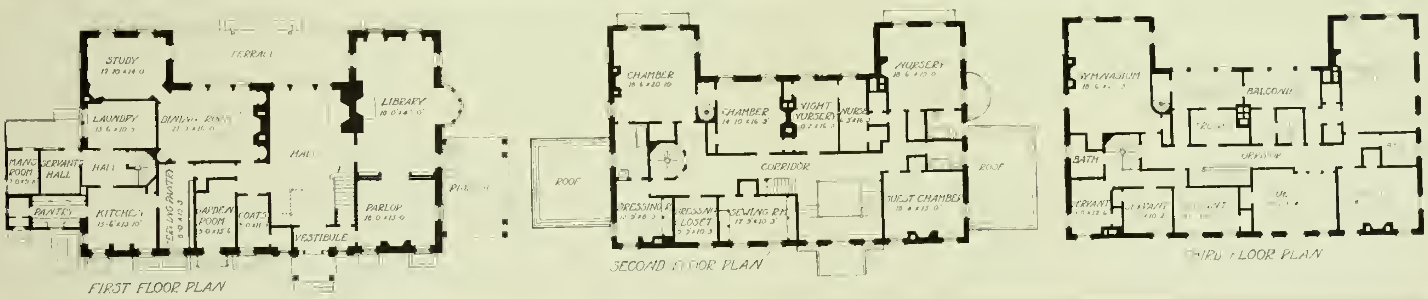


CROSS SECTION

DAVIS LIBRARY, PHILLIPS EXETER ACADEMY, EXETER, N. H.

CRAM, GOODHUE & FERGUSON, ARCHITECTS

ENTRANCE FRONT



GARDEN FRONT

HOUSE AT CAMBRIDGE, MASS.
JOSEPH EVERETT CHANDLER, ARCHITECT

LIVING ROOM

STAIR HALL

HOUSE AT CAMBRIDGE, MASS.
JOSEPH EVERETT CHANDLER, ARCHITECT

DINING ROOM

MANTEL IN HALL

HOUSE AT CAMBRIDGE, MASS.
JOSEPH EVERETT CHANDLER, ARCHITECT

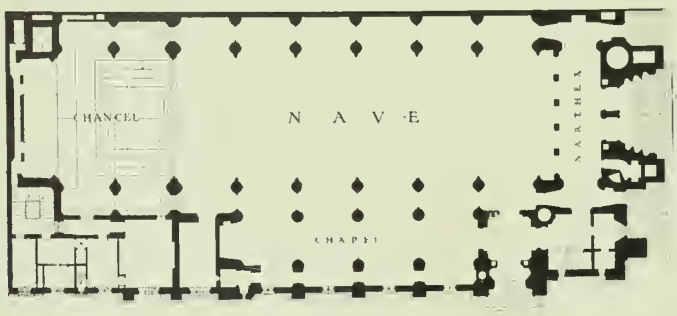
DISTINCTIVE AMERICAN ARCHITECTVRE

A SERIES OF ILLVSTRATIONS OF THE MOST NOTABLE WORK OF THE YEAR WITH APPRECIATIVE TEXT *BY*

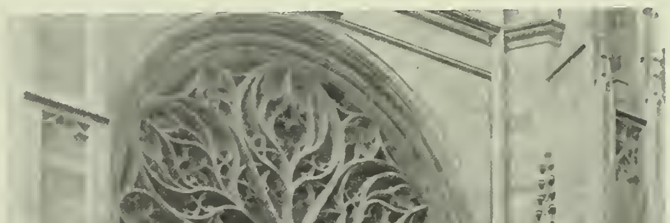
MONTGOMERY SCHVYLER

The New St. Thomas's Church Fifth Avenue, New York City

CRAM, GOODHUE & FERGUSON, ARCHITECTS



Plan.



Detail of Rose Window and Carving on East Front.

THE new St. Thomas's in New York is already recognized as the most successful Gothic church in that city, barring the success of Old Trinity at the head of Wall street, which has held a proud preëminence among the Gothic churches of the city ever since it was consecrated in 1846. Rather curiously it happens that Richard Upjohn, the architect of Old Trinity, was also the architect of the original St. Thomas's which was destroyed by fire some years ago. It is true that his son, Richard M., is the architect of record, but equally true that, at the time of its erection, the church was commonly ascribed by architects to the original Richard. Still more curiously that the modern demand for the "accommodation" of a congregation, which, as we shall see, has been the essential requirement in the differentiation of the new St. Thomas's from the strictly "Anglican" type of ground plan, was also the urgent requirement in the designing of the St. Thomas's of the early seventies. This was by no means a requirement of a medieval Gothic church. Quite the contrary. As to the layman, the requirement of the medieval Gothic church, so far from betraying any disposition to "accommodate" him, was that he should be put in his place and made to feel that he was a worm, blessed above his deserts in being permitted to gaze from afar, in the dim recesses of the vaulting of the nave or the aisles, upon the celebration of the "mysteries" which was going on in the full light of the choir. Since then the layman has reclaimed his rights and has refused to be relegated to the shadowy background of what is going on. He pays, and he has to be conciliated. He is conciliated in modern Gothic to the extent that his opinion that the preaching holds the first place in the attractions of the church, and that the celebration of the "mysteries" takes a place quite secondary and subordinate, simply has to be taken by the modern architect as the basis of his design.

So long ago as the early seventies, when the old St. Thomas's was built, so old and so old-fashioned an architect as Mr. Upjohn was then had to take professional notice of the new requirement. The St. Thomas's of that day was under construction contemporaneously with the Church of the Holy Trinity, at Madison avenue and 42d street, slangily known, when it was new, as the "Church of the Homely Oil Cloth," by reason of a rough mosaic of colored brickwork which was spread over the second tier of its windows. This latter was distinctly an "auditorium" church in its interior, although the exterior expression of the auditorium was by no means complete. The subsequent attempt of an ill-informed rector to take the force and meaning out of the design, much like the attempt now in progress to take the force and meaning out of the design of the Cathedral of St. John the Divine, resulted in the assuagement of the sorrows of lovers of architecture when the church, thus "marred by traitors," was finally put out of its misery by being demolished. Its architect, Leopold Eidlitz, was an architect who followed his logical conclusions to the bitter end. In speaking of Mr. Upjohn's solution of the modern, laic, "auditorium" problem in St. Thomas's, in comparison with his own in the Church of the Holy Trinity, he observed: "Mr. Upjohn's solution was to admit all the congregational accommodation that could be admitted, while retaining the traditional idea of a church. Mine was much more radical. I frankly abandoned the traditional idea of a church, and designed a theater with ecclesiastical details." This was, in fact, the difference. So timid and conservative an architect as Mr. Upjohn, excellent architect though he was, would hardly have varied from the traditional notion of a church without some precedent. He found this precedent in the octagon of Ely, which he modified on a small scale to meet the modern demand, as the architects of the Cathedral of St. John the Divine modified it on a large scale. The development of the "crossing," with the insertion of chapels in the angles of the accruing octagon, was the essence of the design of the elder St. Thomas's. It was not altogether successful, although the octagonal arrangement was clearly expressed on the outside, and although the lantern with which the corner tower was crowned was an undeniably picturesque and spirited feature of the frontage on Fifth avenue.

Detail of Turret on Rector's Residence.

What makes all this preliminary talk pertinent is the fact that the architects of the later St. Thomas's have found themselves "up against" the same condition which their predecessor encountered and have obviated it by even more strictly traditional means. Presumably the "accommodation" was one of the requirements imposed upon the competitors for the designing of the new church. The late William Martin Aiken was one of the judges of that competition, and was overheard to remark that he was much disappointed with the results of the competition, although he concurred with the other judges in considering the design of Messrs. Cram, Goodhue, and Ferguson the most promising for further elaboration of the submitted drawings. Whether by the conditions of the program or not, that design took as a datum the provision of more seating capacity than an orthodox Gothic treatment of the prescribed "lot" would supply, and undertook to provide for it by a novel method, neither that of the expanded crossing of the old St. Thomas's, nor that of the "amphitheater with ecclesiastical details" of the "evangelical" Church of the Holy Trinity. The expedient was adopted of what one may call a lay gallery on one side, and above the main floor, flanking the orthodox and conventional structure of nave and aisles.

Detail of South Entrance to Narthex.

This subordinate but still essential requirement of a superaddition to the main plan for the benefit of an importunate laity no longer negligible must be insisted on, in any analytic consideration of the design of the new St. Thomas's, for the reason that from it proceed all the "questionable shapes" and features of the design of the church. In the very interesting in-

ST. THOMAS'S CHURCH, NEW YORK
CRAM, GOODHUE & FERGUSON, ARCHITECTS


Chapel at South Side of Nave.

terior it is this necessity of furnishing additional accommodation to the laity, in their gallery, on a plot procrusteanly limited, that has enforced the narrowing of the aisles of the regular ecclesiastical "lay out" to mere passageways, or "ambulatories." These ambulatories are of so much less than the conventional relation of width to their nave as to puzzle the spectator, unaware of the reduction of lateral pressure in the vaulting system adopted here, as to the means by which the thrust of the vaults of the broad nave is taken up. Properly speaking, this question is not an esthetic criticism. That is because, as in all Gothic work, the vaulting and its ultimate abutment are two things and not one, the vaulting belonging to the interior and the buttressing to the exterior, and the two never being seen together. There can thus be no contradiction shocking to the cultivated eye, and which, in the French phrase, "jumps to" the eye thus cultivated. It is only a mental puzzle, to be solved ultimately, and by reference to the "system" after the esthetic impression of interior and exterior has had its way and spent itself. Meanwhile, the impression of the interior remains. The simple vaulting of the broad nave, with its round piers rather emphasized than complicated by the simple reeding of the vaulting shafts, has the expression of an austerity amounting to asceticism, which belongs to Gothic so very "early" as hardly to be distinguishable from Romanesque. Indeed, the general expression of the interior is austere, perhaps the more so because the "square East end," geographically speaking the West end which, in authentic examples of English Gothic, goes so far to enliven the vista by its emblazoned expanse of painted glass, cannot here have that effect. Again it is the Procrustean limitation of the site. By reason of this, by reason of the impingement of the end upon secular and alien occupation, the "glorious wall" becomes impossible. It is only the lights in the upper stage that can be made to "tell." What enrichment can be applied below must be applied in the form of painting, mosaic, or pigmental, or else of the sculptured reredos already indicated in the drawings; in either case deriving its illumination either from frank artificiality or else from the upper openings, frontwise or lateral, for which alone the conditions give scope.

Exteriorly, and it is the exterior that has already made the new St. Thomas's the striking popular success it is, the enforced peculiarity of the plan is still more clearly responsible for all the questionable points of the architecture. The most questionable of these is doubtless the virtually equal division of the front between the gabled nave and the truncated tower, with its tall "diaphanous" belfry stage. When you know or recall the imposed, or assumed, necessity of a lateral gallery outside of the nave and aisles of the ecclesiological scheme, this division will no longer seem the freak it may have seemed to you at the first glance, but only the necessary expression of an unusual disposition. Moreover, you will come near to being astonished at the amplitude of space that has accrued from an arrangement enforced in the first instance by an exiguity of space. In the nearer bays, you find what you might call a terrace of massive buttresses, rising and receding as if there had been no question of space to


Chancel, Showing Organ and Carved Screen.
(The fittings of the chancel are temporary)

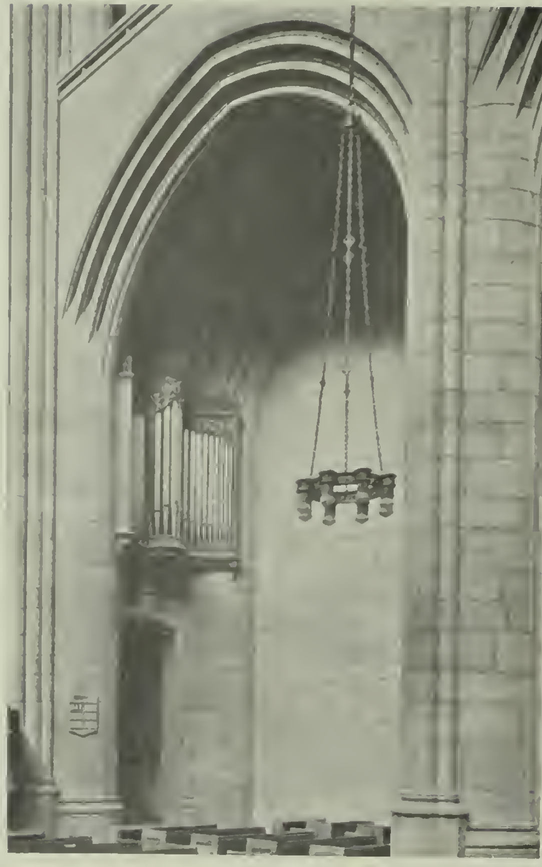
NAVE, LOOKING TOWARD NARTHEX

ST. THOMAS'S CHURCH, NEW YORK
CRAM, GOODHUE & FERGUSON, ARCHITECTS

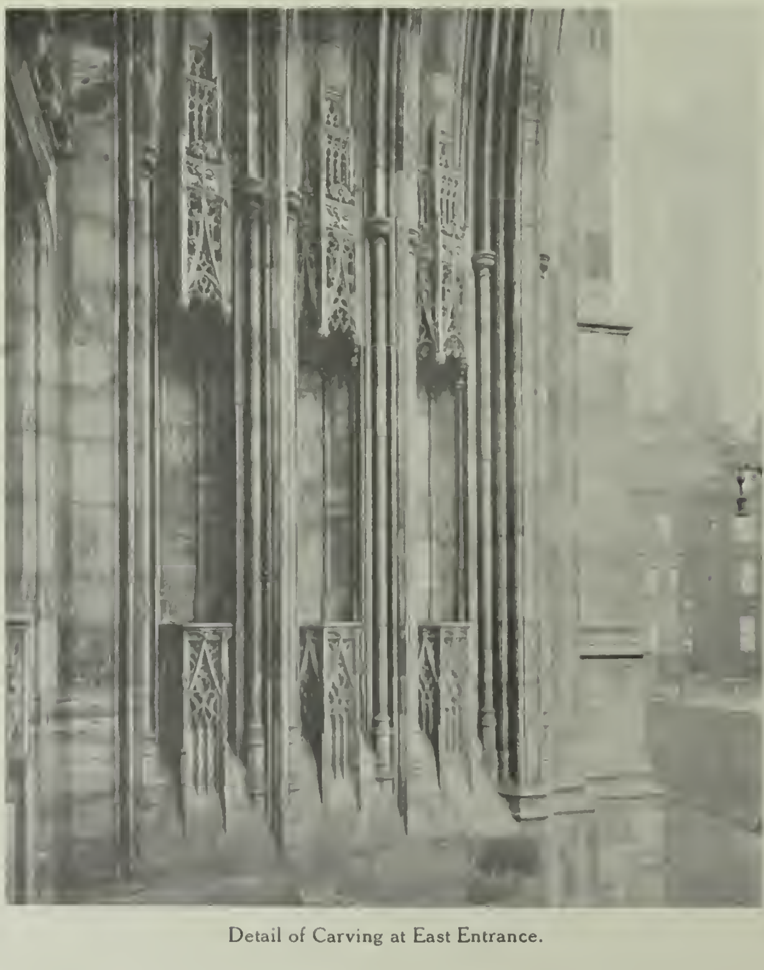
adjust on the Procrustean prescriptions of the "lot." Beyond these you find what in England might, in domestic architecture, be called the "offices" of the parochial plant, built, indeed, "to the limit" laterally, and carried to a much greater height than that of the buttressed aisle which they adjoin, but giving you, from the outside as well as from within, the sense of an amplitude of space very much greater than you could expect from the hard limitations of the scheme. Here, as elsewhere, the designers have plucked the flower safely from the nettle danger, or, as the prosaic architect must be fain to admit, this is highly ingenious planning.

If we have said nothing about the artistic effect of this technical achievement, it is because the illustrations speak for themselves in this regard. The architectural investiture of the skeleton we have been endeavoring to explain offers, as the inspector of these illustrations will admit, surprising turns of expressiveness and beauty. It were tedious to particularize, but one may be allowed to call attention to such features as the rose window, which, with all the medieval precedents for it, appears here to be quite unprecedented; to the tall belfry lights; to the "imitation" on the flank of the predominant turret of the tower; to the tall gallery that masks the gable, as old as Notre Dame de Paris and may be older, but gaining here a virtual novelty by its treatment. In fact, the two visible fronts abound in suggestions. But a point which the student who has not seen the building itself is almost certain to miss is the luck the design has had in being carried out in the material chosen, — a limestone almost white, with curious and random splashes in it of a darker tint.

As the "firm" which signed the plans for St. Thomas's has been dissolved or resolved into its elements since the completion of the edifice, there can be no harm now in saying that whereas the plan of the church was that of Mr. Ralph Adams Cram, the working out and all of the detail should be ascribed to Mr. Bertram Grosvenor Goodhue.



Detail of Bay in Nave.



Detail of Carving at East Entrance.

The Continental and Commercial National Bank Building, Chicago, Ill.

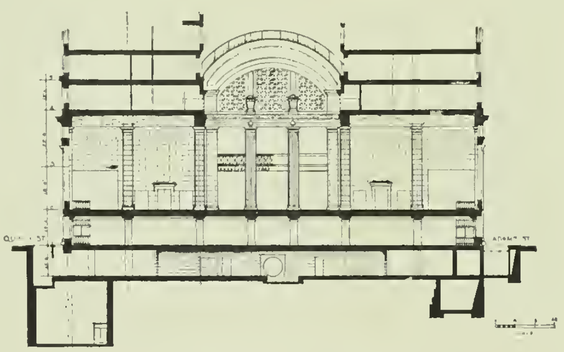
D. H. BURNHAM & CO., ARCHITECTS.

IT IS said, and with truth, that the art which employs materials successfully is as real as that which constructs with permanence and economy. Without construction, building is impossible ; but unless exercised in suitable materials with a proper sense of their nature and serviceableness, fine architecture is equally unattainable.

In the building for The Continental and Commercial National Bank, the architects have evidenced a technical sympathy with the materials in which they designed. This is easily recognizable in the treatment of the architectural terra cotta which has been used on the four street façades from the third floor level up through seventeen stories and attic. The esthetic value of a building material, whatever its nature, has to be expressed by its use and workmanship, form deriving character from its natural qualities. It is therefore by means of this esthetic expression of the texture of terra cotta that the fine effects of the architecture of this building are realized.

The building covers an entire city square in Chicago, bounded by streets on all sides, and in this respect is unique as a bank and office building in that city. The new home of the bank was designed in its essential features during the lifetime of the late Daniel H. Burnham and is one of the last of the many great undertakings with which his name is associated.

The first two stories are completely occupied by The Continental and Commercial National Bank, which to-day is the second largest bank in the country. The upper stories are divided up for offices. The main entrance to the bank is located on La Salle street, this being the principal banking street in Chicago. This entrance feature is emphasized by noble granite columns carried up four stories in height and with corresponding treatment of the terra cotta for the upper stories. On the Adams street side the ground floor is occupied by the Hibernian Banking Association and on the Quincy street side by the Continental and Commercial Trust and Savings Bank, subsidiaries of the main institution.



Transverse Section Looking West.

General View from Perspective Drawing.

The main banking room occupies the second floor and in some portions is four stories high, reached by two monumental staircases in the center of a large corridor near each entrance. The banking room is lighted by daylight through the barrel vaulted glass ceiling which serves the double purpose of ceiling and roof for the entire area of the open court. The interior court is 54 feet wide by 155 feet long. It is faced with white terra cotta and enameled brick. The sectional drawings illustrate the banking room and the floors beneath.

In all senses of the word this building is a modern fireproof structure. It is the last word in construction, heating, ventilating, etc. The structure is of steel with flat floor arch system, on caissons built upon solid rock.

Impervious terra cotta of a beautiful yellowish gray, softened by inconspicuous brown spots, was the material successfully used in the building. This combination of colors was the result of exhaustive experiments for this specific purpose. The factor of color in architectural work is one upon which stress should be laid. Most architects whose work is pleasing in its relationship of color have succeeded by begging the question and by using in place of really positive colors a monotone scheme. This scheme was employed in the subject under consideration and is highly successful. The surfaces are warm, sympathetic, and rich. In laying out the work special care was taken to arrange the jointing agreeably. All joints in ashlar as set were raked ¼ inch deep, thus displaying joints as clean-cut black lines.

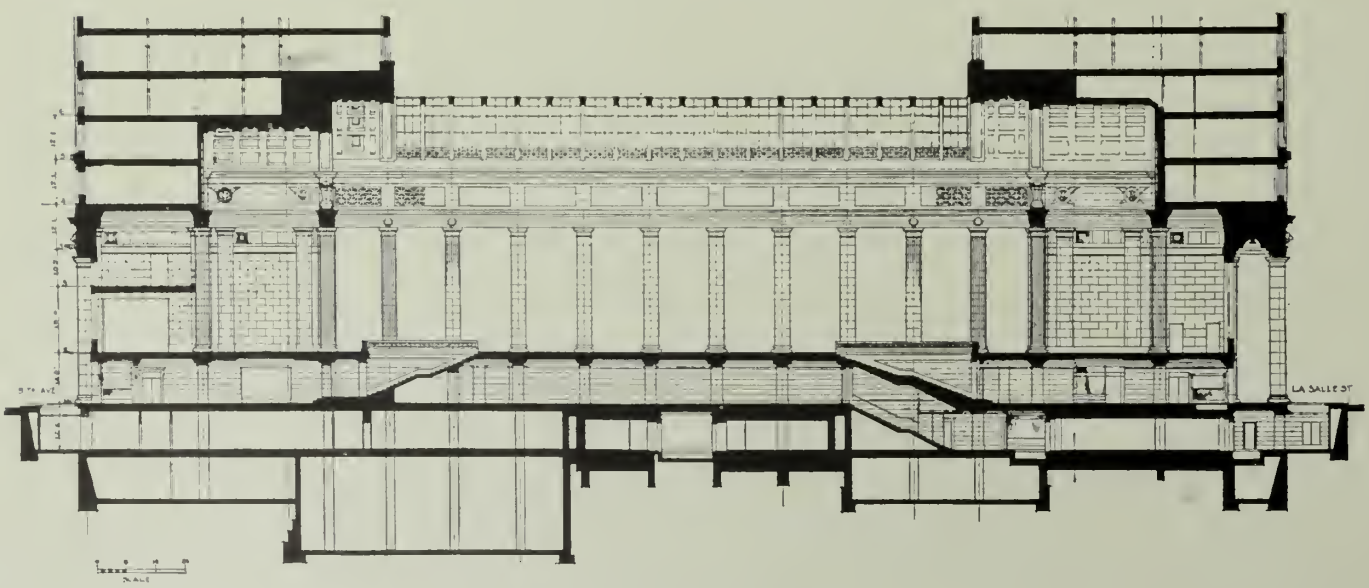
Architectural terra cotta, though a constructive element, has, however, an esthetic quality if it governs, as it should, the genesis of detailed form. It imparts the quality of texture which is beginning to be better understood in this country. That the architects have given thoughtful study and consideration to its use in this particular instance is to be remarked upon. The employment of this material has endowed the work with direct interest and beauty.

Two interesting drawings are here presented to illustrate the construction and to show how the exterior terra cotta finish was attached to the steel skeletons. The other illustrations tell their own stories of the magnitude of this whole work and the general scheme of the design. The illustration adjoining, showing a corner of the building, is from a photograph taken from the only point from which the building may be viewed in its correct perspective. It is also the nearest in point of position to that taken in the rendered perspective, a reproduction of which is shown at small scale on preceding page.

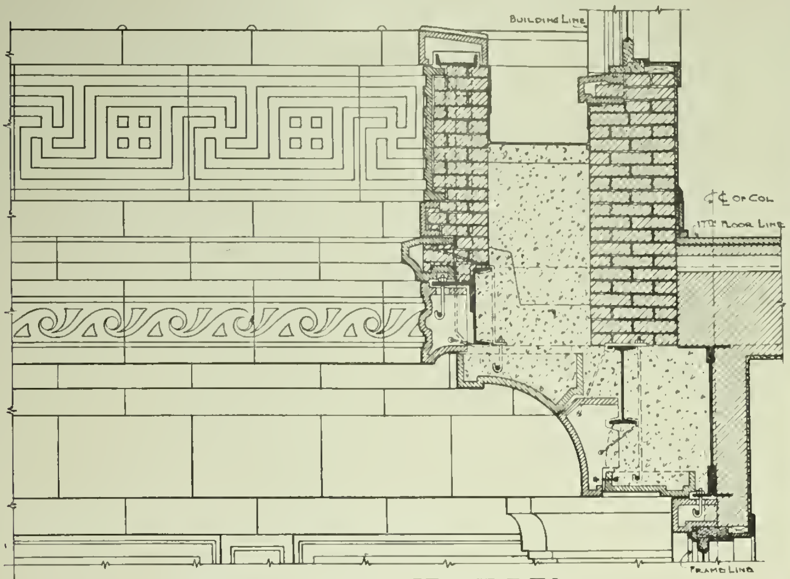
View Showing Upper Part of La Salle Street Front.

It is necessary to allow here that good building and good art are the same; the quality is properly common to both, admirable construction having beauty in building as well as in other workmanship. Construction as an art in entablatures, domes, vaultings, arcades, roofs, staircases, etc., offers abundant examples which do not permit the disintegration of artistic effect from constructive skill. It would seem that the architect of this building was emphatically the master of his work rather than the unwilling slave of untractable materials and awkward conditions. This is a sense conveyed to the mind by modern erection other than works of engineering. The conclusion is enforced that many architects have a genuine enjoyment in their handling of building materials and crafts and are able to express the means they employ to attain their ends in their work.

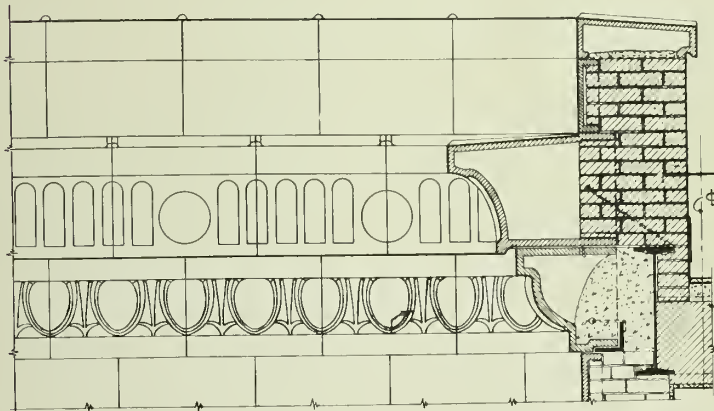
In the final analysis of this new building it can surely be said that dignity, fitness, and security are expressed alike by the material, construction, and arrangement.



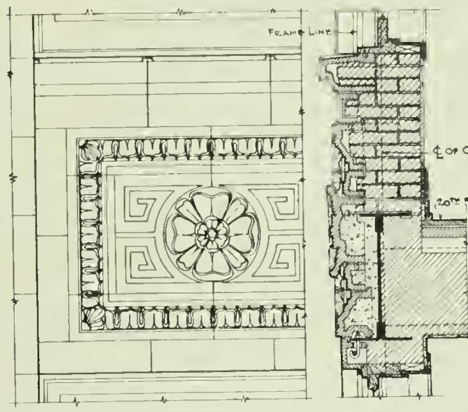
Longitudinal Section Looking North.



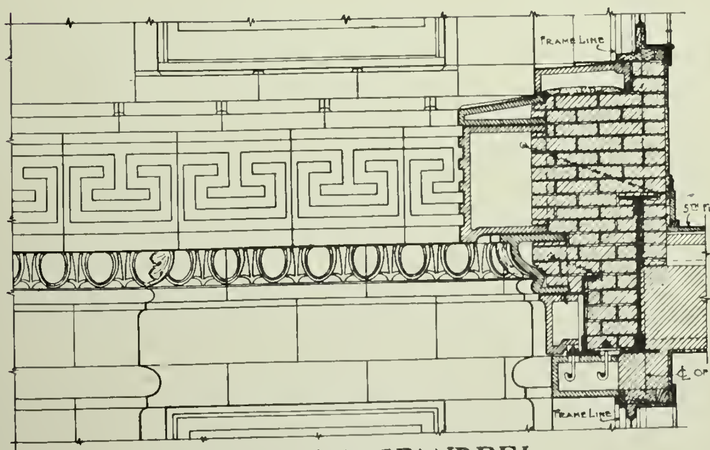
·17TH·FLOOR·SPANDREL·



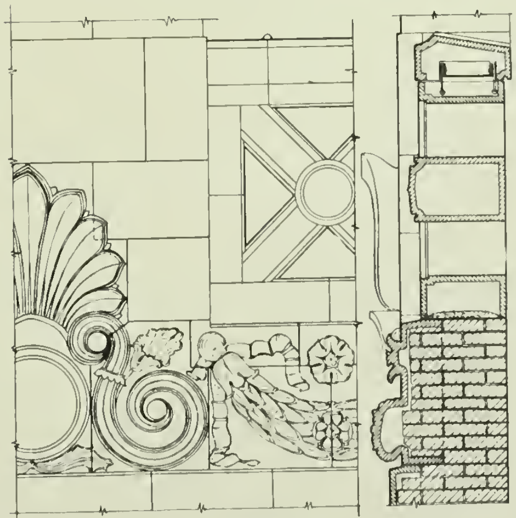
·CORNICE·ON·PENT·HOUSE·



·20TH FLOOR·PAVILION·SPANDREL·



·5TH·FLOOR·SPANDREL·



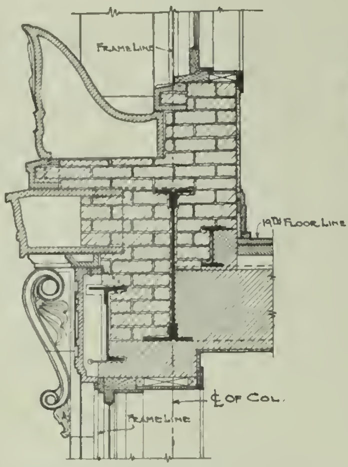
·PARAPET·

·SCALE· FEET

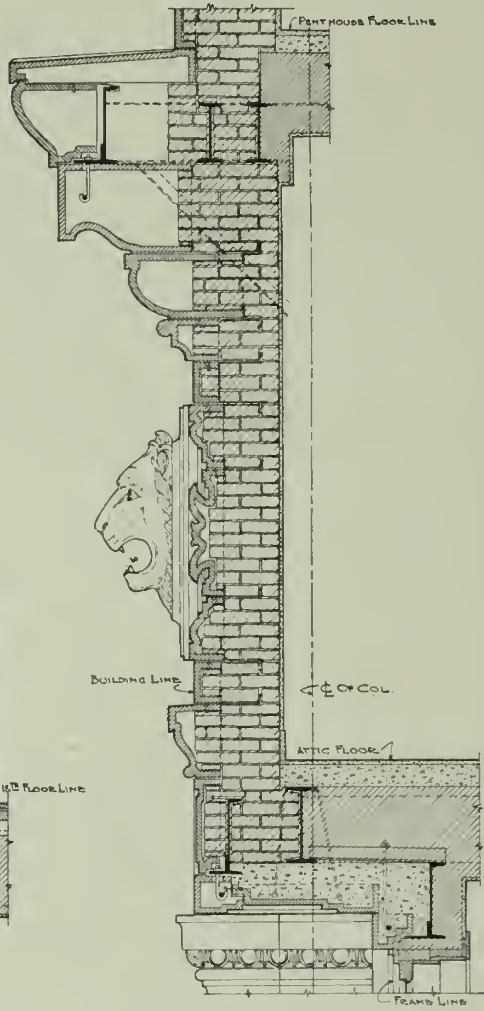
TERRA COTTA CONSTRUCTION DETAILS

CONTINENTAL AND COMMERCIAL NATIONAL BANK BUILDING
CHICAGO, ILL.

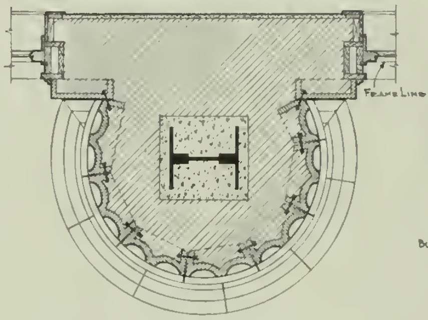
D. H. BURNHAM & CO., ARCHITECTS



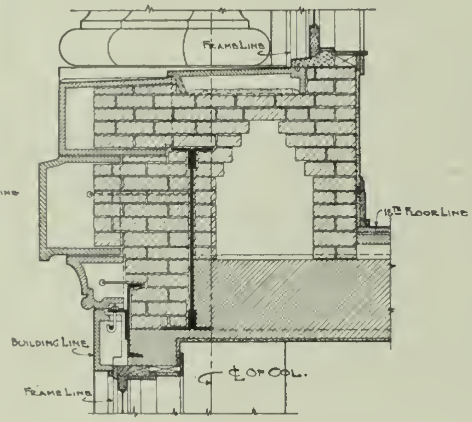
·19TH·FLOOR·PAVILION·
·SPANDREL·



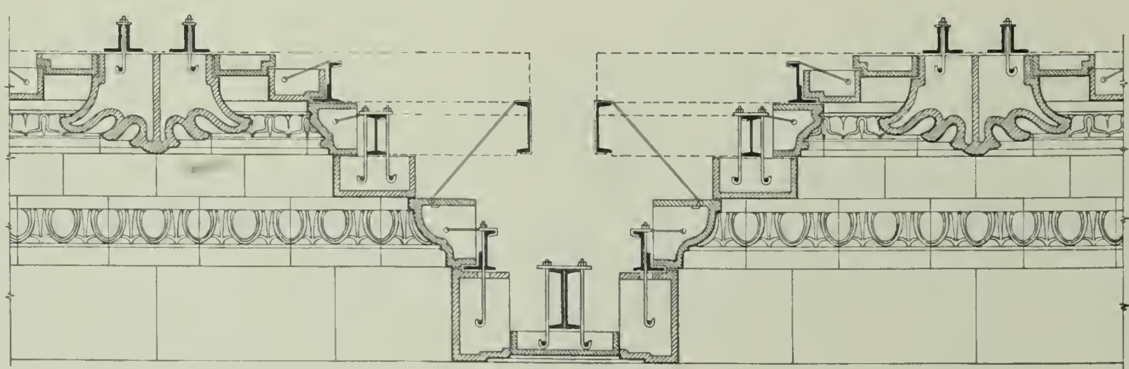
·MAIN·CORNICE·



·PLAN·THRU·COLUMNS·
·AT·19TH·FLOOR·



·18TH·FLOOR·SPANDREL·



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SCALE FEET

TERRA COTTA CONSTRUCTION DETAILS

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D. H. BURNHAM & CO., ARCHITECTS

The Quantity System in Estimating.

GENERAL DISCUSSION.

Editors, THE BRICKBUILDER :

IT IS exceedingly interesting to note the different attitudes of your correspondents towards the quantity surveying system.

The subject seems to have been obscured by the suggestion that a reorganization or a radical improvement in the methods of preparing plans and specifications in architects' offices is a necessary preliminary step to the establishment of the quantity surveying system. This is not the case. The quantity surveyor's duty is to take plans and specifications as he finds them and from them compute the quantities of labor and material in the building. It is, of course, desirable that the plans and specifications should be good ones, and the better the plans the better his survey ; but even with a poor set of plans he is likely (because of his greater experience and the facilities at his disposal) to make a better survey than half a dozen competing builders. But there is no basis for the idea that quantity surveying would of itself improve any architect's plans or require better plans than the contractor now gets.

The science of quantity surveying has only been in existence in England for about fifty years, and originated by builders who were asked to tender on a building meeting and appointing one from among their number to prepare their quantities, furnishing each with a copy to be priced, on which he would base his bid.

In order to reduce unproductive expense, these parties would agree that whoever got the job should pay the whole cost of preparing the quantity schedule, and so each one would add the cost to his bid before putting in his tender, and the owner would thus pay for the quantities without knowing it. In event of the bids being all rejected, the competing builders each paid a proportion of the cost.

Very soon independent surveyors took up this work and the benefits of a schedule of quantities made up by independent parties was soon felt, and before long architects realized the advantages to them in having the appointment of this surveyor in their own hands and in having the use of the quantities during the progress of the building and for the settlement of extras, so that it was not long before the quantity surveyor came to be appointed by the architect instead of being appointed by the competing builders.

Contractors are of two kinds and do their estimating in different ways. Mr. Blackall and Messrs. Isham and Cady speak of one type who figure work in a rough and ready way, sometimes by cubing the whole building, and pricing it at the same price per foot cube as the last similar building they put up, or else taking off a schedule of the materials and adding a lump sum price for labor. These guesswork, haphazard methods are survivals of a past day and generation and (although more commonly in use than we would like them to be) are steadily and surely dying out, especially among the larger contractors. The other type are those who carefully take off quantities in order to make up their estimates, and it cannot be denied that all the principal contractors on building work in the East do take off a schedule of quantities before making competitive bids, and that they price their labor by unit prices in accordance with the schedules in the same way. These are the men who are interested in the development of a quantity surveying system — men who at present do spend large sums in getting their bids accurate, only at last to lose the fruit of their work to some one who doesn't know how to make an estimate or has forgotten something.

I will go this far with Mr. Blackall in agreeing that there is *some* uncertainty about contracts in England, *some* latitude in estimates, *some* difference in profits, for the English system is not perfect; but I do not agree that they are as great as they are here, and especially in the range of estimates my English experience (which extended over twelve years) did not show me any jobs which were taken at ridiculously low prices except in one or two cases when, through pure carelessness, a builder priced out a whole bill of masonry and carried it into the summary with the decimal point set back a place, or a builder's clerk made a mistake in addition. No system will insure against errors of that sort.

It is not suggested that there will be any immediate demand for quantities on small jobs such as ten-roomed houses, small stores, etc., but the primary need comes on buildings costing $20,000 and over ; this figure need not be a limit, but an economical limit will soon set itself.

It has not been claimed that the quantity surveying system will have any part in lowering or raising unit costs, and it also will make no difference whether bids based on quantities are accepted as lump sum contracts, or cost plus fixed sum with guarantee, or any other type of contract.

The way in which Mr. Jones refers to stringent blanket clauses in the contract and badly drawn plans would make it seem that, if all contracts were fair and impartial, and all plans clear and well drawn, there would be no need for quantities. But quantities are needed just as much in either case, with this difference,— that where plans are clear and specifications definite, the contractor would reap the primary advantage in being saved the labor of making an estimate of quantities ; but where plans were not clear and specifications of the "blanket" type the owner would in a large percentage of cases reap the advantage.

The quantity surveying system, if adopted in this country, will eliminate one of the uncertain elements in present day building contracts, by furnishing each contractor with a schedule of the materials and labor shown on the plans, instead of leaving him to figure them out. It will not interfere with his own judgment in pricing or making up a bid. It will not necessitate any changes in architects' plans. It will not reduce fair competition or eliminate the careless or incompetent among builders or architects. It will not interfere with letting work under any type of contract the architect may desire, nor will it raise or lower costs. It is simply one logical forward step in the awarding of building contracts, the advantages of which must be experienced to be fully appreciated, but which seem apparent to all those who have carefully considered the subject.

LESLIE H. ALLEN.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

IT IS the inalienable right of every one to think for himself, to form his own opinions regarding those matters with which he is intimately concerned. And undoubtedly every one has an opinion as to the outlook for building during the coming year. The very nature of our work brings us into touch with those who are identified with building operations in different parts of the country, and if we may intelligently judge from the opinions that come to us, we feel safe in predicting that there will be a general revival during the year.

Expansion in general business is always reflected, favorably, in the building field. As we all know, expansion in business is dependent upon wise legislation, a good crop outlook, and the attitude of banks and other institutions toward those who seek loans for the promotion of sound and legitimate business enterprises. To this let us add that optimism rather than pessimism is an important factor in creating and maintaining a healthy condition.

Taken as a whole, building operations for 1913 were very satisfactory. They were not as extensive in some parts of the country as in others, but this is natural and will probably always be so. The real depression came during the last two or three months and this depression was noticeable particularly in the larger cities. Here we find that a great deal of work which was already on the boards was ordered held up for one reason or another. Again, a great deal of work that had only reached the "interview" stage suddenly vanished. It will take but a short time when conditions have become more favorable to start this work going again, and to it will be added a great deal of new work, because cities and towns of this country are not overbuilt. The demand for most kinds of buildings has been equal to the supply. A period of hard times and consequent retrenchment in building operations is almost immediately followed by a corresponding increase.

Let us consider briefly those influences which do now and will continue to stimulate building operations. A rapidly increasing population must be housed. Electricity and the motor have reduced and are reducing distances with the result that new areas are being developed to provide new homes, schools, churches, business blocks, and manufacturing plants. The more prosperous among us will continue to build houses which will reflect modern thought in design, plan, and equipment. New inventions which administer to the comfort and material welfare of mankind will have a large influence in creating a demand for new hotels, apartments, hospitals, banks, libraries, theaters, office buildings, etc. Is this work likely to stop for any considerable length of time? Has it ever seriously stopped within the recollection of any man in practice to-day? We think not.

The practice of architecture is, generally speaking, influenced by two words, — "stop" and "go." The one is the spark that prostrates. The other brings into instant life every creative energy. Depression comes suddenly — you can tell it by the long line of draftsmen who hit the trail with a gloomy pine. Reaction is equally as sudden — you can tell it by the untrodden verdure that covers the trail. The word "stop" was undeniably uttered during the closing months of last year. Weighing — to the best of our ability and with the one thought of forming an intelligent estimate — the reports that have come to us from different sections of the country, we are of the opinion that the word "go" is soon to be passed down the line.

PRIZE WINNERS.

THE BRICKBVILDER'S ANNUAL ARCHITECTURAL TERRA COTTA COMPETITION.

THE Jury of Award for the Moving Picture Theater Competition awarded First Prize, $500, to Louis Fentnor and Robert Pallesen, associated, New York City; Second Prize, $250, to Thomas B. Herman and Dinardo & Beersman, associated, Albany, N. Y.; Third Prize, $150 to Gustave G. Vigouroux, New York City; Fourth Prize, $100, to James Flaherty, Boston, Mass. Mentions: Walter Scholer and David W. Carlson, associated, New York City; Robert R. Graham, Syracuse, N. Y.; LeRoy Barton and Walter McQuade, associated, Brooklyn, N. Y.; C. Hugh Ferber, Reno, Nev.; Harry E. Warren, Boston; Midgley Walter Hill, New York City.

The competition was judged January 10 by Winthrop Ames, Howard Greenley, Harry Creighton Ingalls, Albert Kelsey, Hugh Tallant, and Arthur Ware.

FOR some years there has been a strong movement on the part of the members of the National Association of Master Plumbers and National Association of Steam and Hot Water Fitters to secure the letting of their contracts by architects instead of general contractors.

It is interesting to the profession, therefore, to give here the resolution that was adopted at the last Annual Convention of the American Institute of Architects.

"*Resolved*, That the American Institute of Architects in convention assembled recommends to the members of our profession the adoption of the practice of direct letting of contracts for mechanical equipment, such as heating apparatus, plumbing, and electrical equipment. This recommendation is based on the conviction that direct letting of contracts as compared with sub-letting through general contractors affords the architect more certain selection of competent contractors and more efficient control of execution of work and thereby insures a higher standard of work, and, at the same time, serves more equitably the financial interests of both owner and contractor."

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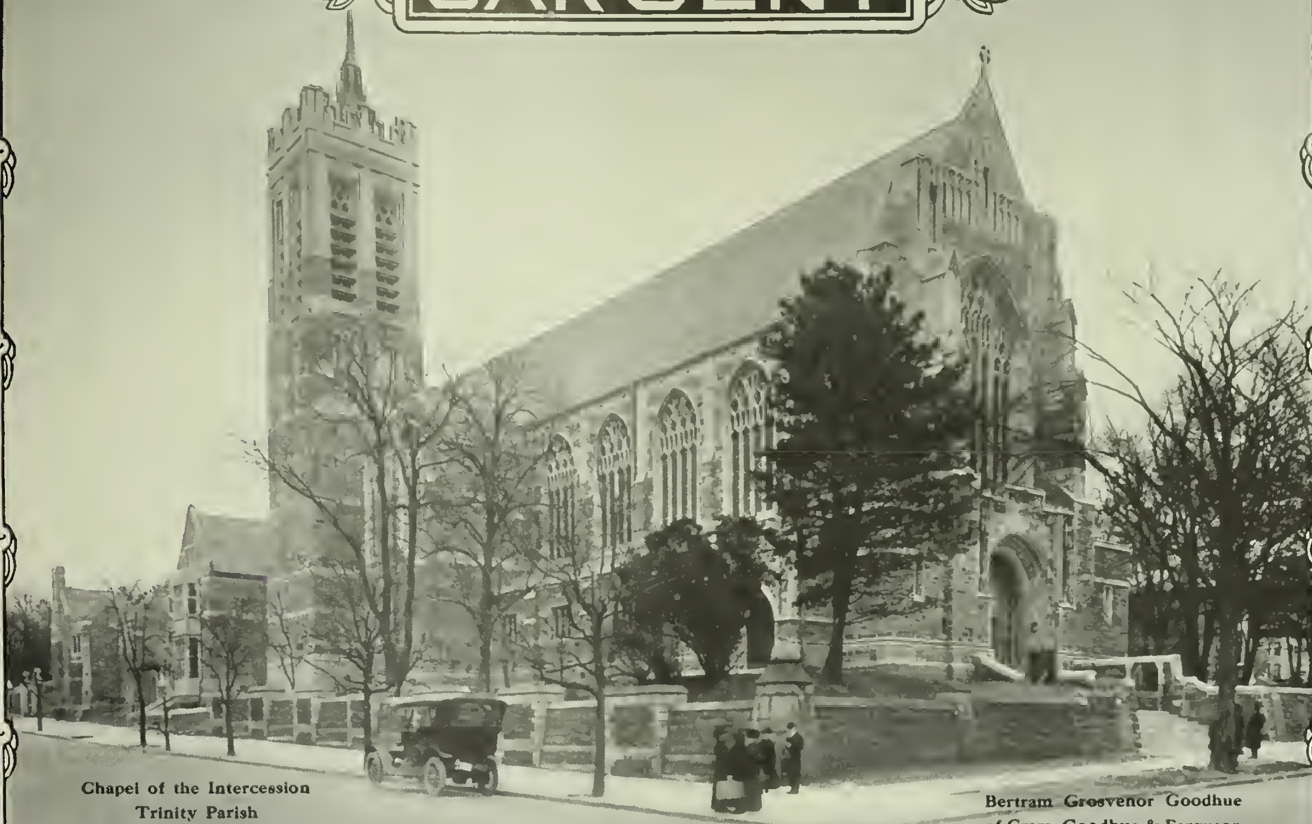

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New York City

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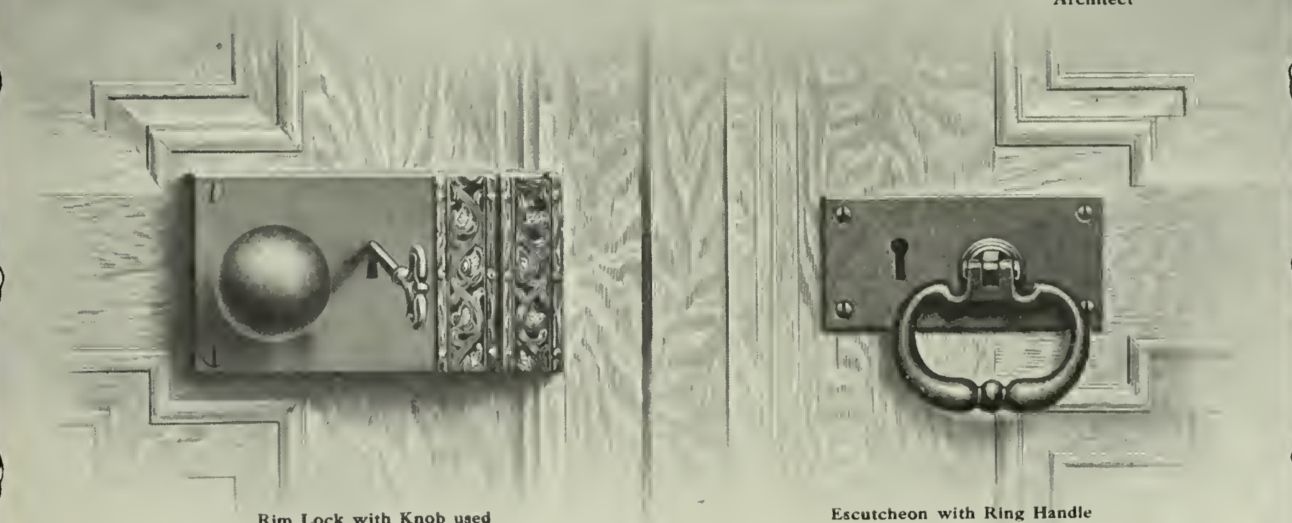
Architect



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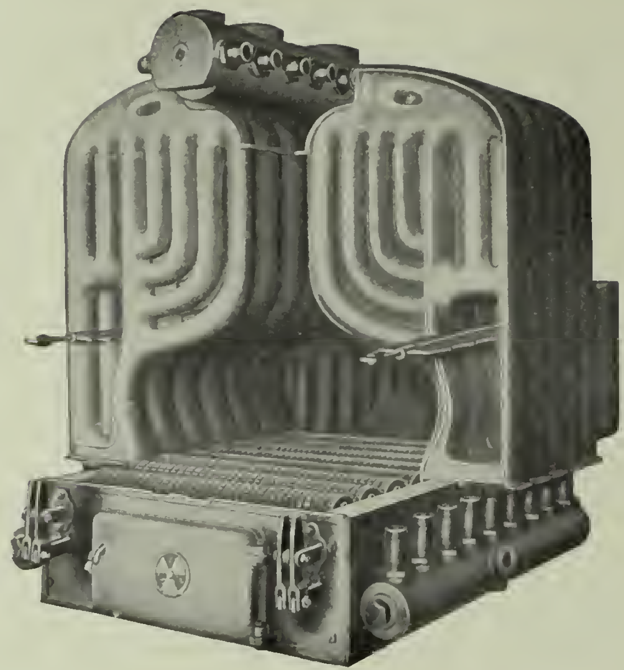

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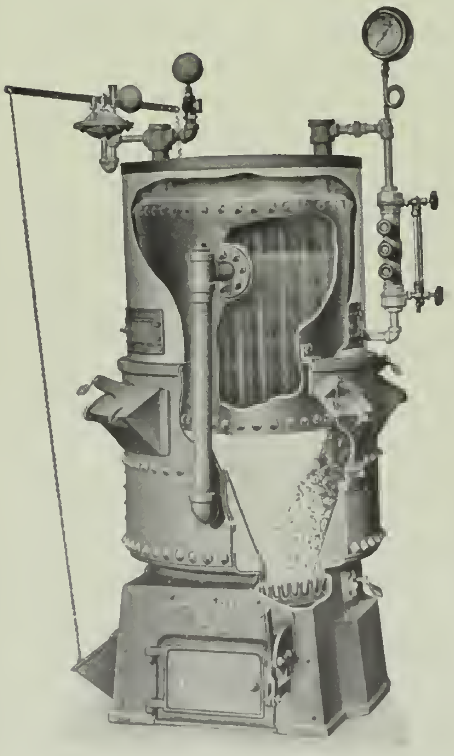

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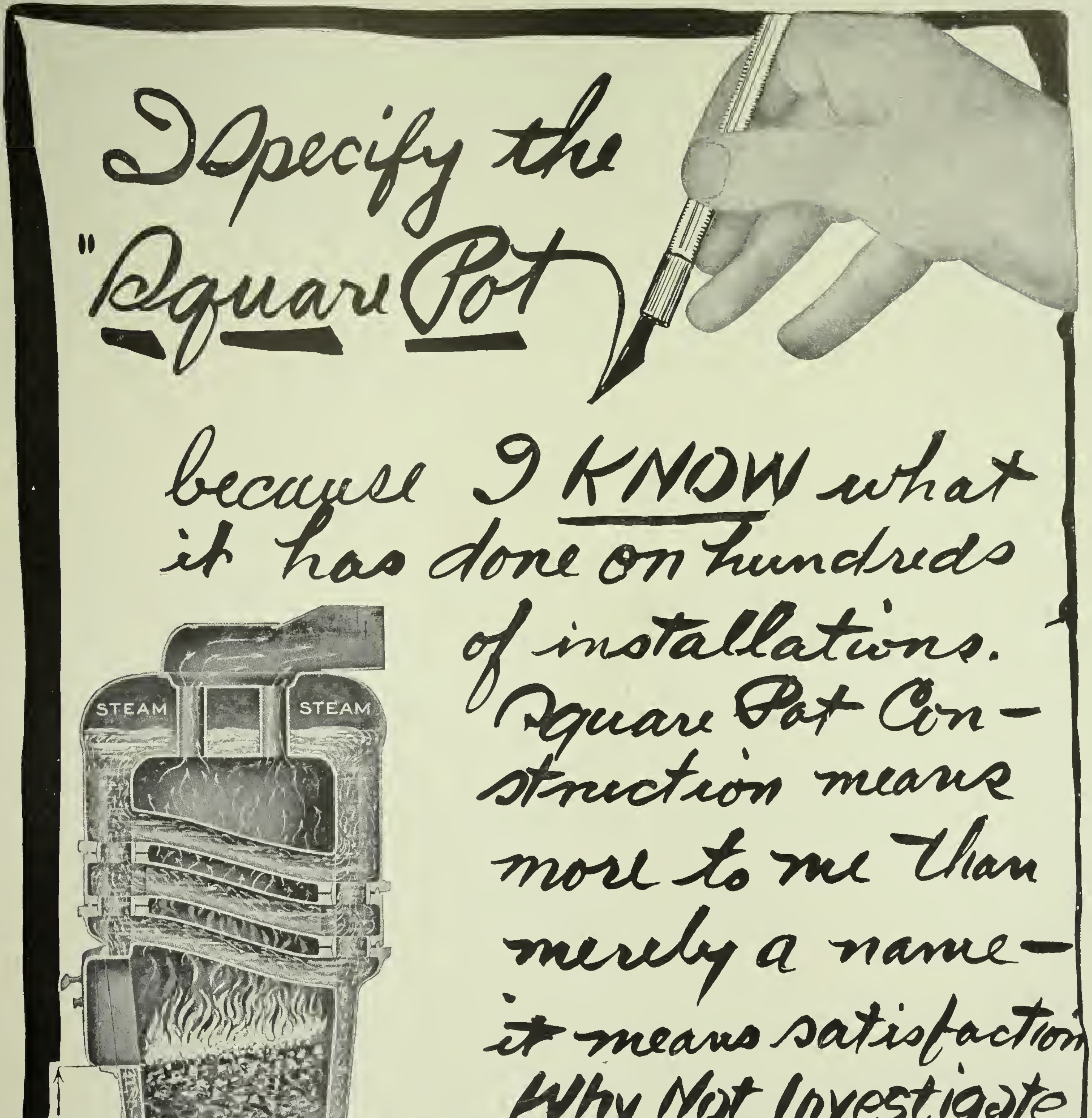
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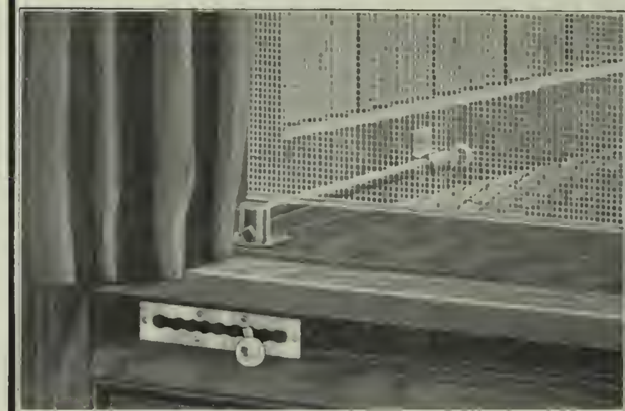

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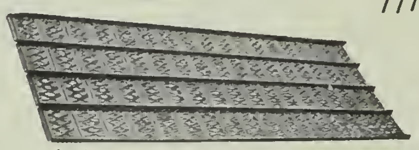

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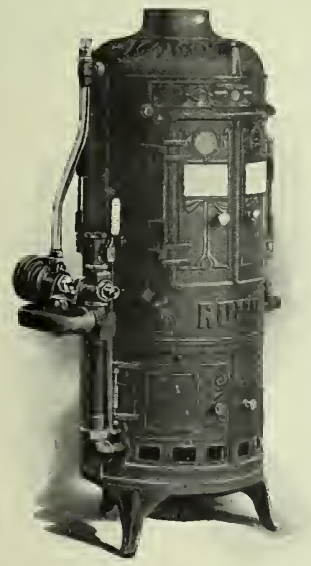

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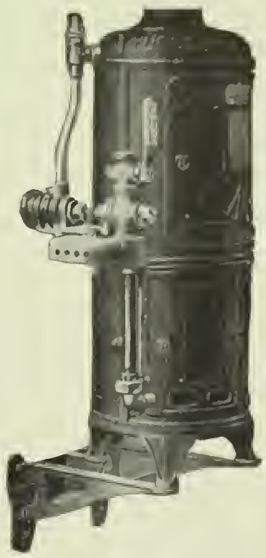

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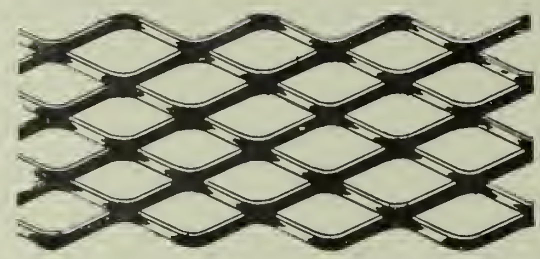

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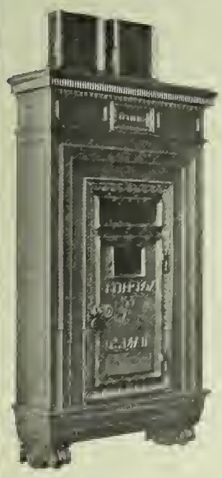

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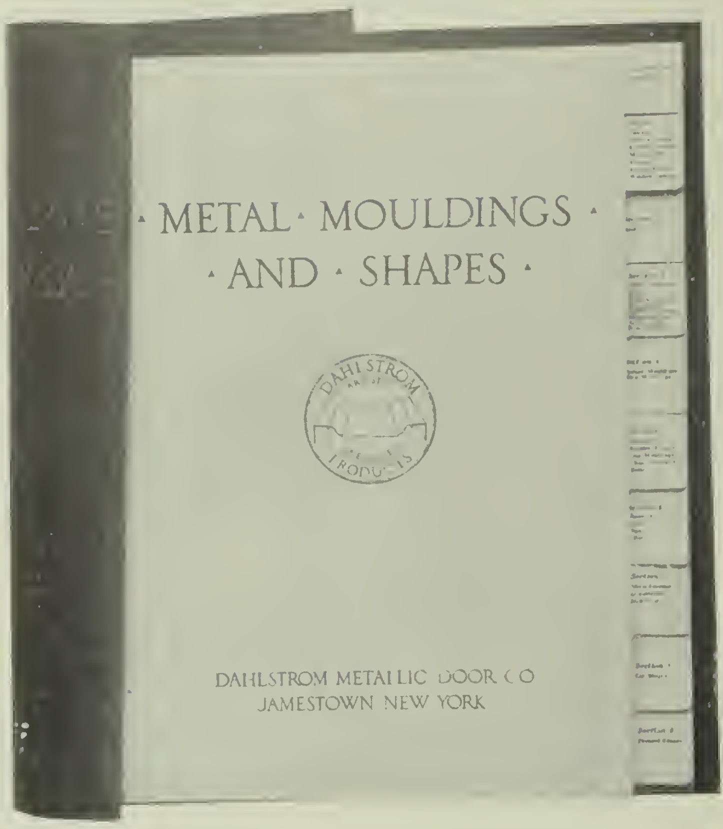

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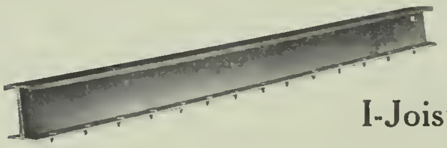

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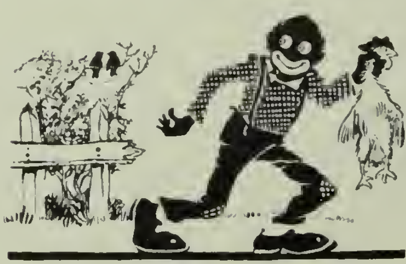

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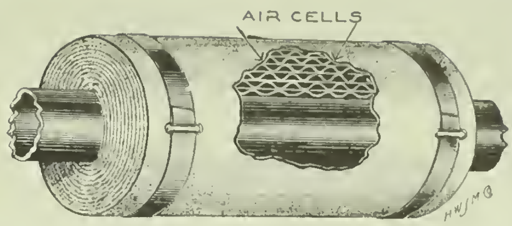

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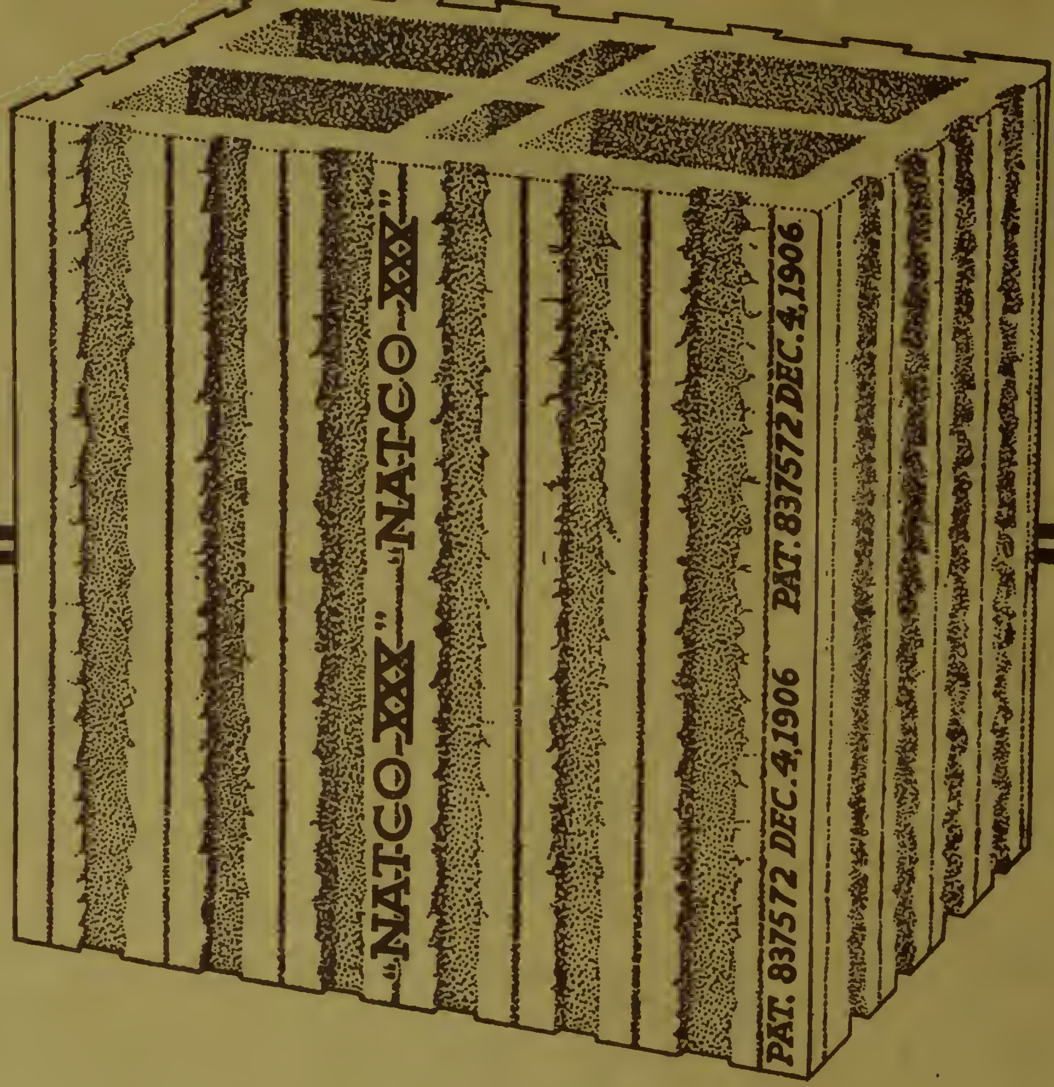

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II. THE WORK OF ALFRED MORTON GITHENS.

MR. GITHENS as an architectural renderer is not as well known as Mr. Eggers, the first in this series, not because his work is of unequal quality, but because most of it has been rendering of buildings in the Gothic style, and his method is one which does not suggest his actual ability to render buildings of other types. Besides this his work for his brother architects is necessarily somewhat limited by the fact that he has been for some years in partnership with Mr. Charles C. Haight (the firm name is Charles C. Haight and Githens), and has had during that time a very considerable share in the design and construction of the numerous buildings at Yale for which this firm were the architects, as well as the other large work that they have executed.

Mr. Githens was born in Philadelphia in 1876, studied at the University of Pennsylvania, and afterwards won the Stewardson Traveling Scholarship; he is a former student of the École des Beaux Arts, which school has however not impressed its methods upon either his rendering or design, although he was enabled to get the real good of the Beaux Arts training in plan and its general broadening influence. As a draftsman he was at different times connected with several offices, but those in which his particular ability showed most clearly, and with which he was connected for the longest times, were Cope and Stewardson and Charles C. Haight, both of which were eminent for their work in the Gothic style.

The first renderings by Mr. Githens which the writer ever saw were those made in Cope and Stewardson's office for some of the buildings at the University of Pennsylvania and at Princeton. These renderings showed the same characteristics that his work to-day possesses; they were notable for sharp accents on the salient features, and for a sort of glossing over of the parts which he found uninteresting. His palette is unusual; cold in the extreme and keyed with color combinations which, brilliant in themselves, do not convey to the eye any surcharge of color. His work is never suave or calm; one feels always that the day is cloudy, and that there is wind in the air. He is not a maker of lovely color schemes which dress up the poorest architecture into a semblance of decency, but is the instinctive architect seizing eagerly, almost fiercely, upon those things which he finds good, forcing them on your attention with a few heavy and yet delicious pen strokes, and running flat toned washes over the parts in which he is not especially interested; but by some instinct not easily understood he manages, perhaps unconsciously, to so place his accents that he has in the end not a series of spots but a picture, and always an architectural picture. This is Githens at his best, and working in the way most natural with him; thus he has worked in the perspective of the Yale Library and in that of the church interior.

His method in rendering differs very widely from that of most draughtsmen, especially in the one respect that the pencil drawing with which he starts is not regarded as a guide and a thing to be covered up; he makes the pencil lines themselves count in the rendering, washing in flat surfaces with water color, sometimes using it for his shadows, but more often indicating them with a fountain pen. Any one who has ever tried to use ordinary ink in connection with a water color knows how it tends to spread and blur; when Githens uses it he seems to forecast in advance the precise direction of these spots, so that they too fit into the picture. Chinese white is said in the schools to be a dangerous thing to use, but all our architectural renderers employ it largely, and none perhaps with more skill than Githens, though he rarely mixes it in his water color tones, but uses it for accents and high spots. He is of all the men the writer has observed in the actual process of their work the least careful as to his material; any color or any sort of paper is good enough; it may or may not be mounted, and if the water is dirty he changes his color scheme rather than get fresh water; it is essentially the method of a hurried man whose renderings are made for a purpose and not for his own satisfaction as pictures.

House at Englewood, N. J. Aymar Embury II, Architect.
Alfred M. Githens, Delineator.

Church of The Holy Comfortor, Charlotte, N. C. Charles C. Haight, Architect.
Alfred M. Githens, Delineator.

From this typical method of course, like all other men with original bent of mind, he has varied, experimenting with different methods, but never in quite the way one would expect. Thus, for example, the rendering of the Armory for the Second Battery, N. G. N. Y., looks in a general way like a sepia drawing, but is in fact largely a pencil drawing with a few flat washes, and this particular one is different from most of his drawings in that the building is treated with about the same tonal relations on all its parts and without marked accent. The suggestion of texture obtained by the use of the pencil is extraordinary and the ease with which light has been indicated by picking out the sides of the buttresses with a rubber, and by Chinese white in the sky, is extremely interesting. The bird's eye view of the Stevens Institute of Technology is another drawing quite different from most of his, and is of all his pen drawings perhaps more like the common run of perspectives, although lifted from the generality by the sureness of its execution, and by the precision with which the architecture, and not the unimportant, although interesting entourage, is made the focal point.

The drawing of the church interior (see Frontispiece), as well as being one of the most amusing drawings that Mr. Githens has ever made, is perhaps as excellent a piece of design of church interiors as we have often seen. It is of course reminiscent of very many Gothic churches, but is by no means archeological, and the treatment of the choir with a sort of masonry rood screen with openings to an ambulatory is certainly very unusual. It might be

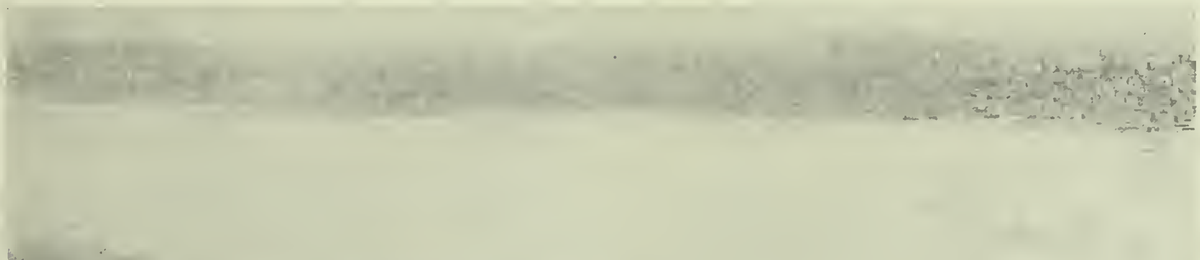
Competition Drawing for the Yale Memorial Library, New Haven, Conn. Charles C. Haight, Architect.
Alfred M. Githens, Delineator.

said that this drawing was made by Githens in about two hours, and without anything except the roughest sort of cross and longitudinal sections to guide him and is therefore an excellent illustration of the precision and architectural knowledge with which he works. This is one of those drawings in which no line is wasted and every single thing which is put on the paper was made to count: the paper itself was gray tinted so that a solidity could be obtained by the use of a very few lines in a way impossible on white paper. The drawing is in a sense extremely tricky, certain things are very far from appearing as they would in an actual structure (as for example the silhouetting of the arcades between the nave and the side aisle at the left), but these have been made to count in a way that is more real than reality; and the manner in which the drawing progresses in strength of indication until at the choir screen the interest is brought to a focal point gives an impression of reality which is absent in even the best of photographs. The simple trick of reflections on the pavement relieves the floor from being a plain, bare, open space, without the trouble of drawing in miles of pews or chairs which would in a drawing distract the eye, as in reality they never would. Of color there is very little, the intersecting arches are brightened with Chinese white in such a way as to develop their form without the use of elaborate indication of vaulting, etc. There is a hint of color in the windows, also in the crucifix and pulpit, but the color is suggestive and not forced. It is a drawing which deserves far more study than many drawings of infinitely elaborate character by the man who is interested in the methods of rendering, since it is a very impressive piece of work although a very quick one.

The drawing of the Church of the Holy Comfortor is not dissimilar in its methods, although the most part of the rendering was done with pen and brown ink instead of pencil, and slightly more elaboration was used in the indication of trees and the entourage generally than was necessary in any part of the drawing of the interior. It is a drawing neither very good nor very bad, but selected because of the facility with which it was done and because of its general excellence of quality.

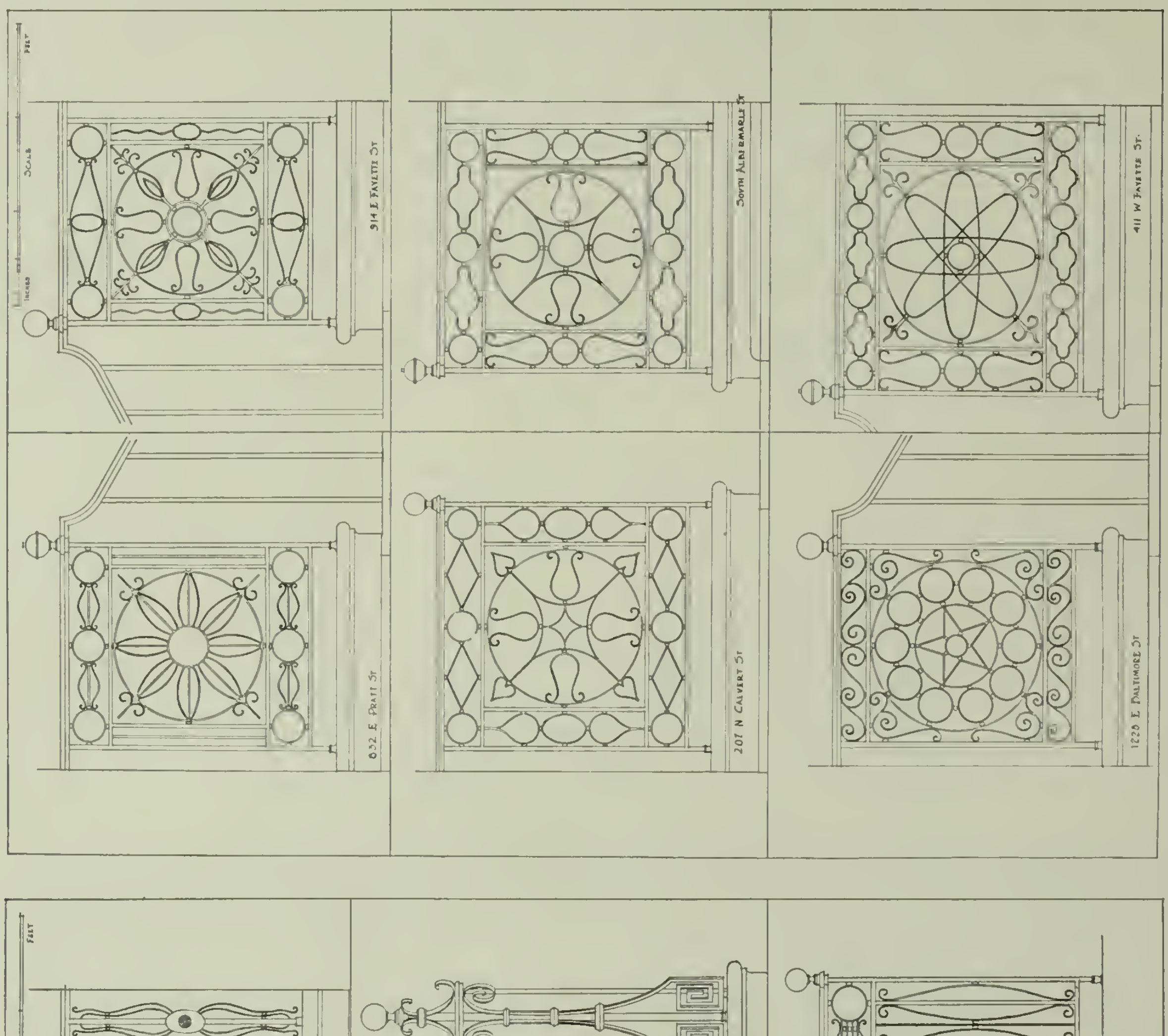
The drawing of the house at Englewood is carried to about the same distance, but there is a little more water color in this than in most of Mr. Githens' drawings. The background of trees as well as the foreground and terrace was done entirely in water color and the big trees across the front, indicated in pencil, are washed in with color. The building itself has most of the pencil perspective made by the architect untouched, and only certain things like the shadows in the windows, under the cornice and portions of the trellis are picked out in brown ink. The bright side of the building is washed in with Chinese white and the color of the tinted paper serves as shadows.

The illustrations together with these descriptions of his methods snould indicate pretty completely the wide variety of Mr. Githens' ability as an architectural renderer.



Bird's Eye View, Stevens Institute of Technology, Hoboken, N. J.

Ludlow & Peabody, Architects. Alfred M. Githens, Delineator.



DETAILS OF OLD IRON RAILINGS AT BALTIMORE, MD.
MEASURED DRAWING BY RIGGIN BUCKLER

Old Iron Work of Baltimore, Md.

ACCOMPANIED BY MEASURED DRAWINGS OF SELECTED EXAMPLES OF WROUGHT IRON RAILINGS.

By RIGGIN BUCKLER.

THE possession of richly wrought ironwork was much sought after in some of our older cities at the time when our forefathers were creating the architecture of the Colonies. Baltimore has its share of examples which have survived, notwithstanding the ravages of time and the havoc of changing fashions. While the ironwork of Baltimore cannot be considered as beautiful or as varied as that which one finds in Charleston, nevertheless the visitor is well repaid for a trip through certain parts of the city.

Unlike most southern cities Baltimore is not a city of gardens, the houses being built directly on the building line, and therefore there is not to be found the wrought iron entrance gates and lamps that are so characteristic of the South. The ironwork, except for shutter fasteners, foot scrapers, and similar examples of the craftsmen's art, is limited to the ornamental landing panels that flank both sides of the broad marble step platforms.

There is not much doubt but that the work illustrated herewith was either designed or executed by the same person; the same motive in the center of the panel appears again and again with variations in the small side panels. The designs may be roughly divided into three groups: that with the lyre baluster in the center; that with the "honey-suckle" ornament in the center, and that with various combinations of geometrical designs. The scale of the ironwork is very delicate; the ornamental iron ranging from 3/16 to 1/4 inch in thickness by not more than 5/8 inch in width, and the frames from 5/8 to 3/4 inch square.

In days gone by, when the residential center was on Franklin street and lower St. Paul, the average Baltimorean spent the greater part of the summer in the city; a month in the country or a visit to the Virginia Springs was considered an ample vacation. So when the nights grew warm, chairs and cushions would be placed on the front steps, and the platforms with their broad marble steps reaching out hospitably became the summer drawing room. To-day these same steps, forgotten and neglected, with the iron rust staining the marble, have become the entrances to tenements or, at the best, office buildings.

Wrought ironwork is again

Entrance to 105 West Mulberry Street.

Entrance on East Mulberry Street.

Shutter Fastener.

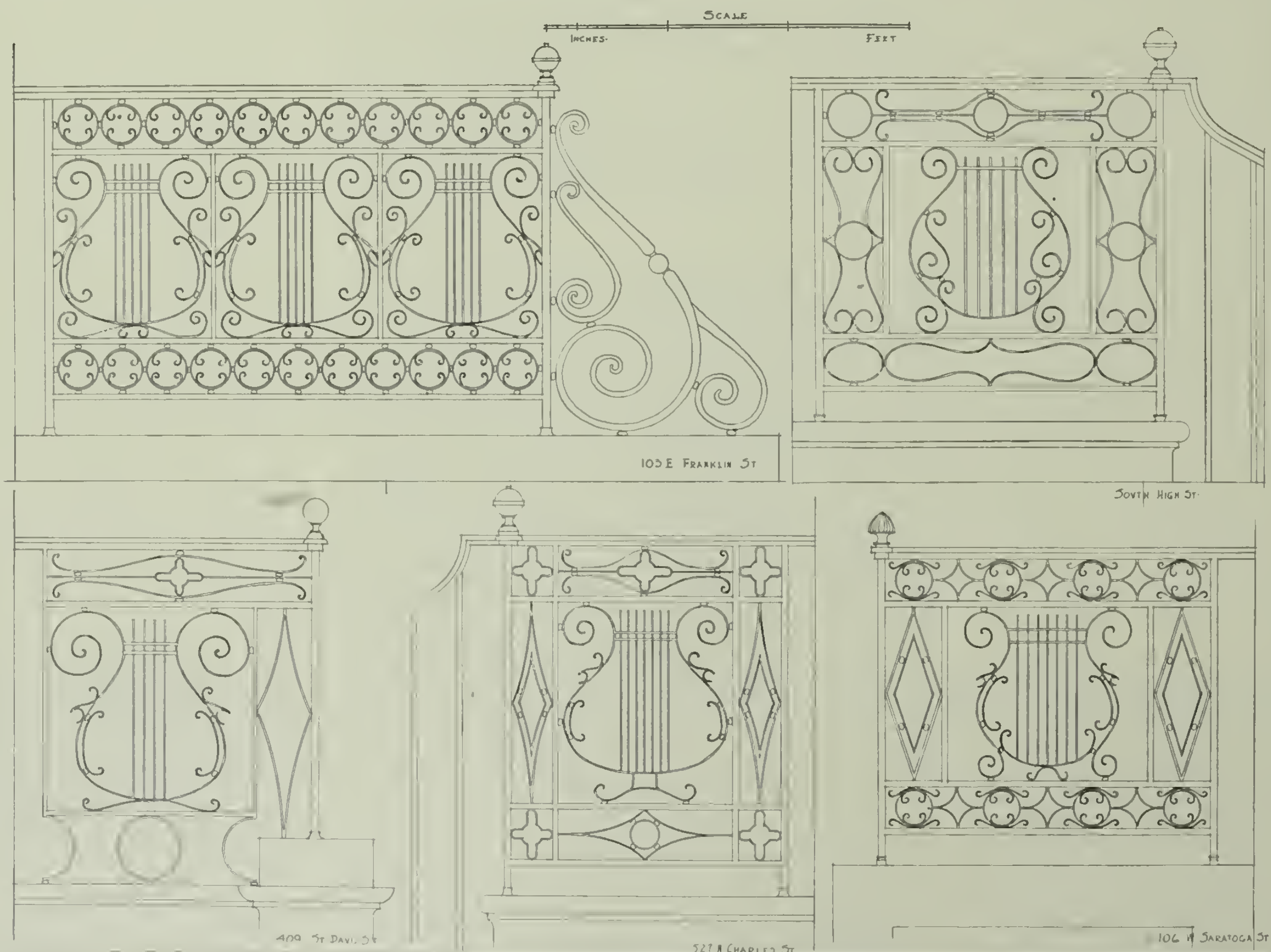
Foot Scraper.

becoming much more appreciated by owners and the public generally. There is a demand for old ironwork which inevitably accompanies appreciation. It is to be remarked, however, that when severed from its original surroundings and associations, the older specimens of the craft of the blacksmith hardly appear to have much real sentiment apart from the beauty of the design. The new work of to-day compares favorably with that which was done a century ago, and few experts can distinguish between old and modern.

There is a strong appeal to the artistic sense about the craftsmanship of the worker in wrought iron. This is accounted for, perhaps, because of one of the salient characteristics of the work. His operation must, by the very nature of his material, be hurried. He must strike while the iron is hot, while the sparks fly, and working under such conditions the result cannot fail to be more or less a work begetting a spirit of sturdy independence.

In the past the designing of ironwork was as essential a part of the smith's occupation as working the metal. Of the design the architect did not then concern himself. To-day, however, he considers all elements of design, and in wrought iron, working upon and improving the old forms, he has made progress equal to that evident in greater problems of modern architecture.

Entrance on East Pratt Street.



DETAILS OF OLD IRON RAILINGS AT BALTIMORE, MD.
MEASURED DRAWING BY RIGGIN BUCKLER.

Heating and Ventilating.

I. OFFICE DATA FOR THE ARCHITECT.

By CHARLES L. HUBBARD.

IT IS intended to give in condensed form data relating to heating and ventilation prepared especially for the use of the architect. Work of this kind, as carried on in architects' offices, usually varies somewhat from that of the heating engineer, in that the architect deals more with quantities or capacity of apparatus than with details of construction. For example, proposals for a certain piece of work are submitted by a number of heating contractors, each furnishing his own plans and specifications. As these will vary more or less the architect must necessarily check up the various quantities and capacities, such as radiator and pipe sizes, boiler power, etc., before awarding the contract. Again, he wishes to prepare a uniform set of conditions for heating contractors to bid upon without going to the expense of preparing or having prepared a complete set of working drawings and specifications.

The following data are intended for work of this kind, and should enable the architect to quickly check the work of others or make the more important computations for a heating and ventilating layout with a minimum of reading and study.

Radiation. The following curves and figures apply either to ordinary wooden construction or 12-inch brick walls with lath and plaster inside. It is assumed that the workmanship is first class, the exposure south, and that an even temperature of 70 degrees is to be maintained within the building in zero weather.

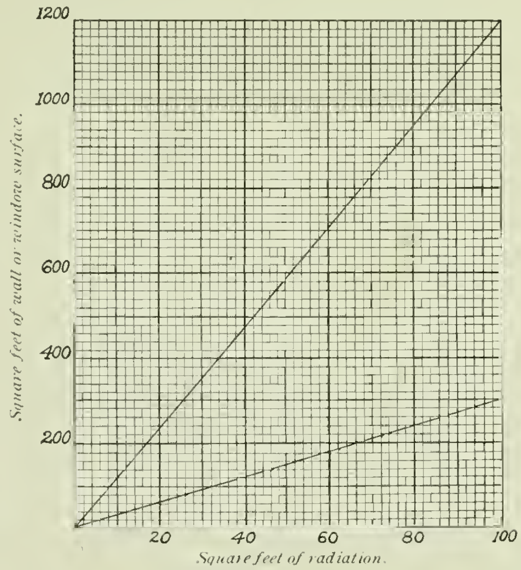


Fig. I. For Direct Steam Radiation.

Upper Curve for wall.
Lower curve for glass.

The curves in Fig. I are for direct steam radiation, the upper one gives the square feet of radiating surface for the wall exposure and the lower one for the glass exposure.

Example (1). A room has 600 square feet of wall surface and 100 of glass; how many square feet of radiation are required? Referring to Fig. I, the upper curve calls for 52 feet and the lower 32, making a total of $52 + 32 = 84$ square feet of radiation.

Factors for Correction. When the building construction is not of the best, or the room has other than a southerly exposure, or there is a cold attic above or unheated basement below, the radiation must be increased accordingly by use of the factors given below:

Best Construction	× 1.0
Good Construction	× 1.1
Fair Construction	× 1.2
Poor Construction	× 1.3
North Exposure	× 1.3
East Exposure	× 1.15
South Exposure	× 1.0
West Exposure	× 1.2
Cold Attic	× 1.10
Cold Basement	× 1.10

Example (2). If the room taken in example (1) were in a house of fair construction, had a northerly exposure, and a cold attic above, what amount of radiation would be required?

The correction factor in this case is $1.2 \times 1.3 \times 1.1 = 1.7$, calling for $84 \times 1.7 = 143$ square feet of radiation.

The curves shown in Fig. II apply in a similar manner to direct hot-water heating.

Indirect Radiation. In the case of dwelling houses and similar work, the simplest way of determining the indirect surface for warming a given room is to first compute the direct surface and multiply by 1.5.

This method is very convenient, as a building employing indirect heat commonly has a considerable amount of direct radiation also, hence, in making the computations, the whole system may be worked out on the basis of direct heat, and then the surface, in such rooms as are to be heated with indirect, may be multiplied by 1.5. The same relation between direct and indirect surface holds in the case of hot water as well as for steam.

Pipe Sizes for Steam. The pipe sizes in steam heating are usually based on the allowable drop in pressure between the boiler and the last radiator at the extreme end of the line. In buildings of ordinary size a drop of one-fourth pound in 150 feet will be safe for all ordinary conditions.

Table I has been computed on this basis and is to be used for all horizontal supply mains and branches, and for risers where the two-pipe system is employed.

TABLE I (STEAM).

Square Feet of Direct Radiation.	Size of Supply Pipe.	Size of Dry Return.	Size of Wet Return.
70	1"	1"	¾"
120	1¼"	1"	1"
210	1½"	1¼"	1"
430	2"	1½"	1¼"
800	2½"	2"	1½"
1,300	3"	2½"	2"
2,000	3½"	2½"	2"
2,800	4"	3"	2½"
5,000	5"	3"	2½"
7,500	6"	3½"	3"
11,000	7"	3½"	3"

It will be noted that the "dry" or overhead returns are made a size larger than when they are sealed or below the water line of the boiler. This is because in the first case they contain both water and steam, and "water hammer" and surging are likely to occur if the pipes are not of good size and properly graded. Pipes of this kind should pitch at least 1 inch in 10 feet toward the boiler. When the returns are sealed, no pitch is necessary, although it is customary to give them a slight downward grade toward the draw-off cock for purposes of drainage.

When the single-pipe system is employed, that is, where the steam supply and return water flow through the same riser in opposite directions, larger sizes must be used than given in Table I. In cases of this kind Table II may be employed.

TABLE II (STEAM).

Square Feet of Radiation.	Size of Riser.	Square Feet of Radiation.	Size of Riser.
40	1″	240	2½″
70	1¼″	300	3″
100	1½″	500	3½″
160	2″		

When the circuit system of piping is employed, that is, where a main of uniform size is carried around the entire building and connects with both the supplies and returns from the radiators, the following sizes may be used :

TABLE III (STEAM).

Square Feet of Radiation.	Size of Main.	Square Feet of Radiation.	Size of Main.
200	2″	1,200	4″
350	2½″	2,000	5″
600	3″	3,000	6″
900	3½″		

For indirect radiation, count each square foot of heating surface as two of direct and use Table I.

Pipe Sizes for Hot Water. The pipe sizes for hot-water heating depend upon the difference in temperature between the supply and return and upon the elevation of the radiator above the boiler. The frictional resistance due to the length of run is also an important factor.

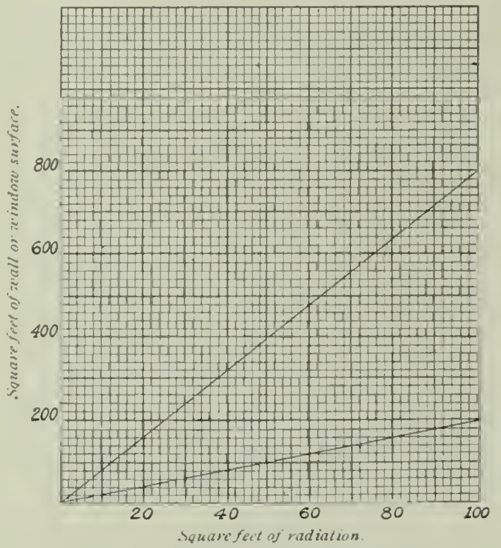


Fig. II. For Direct Hot-Water Radiation.

Upper curve for wall.
Lower curve for glass.

For the average conditions of gravity heating, where the farthest radiator is not more than 150 feet from the boiler, the following sizes may be used for the supply and return mains and branches :

TABLE IV (HOT WATER).

Square Feet of Radiation.	Size of Supply and Return.	Square Feet of Radiation.	Size of Supply and Return.
20	1″	600	3½″
50	1¼″	850	4″
75	1½″	1,200	5″
150	2″	1,600	6″
250	2½″	2,000	7″
400	3″		

The vertical supply and return risers leading from the mains to the radiators on the upper floors may be made somewhat smaller, owing to the increased elevation and the higher velocity of flow.

Table V may be used for conditions of this kind.

TABLE V (HOT WATER).

Size of Riser.	Square Feet of Radiation Supplied. 1st Floor.	2d Floor.	3d Floor.	4th Floor.
1″	30	50	60	70
1¼″	60	80	100	120
1½″	90	120	150	180
2″	180	250	350	400
2½″	320	430	500	
3″	500	600		
3½″	800			

In the case of indirect radiation, each square foot of surface should be counted as two of direct and considered as being located upon the first floor, so that Table V may be used by taking note of these conditions.

For example, 250 square feet of indirect surface is equivalent to $2 \times 250 = 500$ feet of direct, and from Table V is found to require a 3-inch pipe.

Boilers. Heating boilers of the cast-iron, round, or sectional type are usually rated upon the square feet of radiation which they will supply. Boilers of this kind are frequently overrated in trade catalogues and it is usually better to compute the required grate area and select a well proportioned boiler having the required dimensions than to be guided wholly by the rated capacity. Tests show that the weight of coal burned per square foot of grate per hour varies somewhat with the size of the grate, and under ordinary conditions runs from about 3 pounds for boilers having 1 to 4 square feet of grate up to about twice that amount for those having from 16 to 20 square feet.

This variation depends largely upon the care which they receive and the skill exercised in firing.

Of the heat contained in the coal, about sixty per cent is utilized in the generation of steam, or in heating the water in a hot-water boiler.

Figs. III, IV, and V give the square feet of grate surface for both steam and water boilers for varying amounts of direct radiation. The first of these includes boilers having grate areas from 1 to 4 square feet, and is based upon a combustion of 3 pounds of coal per square foot per hour. The second includes grates from 5 to 10 square feet in area, with a combustion of 4 pounds ; while the third is for areas of 11 to 15 square feet, with a combustion of 5 pounds. It will be noted from an inspection of these curves that a given size of boiler will supply considerably more water radiation than steam. This is because of the lower temperature of the water, which causes less heat to be given off per square foot of surface.

Under ordinary conditions a radiator supplied with steam at 2 pounds pressure will give out about fifty per cent more heat per unit of surface than a similar radiator filled with water at an average temperature of 170 degrees.

In estimating the boiler capacity for any given case, a certain factor of safety should be applied to cover radiation losses from the piping, etc. Under ordinary conditions the square feet of surface contained in the radiators multiplied by 1.25, will provide for these losses and give the *total* radiation upon which to base the boiler capacity.

Here, as in the case of pipe mains, each square foot of indirect radiation should be counted as two of direct.

Example (3). A building contains 400 square feet of direct hot-water radiation ; how many square feet of grate area should be provided in the boiler?

$400 \times 1.25 = 500$ total radiation, and from Fig. III we find that practically 3.5 square feet of grate are required.

Example (4). A building heated with steam has 1,000 square feet of direct radiation and 500 of indirect; what should be the grate area of the boiler?

$[1000 + (2 \times 500)] \times 1.25 = 2{,}500$ square feet, total direct radiation to be provided for, and this, from Fig. V, calls for 15.75 square feet of grate.

Similar curves for larger sizes may be plotted by allowing 190 square feet of steam radiation and 280 of water radiation per square foot of grate area for sizes running from 16 to 20 square feet. Tubular boilers are given a horse power rating, which is commonly based on 15 square feet of tube and other heating surface per horse power. Fig. VI gives the horse power rating of tubular boilers for different quantities of direct steam radiation. Boilers of this type are not ordinarily used for hot-water heating, except in connection with forced or mechanical circulation, in which case the water is usually warmed by steam in especially constructed heaters.

Centrifugal Fans. Fans of this type are commonly used for supplying air to halls, churches, schoolhouses, theaters, etc., where a certain standard of ventilation is required.

The capacity of a fan of given diameter depends upon its speed and the resistance against which it operates. The speed is limited in one direction by the required size of fan and the low pressure furnished to the air; while the noise produced with a peripheral velocity much above 3,500 feet per minute limits the speed in the other direction in buildings of the kind named above. Table VI gives data for fans of this type running at a peripheral velocity of approximately 3,000 feet per minute. When necessary they may be speeded up from ten to fifteen per cent without undue noise when properly constructed and mounted, the capacity increasing practically as the speed, within this range.

TABLE VI.

Diameter of Fan.	Revolutions per Minute.	Cubic Feet of Air Moved per Minute.	Horse Power of Motor for Driving Fan.
3″	325	4,500	2
4″	275	8,900	3
5″	225	13,900	5
6″	175	18,300	7
7″	150	24,600	8
8″	125	30,300	10
9″	125	42,900	14
10″	100	46,800	14

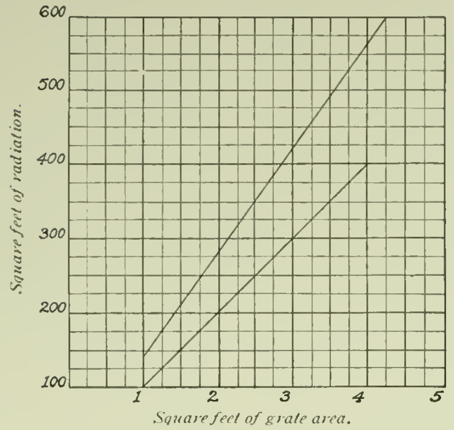


Fig. III. For Determining Size of Cast-Iron Boilers.

Upper curve for water boilers.
Lower curve for steam boilers.

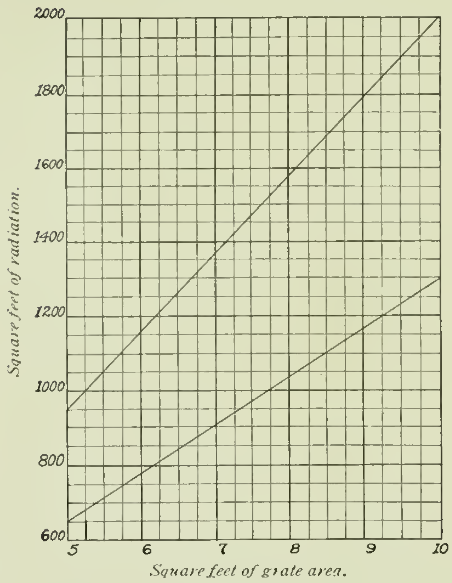


Fig. IV. For Determining Size of Cast-Iron Boilers.

Upper curve for water boilers.
Lower curve for steam boilers.

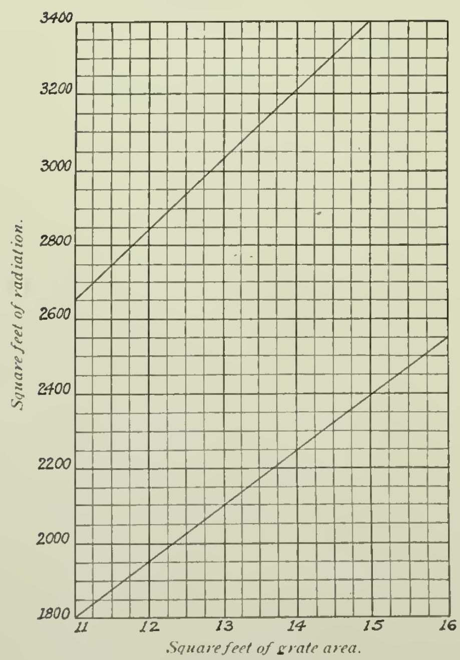


Fig. V. For Determining Size of Cast-Iron Boilers.

Upper curve for water boilers.
Lower curve for steam boilers.

Disk Fans. In the case of disk or propeller fans, Table VII may be used. These data apply to the average conditions of exhaust ventilation where the fan is connected with a system of ducts of ample size. When the fan is placed in a wall or window opening, and discharges directly outward without the use of ducts, the speeds and horse powers for moving a given volume of air may be multiplied by 0.7 and 0.4, respectively.

TABLE VII.

Diameter of Fan.	Revolutions of Air per Minute.	Cubic Feet per Minute.	Horse Power of Motor.
18″	800	1,500	¼
24″	600	2,500	½
30″	500	4,000	¾
36″	400	6,000	1
42″	350	8,000	1½
48″	300	10,000	2
54″	250	12,000	2½
60″	225	16,000	3
72″	200	24,000	4

Main Heaters. The required depth of a heater for use with a fan depends upon the final temperature to which it is desired to raise the air.

Table VIII is based upon an average air flow of 1,000 feet per minute between the pipes, a steam pressure of 5 pounds, and the entering air at zero.

TABLE VIII.

Rows of Pipe Deep.	Final Temp. of Air.	Rows of Pipe Deep.	Final Temp. of Air.
4	42°	16	125°
8	70°	20	135°
12	95°		

When the air is to be used simply for ventilating purposes, and is introduced at a temperature of 70 to 75 degrees, heaters 8 to 10 pipes deep are commonly used; but in the case of churches, halls, theaters, etc., where the warming is also done by the main heater, temperatures of 110 to 120 degrees are called for, and heaters containing from 14 to 16 rows of pipe are used.

The efficiency, or heat units per square foot of surface per hour, depends upon the depth of the heater, the velocity of air flow through it, the steam pressure, and the temperature of the entering air.

Table IX gives the efficiencies for heaters of different depths, with an air velocity of 1,000 feet per minute, steam at 5 pounds pressure, and the entering air at zero.

TABLE IX.

Rows of Pipe Deep.	Efficiency in B. T. U. per Sq. Ft. per Hour.	Rows of Pipe Deep.	Efficiency in B. T. U. per Sq. Ft. per Hour.
4	2,100	16	1,500
8	1,900	20	1,300
12	1,700		

The amount of heat in B. T. U. required to warm a given volume of air through any range in temperature is given by the formula,

$$H = \frac{V \times T}{55}, \text{ in which}$$

H= the total heat required in B. T. U.,
V= volume of air in cubic feet,
T= rise in temperature in degrees.

Example (5). A school building requires 1,700,000 cubic feet of air per hour at a temperature of 70 degrees in zero weather. How deep should the main heater be, and how many square feet of surface should it contain, assuming a steam pressure of 5 pounds and an air velocity of 1,000 feet per minute?

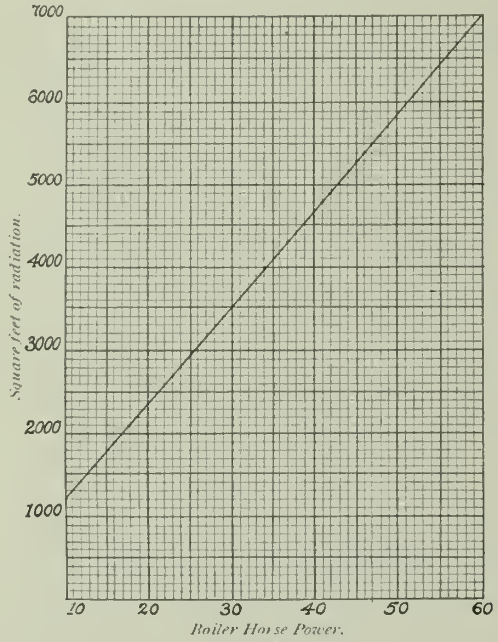


Fig. VI. For Determining Size of Cast-Iron Boilers.

Upper curve for water boilers.
Lower curve for steam boilers.

Referring to Table VIII it is found that the heater should be 8 pipes deep to give the desired final temperature, while the efficiency for an 8-row heater is given as 1,900 in Table IX. The total heat required per hour is found from the formula to be,

$$\frac{1,100,000 \times 70}{55} = 1,400,000$$

B. T. U., and this divided by the efficiency calls for $140,000 \div 1,900 = 737$ square feet of heating surface.

Practical Considerations. The following points should be taken into consideration when drawing up a set of heating specifications or when passing upon those of others.

The plant should be of sufficient capacity to maintain an inside temperature of 70 degrees in zero weather, without forcing the boiler beyond the point of *economical* operation to effect this.

Two-column radiators are more efficient than deeper ones and should be used when there is sufficient space for them. Make the radiators of symmetrical proportions; reduce the height for the smaller sizes instead of the length. Consider the furniture and the use of the room when locating direct radiators. While theoretically the source of heat should be placed in the coldest part of the room, a radiator or register in almost any part of a small or medium size room will produce an even temperature.

Do not leave the gilding or painting of the radiators to the steam fitters' helper. This work is a part of the interior decoration and should be done in a manner to harmonize with the special finish of the room.

The single-pipe system of steam supply is the best for dwelling houses and similar buildings, as it reduces the number of risers and valves one-half, and prevents the flooding of floors and ceilings by neglecting to close the return valve.

Hot-water systems operate nicely on a downward supply, with the supply and return at the same end of the radiator and connected with the same drop. This arrangement does away with separate return drops and makes the system self-venting, thus doing away with air valves on the radiators.

Place the expansion tank where there is no danger of freezing or else provide it with a special circulation pipe. Carry the vent from an expansion tank through the roof, and the overflow to a basement sink as a "tell tale" to indicate when the tank is full.

If it is arranged to add water at the tank, provide a gauge glass; if the connection is in the basement, provide an altitude gauge.

Carry up all risers in the corners of rooms, behind doors, and in closets so as to conceal them as much as possible. Never run a riser on a conspicuous wall.

Grade all pipes in the right direction and avoid pockets for the accumulation of condensation in steam systems and of air in water systems. If it is desired to keep the basement cool, insulate the pipes with a good form of sectional covering. Heat radiated from the boiler and piping, however, is not lost, as it rises to the rooms above and also warms the floors on the first story.

Floor registers are convenient for warming the feet, but are often in the way of carpets and rugs, besides catching a considerable amount of dirt. Baseboard registers avoid most of these objections and are easier to install, especially on the upper floors.

In selecting a heating system the following points should be kept in mind. A furnace is the cheapest to install, easiest to regulate as to temperature, and furnishes fresh air for ventilation. On the other hand, it is quite likely to heat the rooms unevenly in cold and windy weather, and its use should, in most cases, be limited to buildings of small and medium size.

Steam, both direct and indirect, is well adapted to cold climates and exposed locations. It is also adapted to buildings of all sizes.

Direct steam furnishes no fresh air for ventilation, but this defect may be overcome by using indirect stacks for the more important rooms. The principal objection to steam is the difficulty of temperature regulation except by the use of expensive automatic devices.

Hot water is especially adapted to the warming of dwelling and apartment houses on account of the ease with which it is regulated. It may also be used for ventilating purposes by employing indirect stacks the same as for steam.

The principal objection to hot water is the danger of freezing in extreme weather, which makes it necessary to circulate the water to a certain extent through all of the radiators, whether the rooms are in use or not.

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M O N T G O M E R Y   S C H V Y L E R

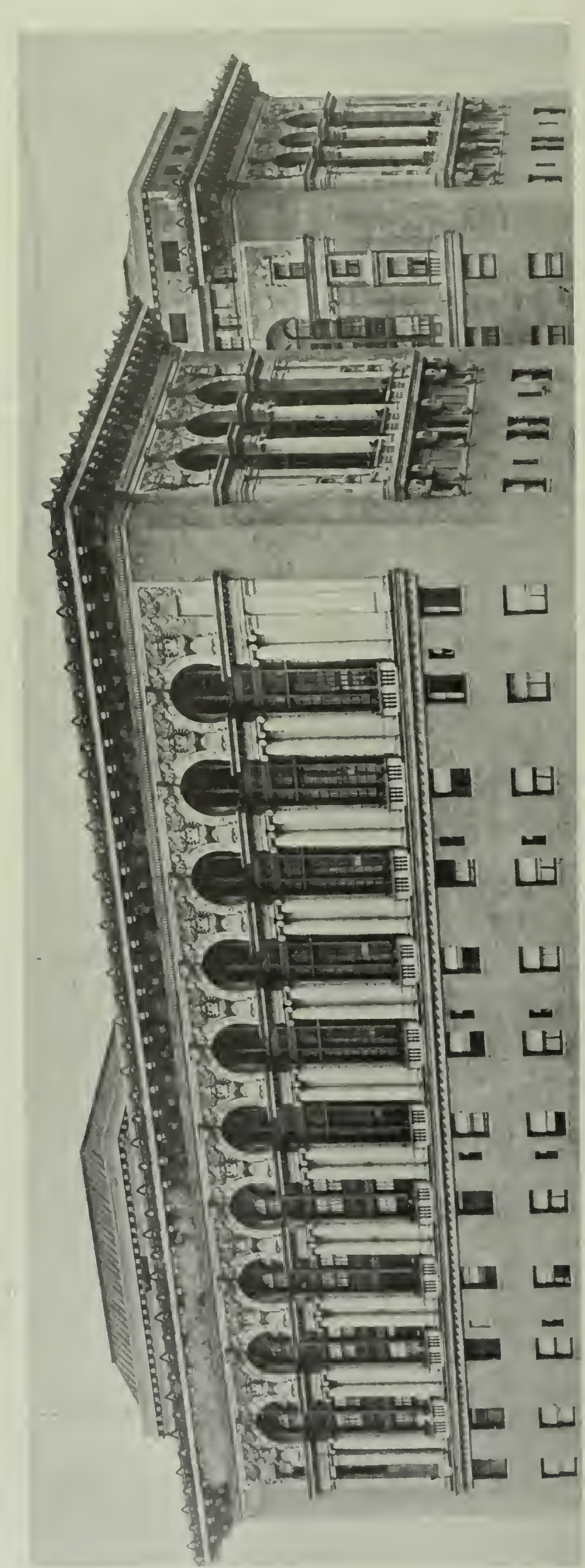
The Biltmore Hotel
Madison Avenue, New York

WARREN & WETMORE, ARCHITECTS

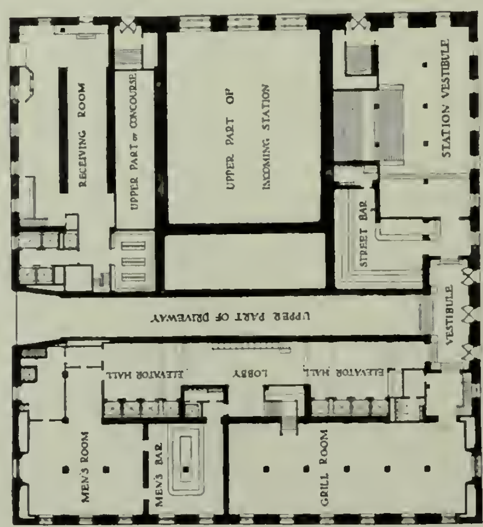
THE problem of the steel-framed, skyscraping hotel is architecturally so serious that an architect may almost be pardoned for abandoning it as insoluble. The architecture is, equally with the architecture of the skyscraping office building, apiarian, for by far the greater part is an aggregation of single cells for which the honey-comb offers the only precedent among the organisms of nature. In the case of the new hotel, which offers one of the most conspicuous and quite the most towering of the members of the group of which the new Grand Central Station in New York is the nucleus, the essential problem was, as we shall see, much complicated with special difficulties of adjustment and construction. For, like the other members of the group, the new hotel is reared above a network of railroad tracks. These it is obliged to straddle and in various ways circumvent, so as not to interfere in the smallest degree with their reticulation or to obstruct their fair-leadings and clearances. Consider this condition and you will understand that the actual points of support of the building, which carry its weight to its foundations, must be put not where you would have them if you were free to put them where they "ought" to be, but where you must put them to prevent them from getting in the way of the traffic. This is the primary condition of the whole enterprise, that the tracks shall be unobstructed and have the right of way over all other construction and architecture whatsoever. Not only is this skyscraper a honeycomb like all the others; it is a honeycomb set on stilts extending unusually far below the visible structure, and these stilts are set not where the designers would have chosen to set them if they had been free to choose, but where they could get them in in deference to the paramount claims of structural necessities which had nothing to do with those of their building. It is true that the structural troubles of an architect have nothing to do with the critic of the finished product, whom it is the architect's business to make forget that there were any such troubles. They may and must be mentioned in the case even of an exclusively architectural consideration of the Biltmore, because they have left their scars on the completed edifice, and produced dispositions unintelligible without reference to them.

It is true that the architect of a skyscraping hotel has advantages over the architect of a skyscraping office building. To follow the triple division which has imposed itself upon all designers of skyscrapers whatever, and follows out the analogy of the division of the classical column into base, shaft, and capital, again pursuing the Aristotelian precept that every work of art must have a beginning, a middle, and an end, is a much easier prescription to comply with in an hotel than in an office building. And this because in an office building it is difficult, and in most cases impossible, to give to the three members of the classic "order" proportions and relations which will be tolerable to the spectator habituated to the classic examples, without making the division arbitrary, illogical, and unfounded in fact. The architect who attempts to retain classical proportions

View of 43d St. and Vanderbilt Ave. Façades.

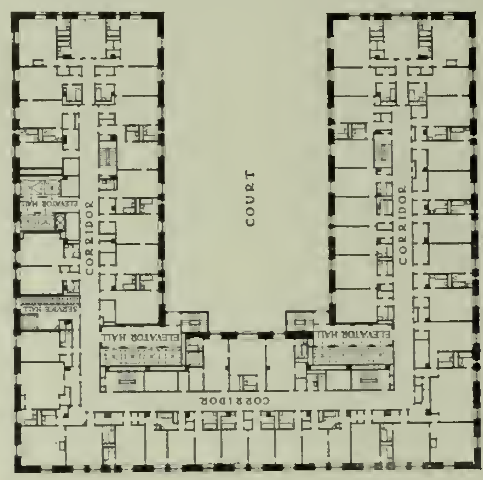


DETAIL OF UPPER STORIES OF 43D STREET ELEVATION



GRILL ROOM FLOOR PLAN

MAIN FLOOR PLAN



TYPICAL FLOOR PLAN

THE BILTMORE HOTEL, NEW YORK, N. Y.
WARREN & WETMORE, ARCHITECTS

in a tall office building comes into collision with a rule founded quite as much in the nature of things as Aristotle's precept, and that is the rule formulated by Mr. Louis Sullivan, "Where function does not vary, form does not vary." For, in fact, in an office building it is only the single story containing the shop fronts of the street level that demands or justifies a separate treatment. Above this, the superstructure is all honeycomb, until we arrive at the very top, where there may be another single crowning story devoted to the operative machinery of the structure. Proportions negotiably classic, in the case of a building say of twenty stories, would require a base of three stories at least, and a capital of as many. It is one of the distinctions of the Woolworth Building, the latest and tallest of the office buildings up to date, that the classical convention has been ignored and the base is only the single high story which can be logically differentiated from the shaft by the character of its uses and its occupancy. But, of course, it is much more convenient and comfortable for the architect if the practical uses of his building allow him a base and a capital which bear a more conventional relation to the shaft of small and single cells; and this is the case when the building is an hotel.

Models of Terra Cotta Ornament.

We find that the architects of the Biltmore, if they have not succeeded in dissembling all their misfortunes, have at least made the most of their advantages. The bulk of their building, the many storied brown brick shaft, consists like the office building of single cells, only sleeping rooms instead of working rooms, without even so much distinction as exists among those of the honeycomb, where one finds that the queen cells are at least larger than those of the workers, and each cell, in the case of the hotel, having a subordinate slit alongside, denoting the invariable bath. There is no help for this, and indeed the architects are entitled to no sympathy on account of it, provided only they can find plausible occasions for differences in the treatment of what may be called the public rooms of their building. The architects of the Biltmore have managed to find it, insomuch that they have made of their architectural base a seven-story building, complete in itself, upon which they have concentrated their architectural efforts, and the spectator is expected to concentrate his inspection, kindly ignoring the great brick shaft above as more or less a necessity which he need not look at unless he likes. The separate treatment of the base as a complete architectural entity has been carried further in this case than in that of any other of the sky-scraping hotels, and constitutes the chief distinction of the building.

It is easy for the spectator to follow the implicit injunction given to him by the architects to look at the base and look at nothing else. The total area of the hotel is about 40,000 square feet. The streets are narrow; even Madison avenue, which is the widest of them, is narrow compared with the enormous height of the total structure. They are narrow even compared with the base, so that from any one of the opposite sidewalks the spectator has to look up quite as steeply as is comfortable to the crowning member of the base. The angle must be 60 degrees or steeper, and the base would be, quite as lofty as would normally be built facing such streets if the construction were composed, as it appears to be of walls capable of carrying themselves. It is, however, not solid masonry but the usual steel frame with a facing of limestone, excepting the crowning member, which is a frieze in architectural terra cotta. As is the case even in the most commercial of skyscrapers, the architects "have their exits and their entrances." They have also a tall arcade, which is counted as three stories in the above enumeration of the total height as seven, which is continued on all four sides, and which often justifies itself by opening upon great apartments, dining rooms and the like, which occupy the total height, elsewhere subdivided into lower rooms according to the exigencies of the "lay out." Below it is a story of square openings level with the sidewalk. Above are two more stories of normal dimensions, and a transitional story between two

Hotel Lobby, looking toward 43d St. Entrance.

molded "cordons." The arcade, however, is really "the thing," and may be said to comprise the architecture of the base, the story below and the stories above being subordinate appendages to it. It is, by its scale and generally speaking by its treatment, entitled to its preeminence and its conspicuousness, having in fact a stately effect and being a valuable addition to the street architecture of New York. It has a defect which detracts from the effect to which it is entitled, and that is the failure to mark the impost of the arches by some emphatic horizontal band. A vigorous molded course at this level would relieve the openings of the arcade of that uncertainty of determining just where the jamb ceases and the arch begins, which is always unpleasing even with a single arch and still more with a continuous arcade. How much it detracts from the potential effect of the feature may be seen in those places where the lack of emphasis which comes from the omission of a vigorous horizontal member is partly supplied by the well designed metallic lanterns which are so placed as to indicate the points at which the arcade needs the invigoration which such a member would supply. The well meant punctuation given by these ornaments, good so far as it goes, ought clearly to be carried further. On the other hand, the light iron balconies under the windows of the story just over the great arcade have an excellent effect, and upon the whole the base of the Biltmore is a success. It is an earnest of even greater successes hereafter, when the method that has been followed here of treating the base of a skyscraper as a complete and separable structure has excited imitation and emulation, as one would say that it is quite sure to do.

Main Foyer.

On the east side, the side towards the Grand Central Station, there is more room and a freer outlook than on the other three sides, where the narrow streets shut off the main bulk of the building from effective observation. This advantage has been utilized to the utmost. The separateness of the base is on this side emphasized by an actual recession of the superstructure from the plane of the wall of the base — a recession emphasized by converting it into a platform, available at the right season as an open air lounging place, crowned with a pergola and fronted with the frieze in architectural terra cotta, which is one of the best things in the building as a piece of design and also of execution. One would be at a loss to mention any other piece of decoration in terra cotta more readily distinguishable from cut stone, and this by employing the advantages which burned clay has over cut stone, in conveying the sense that before it was burned it was plastic and even fluid, and by retaining the sense of plasticity and fluidity in the burned product as an instance, so to say, of arrested motion. This frieze is really a delightful piece of work.

Gentlemen's Lounge and Café.

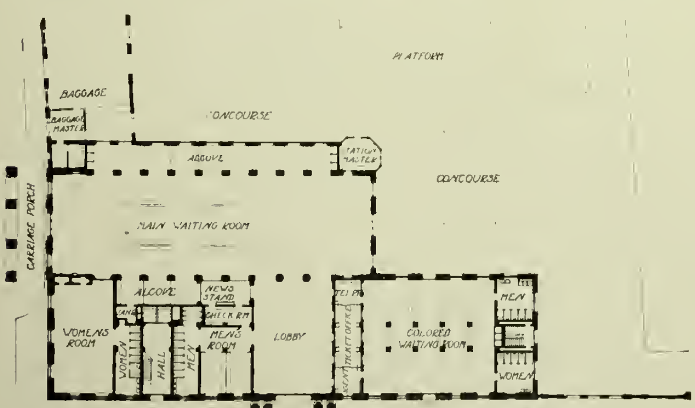
This east side is otherwise notable as being the side from which the superstructure may be best seen — the side, moreover, in which is sunk the open court, which is a vital necessity to a skyscraper of this form and area. It is considerably wider here than either of the wings it separates, which does not prevent them from offering rather puzzling questions, not soluble in the exterior view with which alone these remarks are concerned, as to how the middle suites of apartments are effectively illuminated. But one sees from here that a logical basis has been found for a lofty capital as well as for a lofty base. The "capital," a close arcade equal perhaps in height to three tiers of the cells which constitute the shaft, occupies the space with single apartments sometimes of its full height. What is to the point is to observe how the columns of this upper arcade are so queerly placed as to impend sometimes over voids, instead of over what seem to be, but of course are not, solid piers of brickwork. It appears that this anomaly is one of the results of having to place the feet of the stilts away down among and beneath the trackage, not where they ought to be, but where they can be placed. Fortunately, to apprehend the anomaly from near the building involves some eye strain, to say nothing of the risk of cervical dislocation; while at a distance across the city roofs, from which the upper stories of the Biltmore become effectively visible, the irregularity seems not to be apprehensible at all. The general effect of the arcade is pleasing, and without being too unacademic we can safely credit it as a successful termination to the building. The richest decoration of the entire façade is concentrated on this feature, and not without logical reason, for within this space is located the ballroom and the larger apartments of the hotel. The execution of the detail in architectural terra cotta is particularly free, and the lightness and grace of the forms reproduced in this material will make the upper portion of the Biltmore a notable addition to the diversified sky line of New York.

THE BILTMORE HOTEL, NEW YORK, N. Y.
WARREN & WETMORE, ARCHITECTS

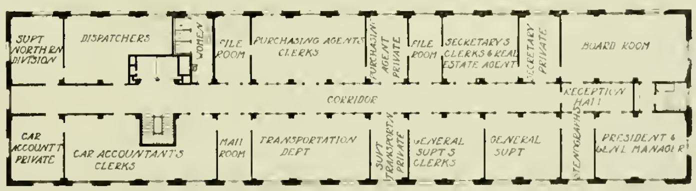
PALM COURT

MAIN RESTAURANT

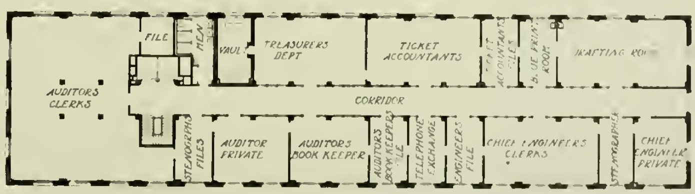
THE BILTMORE HOTEL, NEW YORK, N. Y.
WARREN & WETMORE, ARCHITECTS



MAIN FLOOR PLAN



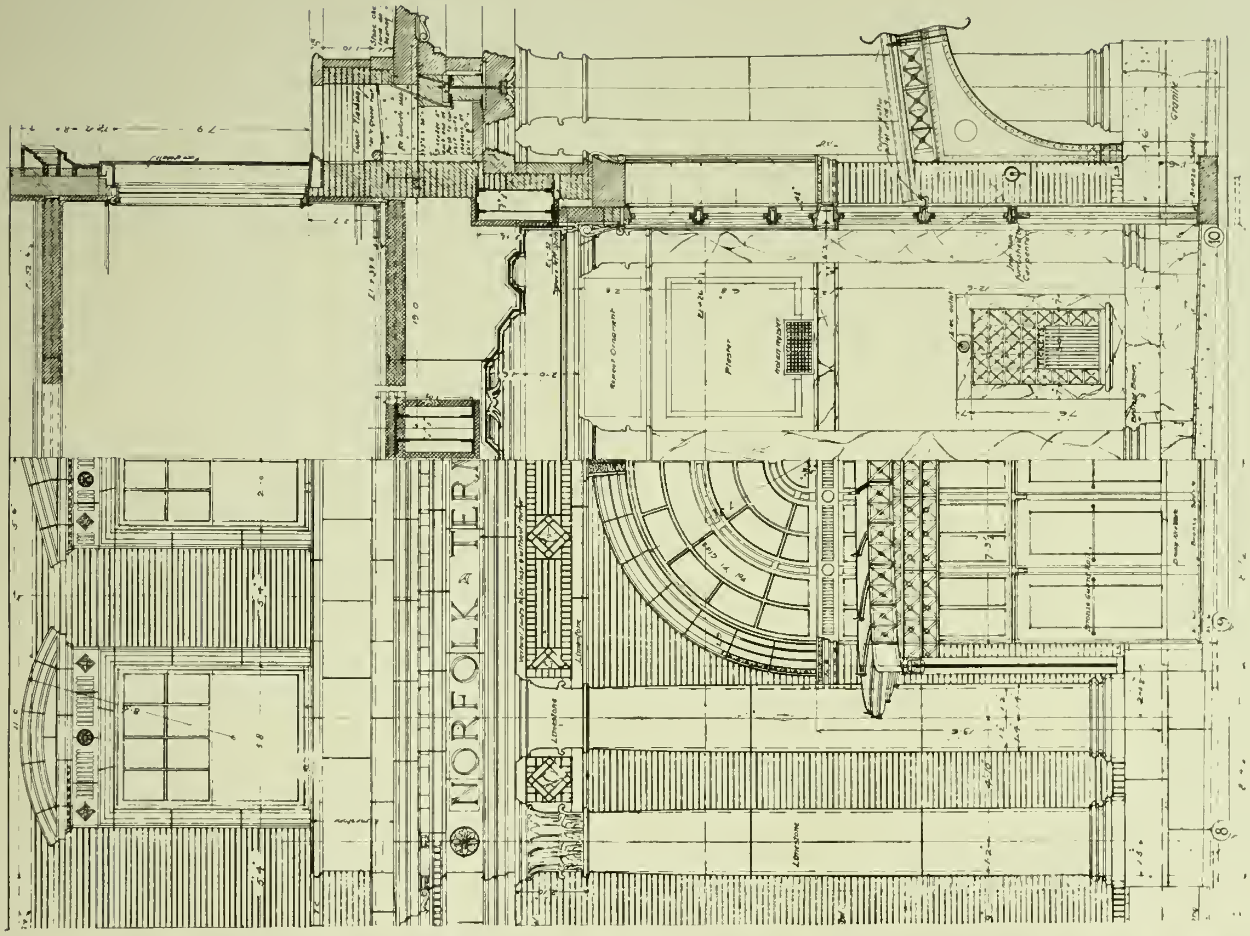
THIRD OFFICE FLOOR PLAN



FOURTH OFFICE FLOOR PLAN

UNION STATION, NORFOLK, VA.

STEM & FELLHEIMER, ARCHITECTS

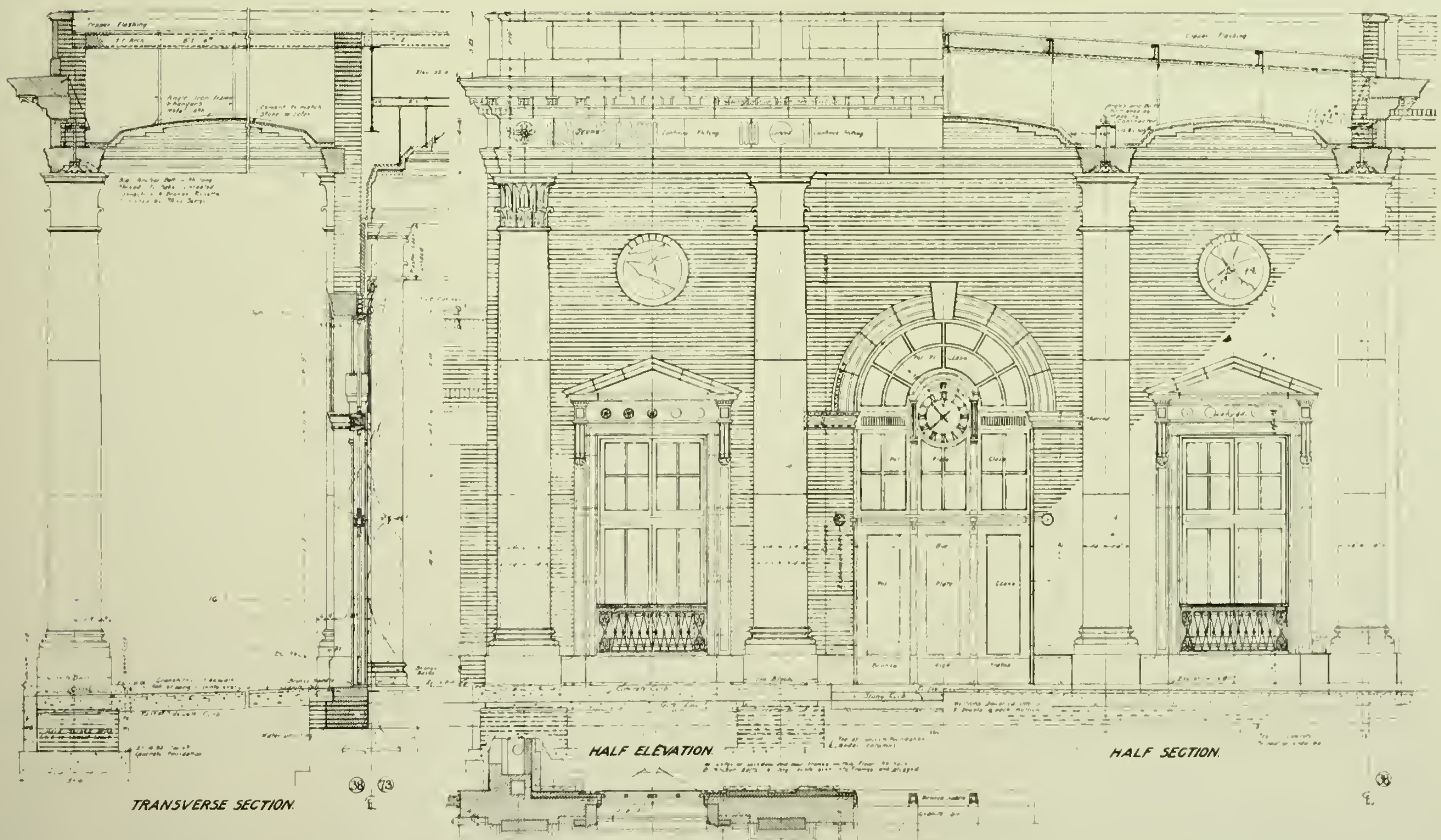


DETAIL OF MAIN ENTRANCE

MAIN ENTRANCE

UNION STATION, NORFOLK, VA.
STEM & FELLHEIMER, ARCHITECTS

MAIN WAITING ROOM

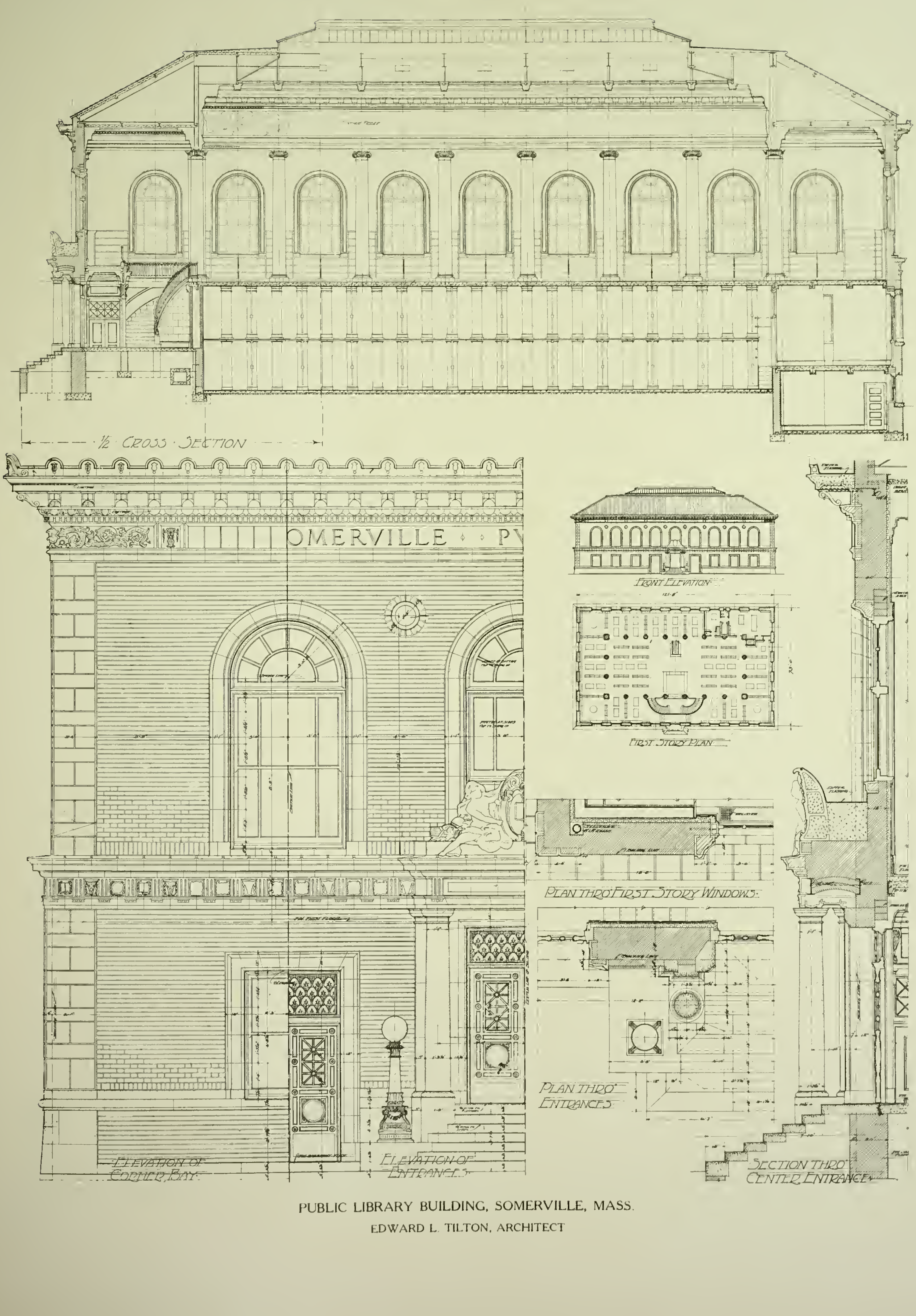


DETAIL OF CARRIAGE PORCH

UNION STATION, NORFOLK, VA.

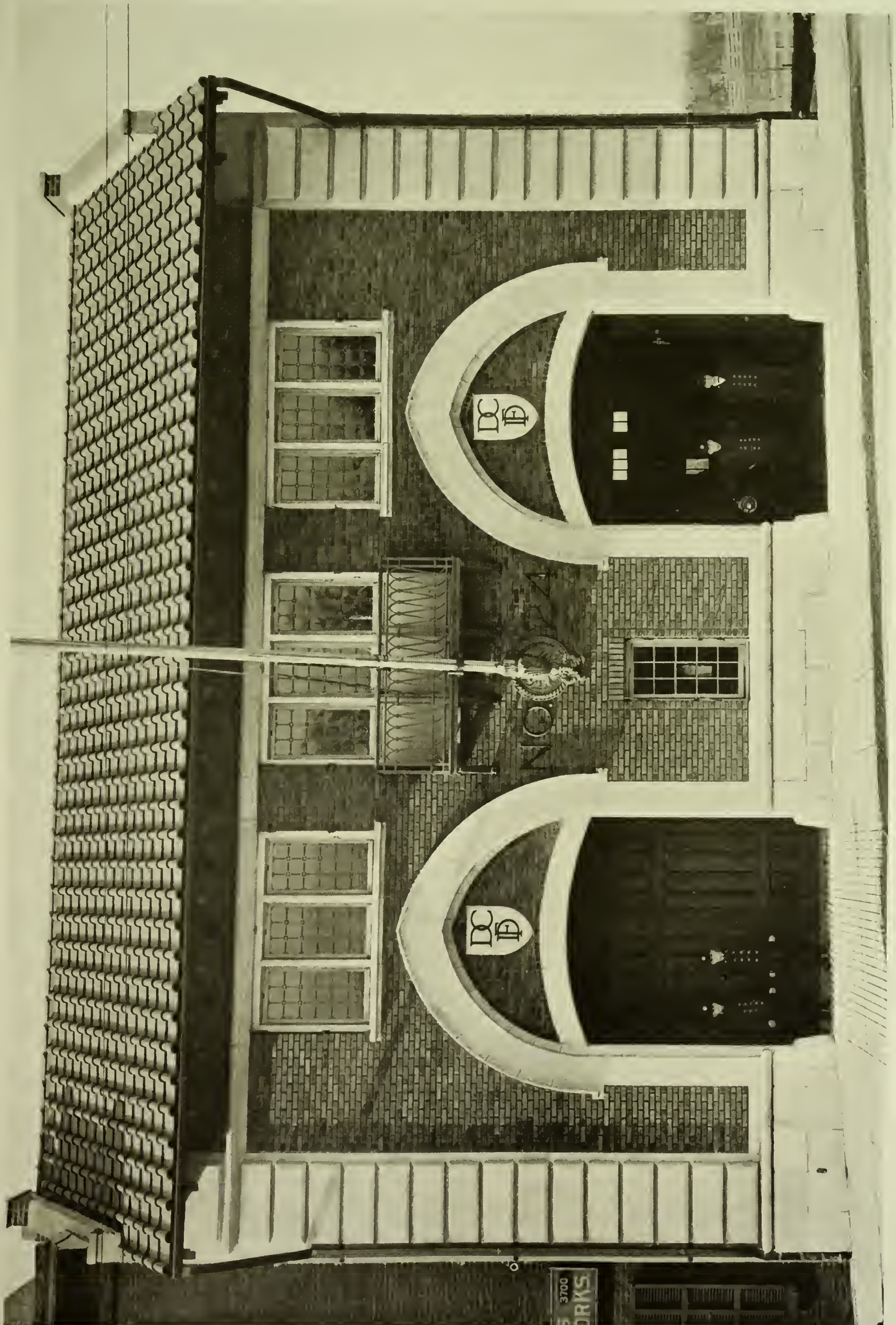
STEM & FELLHEIMER, ARCHITECTS

PUBLIC LIBRARY BUILDING, SOMERVILLE, MASS.
EDWARD L. TILTON, ARCHITECT

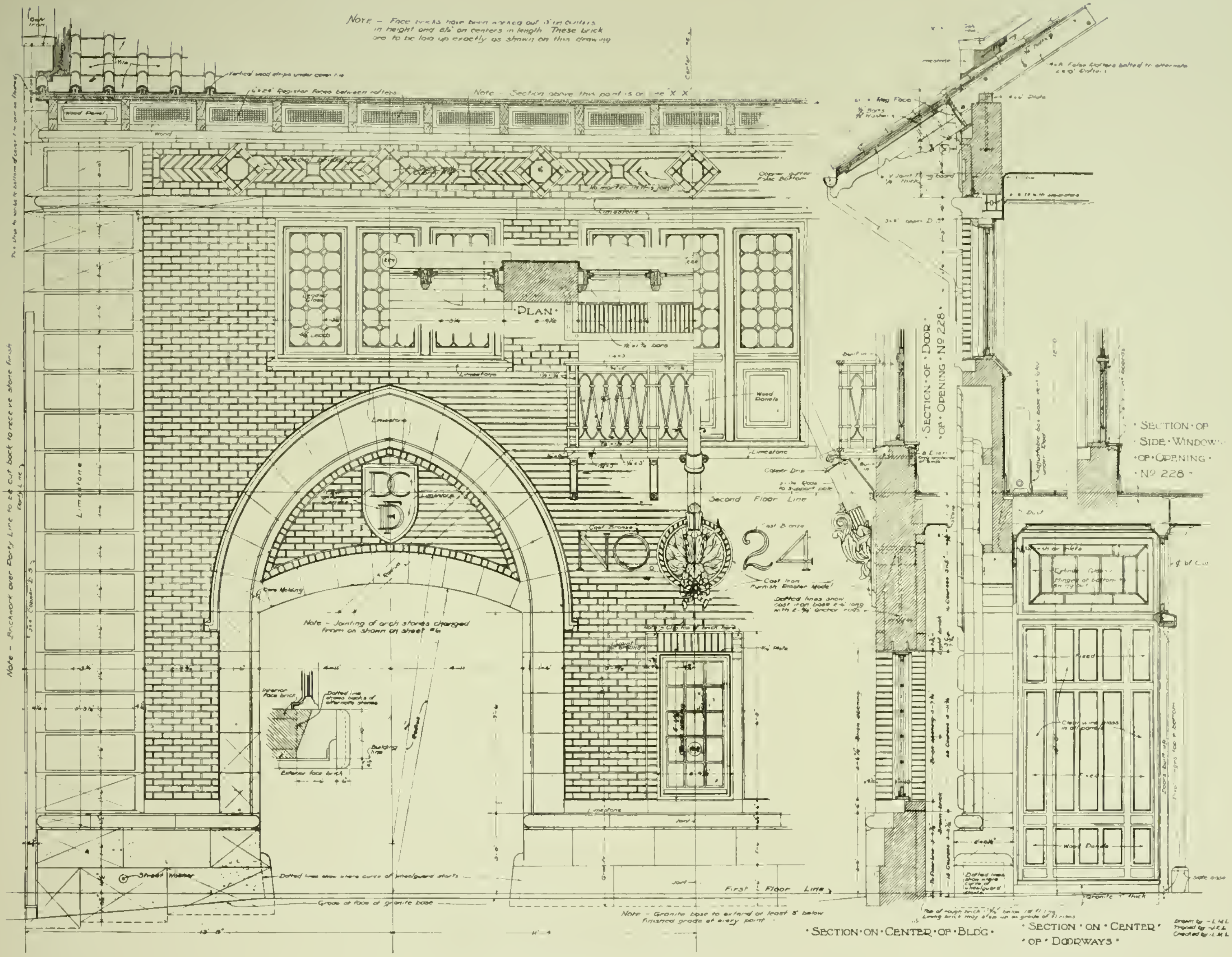


PUBLIC LIBRARY BUILDING, SOMERVILLE, MASS.

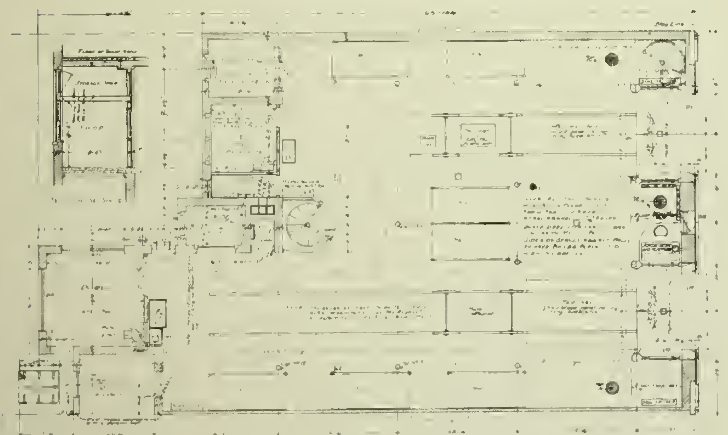
EDWARD L. TILTON, ARCHITECT



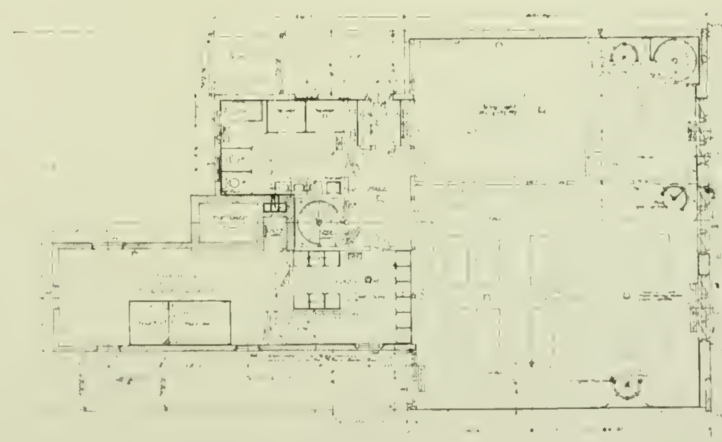
FIRE HOUSE FOR THE DISTRICT OF COLUMBIA, WASHINGTON, D. C.
GREGG & LEISENRING, ARCHITECTS
SNOWDEN ASHFORD, MUNICIPAL ARCHITECT



DETAIL OF ELEVATION AND SECTION THROUGH FRONT WALL



FIRST FLOOR PLAN



SECOND FLOOR PLAN

FIRE HOUSE FOR THE DISTRICT OF COLUMBIA, WASHINGTON, D. C.

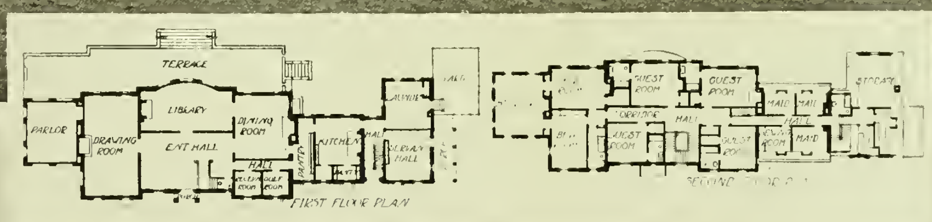
GREGG & LEISENRING, ARCHITECTS

SNOWDEN ASHFORD, MUNICIPAL ARCHITECT

GARDEN FRONT

HOUSE AT SOUTHAMPTON, LONG ISLAND, N. Y.

F. BURRALL HOFFMAN, JR., ARCHITECT



GARDEN

HOUSE AT SOUTHAMPTON, LONG ISLAND, N. Y.

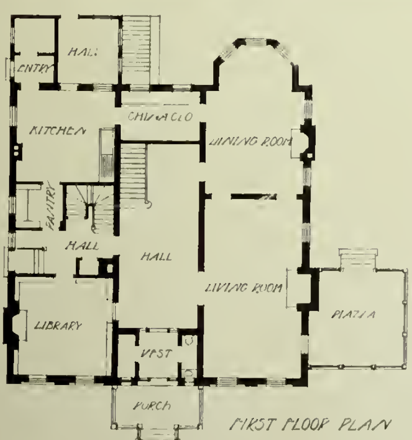
F. BURRALL HOFFMAN, JR., ARCHITECT

DRAWING ROOM

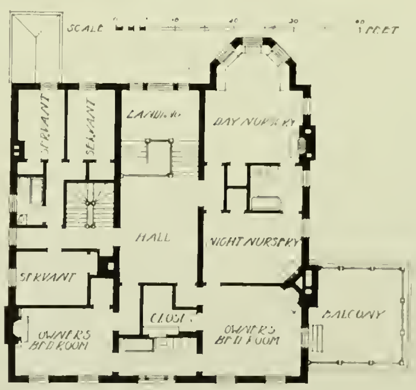
ENTRANCE HALL

HOUSE AT SOUTHAMPTON, LONG ISLAND, N. Y.

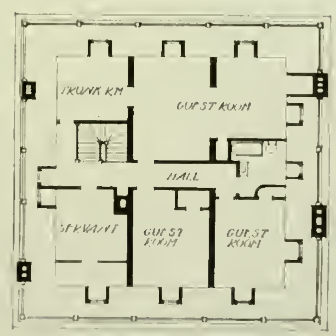
F. BURRALL HOFFMAN, JR., ARCHITECT



FIRST FLOOR PLAN



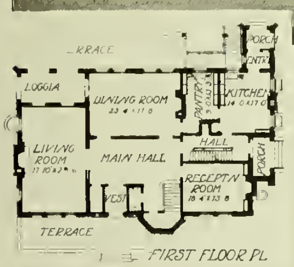
SECOND FLOOR PLAN



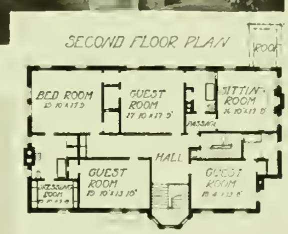
ATTIC PLAN

HOUSE AT NEW HAVEN, CONN.

R. CLIPSTON STURGIS, ARCHITECT

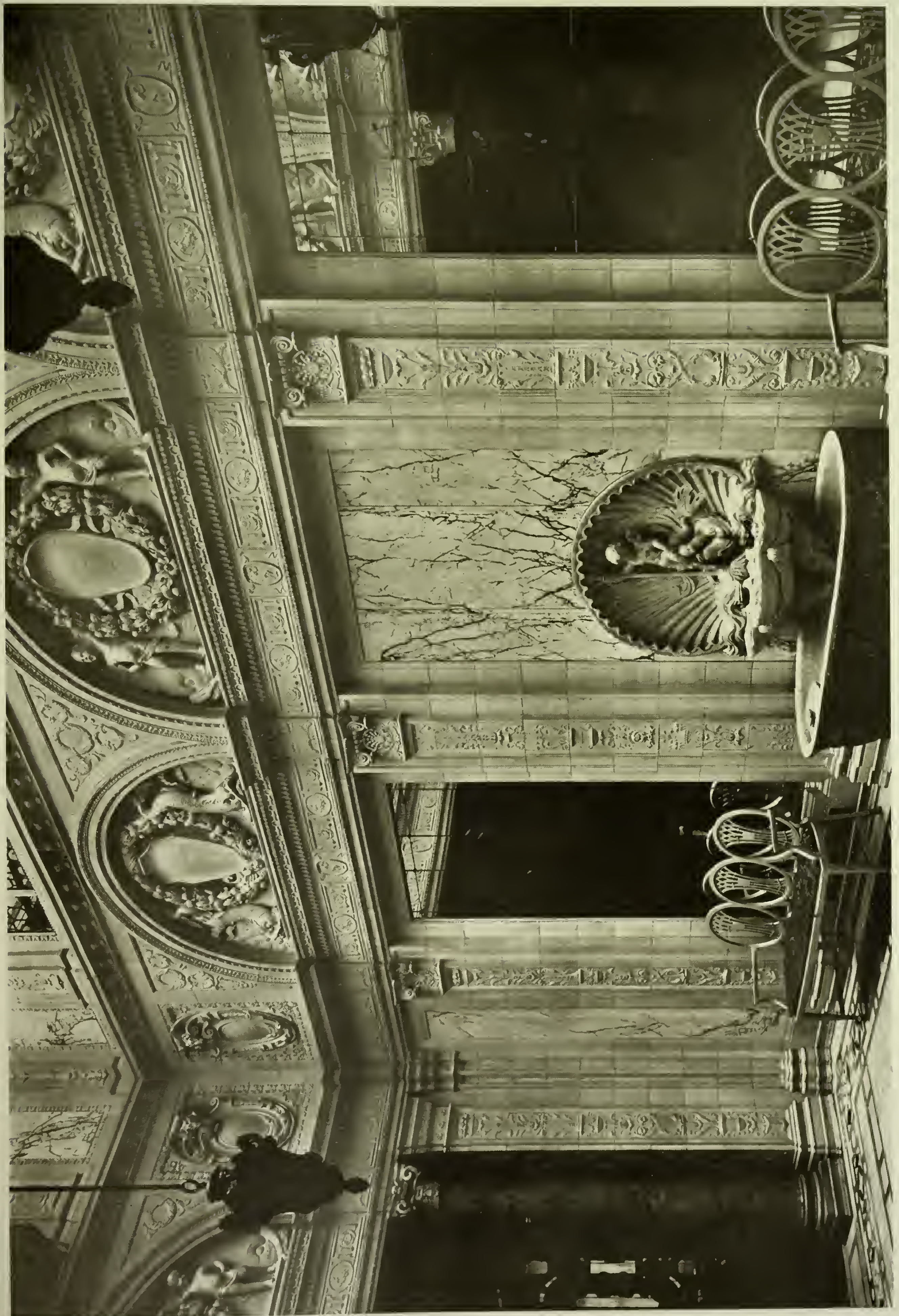


STREET ELEVATION



HOUSE AT ST. LOUIS, MO.

MAURAN, RUSSELL & CROWELL, ARCHITECTS



DETAIL OF WALL TREATMENT

THE PATIO OF A HOUSE IN NEW YORK, N. Y.

HOWELLS & STOKES, ARCHITECTS

VIEW LOOKING TOWARD DINING ROOM

DETAIL OF CORNER TREATMENT

THE PATIO OF A HOUSE IN NEW YORK, N. Y.

HOWELLS & STOKES, ARCHITECTS

A City House of Unusual Plan.

ITS WELL LIGHTED INTERIORS ACHIEVED BY THE INCORPORATION OF A PATIO.

By M. B. STAPLEY.

ONE of the most interesting and artistic city homes built in recent years is that at 33 East 69th street, New York, Howells & Stokes, architects. All it has exteriorly to proclaim this fact is a twenty-five-foot façade, for the lot is not a corner one. This façade, redolent of some little late Renaissance palace in Rome, promises an interior of good taste; but it cannot prepare one for what is the real triumph of the planning, viz., an interior flooded with light and sunshine.

How to secure this result on a typical city lot of twenty-five by one hundred feet becomes steadily more difficult, for adjacent buildings are usually higher and deeper than they were some years ago, even to the entire suppression of the rear yard; while present-day clients are no longer satisfied with insufficiently lighted and monotonously planned rooms. They want instead large light rooms, foyers, and impressive stair treatments.

The solution in this case was to build the house around a patio, Spanish fashion, which patio practically divides it in two laterally, with the staircase and hall as connecting link between front and rear portions. At the top of the second story the patio is glazed over; meanwhile it serves as the nucleus of the first and second floor plan, and besides, the *chef-d'œuvre* of the whole house.

To reach it one passes through an outer vestibule treated in sgraffiato work, an inner in Istrian marble, and reminiscent of the charming stair landings of the Palazzo Mattei, and a reception room even more typically Italian, with vaulted plaster ceiling in low relief. All these rooms are three steps below the patio level. Between them and it there is structurally no separation; neither is there at the opposite end where the dining room adjoins. Instead, privacy is obtained in each instance by means of wondrously carved and gilded open screens, which on one side are hung with heavy velour curtains. Between such a demarcation and the usual solid paneled doors or wall there is no comparison for illusiveness and decorative effect, while the degree of exclusion is the same.

Street Façade — Howells & Stokes, Architects

Passing through the gilded screens the dining room presents a study in decorative color — paneled wainscot and an elaborate wooden beamed ceiling, gilded and patterned, studded here and there with *lapis lazuli* blues. Its outlook, aside from its juxtaposition with the patio, is onto the little garden yard which has been made attractive by means of a Florentine wall fountain and some planting.

The two principal rooms of the second story are the drawing room and library, both of which have casemented windows looking down into the patio — an idea both romantic and effective. As a study in plaster work, and by this is meant the real stucco-duro of the Italian Renaissance, there is little in this country to surpass the drawing room. Although spoken of as stucco-duro, the style is really patterned after the work of the Adam Brothers; that is to say, it is distinguished by an arrangement of circles, ovals, octagons, vases, wreaths, sphinxes, and medallions, containing mythological subjects. As an example of twentieth century modeling it is incredibly fine. The library, approached by a charming old Spanish door and postern, is treated in dark woods. A room with a northern exposure, it would ordinarily be cheerless, but is enlivened in this case not only by the sun's rays filtering in from the patio, but by the view into the patio below, with its trickling little fountain and the darting goldfish in the old Roman sarcophagus basin.

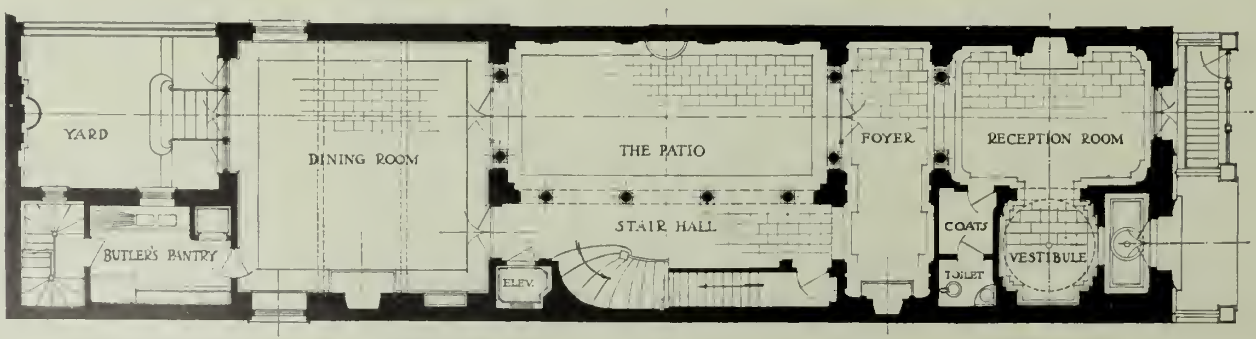
Returning to the patio, a number of features combine to make it an extraordinary achievement for so limited an area — its feeling of space, its tone, and the quality of workmanship put into its material. This does not refer to the rich marbles, mosaics, etc., that all play their part and play it well, but to the dominant material, terra cotta.

Before selecting it, much thought had been given to finding a sympathetic treatment of the walls. To create a novel effect was never the actuating motive; simply to make a cheerful, beautiful room that could be lived in and enjoyed daily, just as the Spanish patio is. The house being Italian Renaissance in inspiration, marble was first considered, especially as there were several very fine antique Pavanazzo marble columns to be worked in; but after several kinds of marble had been assembled and tried, it had to be admitted that its hard surface failed to impart the right warmth and intimacy. To carve it into a warmer play of light and shade would have been prohibitive in price; and straightway those who had the matter in hand dropped from sumptuous marble to plain, workaday terra cotta. That its texture was the responsive, sympathetic one sought for, was apprehended from the start. Its varied and sparkling surface played in a fascinating way with the steady white light filtering through the glazed roof of the court.

Reception Room Looking Toward Inner Vestibule.

Perhaps the greatest charm of the room — its greatest charm certainly to one who understands the scope and the limitations of this material — is that it was all actually designed for terra cotta. No end of research was made through a mass of old time terra-cotta ornament; classic, of course, for the patio was to be harmonious with the adjacent dining and reception rooms. Yet in the wealth of classic examples that have come down to us, nothing seemed quite delicate and haunting enough to stand the strong unvarying flood of light from the patio roof. It was all too positive, too assertive; and so small figures and medallions were designed, as delicate in spirit as those Wedgwood and Flaxman designed for their immortal pottery, the modeling kept very flat and the drawing in places incised in a way that completely expressed the plasticity of the material. The success of these brings up the question why is it that, being perfectly familiar with this fugitive sort of delicacy in pottery and in the smaller expressions of Greek art, no one has recognized sooner how it may be made the keynote of beauty in treating a room?

In this room there is an ivory-tinted band eight inches high in the architrave of oval medallions, enclosing cameolike figures, alternating with highly conventionalized flowers, that is an unusual bit of well-studied, unobtrusive decoration. Above in the lunettes the design and relief become bolder — amorini supporting heavy wreaths. With the exception of some dry leathery tones in the backgrounds no variety of color has been introduced in the terra cotta; but due to the strong coloration in the Alexandrinum pavement and in the mottled and veined Pavanazzo columns, there is a feeling of polychrome treatment in the room. The modeling is of course all very flat — so light that when the glaze was added the patterns became in many cases fascinatingly vague. It makes one think of those only half breathed designs in terra cotta on the façade of the Orotorio of San Bernadino at Perugia.



First Floor Plan.

House in New York City.

Howells & Stokes, Architects.

The Lighting of Public and Semi-Public Buildings.

SIXTH AND CONCLUDING PAPER.

By L. B. MARKS.
Consulting Illuminating Engineer, New York City.

GAS LIGHTING.

RECENT improvements in the control of gas lighting, that is to say, the lighting and extinguishing of individual burners or groups of burners by pressing a push button conveniently located, have opened up a more extensive field for gas lighting than heretofore, especially in public and semi-public buildings.

Mr. Thomas Scofield comments on the methods of ignition and extinguishing of gas lamps as follows:

"With the advent of the incandescent mantle burner came the development of the pilot ignition system. This consists of a small by-pass around the main gas cock, allowing a small stream of gas to pass through a small tube, terminating in a small open flame tip located close to the mantle. This tip or pilot remains lighted when the gas is turned off from the burner, and on again turning the main gas cock it ignites the gas issuing from the nozzle, thus lighting the lamp. These pilots consume but a very small quantity of gas, ranging from one-tenth to one-eighth cubic foot per hour, depending somewhat on the pressure and adjustment.

Several systems have been developed for the distant control of gas lights which do not depend upon the pilot light for ignition. Two of these will be described briefly. The first is one application of the magnet valve and the principle of the spark ignition. Each burner is fitted with a sparker, a device similar to the spark plug used in automobile work, consisting of a porcelain armed sparker containing two spark points, binding posts, and device for attachment to the lamp. For a single lamp, this sparker is connected to the secondary circuit of an induction coil, the primary circuit of the coil being connected to the terminals of a group of dry batteries or storage battery. On this primary circuit are also connected the magnet valve and push buttons, while the secondary circuit carries a push button for operating the sparkers. In the case of a number of lamps, the sparkers are all connected in series. To operate this system, both the white button opening the magnet valve is pushed and the button operating the sparker — the former causing the opening of the gas way, and the latter causing the generation of a spark at the lamps and the ignition of the gas. To extinguish, it is only necessary, of course, to close the magnet valve. In making this type of installation, all the wiring in the secondary or ignition circuit must be carefully insulated and all the burners carry insulating nipples.

The second system employs the magnet valve and a filament igniter. This filament igniter consists essentially of non-conducting body with binding posts and a short filament of a platinum alloy. The operation of this device depends on the heating of this alloy by the passage of an electric current to the temperature at which catalytic action takes place, about 500 degrees F., from which point this catalytic action causes the filament to be heated, by the stream of gas, to the kindling temperature of the gaseous mixture, about 1500 degrees F., at which point the ignition of the gases takes place. The method of installation on one burner is as follows:

From the source of electrical energy, storage battery, dry cells, or motor generator set, one wire is run direct to the fixture and grounded on it at a point below the insulating joint, which is placed between the fixture and the ceiling drop or side bracket gas outlet — from the other pole of this source a connection is run to the filament on the lamp, and from the other binding post of the filament to the white or opening binding post of the magnet valve. From the black binding post of this valve a connection is then run back to the black button of the switch, thus completing the circuit. In other words, the filament and magnet valve are connected in series through the opening side of the switch, and on the other side the closing side of the switch and magnet valve are in series, the ground wire on the fixture furnishing a common return. To operate this system, therefore, all that is needed is to press the white button which opens the valve, actuates the filament, and lights the lamp, and a pressure of the black button closes the magnet valve and extinguishes the lamp. A number of lamps may be connected to the same switch, the method of connection being the same as in the case of a single burner.

This system has many advantages, some of which are: the use of a single two button switch, small amount of electrical energy needed for operation, positive action, unlimited number of combinations of ignition and extinguishing possible, and the impossiblity of turning on the gas to a burner or fixture when ignition would not take place due to a faulty filament, since in that case the magnet valve would not operate. Past experience has shown that this system can be operated at slight expense, and that by carrying the wiring for ignition in conduits in connection with call-bell wires, telephone wires, etc., the compactness is very complete and extremely practical. By the use of a master switch and a revolving contact, similar to that used in flashing signs, the ignition and extinguishing of a large installation, comprising many fixtures, can be made absolutely automatic and extremely rapid in operation."

The development of fixtures for gas lighting has followed along the general lines of progress for electric fixtures, and there are now available many types of gas lighting fixtures for direct, indirect, and semi-indirect lighting. Figs. LV and LVII show types of such gas fixtures used by the gas company in New York City; Fig. LV shows a fixture containing one standard reflex lamp consuming about 3½ cubic feet of gas per hour at a pres-

Fig. LV.

Fig. LVI. Night View of Exhibition Floor, Consolidated Gas Company, New York City.

THE above illustration shows a night view of an illumination provided entirely by gas and where direct and "semi-indirect" lighting fixtures are used. The lights about the columns are lighted and extinguished by push buttons after the fashion of electric lamps.

Fig. LVII.

sure of 2½ inches. The spherical globe on this fixture is open only at the neck. Fig. LVII shows a fixture equipped with 12 junior reflex gas burners, having a total consumption of 18 cubic feet per hour at 2½-inch pressure. Fig. LVIII shows a 6-cluster gas fixture with the individual burners supported by chains. The lighting and extinguishing of the gas in these lamps is controlled from a distance. Fig. LIX shows an indirect lighting fixture containing three upright burners with standard mantles, hidden from view and consuming 11½ cubic feet of gas per hour at a pressure of 2½ inches. The interior of the opaque bowl is finished in a special white enamel. Fig. LX shows a recently designed high power semi-indirect lighting fixture, having a 14-inch translucent bowl and a reflex lamp. The consumption of gas is 8¾ cubic feet per hour at a pressure of 2½ inches. The mean spherical candle power of the lamp, equipped as shown in the illustration, is 173.

Fig. LVIII.

Other types of semi-indirect gas lighting fixtures are shown in Figs. LXI and LXII.

Pendant gas lighting fixtures are usually equipped with pipe stem suspension, but with the growing introduction of indirect and semi-indirect lighting units, the chain suspension is coming into more extensive use. For fixtures with chain suspension exclusively the gas may be piped to the burner either directly through the chain, which is the usual way, or by means of a thin flexible tube attached to the chain. This tube may be made quite as inconspicuous as is the wiring of the average electric chain suspension fixture.

With modern improvements in efficiency and life of mantle gas burners, in quality of the light, in push button and automatic control, and in fixture design, there is a vast field for the modernization of existing gas installations, to say nothing of the equipment of new buildings.

Fig. LIX.

Fig. LX.

Fig. LXI.

Fig. LXII.

OFFICES, EXHIBITION ROOMS AND BANKING ROOMS.

Fig. LXIII. Direct Lighting Installation in Clerical Offices.

Fig. LXIV. Semi-Indirect Lighting Installation in Private Office.

OFFICES OF CARNEGIE STEEL COMPANY, PITTSBURGH, PA.

IN the above direct lighting installation in a large office no desk lamps are required, the general illumination from the ceiling pendants being sufficient for all working purposes. The units are spaced on approximately 9 ft. centers and an investigation in the room has shown that the resultant illumination is much more satisfactory when the lamps are hung high, as indicated in the picture, than when the lamps are hung low. The reflectors are of light density opal glass.

THE illumination in the room illustrated below is obtained by tungsten lamps enclosed in diffusing shades open at the top to permit a considerable percentage of the light to reach the ceiling directly. This "semi-indirect" lighting installation can be converted into a direct lighting installation by mounting the diffusing shades with the opening facing the floor instead of the ceiling. The shades are specially designed for this convertible feature, and are 17 inches in diameter and 8½ inches deep. Each shade houses a 250-watt lamp. Data for the entire building are as follows:

Total Floor Area	*76,800 sq. ft.*
Average Watts per square foot	*1.4*
Average Foot-candles	*4 to 6*

IN the installation illustrated above the fixtures are arranged slightly closer than at centers of equal rectangles which prevents the upper portion of the walls at the ends of a narrow room from receiving direct light from the lamp bulb. Two 250 watt tungsten lamps were found sufficient for the lighting of this room. Data for this room are as follows:

Ceiling Height	*12 ft.*
Area of Room	*180 sq. ft.*
Watts, 500	*Watts per square foot, 1.04*
Average Foot-candles	*3.5*
Ceiling Tint	*Light Cream*
Wall Tint	*Dark Buff*
Distance to Ceiling	*3 ft. 4 ins.*

THE glass bowls of the type shown in the illustration below are made deep enough to sufficiently hide the lamp bulb either horizontally or vertically placed. The glass is sufficiently dense to prevent uneven illumination of the bowl which has been found to be a bad fault when using lamps that necessarily must be clustered and placed close to the interior surface. The design is also such as to minimize ceiling shadows caused by the supporting chains.

Fig. LXV. Night View of Exhibition Room, Buffalo General Electric Company.

Fig. LXVI. Semi-Indirect Lighting Installation, First National Bank, Chicago, Ill.

IN the illustration of the banking room at the right direct lighting through diffusing glass plates and semi-indirect lighting are combined. On the ceiling are mounted direct lighting units, the lamps of which are enclosed in diffusing globes. Around the inner edge of the light well is a line of diffusing plates and outlining the ventilating register boxes on the ceiling are diffusing glass troughs of special design.

The illumination in the banking room shown below at the left is carried out by lamps enclosed in prismatic glass spheres suspended from the ceiling. This form of direct lighting installation has the advantage of sufficiently diffusing the light and at the same time completely hiding the objectional direct view of the lamp itself.

The illustration below at the right shows a modern banking room illuminated by indirect lighting in which the fixtures have been designed to harmonize with the architectural treatment of the ceiling and columns. There are seven large fixtures on the upper ceiling of the room shown, and each fixture contains 12 100-watt lamps. There are eleven fixtures under the mezzanine floor. Each fixture is equipped with 4 60-watt lamps.

Fig. LXVII. Direct and Semi-Indirect Lighting Installation in Union Trust Company Building, Pittsburgh, Pa.

Fig. LXVIII. Direct Lighting from Lamps Enclosed in Prismatic Diffusing Glass Spheres.

Fig. LXIX. Indirect Lighting Installation in First National Bank, Denver, Colo.

IN conclusion the writer desires to acknowledge the kind and valuable co-operation of the manufacturing interests in supplying information, data of tests, and photographs relating to lighting installations. The limits of the article have made it impossible to use all of the illustrations and data submitted. Grateful acknowledgment is made of contributions from Messrs. Thos. Scofield, Engineer, Consolidated Gas Co., New York City; A. D. Curtis, President, and H. B. Wheeler, Illuminating Engineer, National X-Ray Reflector Co., Chicago; W. D'A. Ryan, Illuminating Engineer, General Electric Co., Schenectady; V. R. Lansingh, Gen. Mgr. Holophane Works, Cleveland; Geo. S. Barrows, Illuminating Engineer, United Gas Improvement Co., Philadelphia; S. G. Hibben, Illuminating Engineer, Macbeth-Evans Glass Co., Pittsburgh; R. F. Pierce, Illuminating Engineer, Welsbach Co., Gloucester, N. J.; and W. S. Kilmer, Illuminating Engineer, H. W. Johns-Manville Co., New York.

The Business Side of an Architect's Office.

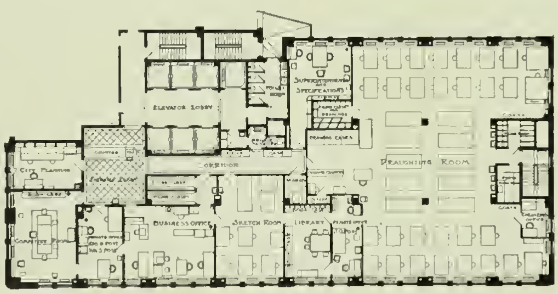
THE OFFICE OF GEORGE B. POST & SONS.

By D. EVERETT WAID.

THE late George B. Post will live in the memory of architects as a giant in the profession. Some men are regarded by their fellows as artists, others as promoters and constructors, who have failed to command a high degree of respect as designers. Mr. Post possessed that rarely symmetrical development of abilities which won him recognition as an all-round architect. He could analyze engineering problems and study the structural suitability of building materials. He could talk to the directors of a financial corporation on the economic and investment aspects of their project, and he could find time even when doing millions of dollars' worth of work to render a water color competition drawing with his own hand. The mention of his name recalls a list of important buildings which are notable as to design and at the same time reflect the exceptional structural and executive control exercised directly by the architect. Hence it is probable that many of the profession will be interested in the office of George B. Post & Sons, which carries the traditions of the old office, in which many present-day practising architects served their time, even though Mr. Post, Senior, had to a large extent retired from active work three years before his death.

Entrance Lobby.

The volume of work passing through this office is very large and demands corresponding space and a large organization. The printed forms used in the conduct of the office are many, and express the "follow-through" business methods which characterize the firm. Several of these forms are reproduced on the next page, and the following notes are intended to explain their uses.



Plan.

Memo-Record. One of the most important documents is familiarly referred to as the "Memo-Record." It does not follow any rigid form, but is simply a series of concise notes made up from interviews with, or letters of instruction from, clients, typewritten in triplicate. The original black copy remains in the outer office, a carbon copy goes to the superintendent, and a red copy to the drafting room for the information and guidance of all concerned. These "Memo-Record" notes are referred to by draftsmen and specification writers, and may be the origin of "Work Slips" and "Change Slips."

*Record Cards — History of Drawings.** Record cards shall be filled in as to name of building and job number for each new job, and a number of cards placed on file in numerical sequence for record of prints issued or loaned. The original drawings or sketches should not be loaned, unless office copies are made, without special instructions from a member of the firm.

Blue guide cards are to contain names and commission numbers of the buildings. Salmon guides are to contain the names of constructive materials used in the building. Buff guides indicate the general character of drawings. White cards are to contain the history and location of drawings made in this office.

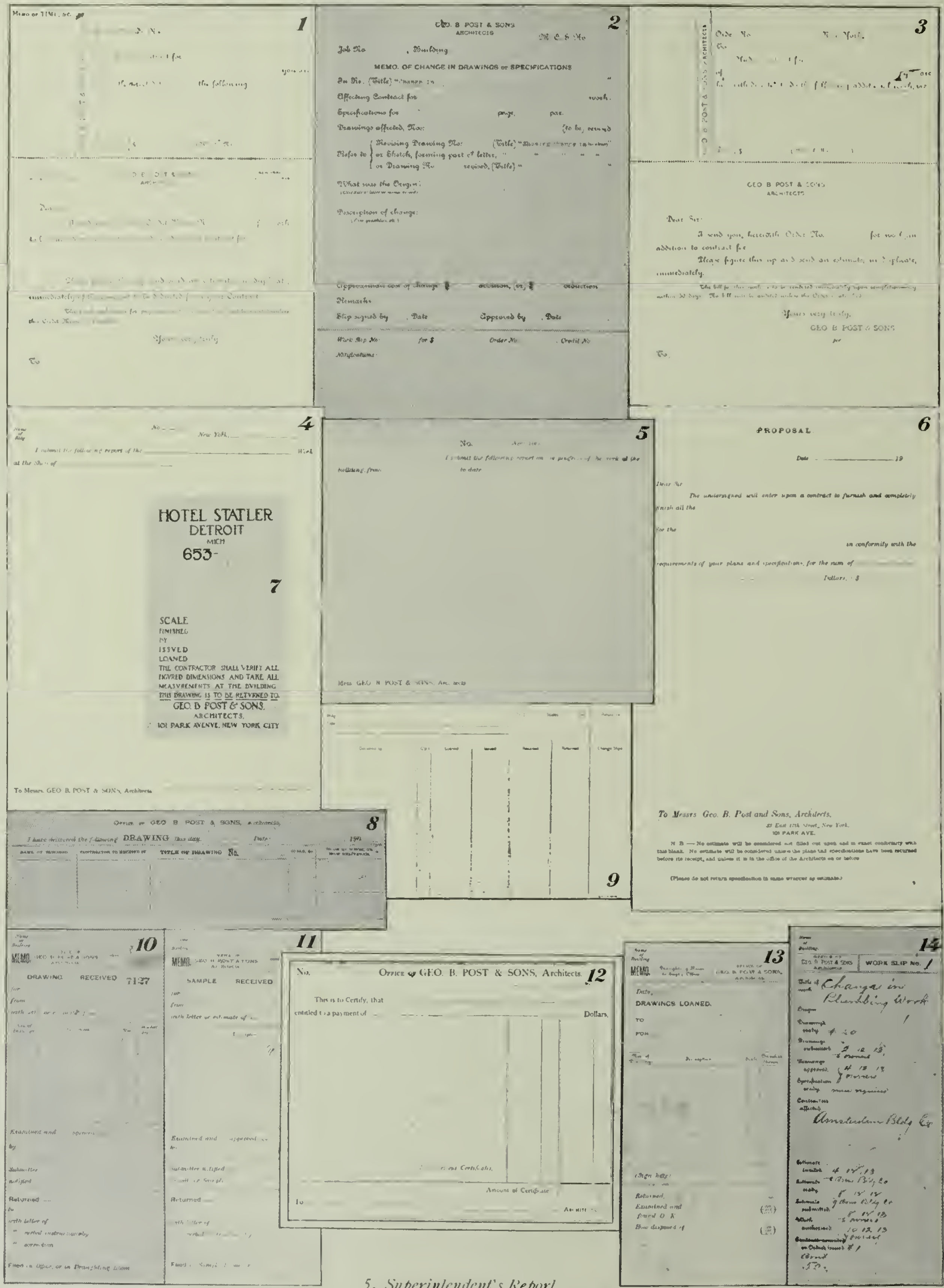
These cards are arranged as shown in Fig. 9 for the subject and title of drawing to be typewritten, with its scale, number of drawer in which it is kept, a record of the number of copies issued, and to whom, with the dates for same, together with a list of other drawings to which it refers. Buff cards are similarly arranged to give the history of drawings made outside the office.

Committee or Reception Room.

*Order for Prints.** The printer's supply "Order Blank" shall be filled in according to form and a carbon copy kept in the book on file in issuing department.

When the prints are received, the size of each print shall be carefully noted on the space on the duplicate order blank, by which the bills when rendered shall be

*Quoted from office instructions.



1. Credit Memo.
2. Change Slip.
3. Order for Extra Work.
4. Report Blank.
5. Superintendent's Report.
6. Form of Proposal.
7. Typical Drawing Title.
8. Loan Slip.
9. Record Card.
10. Drawing Received Slip.
11. Sample Received Slip.
12. Form of Certificate.
13. Issuing Blank.
14. Work Slip.

checked, after which the blanks are filed in the issuing department for at least one year.

*Loaning Drawings.** "Loan Slips" (shown in Fig. 8) shall be filled in according to form and a carbon copy kept in the book. The yellow "Memo. Return Tag" shall be placed on the upper left corner of each print loaned separately, or on the first of a set of prints bound together.

The loose slip is then attached to the record cards for the drawings of which prints have been loaned, the record of which is then typewritten upon the record cards and the card filed in the index case and the loan slip filed in the front office. When drawings are returned, the loan slips should both be filled in according to form.

An office copy of every print loaned for estimate, upon which a contract is to be based, must be made at the same time and carefully wrapped up and marked and filed in the drafting room. If several sets are loaned for estimate, one of these, when returned, may become an office copy.

If the contractor to whom the contract is awarded has returned his set, it is then "issued" to him as the contract set of drawings (usually the contractor prefers to use the copy loaned him for estimate).

"Issuing Blanks"* (shown in Fig. 13) should be filled in according to form, the blank then attached to the record card for these drawings, a record of which is then typewritten on the card and filed in the index case, and the issuing blank filed in the front office. A drawing may be recalled and re-issued with revisions, etc., in which cases a new blank is filled in and filed as before; the old blank remaining as a record.

The Desk and particular Chair which Mr. Post used for many years as he left it shortly before his death.

In the Specification Room.

Corner of the Library.

Drafting Room.

*Drawings Received.** "Drawing Received Slips" (shown in Fig. 10) are to be filled in according to form and a carbon kept in the book. The drawings or prints received should be stamped on the back of the lower left-hand corner, with the "Receiving Stamp" and "D.R.S. number" filled in according to form. The loose slip is attached to the drawings which are sent to the drafting room for examination and the result noted thereon.

The loose slip is then filled in further as to returning and filing of the drawings, and then attached to the letter and forwarded to the front office, giving the data for answering the letter submitted with the drawings.

The loose slip is next filled in as to the notifications to the submitter and returned to the issuing desk, the carbon copy in the book is made to agree, and the loose slip is filed.

"Sample Received Slips" (shown in Fig. 11) should be filled in according to form (with no duplicate copy). For each new job a number of sample slips are stamped and kept in numerical sequence in a box on the issuing desk. Tags should be pasted on the back of the samples and filled in as to material, submitter, date, with "S.R.S. number." These slips are then attached to the letter accompanying the sample and records made after the manner of "Drawing Received Slips."

Other forms in constant use are the "Change Slip" (Fig. 2), which originates usually either in the drafting room or in the superintendent's office, and the "Work Slip" (Fig. 14), a follow-up card which is considered one of the most important instruments of the business system in the office.

* Quoted from office instructions.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

ARCHITECTS shoulder a grave responsibility in the matter of fire prevention. All over the country members of the profession have come to realize this and are exerting their powerful influence in co-operation with those who have made the subject a specialty. A special committee has been organized in the city of New York, composed of architects and members of the National Fire Protection Association. In a recent report this committee declares that the "existing constitutional prerogative of the property owner" is one of the serious obstacles in the campaign for fire prevention. The report continues:

"The architects of America can and should take the initiative responsibility to the limit of their influence with clients by advising that reasonable fire resisting methods of construction be observed, not alone upon their merits, but because of the ultimate economy that must result by anticipating a tidal wave in the form of a sudden popular demand for stringent laws that will fix the standard so high as to require costly alteration in the best, and prohibit the occupation of all buildings under the ban of condemnation issued by duly constituted authorities. The process of evolution is ever active, and it is only a matter of time when landlords will be obliged to submit to humanitarian equalization. Only justice is desired, but do not force it. Let us advise ways and means whereby a composite perspective may be voluntarily accepted by the owner as an inevitable matter of course."

IT IS gratifying that so many of the designs submitted in our recent competition for a small brick house — a selection of which will be published in THE BRICKBVILDER for March — should possess many of the characteristics which differentiate the home from the house.

While these designs will show an exceptionally virile grasp of those elements which characterize the better American homes of moderate cost, a mere drawing fulfilling arbitrary conditions laid down in a program, no matter how effective or how beautiful the composition, cannot be said to represent a home. The perfect home can only be evolved by an architect who is in direct touch with his client and who has imbibed something of that client's personality *before* he makes his design. The value of the presentation of the designs is but the first step. It brings together the architect who creates and the client who requires the expression of a particular idea.

The design of a house is much more than the mere arrangement of several rooms fulfilling various functions or of the disposition of architectural features to form an attractive and pleasing exterior, either in a formal or picturesque manner. Something more than this is needed to render a house a home. In order to be called a "home," it must be a house consonant with the habits and mode of living of the man who resides beneath its roof and a definite expression of his individuality.

HOW discouraging it is to be constantly confronted with the "nothing under the sun new" theory. How unfortunate that the wings of modern endeavor should be clipped by so-called savants, who continually bob up with the report that the *ne plus ultra* of everything was attained when the world was in *statu pupillari*. Did it encourage Watt to be told that the ancients were past-masters in the use of steam? Did Stevenson work with renewed vigor in his attempt to harness steam when he was informed that sometime B. C. steam, generated beneath the altar fires, was used to open the temple gates? No doubt he felt more chagrin, from the knowledge that he had been anticipated two thousand years, than pleasure in the explanation of what seemed a miracle.

We have, almost in our own day, another example of this muckraking of the past. Hardly had Bouscaren contrived what we had supposed was the first suspension bridge, than along comes a mildewed antiquary, with the news that "flying bridges were common in China in the days of Confucius." We are expecting daily that some one will discover that aeroplanes were as common in the Pleistocene age as are London omnibuses.

We for our part believe neither in the fact nor in the policy of the elevation of ancestors. We see the bad effect of this religion in the Chinese people of to-day. It is a pleasure to note, however, that we are progressing in spite of these raconteurs. For example, consider architecture. Time was when we felt bound to the three orders of Greece or the five orders of Rome. Indeed, even to-day do we find most of capitols and railroad stations Doric, our churches and prisons Gothic, and our residences composite, *very* composite. But quietly, modestly, persistently, we are developing a new order. Is it the sky-scratcher? No! Is it the subway? No! It is the eggandart!

It is true that some architects have already employed the egg-and-dart in the treatment of their objects, but only to a limited extent. It is now used only on cornices, columns, pilasters, frames, mouldings, architraves, panels, wainscot, mullions, lintels, sills, jambs, baseboards, etc. But in no distant future we will have the pure egg-and-dart. No longer will this beautiful and rare design be violated by being placed in proximity to spiral volute, astragal, cartouche, or acanthus. The building of the future, such as no ancestor might boast of, stands revealed. From top to bottom, within and without, it will be covered with a tracery of eggandart that will delight every architectural eye that beholds it. — *Contributed.*

In an article in the January, 1914, issue of THE BRICKBVILDER treating of the drawings of Mr. O. R. Eggers, credit for the design of the U. S. Post Office, Denver, Colo., and for the Washington Armory, was given to Tracy & Swartwout, architects, when as a matter of fact the work was that of the firm of Tracy, Swartwout & Litchfield.

Barrett Specification Roofs

A Word to Architects, Engineers, and Builders

After you have provided for foundations, steel structures, masonry, flooring, heating, wiring, and the thousand other things that demand your attention when planning for skyscraper, office building, factory or warehouse, you should "top off" the good work with a Barrett Specification Roof.

Your experience has taught you that metal roofings are very costly, both in first cost and for maintenance. They require painting every so often, and easily corrode under the action of smoke and acid fumes. Slate cannot, of course, be laid on a roof that is comparatively flat. A ready roofing is out of place on a first-class permanent building because of the danger of damage from leaks and because of the frequent paintings that make it by far the most costly you could use.

To any one who will investigate the subject, it will be apparent that a Barrett Specification Roof is by far the most economical and satisfactory.

The five layers of Coal Tar Pitch insure its being *really waterproof*, the five plies of tarred felt give it strength and body, and the gravel or slag or tile which forms the wearing surface bears the brunt of the weather.

There are many cases of roofs built along lines of The Barrett Specification which are doing good service at the age of twenty or even thirty years without any expense for maintenance.

Underwriters always accord these roofs the base rate of insurance.

Send to our nearest office for a copy of The Barrett Specification in full. It specifies a roof which will always stand as a proof of your good judgment.

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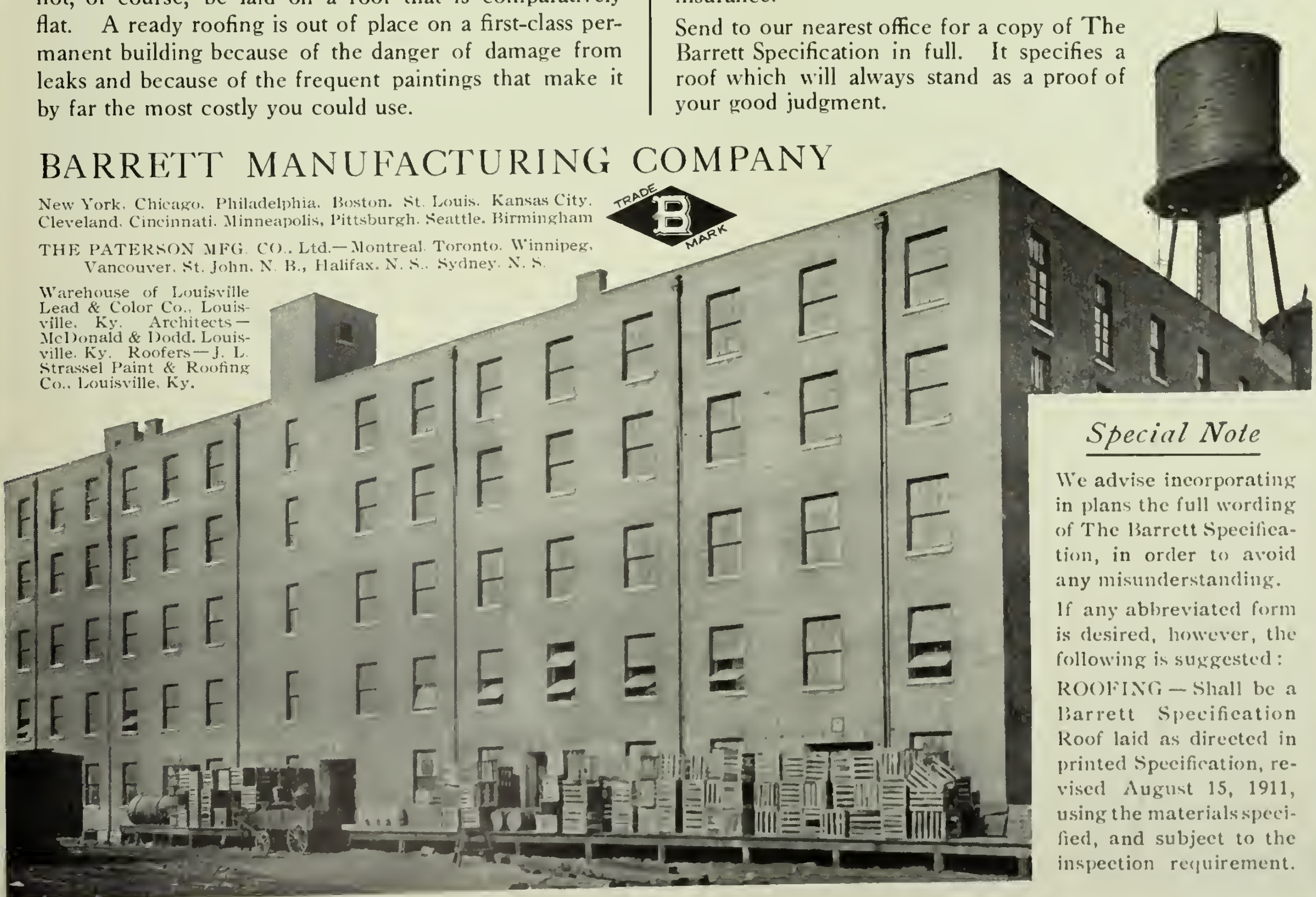

Warehouse of Louisville Lead & Color Co., Louisville, Ky. Architects—McDonald & Dodd. Louisville, Ky. Roofers—J. L. Strassel Paint & Roofing Co., Louisville, Ky.

Special Note

We advise incorporating in plans the full wording of The Barrett Specification, in order to avoid any misunderstanding.

If any abbreviated form is desired, however, the following is suggested:

ROOFING — Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified, and subject to the inspection requirement.

"TARGET-AND-ARROW" Roofing Tin

CURTIS HOTEL, LENOX, MASS.

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William D. Curtis, the proprietor, tells us that the oldest portion of the building was roofed with our Target-and-Arrow brand of roofing tin thirty years ago. The roofs of the additions made in 1898 and in 1913 are also Target-and-Arrow tin. These roofs are all in good order at the present time and bid fair to last as long as the building stands.

The recent roofing work was done by W. B. Bull, of Lenox.

We have been supplying this durable roofing tin to American sheet metal workers for more than sixty years. It costs a little more than other roofing tin, so you are not likely to get Taylor quality if you write a specification that permits substitution.

Architects can get from us on request a useful little reminder of our Target-and-Arrow roofing tin in the form of a six-inch celluloid edge boxwood scale, also a standard tin roofing specification form, and some instructive literature telling about this old product.

Our catalog is in "Sweet's," pages 546-549, of the 1913 edition, and pages 498-499 of the 1912 issue.

N. & G. TAYLOR CO., Philadelphia

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Rapidly Mixed *Durable*

Pure Red Lead Ground in Pure Linseed Oil is a Big Step Forward

When white lead was first put on the market ground in pure linseed oil a most important advance was made in the painting business. Now we are ready to supply this other valuable lead product in this convenient paste form.

It marks another big step forward.

Architects and engineers have long recognized the great protective value of red lead when used to paint skyscraper skeletons, steel bridges, and other structural iron and steel work. Sometimes, however, because workmen told them paint made from old style red lead required special skill in application, and because of its propensity for setting quickly, its advantages were foregone and a less effective paint used instead.

Dutch Boy Red Lead-in-Oil overcomes even the semblance of objection and supplies a long felt want—a red lead paint as easy to handle as the old reliable Dutch Boy white lead-in-oil.

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B.B.

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HARDWARE

KINNEY BUILDING
NEWARK, N. J.

CASS GILBERT, Architect

THE building here shown was equipped with SARGENT locks and hardware. It is inconceivable that an architect capable of designing such a structure would permit the selection of anything but the best for its equipment. The conclusion is obvious.

SARGENT & COMPANY *MAKERS OF SERVICEABLE, DURABLE, APPROPRIATE HARDWARE*

NEW HAVEN, CONN. NEW YORK BOSTON PHILADELPHIA CHICAGO

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ARCHITECTS, Warren & Wetmore
CONTRACTORS, George A. Fuller Co.

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The public is interested only in the final effect, but the Architect cares more about the individual items of equipment that make the new Biltmore one of the greatest feats in hotel construction and an example worthy of closest study.

The Otis Elevator Company installed in the new Biltmore Hotel —

Eight Gearless 1:1 Traction Elevators

— located in two banks, for the exclusive use of guests and serving all floors.

One Electric Passenger Elevator

— drum type — travelling from Main Waiting Room level of Grand Central Station, beneath the Hotel, directly to presidential suite on fourth or first bedroom floor.

Five Service Elevators

(Combination Passenger and Freight)

— of geared traction type for the handling of baggage and freight.

One Electric Service Elevator

— drum type for employees' exclusive use.

Sixteen Electric Dumbwaiters

— connecting main with secondary kitchens on all upper floors, bars with wine cellars.

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Eleventh Avenue and Twenty-Sixth St., NEW YORK

Offices in All Principal Cities of the World

"GUARANTEED UNSTAINABLE"

Argentine Structural Plate Glass

(Opaque Polished Plate)

FOR PERMANENTLY NEW WAINSCOTINGS

SANITARY INSTALLATIONS

INTERIOR AND EXTERIOR FINISH, Etc.

Is made in white, black and 12 colors. From 5-16" to 1 3-16" thick and in slabs up to 85 x 135 inches.

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To assure the delivery of the best structural glass obtainable, specifications should call for absolutely non-absorbent structural glass, ground and polished to a plane surface, and should also REQUIRE THAT THE MATERIAL BE TESTED ON THE JOB FOR NON-ABSORBENCE. Test to be with red ink or some similar coloring agent. Any glass showing stain after the coloring matter has been allowed to dry for 24 hours to be considered absorbent and defective. We *guarantee* our glass.

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The Architects' Bureau of Technical Service

AN EXPLANATION FOR BOTH ARCHITECTS AND MANUFACTURERS OF THE PLAN AND SCOPE OF THE BUREAU AND ITS METHODS OF OPERATION

THE consumer in the industrial field of building, the man who foots the bills, being, with but rare exceptions, a layman without the technical knowledge requisite to making a selection of such materials, devices, and methods as seem best adapted economically and practically to produce the desired result, delegates his initiative in making this selection to the architect. The architect's judgment is interposed between the producer and his market. The architect's position makes him a potent and influential factor in a conglomerate industry of enormous scope. The architect may be pictured, with but a slight stretch of the imagination, as a funnel fitted at the neck with a strainer of technical knowledge and experience. Into this funnel those industries contributing to the actual work of construction must pour their products that they may pass through into the building. Those products which for any reason fail to pass the strainer clog the funnel and prevent those that might pass from doing so. The vital fault with this situation is that the area of the strainer in the funnel — the breadth of the architect's knowledge and experience — is ordinarily too greatly restricted. The strainer should be forced upward to the top of the funnel, giving it the maximum area and efficiency and a reasonable opportunity to properly perform its duty.

In the practice of the technical side of his profession the architect is surrounded by a swarm of manufacturers all thrusting their products at him, loudly acclaiming their alleged fitness and excellence. Meanwhile the architect is using his utmost endeavor to distinguish the notes of truth in the tumult; for the very information that these manufacturers are trying to get across to him is essential to the intelligent and efficient performance of his function.

The architect's problems must ultimately be solved in terms of materials, devices, and methods. Through the use of these only can he give concrete expression to his design. His professional efficiency and the value of his services to his client are necessarily measured by the scope and accuracy of his knowledge of the tools and media with which he may work. Knowledge is born of experience or of investigation. Few architects may claim the enlightening benefit of wide experience, and still fewer have the time or the facilities or even the aptitude for adequate research and investigation. In the effort to solve their problems under such conditions, the majority of architects faces two alternative lines of procedure: either to employ those things with which they are not familiar and gamble on the results, or resort to the use of standards with which they are familiar though frequently obsolete and economically unfit to serve the purpose.

We can not increase the breadth of the architect's experience, but we can increase the scope of his knowledge by furnishing him with accurate information on the materials, devices, and methods which he may use, and by telling him in his own language how to provide for their use and how to use them. This is precisely the fundamental purpose of the service rendered the architect by the Bureau.

The benefit to the architect, to the owner, and to the manufacturer of such a medium for the distribution of information can not be fully understood without a realization of the fact that the present insurmountable limitations placed upon the architect's practical and technical knowledge deprives the owner of the economic advantages of development and progress and robs the manufacturer of the just fruits of his industry and enterprise. While we acknowledge the injustice to the owner growing out of this condition, we must also recognize the right of the manufacturer who is actuated in business by the desire to produce an article of value and merit, to receive in his restricted market fair consideration of his product.

The manufacturer's problem of developing a market and the architect's constructive problems both contain the basic factor of information on products and methods. The solution of one of these problems is also the solution of the other. The service of the Architects' Bureau of Technical Service to the manufacturer and to the architect is that solution.

The gulf of skepticism, misunderstanding, and misrepresentation which now separates the architect and the manufacturer is bridged by the Bureau and its service. The manufacturer has tried to force communication across this gulf with oral and printed talk. Ninety per cent of his circular matter is economic waste. It becomes a daily contribution to the architect's waste basket, frequently unopened and unread. This waste runs into enormous sums of money every year and is charged to the cost of building. The consumer always pays all the cost of selling the commodity he buys. The Bureau, as it increases the scope of its service, will gradually eliminate this waste and should secure the corresponding reduction in the cost of building.

The manufacturer's literature, catalogues, pamphlets, broadsides, house organs, and circular letters fail in their mission because they do not contain the kind of information the architect needs; because they reach the architect when he is not interested, and because they are of such a variety of sizes and shapes and frequently embrace so many topics that it is impossible for the architect to devise a filing system which provides for future reference.

The manufacturer's oral talk, or, more truthfully, his inability to talk through demonstrators and salesmen, also represents economic waste — also charged to the cost of building. Representation by salesmen is at best haphazard shooting, with an accidental hit now and then. Occasionally, by sheer luck, the salesman drops on an architect at the moment that the architect's and the salesman's interests are one and the same, and at such times the architect succeeds, provided both he and the salesman know their business in extracting the information required.

The Bureau is the distributor of the manufacturer's literature. Through the Bureau's service this literature goes to the architect when, and only when, the architect is interested. The Bureau co-operates with the manufacturer in the effort to produce literature of the kind that will serve the architect's purpose. It is economic stupidity to persist in the production of something which is of no value and fails to secure results. The Bureau also speaks to the architect for the manufacturer, as does the salesman when he succeeds in securing an interview, but with this advantage,— the Bureau has the prestige of the architect's confidence, and it gives him the facts he wants and without cross examination in such form that he may use them with the minimum amount of personal effort.

The Bureau accomplishes results where other media fail, because it is performing the architect's function for him. The Bureau is an active adjunct of every architect's office, responding to every need, as would his own organization. This the Bureau does with better tools than the architect can ordinarily acquire, and far more thoroughly. The Bureau's technical staff, composed of experts of technical training and wide experience in building construction, devotes its entire time to investigation and research in the field of production, combing out the facts from the mess of information and misinformation that clogs the market; assimilating these facts, formulating them, and translating them into standard specifications that may be transcribed verbatim into the architect's specification.

The Bureau accepts for registration only those products and methods which are honestly marketed and which have "made good" under actual service test. The architect is therefore secure in the use of any material, method, or device which bears the Bureau's hall mark. In brief, the Bureau's service short circuits the reputable manufacturer's present wasteful selling

(*over*)

methods and places his product in competition only with its equals.

The Bureau's service is national in its scope, offering every reputable manufacturer of an excellent article and every proprietor of an efficient method a national market if he desires it. To facilitate the service to the architect and to restrict the manufacturer's market as may be required, the United States has been divided into six service zones as indicated on the zone map (Fig. 1). The manufacturer may register his product in one or more zones as he wishes to extend or restrict his market. There is, however, a complete interchange of data between the six zone offices of the Bureau, so that the architect may, upon special request, receive information on any material, method, or device, even though it be not registered in his zone. Thus the architect in Seattle may secure information on a material manufactured in zone No. 1 and in general use in the East, but not registered in zone No. 6.

Products are registered under two grades, "A" and "B." Products of grade "A" are those which are suitable for use in work of the highest standard. Products of grade "B" are those which are honestly marketed, perform satisfactorily their intended function, but are obviously inferior to products of grade "A."

The Bureau's service to the architect relieves him of the obligation to investigate before he uses a material or device with which he is not familiar, posts him on the relative merits of various products and methods which he may use, instantly increases the breadth and scope of his practical knowledge so that he may in writing his specifications draw upon a national market instead of a local market as is now the case, and removes the necessity of his attempting to save and file for possible future reference the mass of miscellaneous literature which now enters his office. The Bureau's service gives the architect in the small city the same advantages which now belong to him who practises his profession in the large centers of building activity.

The Bureau's information goes to the architect only on request, and to insure the utmost efficiency the Bureau's service has been devised to operate as nearly automatically as possible, demanding the minimum effort on the part of the architect.

The Bureau places in the office of each registered architect an index to the Specification Register. The index contains over 2,000 topics cross indexed so as to facilitate reference. The architect is furnished with stamped post cards addressed to the Bureau, on which he notes the index numbers of the topics on which he requires information and standard specifications. The post cards bear his registration number, dispensing with the necessity of his signing them. Upon the receipt of one of these cards the Bureau forwards immediately to the architect data and standard specifications on all similar products or methods of the grade required which are registered. In addition to the data and standard specifications the Bureau delivers to the architect specification sections providing for preparatory and coordinate work when the same is necessary in connection with the topic, thus reducing the chances of omissions in the architect's specification. The architect may have as many copies of the Bureau's data and as frequently as his needs require. The Bureau asks him not to save the data. Its destruction affords the Bureau the opportunity of keeping the information up to date and of rejecting registered articles which show evidence of degeneration.

The Bureau's service answers another insistent demand from the architect, contractor, and the manufacturer — the demand for a standardization of the specification. At present it is an extraordinary coincidence to find two architects who will describe the same material in the same language. Many specifications are ambiguous and unintelligible, due to the author's imperfect knowledge of the subject. A little knowledge is nowhere so dangerous as in the writing of a specification.

As the architects of the country form the habit of "asking the Bureau" and as their growing confidence in the thoroughness and fairness of the Bureau's service stimulates patronage, the Bureau will become the recognized clearing house for technical information, and as such is destined to become that indispensable instrument of cooperation for their mutual benefit between the reputable manufacturer and the architect. The Bureau will therefore ultimately acquire vast power in this great industrial field. The centralization of the control of this power holds many elements of danger. In the hands of a few individuals it might be improperly used in any one of many ways that immediately suggest themselves. The fundamental purpose of the Bureau is to serve efficiently the architect and the deserving manufacturer, and in order to prevent any possible abuse of its power, the control of the Bureau has been offered to the American Institute of Architects through a majority representation on its Board of Directors — directors that will direct and control — or control by any other means that the Institute may select as most effectual. To disarm those skeptics who will insist that the Bureau cannot withstand the temptation of being influenced by consideration of pecuniary gain, it makes the solemn declaration that it is not operating and will not operate for profit. Its revenues will be gauged and fixed so as to meet expense only. There are no outstanding bonds or stocks upon which dividends or interest will have to be paid. Indeed, if this were not the financial basis upon which the Bureau operates, the declaration on the cover of the Index would be a hollow platitude.

The architect, as a beneficiary under the Bureau's service, should unquestionably bear his equitable share of the expense of operation. There is ample evidence that he recognizes this obligation, and ultimately some practical scheme for the complete mutualization of the bureau will be worked out. The rates now quoted to the manufacturer have been carefully computed to meet the expense of operation and to provide a small margin for development.

The Bureau enters the field of building as the exponent of efficiency.

ZONE OFFICES

Zone No. 1. Boston
Zone No. 2. New York
Zone No. 3. Cleveland
Zone No. 4. Chicago
Zone No. 5. Denver
Zone No. 6. San Francisco

ZONE MAP

Architects' Bureau of Technical Service

The following is a specimen of the specification data delivered to the architect under the "Specification Register" service:

Architects' Bureau of Technical Service

101 PARK AVENUE, NEW YORK CITY

SPECIFICATION REGISTER

Topic No. 951-1. DISAPPEARING AND TELESCOPIC ASH HOIST — HAND POWER

Grade A.

HOIST:

The contractor shall furnish and install complete and ready for operation, in the area (describe location), a "G. & G. Telescopic Hoist" * as manufactured by Gillis & Geoghegan of 537 West Broadway, New York City.

* *Gillis & Geoghegan also manufacture a telescopic hoist with an overhead crane attached to the hoisting head and designated as the "G. & G. Telescopic Overhead Crane Hoist." This type may be used to advantage where trucks can be backed up to the hatchway, avoiding the necessity of handling the barrels after they are landed on the sidewalk. Both of these hoists may be operated by electric power, and provision for such power in the specifications may be obtained by inserting the words "with electric motor" after the designation of the hoist.*

INSTALLATION:

The hoist shall be set with the post plumb and secured to the area walls with heavy, wrought iron clamps expansion bolted to the walls. The heel of the post shall be bedded solidly in the concrete of the area bottom, and shall rest on a footing to be set by the mason contractor.

Under the specifications for mason work "Footings" provide that:

The contractor shall place a concrete footing below the bottom of the area (describe location), 12 ins. thick and not less than 12 ins. square, to receive the heel of the post for the hoist to be furnished and set as elsewhere provided for.

If the hoist is to be installed outside of New York City, provide under the painting specifications that:

All parts, except gears, of the Telescopic Ash Hoist in the area (describe location) shall be thoroughly cleaned of oil, rust, and scale, and shall be given one coat of red lead and linseed oil, mixed in the proportions of 28 lbs. of red lead to 1 gal. of oil, thoroughly brushed out; and after this coat has dried, an additional coat of white lead and oil, tinted as may be directed.

Note: Hoists to be erected in New York City will be painted by Gillis & Geoghegan after erection as part of contract, and no provision for field painting is necessary.
DO NOT FORGET to provide under the miscellaneous and ornamental iron specifications for an iron ladder leading from the area bottom to the sidewalk, and for hinged hatchway doors or gratings.

FINDINGS:

Telescopic hoists as above specified have been installed and are operating successfully in over 200 buildings, the majority of which are in or near New York City. Many of these installations have been inspected by the Bureau and have proven satisfactory and efficient. Repairs have not been required on any of the installations inspected.

Among the architects who have used the G. & G. Hoist and have reported satisfactorily on it are: Messrs. Clinton & Russell; C. P. H. Gilbert; Renwick, Aspinwall & Tucker; Hill & Stout; William H. Gompert, and Hunt & Hunt.

The hoist is well and substantially constructed. The defects which developed in the early installations have been overcome. Conscientious study has been given by the manufacturers to the perfection of the device. In the opinion of the Bureau it is capable of further development to increase its efficiency and sphere of usefulness. The Bureau's suggestions to that end are now under consideration by the manufacturer.

COSTS:

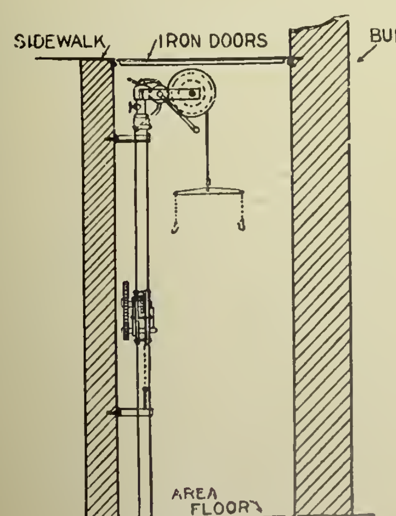
G. & G. Telescopic Hoist, without can, erected complete in New York City	$125.00
The same F. O. B. cars New York City	115.00
G. & G. Telescopic Overhead Crane Hoist, without can, erected complete in New York City	175.00
The same F. O. B. cars New York City	165.00

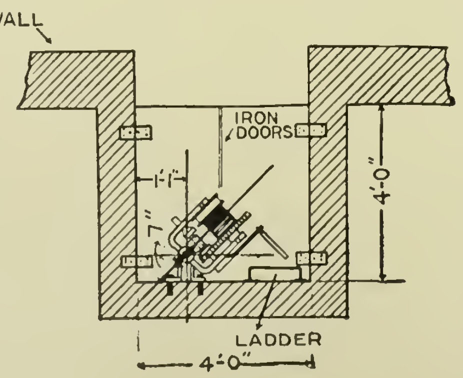
Prices on motor driven hoists will be furnished on application.

A slight additional charge is made if the distance between the area bottom and the sidewalk exceeds 15 ft.

The Telescopic Hoist has a maximum working capacity of 500 lbs., which load it raises at a speed of 30 ft. per minute. The overhead crane hoist has a maximum working capacity of 300 lbs., which load it raises at a speed of 30 ft. per minute. The motor driven hoist raises the load at the speed of 60 ft. per minute.

The cut herewith indicates the minimum clearances required. These clearances may be regarded as referring to the hatchway opening and not to the area walls. Post clamps of proper length will be furnished to meet any reasonable conditions. GILLIS & GEOGHEGAN, 537 to 539 West Broadway, New York City. List of agents on next page.



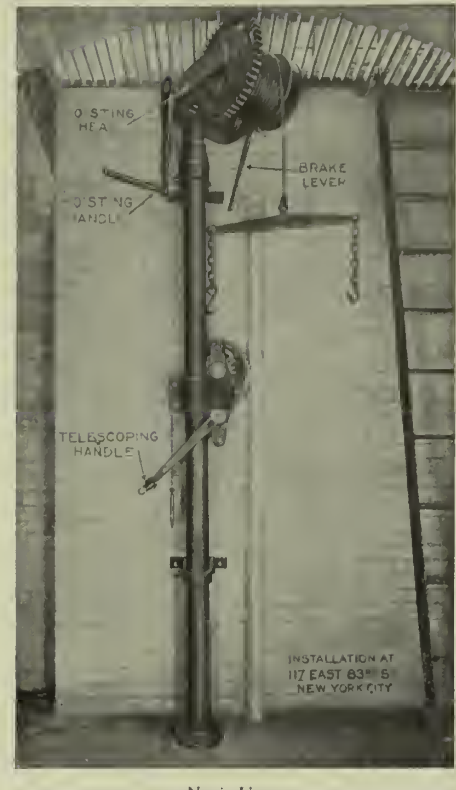


Scale ¼" = 1 Foot.

Plan and Elevation showing arrangement of G. & G. Telescopic Hoist in area of usual size.

Note. — Area, above shown, is large enough for Overhead Crane Hoist or Hoist with Electric Motor.

(over)



Not in Use.

Showing the G. & G. Telescopic Hoist with Hoisting Head telescoped below sidewalk.

Atlanta, Ga., 1307 Third Natl. Bank Bldg., George R. Argo, Tel., Ivy 3876.
Minneapolis, Minn., 747 Plymouth Bldg., Avery Supply Co., Tel., N. W. Nicollet 5229.
Louisville, Ky., 110–112 S. First St., F. A. Clegg & Co., Tel., 2149.
Pittsburgh, Pa., 14 Wood St., Dempsey-Degener Co., Tel., Court 923.
Providence, R. I., 49 Exchange Place, Dudley Hardware Co., Tel., Union 4561.
Cleveland, Ohio, 1214 Schofield Bldg., Queisser-Bliss Co., Tel., Bell, Main 4224, Cuy Cent. 4223.
Omaha, Neb., 1727 Leavenworth Bldg., Shields & Standish, Tel., Tyler 1597.
Scranton, Pa., 309 Republican Bldg., Chas. S. Teal.
Indianapolis, Ind., Vonnegut Hardware Co.
Detroit, Mich., 301 Penobscot Bldg., Geo. T. Wallace Sales Co., Tel., Cherry 2800.
Kansas City, Mo., 514 Kansas City Life Bldg., Jos. G. Walsh & Co., Tel., Home 9485 Main.
Chicago, Ill., 301–303 Stock Exchange, Webster Engr. Co., Tel., Franklin 1330.
Grand Rapids, Mich., 619 The Gilbert, Fredk. H. McDonald, Tel., Mich. State 2458, Citizens 2458.

The accompanying cuts are those which would ordinarily be forwarded to the architect with the Bureau's data.

In Operation.

Showing the G. & G. Telescopic Hoist with Hoisting Head raised above sidewalk.

ALL practising architects are invited to enroll with the Bureau and to avail themselves of its facilities absolutely without cost or obligation of any sort. Just fill out the coupon, pin to your letterhead, and mail to us. We will then forward a copy of the Specification Register and the Inquiry Cards.

Architects' Bureau of Technical Service

101 PARK AVENUE
NEW YORK, N. Y.

Architects' Bureau of Technical Service,

Gentlemen :

Please enroll my/our name and send copy of Specification Register and Inquiry Cards. It is agreed that this involves no financial or other responsibility on my/our part.

Name ....

Address ....

....

Fill out, pin to your letterhead, and mail to the Bureau.

INDEX *to the* SPECIFICATION REGISTER

Published by

THE ARCHITECTS' BUREAU OF TECHNICAL SERVICE

A Declaration.

The Architects' Bureau of Technical Service is dedicated to the Architectural Profession and to the Manufacturer whose professional attitude toward business makes production a creative art; to establish between these two that frank and sympathetic understanding and spirit of cooperation which makes for substantial progress; and to secure a higher degree of efficiency in the field of building.

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Fac-simile of Cover to Index.

THE · BRICKBVILDER

VOLUME XXIII NUMBER 3

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PLATE ILLUSTRATIONS

LETTERPRESS

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RALPH ADAMS CRAM, CONSULTING ARCHITECT

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THE BRICKBVILDER

VOLUME XXIII MARCH, 1914 NUMBER 3

Modern Farm Buildings.

A TREATISE ON THEIR DESIGN, PLAN, AND EQUIPMENT.

By ALFRED HOPKINS.

Architect and Author of the Work, "Modern Farm Buildings."

THE architectural possibilities of the farm group are as varied as they are interesting. There is scarcely a problem in building which lends itself to such a diversity of treatment. This phase of the work, however, shall be touched upon but briefly as every architect is undoubtedly more interested in maturing his own style than in reading of the possibility of treatment suggested by his confrères. It may be remarked, however, that simplicity should be the keynote of this class of work, and that usually it is better to give up the symmetrical arrangement of the plan for the rambling happy-go-lucky working out of the buildings. This type of plan can be treated with enough symmetry to answer all purposes demanded by a symmetrical composition. As a matter of fact, the different wings of farm buildings are usually so varied in their uses that perfect symmetry of plan can seldom be carried out without great sacrifice of practical requirements.

The first practical requirement with which the architect has to concern himself is the site. A selection should be made with a view of obtaining good drainage, a southern exposure, and if possible woods or high lands at the north to give protection during the winter months. The buildings themselves can generally be arranged in their relation to each other, to give this protection in a very satisfactory manner to the portions of the group where it is essential. It is usual to place the hay barn at the north so that its great bulk will give protection to the other buildings, and this arrangement lends itself well to an effective architectural treatment.

Of the individual units the cow barn is perhaps the most important of the farm group. For the most satisfactory exposure, it is best placed on the site with its long axis northwest and southeast. This places the building so that it will receive the most benefit from the summer breezes and the winter sun. It should be filled with numerous windows, large in size, so as to be effective in both seasons. Care should also be taken to place other structures of the farm group in all cases so that they will not deprive the animals, whether cows or horses, of the sun and air which they need.

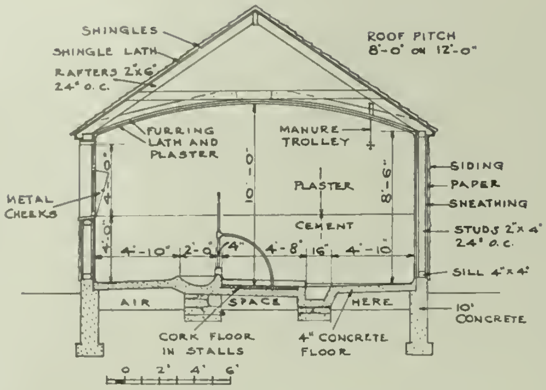
The cow barn of the usual type should be approximately 36 to 40 feet in interior width for a double row of cows and 18 feet in width for a single row of cows. Stables for two rows of cows have been made as wide as 42 feet, but for practical purposes this is too great a width; it makes a cold stable in winter and the extra space involves a needless expense. The two sections, Figs. I and II, show typical arrangements for both types of stable, and give the widths desirable for the passageways, troughs, gutters, etc. The ceiling may vary in height from 9 to 11 feet; in colder climates the lesser dimension is practical and in warmer the greater one.

For the double row of cattle it is generally conceded that placing them face to face is the best as it is the most sightly arrangement. It has the advantage of simplifying the process of feeding, it brings the gutters next to the windows where the sunshine will sterilize them, and it gives the milker more light for his work — a decided advantage on dull days. It is frequently convenient, however, to put the young stock or dry stock, tails together, as this arrangement generally simplifies the tracking for the manure trolley. The passageway between the cows when they are placed head to head should always be kept wide enough to prevent one cow from breathing in the face of the one opposite. This distance should therefore never be less than 8 feet, and in order not to pocket the air in front of the cattle, the front of the feeding trough should be low. High feeding troughs or mangers are undesirable as they do not afford an unrestricted circulation of air at the animal's head.

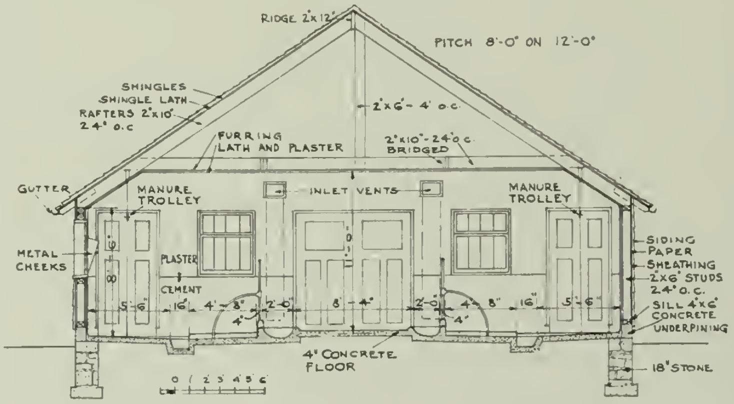
It is the usual and always the better custom to separate the young stock and dry stock from the milking cows. The milking cows have to be kept in a state of perfect cleanliness that is not required for the animal which gives no milk. For this reason provisions for the young stock and dry stock should be made separate from the compartments for the milking cows, though they may be in the same building.

In planning for a given number of animals it is necessary to know approximately what relation exists between the milking cows and the dry stock and young stock so that there may be proper accommodation for each. This ratio is variable according to conditions. The owner may not desire to raise his young stock, though in this case he loses one of the most attractive and interesting occupations of the farm; but if he does wish to raise his own cattle and the natural conditions prevail, from 30 to 50 per cent of the entire herd will be young stock or dry stock. Or if he starts with a number of milking cows accommodations for from 50 to 75 per cent of that number will be required for his future young stock and dry stock.

The usual type of cow stall, shown in the accompanying illustration, is made up of pipe with the stanchion suspended from the top rail and fastened at the bottom in the concrete. This is the most practical way of fastening the cow and is entirely humane. It gives sufficient liberty to the animal to be comfortable, and the stanchion is considered generally better than the cow tie, which requires a collar on the cow and chains from the sides of the stall to make an adequate fastening. Both the collar and the chains are hard to keep clean and in order to fasten the cow with the tie, the herdsman has to reach over the animal to make one side fast. His eyes and face are always in danger from the horns, and when the cattle have been out in the rain his clothes are likely to become wet. The distance in width from stall to stall should be 3 feet 6 inches for average cows, and 3 feet for young stock. For the mature animal the stall floor should measure 4 feet 6 inches to 5 feet in length, and from 4 feet to 4 feet 6 inches for young stock. For Jerseys and Guernseys the stall length is 4 feet 6 inches to 4 feet 8 inches, and for Holsteins 4 feet 8 inches to 5 feet, the length being considered the distance from the edge of the gutter to the stall side of the concrete ridge which separates the stall from the feeding trough. It is always desirable in a long row of stalls to have them 4 feet 6 inches in length at one end of the row and 4 feet 8 inches or 4 feet 9 inches at the other, slanting the gutter and giving stalls of varying length where animals of different sizes or individual habits may be accommodated. This slanting of the gutter is especially desirable for the young stock where the stalls may vary in length from 4 feet to 4 feet 6 inches.



* Fig. I. Section through a Cow Barn 18 feet wide.



* Fig. II. Section through a Cow Barn 36 feet wide.

The stall floors must be of some sanitary material. Concrete in the past has been generally used, but it has the objection of being very cold in winter and damp at all times. To cover the stalls with temporary wooden floors is possible but not desirable. Wooden blocks creosoted have been used, but these are porous and when worn absorb the moisture, swell and usually break the concrete ridge at the gutter. For fulfilling all the qualifications cork brick is considered to be the best material. These bricks are warm and sanitary and their use has been so satisfactory as to entirely justify their expense. They are practically non-absorbent and some which have been in constant use for two years, when sawed through the center, have shown only the thinnest film of absorption on the wearing surface. They should always be laid upon a concrete foundation and embedded in cement, colored black to give the best finish and with the long joints running lengthwise of the stall. They may be used not only on the floors of the standing stalls but in all box stalls and in the calving and bull pens with equally good results. An important advantage of this kind of a floor is the safe footing it gives the animals because of its non-slippery surface.

The stall floor should pitch an inch and a half in length from the stanchion back to the gutter. This pitch is necessary for quick drainage. At the side of the outside stall, that is, the end stall adjoining the passageway, there should be a ridge of concrete 5 or 6 inches high to hold the bedding within the stall and to prevent wetting it when hosing down the passageway.

The old fashioned way of feeding the cattle was from their mangers and to let them drink from buckets. About fifteen years ago there came into the market a separate watering trough put on or near the stanchion and controlled by a central leveling tank. This device for watering the cows took away from the freshness of the water. These troughs were invariably filled with the dust and dirt of the stable, and were hard to clean. The object of this trough, however, was to give each animal a separate watering device and to keep water contaminated by the saliva of one animal from being used by another. This object was accomplished. Latterly it has been the custom to feed and water the cattle in one continuous trough running the whole length of the line of cows. This process of feeding and watering is convenient, the long trough is easy to clean, and its use has become general. Still it must be admitted that cows so watered are more liable to infection, one from the other, than when they eat and drink out of separate receptacles. In high grade cattle or for small herds, it is undoubtedly well to take precaution against possible infection at the feeding trough and to feed and water in the trough divided into separate compartments. No doubt this type of trough increases, though not materially, the labor required in keeping it clean. This idea of separate feeding and watering may be less rigidly carried out by dividing the general feeding trough so that two cows eat from the same compartment. If this method is used the outlet is best placed in the center between the cows where the water and feed will be drained away from each animal. For the commercial herd a continuous trough is preferred.

There are two types of the continuous feeding trough, one about 2 feet in width and nearly level with the floor (Fig. III) and designed with the object of sweeping back the feed which the cows invariably push out in the process of eating; the other (Fig. IV), 3 feet 6 inches in width, its front well extended above the floor and constructed with a view of retaining the feed in the trough as much as possible. The latter is the better, both in principle and in practice, although it necessitates a wider building than the lower trough. The cow's feed should be kept off the floor and the dust and dirt out of the trough.

Accommodation for the young stock should be made apart from that for milking cows, and calving pens should be provided in the ratio of one pen for every four or five milking cows in small herds; but in larger herds this may be reduced to one pen for every ten cows. The smallest dimension of the calf pen or calving pen is 8 feet wide by 11 feet in length; it may be larger if convenient to make it so, but no smaller. This pen may be subdivided by a movable partition when two calves are to be kept in the one pen. The calf pen partitions are best solid and should be 3 feet 8 inches high. The pipe partitions are not generally liked by herdsmen because they are drafty. The doors are usually of iron, and upon the floor below them, at the opening, a ridge of concrete should be formed as in the case of the end stall before mentioned. The calf pen partition should preferably be of concrete. Wood is hard to keep clean, and the calf pen enclosure is one which needs constant attention in regard to cleanliness. Provision should be made for draining these pens, but never by a bell trap in the center, which invariably becomes clogged and foul. The drainage should be led through the front wall of the pen and out into the passageway, where the same bell trap may answer for draining two pens and a portion of the passageway. The calf pen should always be drained so that one pen may be hosed out and cleaned without wetting the adjoining ones. The calf pens should always have a sheltered exposure, and in large stables where many young stock are to be provided for, nothing is better than to give them Dutch doors opening into little yards or runs of their own. A separate yard for young stock is always an advantage.

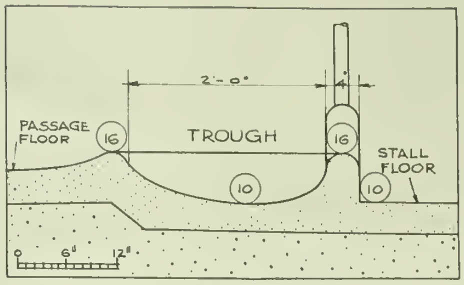


*Fig. III.

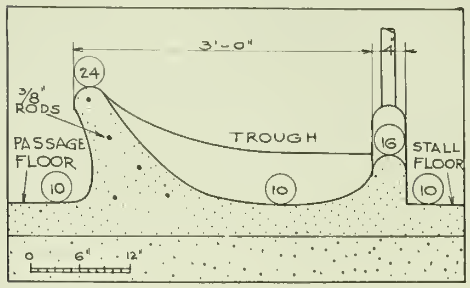


*Fig. IV. Sectional Drawings of Typical Feed Troughs.

The bull is better kept with the rest of the cattle than by himself, as he is always better natured and more tractable when he can see the other animals. His pen, usually with a post in the center, should not be smaller than 12 by 14 feet; where space permits a 14-foot square pen has decided advantages. It is always well to give the bull a yard and arrange his quarters so that he may go in or out as he pleases. He appreciates the privilege of the latch key. The partitions of his pen, always solid, and the more substantial the better, are best increased a foot over 3 feet 8 inches in height, and this may be done by putting a 2-foot pipe rail on top of the wall. To raise the solid partition to that height would shut out too much air.

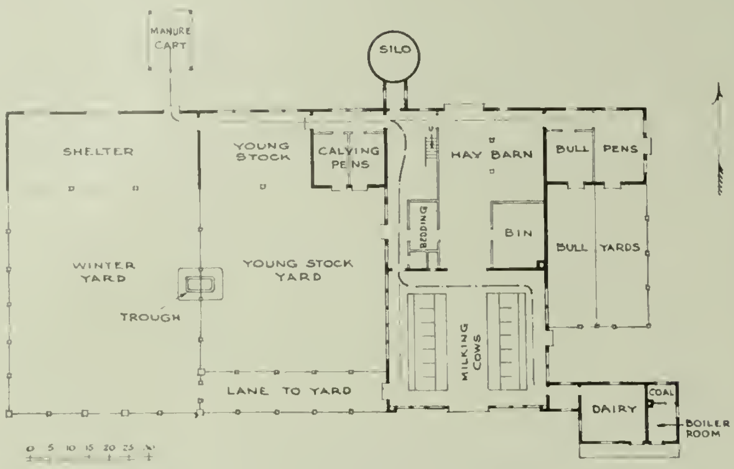
The floors of the cow barn should never be of wood. They are invariably of concrete 4 inches thick. It is very important that the floors of the stable be first class in every way, and none but competent and first class masons familiar with concrete should be employed upon them. The concrete floors where the animal walks are always made with a float finish to avoid slipping, and this finish can hardly be made too rough at first, as it has a tendency to wear smooth. The gutters, on the other hand, the feeding trough, and the passageways where the animal does not walk, are troweled smooth, that they may be easily cleaned. An important matter in the comfort of the stable is the floor drainage, always devised with as few bell traps as possible and all floors draining so that the water, after hosing down, will run away and leave the floor to dry quickly. In order to do this a pitch of 3/16 inch to the foot is necessary, and this is a minimum grade 1/4 inch to the foot is frequently better. It is impossible to lay a long run of concrete floor to a pitch of 1/8 inch per foot in such a manner that hollows will not be formed where the water will remain. For short runs, however, 1/8 inch will do, and for certain places as much as 1/2 or 5/8 inch to the foot is not objectionable. On the whole, it is better to err on the side of too much pitch rather than too little, for there is nothing which shows lack of care on the part of the architect more than to have the concrete floors retain the water in pools, instead of readily conducting it away.

It is better to leave the bell trap out of the feed room and to drain this room into the cow barn or young stock barn, as the case may be. A bell trap in the feed room is very liable to be clogged by the feed, but if one is put there it would be better to place it in some out-of-the-way corner than in the center of the room. It is always best in a double row of cattle to place a bell trap in the central passageway between the troughs. It is always undesirable to drain the central passageway into the feeding troughs. The rear and side passageways,

Fig. V. Cow Stable Interior Showing Stalls.

however, drain into the gutter, which should not be less than 7 inches deep at the end and not over 9 or 10 inches at center. It is wholly impossible to make the gutter pitch to such an extent that the urine will always run out of it, the dropping from the cows prevents this and a pitch of 1/8 inch to the foot or less is sufficient. The watering trough need not drain as quickly as is necessary for the floor. A pitch of 1/8 inch to the foot or less is sufficient; if a little water remains in the trough after watering, it is of no consequence. In a long row of cows, twenty or more, the pitch of the gutter must necessarily be made less, but it is better to have a less pitch than to try to overcome the difficulty by putting in another bell trap in the gutter or a second outlet in the trough. It is well to have as much drainage above the floor and as little beneath it as possible. The gutter should be as high on one side as the other, a low gutter at the side on the passageway will allow the manure when dropping to splash against the outside walls.

A yard in which cattle may exercise is just as necessary as any of the other primary requirements of the farm barn which we have been considering. The buildings are frequently arranged so that they form a protected and sheltered enclosure, in which it is usual to confine the cattle. In general, this is a satisfactory solution of the problem, though the cow yard adjoining the milking barn is not desirable from the standpoint of the bacteriologist. It is better for winter use only. It is quite feasible to locate the cow yard at a distance from the cow barn, and such an arrangement is advised in preference to all others. Fig. VI shows a very practical plan for a small herd of twelve cows and two bulls, with their various yards conveniently disposed and meeting all requirements.



* Fig. VI. Plan of Farm Buildings at Framingham, Mass.
Alfred Hopkins, Architect.

* Reproduced from "Modern Farm Buildings," by Alfred Hopkins. McBride, Nast & Co., Publishers.

Farm Buildings at Islip, Long Island, N. Y.
Alfred Hopkins, Architect.

Chapel of the Intercession, New York, N.Y. Bertram Grosvenor Goodhue, Cram, Goodhue & Ferguson, Architects.
E. Donald Robb, Delineator.

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

III. THE WORK OF E. DONALD ROBB.

DONALD ROBB'S best work has been done in his renderings of interiors, and in this there is hardly a man in the country who has done such exquisite work; although his renderings of exteriors have been of uniform high quality, and also of considerable personality, they do not stand out above the mass of other renderings as do these of his ecclesiastical interiors. Like Mr. Githens, the most of his training has been in offices where Gothic architecture was the predominant style, and it is in his renderings of Gothic work that we most clearly perceive his ability and his imagination. Perhaps the most interesting aspect of his work from the personal side, as it is in the case of any man's, is his training, how he got it, and where his technique was developed. We find in his case, as we do with most of our other successful renderers, that it was largely self-developed; his only school training was in Drexel Institute, aside from a few lessons in oil painting in the Woodstock Summer School; but one cannot imagine that either of these two experiences in school work have been very valuable to him. On the other hand, his office training was long and thorough, and with the exception of a short time was confined to the offices of two firms,— T. B. Chandler, of Philadelphia, and the New York office of Cram, Goodhue & Ferguson. Mr. Chandler was, of course, a well known church architect of the old school and a man of considerable taste and ability; but it is probable that the years which did most to develop and improve Mr. Robb's taste and ability were those which he spent under Mr. Goodhue in New York.

It is also an interesting commentary on Mr. Robb's personality that, while the design that he now does as a member of the firm of Brazer & Robb is at least somewhat reminiscent of his training in Cram, Goodhue & Ferguson's office, his methods of rendering show little of Mr. Goodhue's influence, even his medium being different. This is the more surprising since Mr. Robb not only entered Mr. Goodhue's office as a comparatively young man and in the most impressionable time of his life, but worked there for a considerable number of years, and one would have expected him therefore to follow to some extent at least Mr. Goodhue's wonderful and exquisite pen renderings. Mr. Robb is by no means without ability as a pen draftsman, although perhaps not Mr. Goodhue's equal in that medium; but his deliberate differences in method must have been caused by a strong personality instinctively seeking (and finding) natural expression, and even while he was in that office many of his most exquisite drawings were made in the style which he has made particularly his own. He was still a draftsman there when he made the magnificent drawing of the interior of the choir of the Cathedral of St. John the Divine for *The Churchman*, but the almost equally beautiful drawing of the interior of the Cathedral of the Incarnation at Baltimore, of which Mr. Goodhue is the architect, was made after he left that office and had been engaged in independent practice for some time. It is these two drawings among the five illustrated in this number that the writer finds most wonderful, and it is very greatly to be regretted that they cannot be shown in full color, for they are as extraordinary pieces of real painting of church interiors as any of the old Dutch masters ever made from the executed work. The painting, for one can only call it that, of the choir of the Cathedral of St. John the Divine, is one of the most magnificent things which the writer has ever had the good fortune to see: rich and mellow in color, wonderfully lighted through the stained glass windows, glazed and varnished, it has the quality of the old masters without the inaccuracy in perspective and in architectural detail most usual in their work; and it is very truly a picture as well as an architectural rendering, since it fulfils the painter's idea of composition as well as the painter's idea of a painting as an interesting pattern in color. The way in which the perspective and the lighting alike focus on the high altar, as well as the pictorial element introduced by the procession, is more than architectural rendering and approaches genius; and had Mr. Robb not been a successful architect we could have fancied him a modern painter of masterpieces in miniature, so much patience, attention, and skill has he displayed in working out every detail of the picture, without for an instant getting out of his composition.

The quality of the drawing for the Cathedral of the Incarnation is hardly inferior, and is in a way as wonderful as the painting of St. John the Divine, because while we can believe that Mr. Robb has perhaps in the former example been able to verify from the executed work the impressions he had formed from the architect's drawings, one knows that the Cathedral of the Incarnation is at present only in sketch stage, and the wonderful impression of reality which Mr. Robb has created must be due to his exquisite perception of the results which would be produced from an assumed case. The wonderful thing about all architectural rendering is that the renderer is able so graphically to transmit in pen or pencil or color sensations that he has never experienced, and which he can hardly approximate from the observation of other sensations perhaps entirely dissimilar. When one has seen one cathedral one has by no means seen all cathedrals, and when we consider how heavily the landscape painter leans upon his field notes to correct and determine his imagined impressions, the work of the architectural renderer seems still more extraordinary, especially when he is confronted with a problem so intricate and so confusing as that of a church interior lighted from many sides and from many angles, never by direct sunlight, and never by light of unbroken color quality, but always transmitted through many colored glasses. These two interiors have been spoken of at such great length, not because they are the only things which Mr. Robb is able to do well, but because they are works in which he is incomparable.

Cathedral of the Incarnation, Baltimore, Md.
Bertram Grosvenor Goodhue, Architect.
E. Donald Robb, Delineator.

His renderings of exteriors are as a matter of fact of great excellence, executed in a very personal way, and with a considerable variety of effect. Most architects who have seen some of the recent architectural exhibitions will remember the rendering shown here which he made for Mr. Goodhue of the Chapel of the Intercession; it is not represented as a bright sunshiny day, with a clear sky and sharp and definite shadows, but as April weather, the pavements shining with water, the sky filled with a sort of clear mist, the shadows less important than the shades. It is not perhaps the best rendering that Mr. Robb has ever done, but is nevertheless exceedingly interesting because it pictures conditions very rarely chosen by the architectural renderer, and which faithfully portray his subject in an unfavorable light and show it as still beautiful. Of somewhat the same quality is his rendering of the "Approach from the River of the United States Military Academy" at West Point. This again is no bracing autumn day, but is misty and poetic, and still the great fortress-like towers and battlements of West Point arise with a power and dignity that the veritable buildings more than possess. Yet it is done without tricky effectiveness at the expense of veracity, and the buildings are in no sense dissimilar in that pictured representation to the impression of strength and stability that West Point gives when one views the academy from the evening boat, transfigured by the same dreamy glow that Mr. Robb has so successfully transcribed in his rendering.

There must be some renderings done in a few hours and of subjects not so inspiring as a national military academy or a great cathedral, but which are still useful in gaining a client, or in illustrating to a client won how his building is to appear. The rendering of the small church is illustrative of Mr. Robb's quicker renderings, in which his outlines are sketched in with ink and his color applied in flat tones.

The use of Chinese white in the skies is, it may be suspected, reminiscent of the drawings of Henry Hornbostel, published many years ago, when Mr. Hornbostel showed us all how to get value by abrupt contrasts. Of all the drawings shown, perhaps the one of the Delaware County Court House is the most common-place, and yet at the same time is one of the best, since the ordinary every day problem is approached in the ordinary every day fashion and is solved with dignity, seriousness, and good taste. Like many of Mr. Robb's drawings, this is made on colored paper with the high lights and marble thrown out by using Chinese white, a simple, quick, and effective method of presentation, and one which gives some solidity to the drawing with the least effort.

Sketch for Reformed Dutch Church, Poughkeepsie, N. Y.
Brazer & Robb, Architects.
E. Donald Robb, Delineator.

A few words may be said about the color schemes which Mr. Robb chiefly enjoys using. We very seldom find in his work the brilliant lighting of most of our architectural renderers; in his interiors, of course, there is a little, since most of them are lighted with colored glass, but in his exteriors he seems to prefer the unfavorable to the favorable lighting conditions. His color scheme is therefore usually low, soft blues or grays in the skies, occasionally even mauves; the buildings themselves are rendered in quiet tones and not those under which they would appear most definite. Nor, on the other hand, can we believe that he has deliberately picked color schemes of the greatest difficulties, for the reason that the buildings would under those circumstances appear the best, but rather that his drawings are sincere and convince us that the buildings would look equally well under all circumstances. The architectural renderer, especially the man who has been employed for a long time as a draftsman in some one's else office, is not permitted, however, by either his conscience or his employer to subordinate the actual to a pre-conceived color scheme, as may be the privilege of a painter, and while the result may pictorially suffer, and the man for that reason lose in reputation as an artist, he unquestionably succeeds as a designer, since he is faithful to conditions as they are.

Now, as was said before of Mr. Robb, his metier is unquestionably the rendering of the Gothic interior, but he is an architect rather than a painter, and is therefore able to set forth fully and honestly not only such work as falls within his metier, but also the common, every day necessities of his office.

Alteration and Addition to Delaware County Court House, Media, Pa.

Brazer & Robb, Architects. E. Donald Robb, Delineator.

DETAIL OF CENTRAL MOTIF

CASA DE LAS MUERTES, SALAMANCA

Some Old and Unfamiliar Spanish Buildings.

By ARTHUR G. BYNE.

Illustrated from Photographs Specially Taken by the Author.

CASA DE LAS MUERTES. Salamanca.

THE Casa de las Muertes was built in the early XVIth century for Archbishop Don Alonzo de Fonseca, but the architects and sculptors are unknown.

This little palace, barely nine meters wide, is one of the handsomest in Salamanca; but owing to its evil reputation (as indicated by the name) has long stood untenanted. Other buildings now crowd it so closely that an adequate photograph of the façade with its very tranquil disposition of units is impossible; from a window opposite, however, the central motif may be secured, although the simplicity of the composition is slightly disturbed by the intrusion of corners of the adjacent window treatments.

This balconied opening of the principal floor is framed by two high pilasters, which support an arch motif containing a finely sculptured bust of the ecclesiastic mentioned and underneath it his escutcheon. Beside each pilaster is a portrait set in a medallion. In the arched band is some exquisite carving that in its conception and execution eloquently explains the term "plateresque" or silversmith's art. One almost expects to find it set with gems.

The façade of the Casa de las Muertes shows plainly the hybridism of plateresque. The distinction between old and new forms is much less carefully drawn than in Italy, yet the result is full of charm. When the stone carver took up the fantastic ornamentation formerly peculiar to the metal worker, his supply of ideas was equally inexhaustible, and each example of plateresque offers a fresh field for study. In this instance he has introduced the novelty of two stone candelabra in relief, one at each side of the balcony, which are really nothing more than an adaptation of the huge wrought iron candlesticks used in the churches. This felicitous transposition from a malleable material to a chiseled one once accepted, the further transposition to a plastic substance can be easily demonstrated. It can be seen at a glance that this ornamentation of the Fonseca façade could be carried out as appropriately in terra cotta as in Salamantine sand stone.

HOSPITAL REAL, Santiago in Galicia.

THE Royal Hospital was founded by Ferdinand and Isabella and built from 1501–10 by the architect Enrique de Egas.

The portal here shown is one of the most successful combinations of Gothic and Renaissance to be found in Europe. De Egas was of the Flemish family of Van der Eyken, all noted Gothic builders. He never renounced the style utterly but sought to blend it with the incoming Renaissance. Being a man of excellent taste the results were invariably beautiful, as may also be seen in Toledo, Valladolid, and Granada. He kept the freedom of Gothic motifs, was not afraid of the prodigality of the Mudéjar period, yet knew how to make these subservient to the systematized forms of the Renaissance. It is the alliance of these three elements that the Spanish call plateresque.

In this instance we have the classic round arch, but still retaining, in section, the receding Gothic reveals; these are ornamented with Renaissance repetition, marked at intervals with Gothic canopies which are in turn treated in Renaissance detail. The superimposed pilasters flanking the opening are Gothic in their many-storied composition, but are moulded and embellished in the new style. Even the Gothic row of twelve saints has been conventionalized into a somewhat Renaissance aspect; while the crowning motif, a blaze of Gothic pinnacles, has been interspersed with Roman candelabra and other Renaissance touches. This doorway and the cornice above it concentrate in themselves all the ornamentation of the façade, leaving the patios for the greater embellishment.

The surface treatment of this impressive portal with its myriad of little forms constantly repeated, its freedom from long unbroken alignments in mouldings, and its absence of large sections or difficult stereotomy, make it an excellent inspiration for terra cotta.

COLEGIO DE SAN GREGORIO, Valladolid.

THE College of San Gregorio, of which the patio is shown, was built between 1488–96 for Don Alonzo de Burgos, bishop of Palencia. The architect is unknown. Shortly before another great prelate, Mendoza, had built a hospital of severe design in Valladolid; this determined his rival Don Alonzo upon the other extreme — the most exuberant mood of which plateresque was capable. The architect has, fortunately, been able to keep this wealth of ornament within bounds; in no case does it interfere with the structural form. One might consider this statement contradicted by the lunette treatment in the upper tier of arches; unorthodox it certainly looks, but it must be regarded, not as a part of the arch itself, but merely as a screen to reduce the size of the arch opening, as is often done in semi-tropical climates. It is of Arabic origin, but the Arab screen is of carved and interlaced cedar.

In fact, one sees on all sides the infinite fantasy of the Moor translated into Renaissance, and applied to real structural forms as it never was applied by the Moors themselves, for they seldom attempted a serious structural problem. Also it is counterbalanced by large flat undecorated areas, which was never the case in a Moorish interior, where seldom an inch of surface escaped decoration.

These naïve and imaginative forms suggest terra cotta as the material in which they could be best interpreted; for even were the labor of reproducing them in stone less costly, it is safe to say that not a modern stone cutter could be found who could put any of the original spontaneity into the task. These qualities are more likely to be obtained in a plastic material. In this Valladolid example are several points worth noting by the designer, — the ornament is restricted to unstructural parts; it is low in relief, and the sky line is left absolutely uninterrupted. By losing sight of these rules, one could have a restless result even with much less ornament.

MAIN PORTAL

HOSPITAL REAL, SANTIAGO

DETAIL OF PATIO

COLEGIO DE SAN GREGORIO, VALLADOLID

The Business Side of an Architect's Office.

THE OFFICES OF MR. HOWARD GREENLEY AND MESSRS. TAYLOR & LEVI.

By D. EVERETT WAID.

THE office of Mr. Howard Greenley in the new Architects' Building is an example in which the private *sanctum* and the approach thereto are quite spacious, while the drafting and business quarters are somewhat condensed. The esthetic advantage of this arrangement is evident, and the efficiency question is answered by the fact that every foot of filing space and working room is kept "alive" and dead files and other "junk" are shipped off to the storage room. Architects, of all professional men and of all artists, need a large amount of space; and in days of advancing rents and uncertain commissions we may well take lessons from the intensive principles of operating a Pullman dining car. This little observation by the way.

Plan, Office of Howard Greenley.

Drafting Room.

When one enters Mr. Greenley's office he finds himself first in the entrance vestibule, which is treated in gray with a red tile floor, and which may serve as a waiting room if other parts of the office happen to be busy. The reception room is likewise in gray with an Oriental rug covering the red tile floor. The cornice is in part reproduction and in part the originals of some delightful old carved wood mouldings from Europe. The door head seen in illustration under the Della Robbia figure is an old original except the consoles. The white plaster ceiling is a reproduction of casts of panels from Broughton Castle, Oxfordshire.

Reception Room.
Office of Howard Greenley.

Mr. Greenley's office or conference room has a red tile floor covered with a solid blue rug, wal's of tobacco-brown burlap, and white ceiling and frieze. The door and window hangings are casement cloth of a golden color with a changeable sheen of green.

The illustration shows the fine XVIth century Spanish Renaissance table. Beyond it is a Bargeño desk. One of the treasures in sight (next the tapestry) is the original pencil sketch of the project by Paul Bigot, which won the *Grand Prix* in 1900.

Some of his own Paris studies Mr. Greenley modestly permitted the draftsmen to tack up around their walls. The plan and photograph speak for the drafting room, including the fence around the exit door, which is the dead line for the blue printer's boy who is allowed to appear there.

The illustration of the reception room affords a glimpse of the cases which house the working library in the private drafting room, which is Mr. Greenley's *sanctum sanctorum*. One can even find there, not far from his designing board, a screen ready for use when opportunity permits, to amuse himself with an etching plate.

Private Office.
Office of Howard Greenley.

Turning to the mundane aspects of the office, we note that Mr. Greenley's skilled secretary has in his compact office, within easy reach, an orderly arrangement of vertical correspondence and card files, catalogue files, and all business records. A large amount of business can be handled because all the space is given to current work — old material being stored away — and not least, because of the efficient man. Two or three inexpert stenographers might do the same work in larger space. Conundrum — would it pay? The competent secretary who actually does the work in this case knows how to economize effort by the use of convenient printed forms. He is prepared also to devise methods to care for new conditions. For example, his account records are worthy the inspection of any architect who has a special call to spend large sums of money for a client as Mr. Greenley has been called upon to do in some instances. In such cases he has placed funds in a special bank account and disbursed them not only to sub-contractors, but in wages to workmen and in petty expenditures such as general contractors usually care for.

In this office as in many others a record pad is kept on the telephone table. It is not to check up the telephone company, but for convenience in distributing the expense of the service. It has four columns — "Called by," "Number," "Person wanted," and "Job No." — and this easily enables the accountant to charge up individuals for personal calls and clients for disbursement calls.

Mantel in Reception Room.
Office of Taylor & Levi.

Payday in Mr. Greenley's office comes once a week, and, as payment is not made by check, each employee signs a receipt at the bottom of his time card when he receives the cash.

Since architects often have occasion now to see that fire and liability insurance are kept up, they will be interested in knowing that this office has a file of 3 x 5 inch cards showing amount of policy, rate, premium, term, names of company and assured, and date of expiration. The cards are kept behind dated guides and thus easily remind one to look after renewals.

Inasmuch as architects are sometimes trustees if not investors, another file of cards shows in a fascinating way how to keep on each card the essential facts concerning a mortgage, with entries of all the interest payments.

Messrs. Taylor & Levi have exercised their particular taste and ability in giving an impressive artistic effect to those portions of their office which clients are permitted to see. The entrance hall and clients' room are nooks almost too cozy for the camera to show. But they are designed so ingeniously with a feeling of mystery and suggestive of still more interesting things beyond, that one emerges from the dim religious light of the quaint fixtures, the leaded glass, the wrought-iron hardware, and the old oak walls of the tiny waiting room, and passes through the private lobby where a trickling fountain attracts one's eye to a sculptured turtle and real goldfish, and enters expectantly the medieval library and reception room. An ambitious client could be educated here for hours at a time, and visiting fellow architects can find many artistic suggestions for their own use. The illustration scarcely suggests the fine casement windows (inside the regular wire glass sashes) of hand made reproductions of antique glass in flat leads with a low toned touch of color in the border. Four pairs of bookcase doors in glass correspond, while the fifth door is solid to balance the door to the sample room.

The wall surfaces are covered with chestnut board culls, rejected in the mill, which are stained to a fine old oak effect. The ceiling is in modeled white plaster after the fashion of old Tudor ceilings. The prosaic concrete floor was given a four coat treatment, which has stood so exceptionally that, after four years of hard wear and no repair, it has the soft gray of an old stone floor which needs no rug. The genuine old Italian table and real antique chairs make it unnecessary to speculate whether or not the mantel is a reproduction — the mantel which scrupulously conceals the last ugly steam radiator in the room.

The instrument in the telephone booth has one extension in the stenographers' room, which can be handed through the partition to one of the firm at his desk, and a second extension in the drafting room.

Messrs. Taylor & Levi are careful and exact in the conduct of business for their clients and in keeping their accounts, and at the present time their business system and printed forms are undergoing a reorganization to promote still greater efficiency and convenience in their business arrangements.

Plan, Office of Taylor & Levi.

Drafting Room.

Reception Room.
Office of Taylor & Levi.

GARDEN FRONT

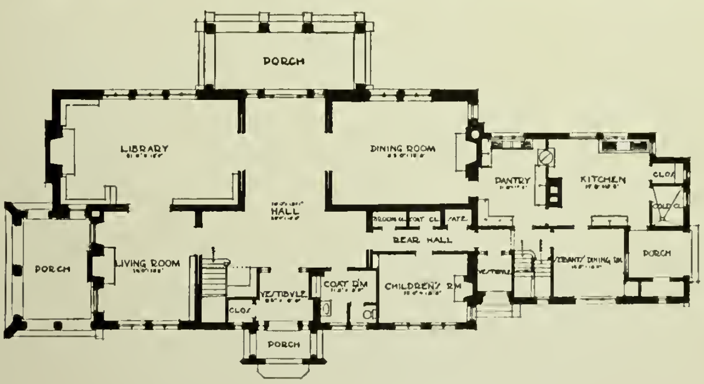
HOUSE OF J. LIONBERGER DAVIS, ESQ., ST. LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS

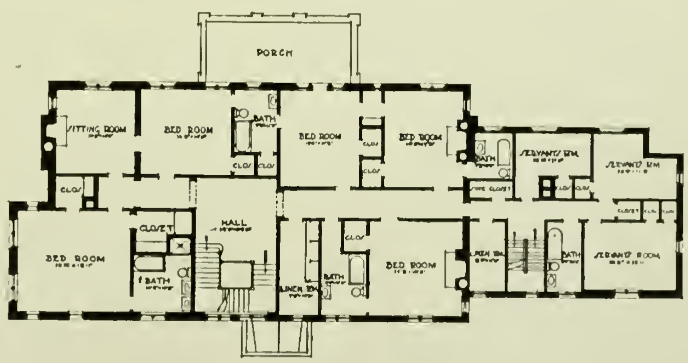
ENTRANCE FRONT

HOUSE OF J. LIONBERGER DAVIS, ESQ., ST. LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS



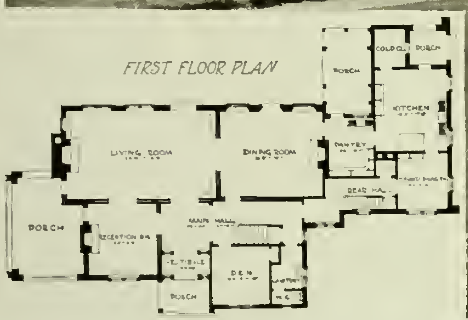
FIRST FLOOR PLAN

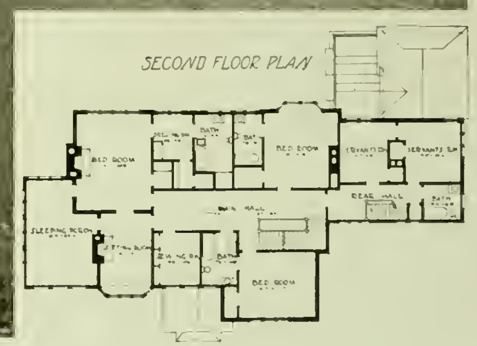


SECOND FLOOR PLAN

HOUSE OF J. LIONBERGER DAVIS, ESQ., ST. LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS





GARDEN FRONT

HOUSE OF F. C. THOMPSON, ESQ., ST. LOUIS, MO.

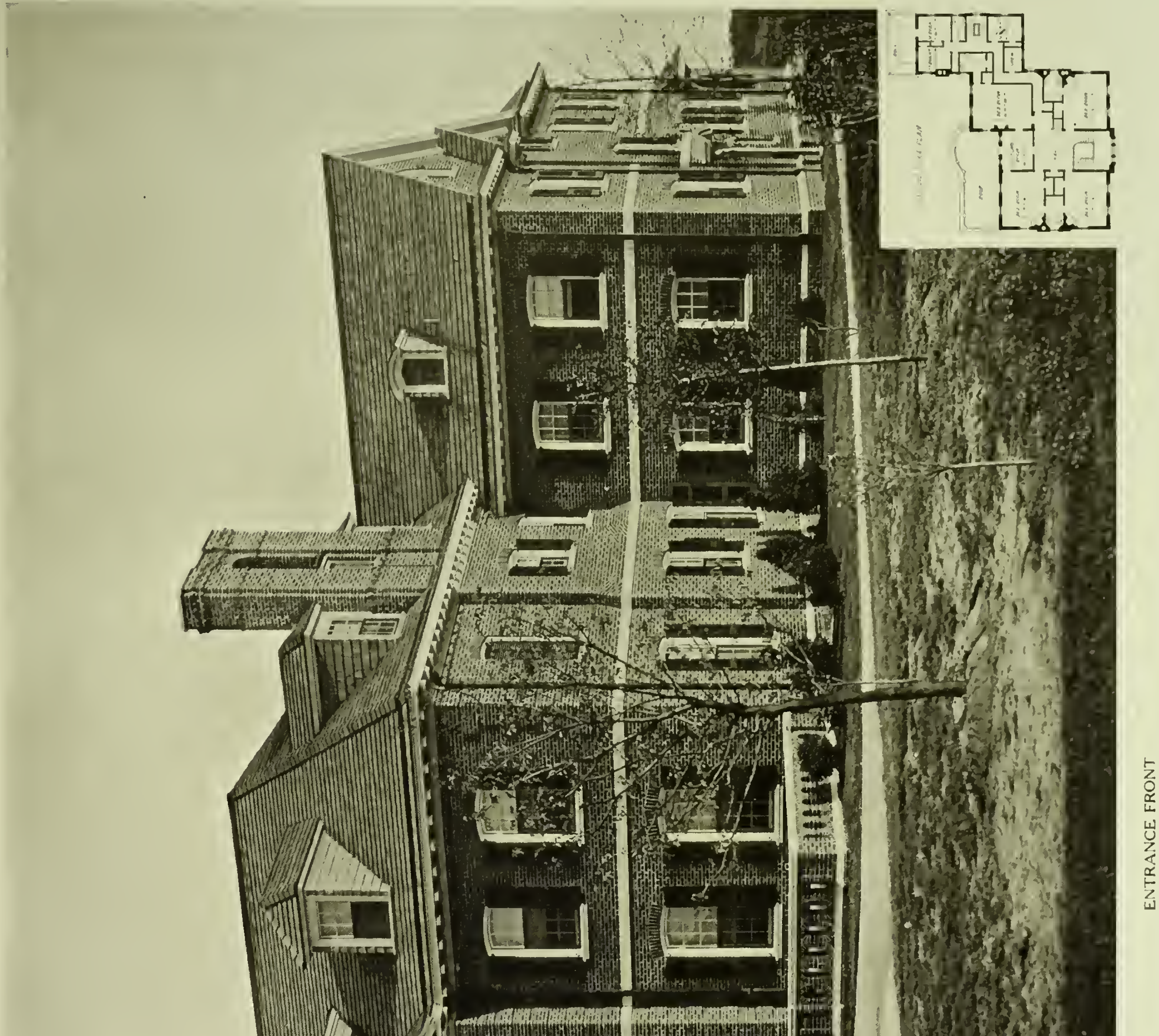
COPE & STEWARDSON, ARCHITECTS

DETAIL OF GARDEN FRONT

DETAIL OF ENTRANCE FRONT

HOUSE OF F. C. THOMPSON, ESQ., ST LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS



ENTRANCE FRONT

HOUSE OF J. D. DAVIS, ESQ., ST. LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS

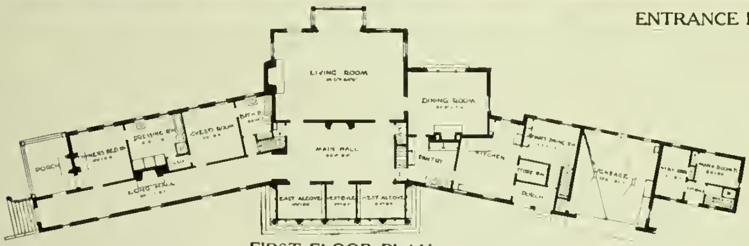
DETAIL OF ENTRANCE

HOUSE OF J. D. DAVIS, ESQ., ST. LOUIS, MO
COPE & STEWARDSON, ARCHITECTS

DETAIL OF LIVING ROOM WING AND GARDEN

HOUSE OF R. S. BROOKINGS, ESQ., ST. LOUIS, MO.
COPE & STEWARDSON, ARCHITECTS

ENTRANCE FRONT



FIRST FLOOR PLAN

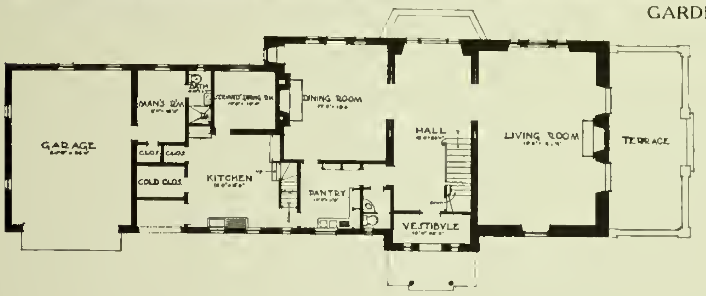
SECOND FLOOR PLAN

GARDEN FRONT

HOUSE OF R. S. BROOKINGS, ESQ., ST. LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS

GARDEN SIDE



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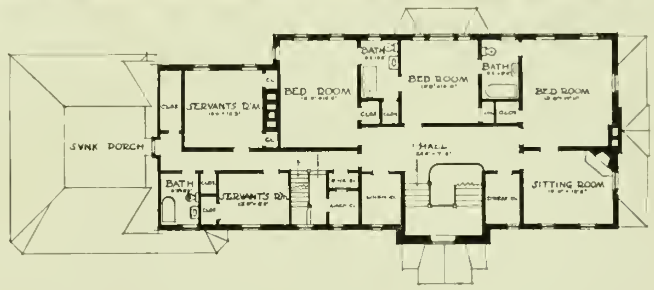


SECOND FLOOR PLAN

ENTRANCE FRONT

HOUSE OF MRS. A. A. WALLACE, ST. LOUIS, MO.

COPE & STEWARDSON, ARCHITECTS

ENTRANCE FRONT

HOUSE OF C. H. HERMANN, ESQ., GLENCOE, ILL.

HOWARD SHAW, ARCHITECT

DETAIL OF MAIN ENTRANCE

DETAIL OF GARDEN FRONT

HOUSE OF C. H. HERMANN, ESQ., GLENCOE, ILL.

HOWARD SHAW, ARCHITECT

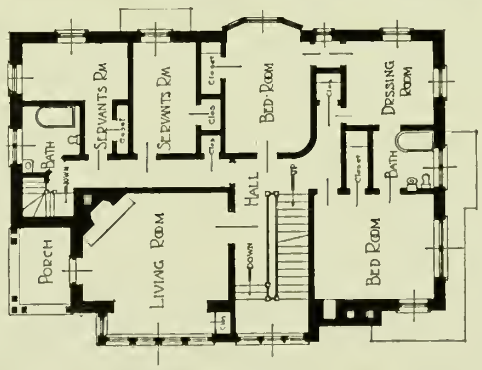
STREET FRONT

HOUSE OF J. F. SHEPLEY, ESQ., ST. LOUIS, MO.

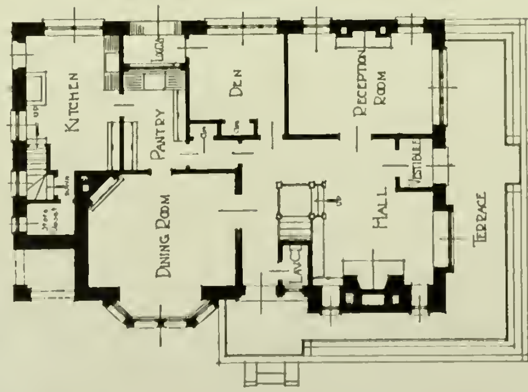
LA BEAUME & KLEIN, ARCHITECTS

DETAIL OF ENTRANCE FRONT

VIEW FROM STREET



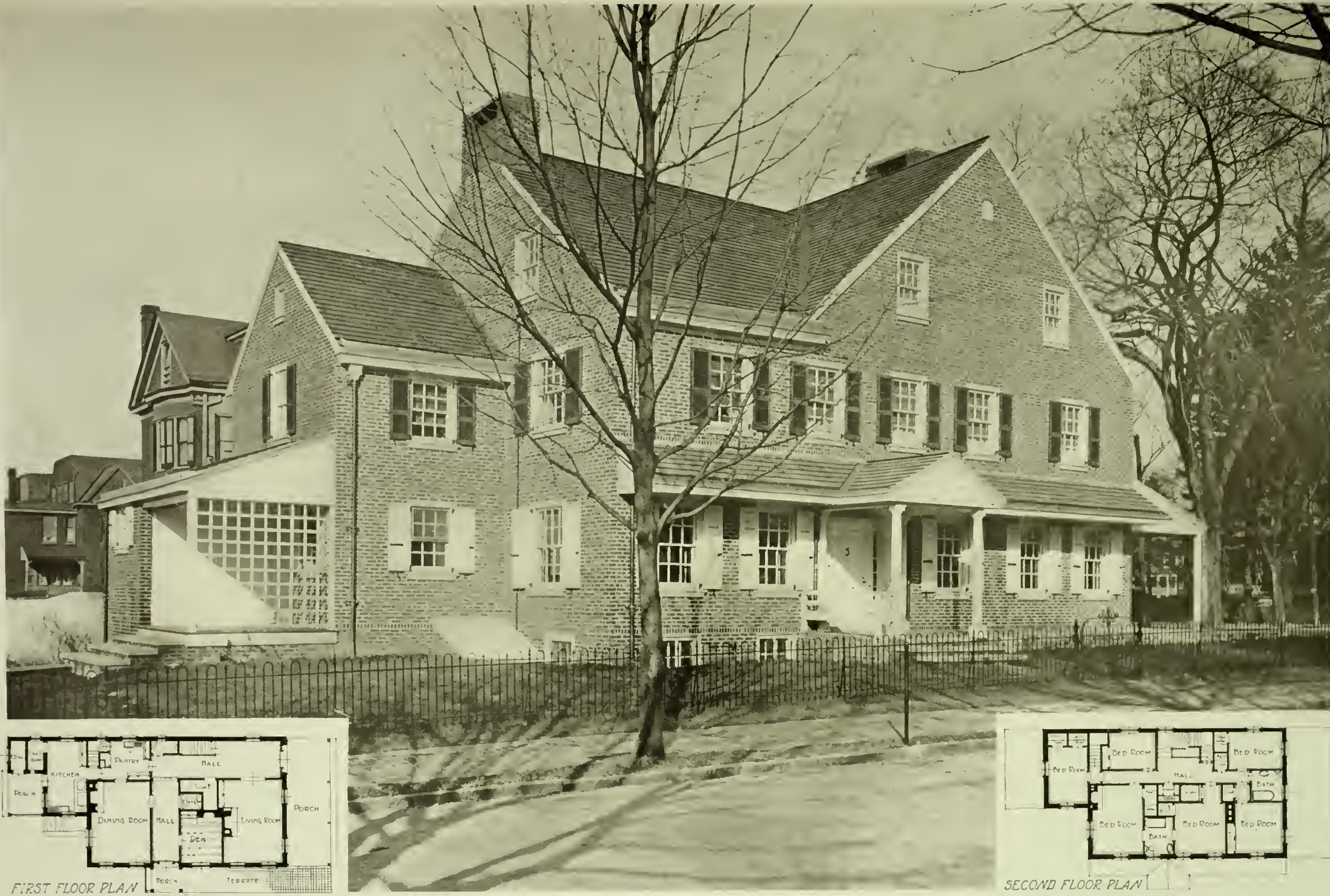
SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE OF GEORGE MILLER, ESQ., PHILADELPHIA, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS



SIDE ELEVATION

HOUSE OF MRS. M. E. WILLIAMSON, WEST CHESTER, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS

FRONT AND SIDE ELEVATION

DETAIL OF ENTRANCE

HOUSE OF MRS. M. E. WILLIAMSON, WEST CHESTER, PA.

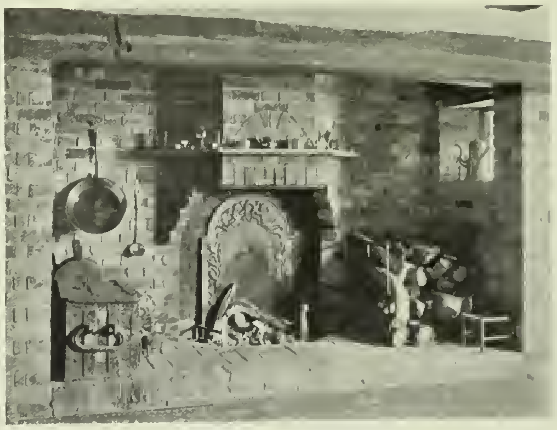
DUHRING, OKIE & ZIEGLER, ARCHITECTS

Some Modern English Interiors.

By R. RANDAL PHILLIPS.

THERE is no doubt whatever that a successful exterior of a house is easier to achieve than a successful interior. Not that the exterior design is a simple matter — far from it; but, speaking broadly, the architect is able to carry out his work without the interference of a score of things which he is not responsible for, and which very often mar, if they do not utterly ruin, the original effect of his scheme; whereas the exterior may be said to be left to itself, free from the movables which a client not infrequently considers to be improvements. On the other hand, it is quite a common thing for the architect to select the furniture of a house, or at least to advise in its selection, and sometimes he has the opportunity of actually designing it — as, in one instance which the writer calls to mind, where an architect designed the entire furniture and fittings of a house, down to the cupboard turns, with the object of securing a harmonious result. That, however, is an extreme case, and it is doubtful whether the idea is to be commended, for the simple reason that it requires an exceptionally gifted architect to carry out such a scheme, and most architects are not prodigies of brilliance with a resourcefulness that would put their furniture design on a higher plane than some of the models of the best periods. Still, in this branch of architectural work as in all others, there has been in England a vast advance since the mid-nineteenth century swept its artistic horrors over the country. That period, indeed, will surely always draw forth a slashing criticism. Even admitting that it is impossible to say what phase of design will next be brought into fashion, with a corresponding wave of appreciation, it can hardly be thought that mid-Victorian models will ever be put forward for anything but ridicule and assault, because of their utter stylelessness. The only feature about Victorian houses which we can possibly admire is the size of the rooms in comparison with those in ordinary houses of the present day. They certainly possess a virtue in this particular. Already we hear references to "the spacious days of Victoria." The reason is, that with the increasing cost of land and building, and the desire for more than can be reasonably expected on a certain outlay, houses are built too close together in suburbs and towns, and with rooms too small. This is partly the outcome of a mixed idea of what we ought to expect, as well as of an irrepressible love of doing something unusual, or at least something in the fashion. With the spread of

Fireplace in Living Room.
"Tilehurst," Bushey, Herts.
C. F. A. Voysey, Architect.



Fireplace in Sitting Room.
"The Stocks," Wittersham, Kent.
W. A. Forsyth, Architect.

The "Solar" or Upper Chamber, "Alston Court."
Restored by Charles J. Blomfield, Architect.

Corridor, "Bibsworth," Worcestershire.
E. Guy Dowber, Architect.

Dining Room.
"Hengrave Hall," Suffolk.
J. L. Davenport and Walter J. Tapper, Architects.

social ethics, and the preaching of a new gospel of house-building, there has been a wild searching among the villages and the countryside; with the result that in our newer garden suburbs and garden cities we see a type of house and a style of furnishing which are quite unreal. Zealous reformers have seen the beauty of the English village, the cottages nestling amidst trees, with ramblers climbing around the simple doorway and over the white-washed walls, and they have transferred this type to their garden suburbs. The area has been plotted out on the basis of a maximum of houses to the minimum of ground, and the pseudo-cottages have been set up nicely side by side, with a patch of ground in front, and a smaller patch behind; all so diminutive that it seems more like playing at house-building than a reality of expression. The architects have been set an impossible task — that of providing detached houses, with all the charm of their country prototypes, on a wholly inadequate outlay. The result is that the rooms are ridiculously small, and those on the upper floor have frequently the added disadvantage of a sloping ceiling on one or more sides, because of the type of roofing which has been adopted. If these cottages and suburban houses could be blown out to double their size, and set in the midst of a piece of ground which could be called a garden without bringing discredit on that old name, the result would be excellent; because the planning of the houses displays a great amount of skill, and it must be said, in fairness, that the houses themselves are well built with sound materials. They are indeed admirable of their type, but, as has been asked, are they the right type? The writer thinks decidedly that they are not. And the practical protest which a certain architect of ability has made by erecting a group of four brick houses of Georgian character, with sash windows, shutters, and a comparatively flat roof, in the midst of a shoal of houses of the cottage type, has a great deal of point in it. Undoubtedly these Georgian-type houses have cost more, because, for one reason, it is cheaper to build low walls and a high sloping roof than it is to build high walls and a low sloping roof. But the point is, people can expect too much for their money, and the attempts at building houses at $2,500 and $3,000, and so on, prove that the thing cannot be done effectively. It means tiny rooms, low rooms, and rooms in the roof which are hot in summer and cold in winter. Hence, with such a fervor about us, it is time to quench it when we see that the results are meager, if not foolish. It simply comes to this, that a man should not attempt to build a house unless he has what may reasonably be called a proper sum of money to do it with. The garden city promoters, however, are ever chanting the glories of their schemes, leaving people to play at building houses and to play at art when they get inside them. Emphasis on this newest phase of work in the matter of small houses has thus been made because a similar fashion has spread to the larger houses, wherein are seen a mixture of architectural fittings and client's furniture which are often wholly incongruous.

Dining Room.
"Barton St. Mary," East Grinstead, Sussex.
E. L. Lutyens, Architect.

DINING ROOM, "WELBECH ABBEY."
ERNEST GEORGE AND YEATES, ARCHITECTS.

LIBRARY, "HENGRAVE HALL," SUFFOLK.
J. L. DAVENPORT AND WALTER J. TAPPER, ARCHITECTS.

The examples which accompany this article bear on this matter, as they show, from the writer's point of view, what is desirable and what is not, and they range over a variety of treatments which may be considered as very fairly representative of modern English houses. Taking them together, they might roughly be divided into two classes, those based on farmhouse or Tudor originals, and those based on Renaissance models and the culture which those models are supposed to embody. In the sitting-room fireplace at "The Stocks," Wittersham, we see a purely cottage treatment of the simplest and roughest character (this was, indeed, an old cottage restored by Mr. Forsyth for Mr. Norman Forbes-Robertson); yet the writer can see no sort of association between the rough brick fireplace and the delicate glass and silver ware which is set on the mantel-shelf: it is an utterly incongruous association, based, as the writer thinks, on a wholly wrong outlook. In Barton St. Mary, East Grinstead, a somewhat similar juxtaposition of the crude and the highly-finished is noticeable, though one must confess the charm which Mr. Lutyens infuses into all his work. This is essentially a modern treatment of farmhouse type, but there seems to be a simplicity about it which is too palpable to be real: one imagines such a house, judging by the fireplace and the timbered corridor, to be inhabited by some old yeoman, but the Persian carpet and the table glass bring us heavily down on modern earth. But in the corridor hall at "Bibsworth" Mr. E. Guy Dawber certainly gives us glimpses of another age, wherein we really live, and the living-room at "Tilehurst," Bushey, by Mr. C. F. A. Voysey, helps us a step further. But it is not until we see the examples by Messrs. Smith and Brewer, Mr. Leonard Stokes, Messrs. George and Yeates, and Messrs. Davenport and Tapper that we actually become alive to the fact that we are not yeomen but citizens of refined tastes, with a love of such things as good paneling and finely carved woodwork, and a very modern need for bookcases and easy chairs! Not that the others are ill done: they are, on the contrary, admirably done, and they display an abundance of skill and taste: but, to the writer at all events, there is much more propriety to such interiors as the gallery at "Ditton Place." There is an air of mellow refinement and unaffected culture about such an interior which is absent in many of those derived from the rough farmhouse type; and this quite apart from the fact that the one is a far more elaborate and costly scheme than the other. At Hengrave Hall, where the architects carried out a restoration of an old house (as also "Alston Court," of which the "solar" or upper chamber is here shown), we see the sumptuousness of oak paneling, while at "Minterne House" and especially at Welbeck Abbey, for the Duke of Portland, are displayed the charms of richly carved woodwork in conjunction with modeled plaster ceilings. Such schemes as these latter are of course only possible where a large expenditure is available, but they serve to point away from the cottage and the farmhouse, whereon architects have latterly set their eyes so absorbingly. It is to the rooms of Wren, of Georgian days, even of the English Empire period at the commencement of the nineteenth century, that we may turn with greater profit, and it is to be hoped the next tide of fashion will set in that direction. Popular talk of "the home beautiful" and "the quaint" has led people too far astray, into a realm of affected simplicity and picturesque absurdity: so that, with so many examples at hand, we may well turn aside from such a phase of work and take upon us a culture of taste to which we are more truly connected and which will be more consistent with our present mode of living.

The rough timbered cottage and simple furniture of earlier times may attract us, and the wealth of styles which confront us may make a choice difficult, but we must cultivate an intelligent discrimination if our work is to stand the searching test of time and usage.

The Hall.
"Minterne House," Cerne Abbas, Dorsetshire.
Leonard Stokes, Architect.

The Gallery.
"Ditton Place," Balcombe, Sussex.
Smith & Brewer, Architects.

Competition for a Brick House to Cost $7,500.

REPORT OF THE JURY OF AWARD.

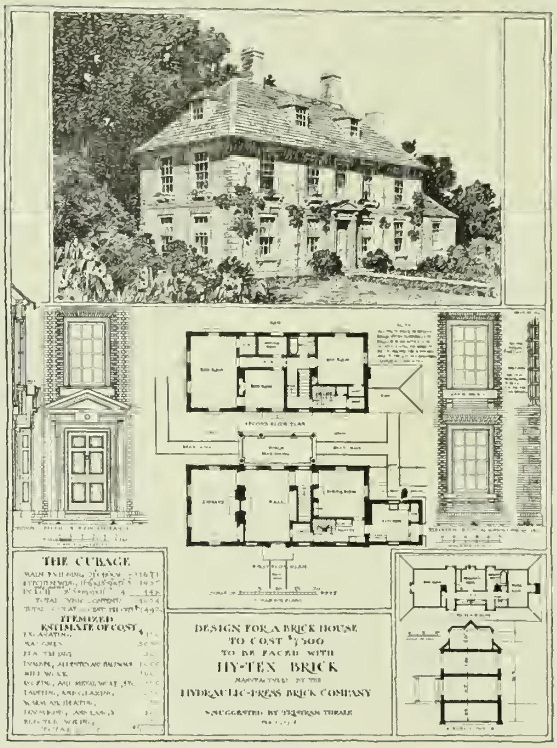
THE problem was a detached house, faced with brick, to be built complete at a cost not to exceed $7,500, which would provide for the usual accommodations and conveniences of a small American family of moderate means. It was especially desired that the designs should show generous appreciation of good brickwork and to this end the program covering this competition called for originality in the treatment of the wall surfaces and brick details. It was the aim of the competition to encourage the further development of a wholesome brick architecture in America.

It must be remarked that the difficulty of selecting the designs to receive prizes and mentions was great. There were nearly four hundred designs submitted and the task of elimination was one of no easy matter. Some interesting bits of real feeling in design were lost to recognition through weak presentation. The predominance of bitten off gable ends gave a notable evidence of striving for a feature at the expense of taste. A striking feature was the prevalence of the Dutch Colonial entrance hood — some eccentric, some weak, but most of them obvious and meretricious.

The jury gave first consideration to the design and its fitness to the material employed. Special attention was given by the jury to the plans. In several instances an otherwise acceptable design was passed by because of weakness in the study of the plan. It was recognized by the jury that good draftsmanship was essential to a good presentation of the subject, and therefore the rendering of the sheet was considered. Obvious copies of published work or of winning designs in previous competitions were rejected with some adverse comments.

The rendering and lettering of the design given a Mention and shown at the bottom of this page is notably charming and unusually meritorious.

First Prize. While the jury in making this award found minor defects of plan, notably in the access to the staircase from the service portion, the small, picturesque mass of the design seemed best to fill the requirements of the program, while ample opportunity is offered for the interesting development of texture in the brickwork under careful study of its fine wall surfaces. The fenestration is interesting and consistent in plan and elevations.



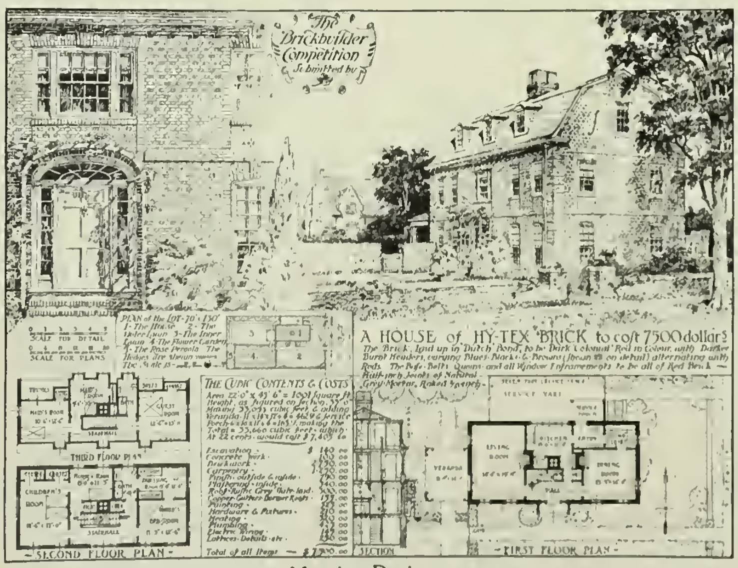
Mention Design.
Submitted by Alfred Cookman Cass, New York, N. Y.

Second Prize. A very consistent, well ordered plan, although not as adequately provided with porch room as is desirable. The elevation, charming in its simplicity, does not do justice to the brickwork as shown on the scale drawing. This well thought out scheme if shown on the perspective would have relieved this drawing from the first impression that it might be for stucco as well as for brick.

Third Prize. This design has a delightful plan and a happy scheme of composition which might be made most attractive in execution.

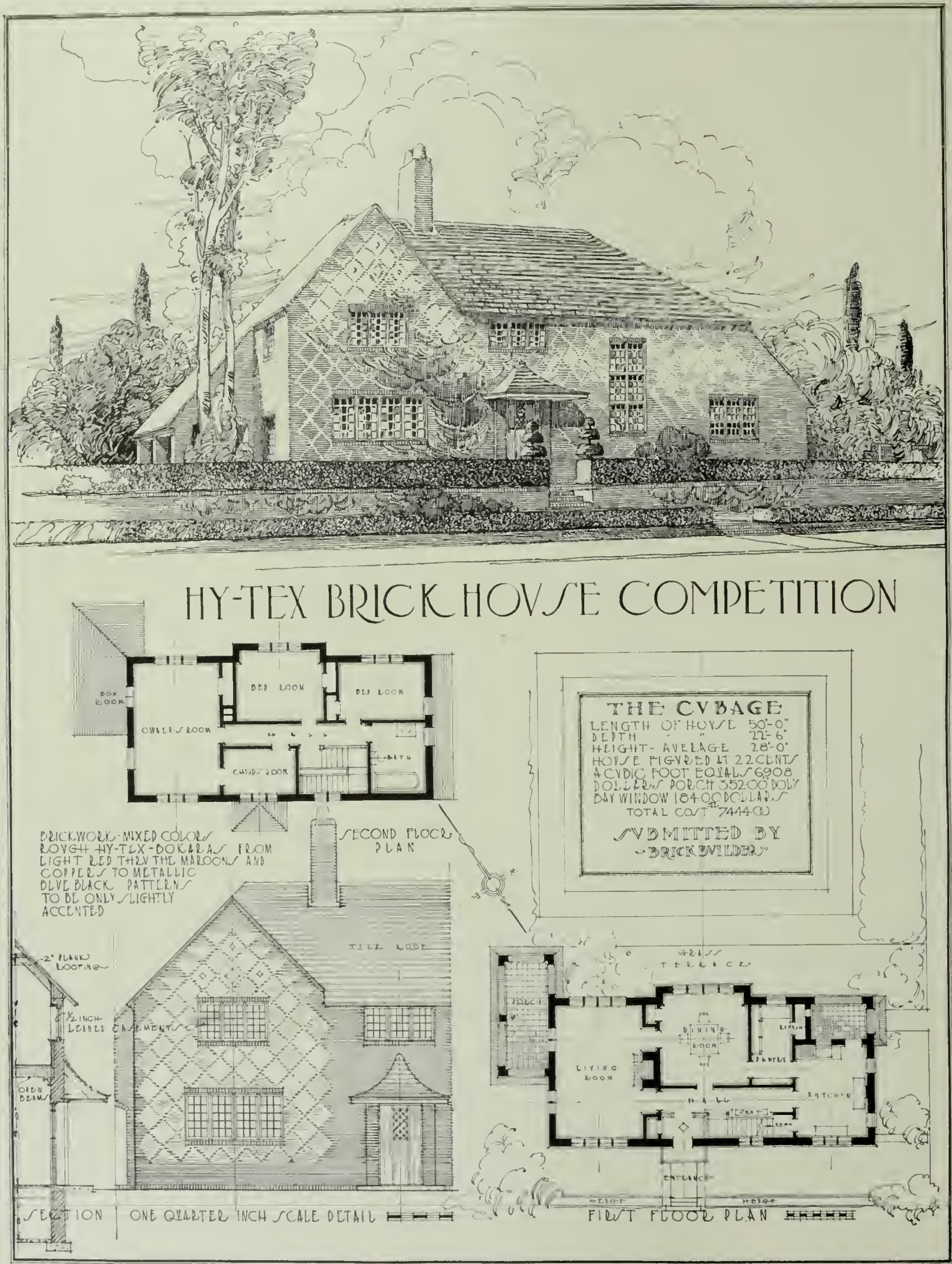
Fourth Prize. The greatest merit of this design is in its admirably balanced, well conceived plan and in a certain originality of design which is commendable and which would have placed it higher had it not gone a step too far in destroying the simplicity of the charming balconies with clumsy corbeling and the attendant evil of this feature interfering seriously with the fenestration below.

The six mention drawings are presented as of equal merit.

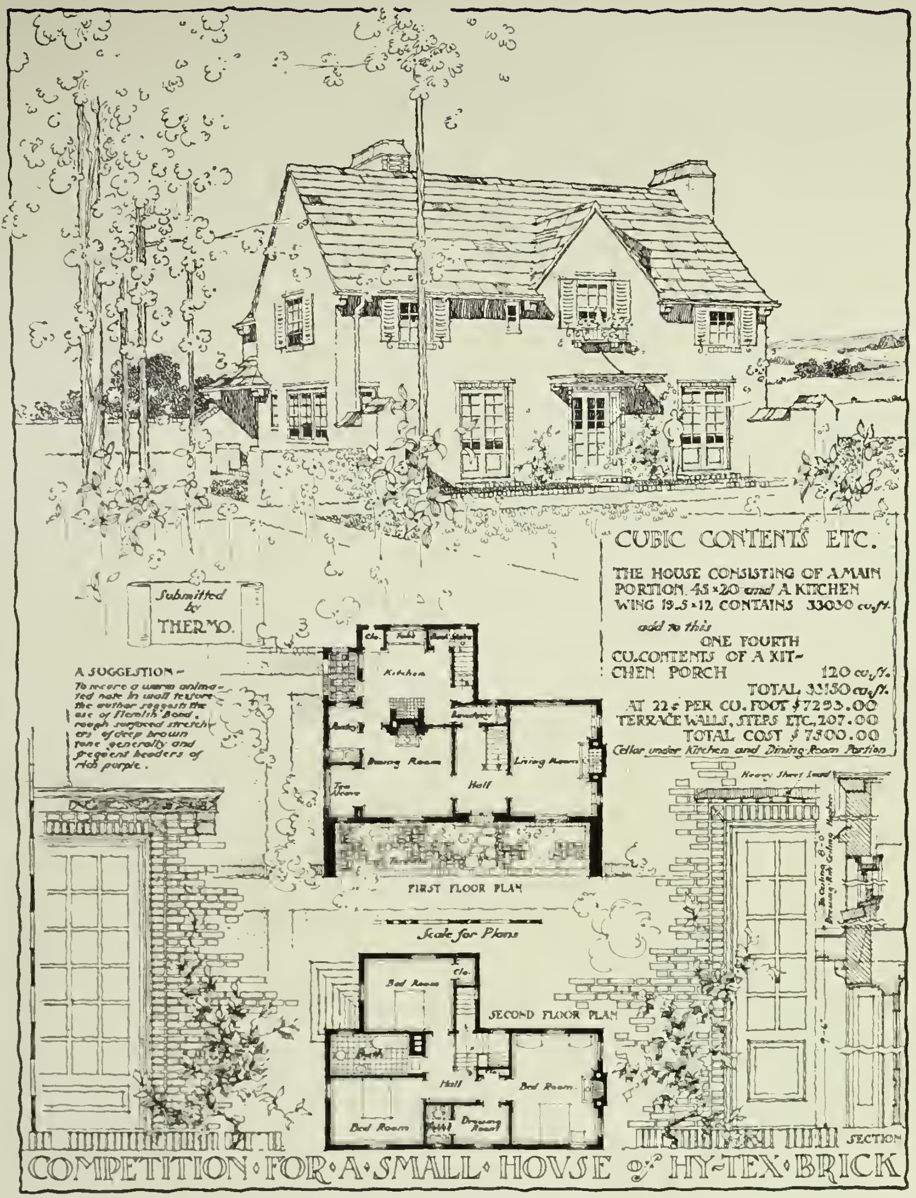


Mention Design.
Submitted by Richard R. Stanwood, Boston, Mass.

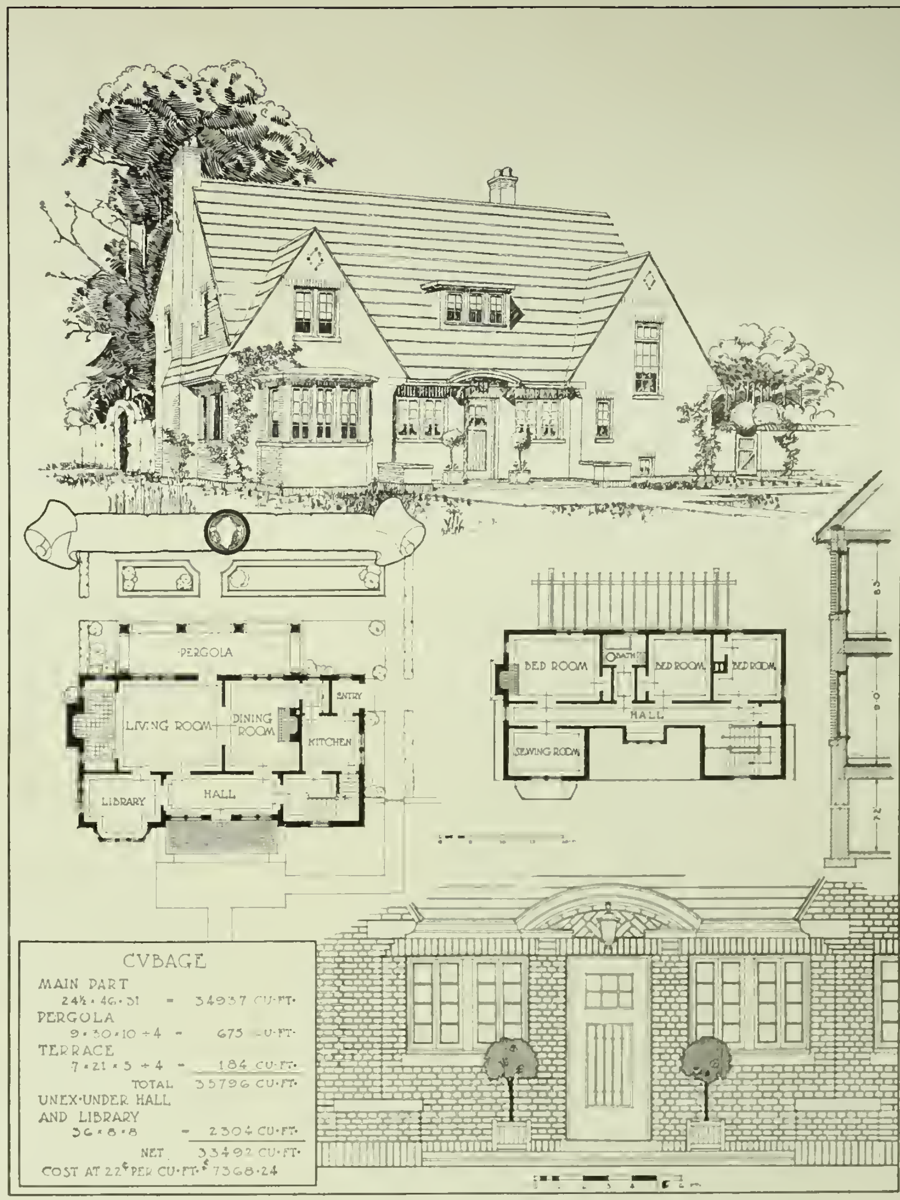
ARTHUR HEUN,
Chicago.
EDWIN H. HEWITT,
Minneapolis.
JOHN L. MAURAN,
St. Louis.
FRANK B. MEADE,
Cleveland.
W. D. WIGHT,
Kansas City.
Jury of Award.



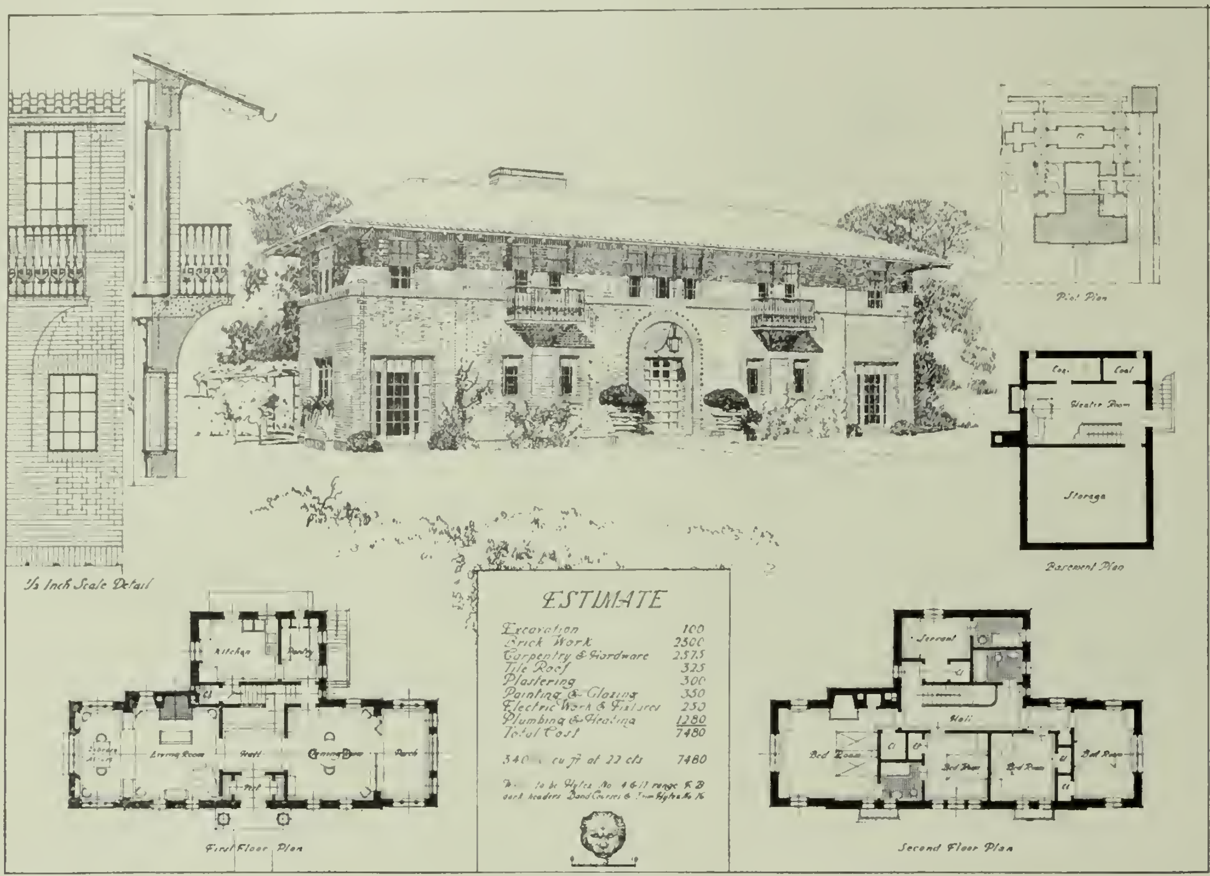
FIRST PRIZE DESIGN.
SUBMITTED BY I. P. LORD, BOSTON, MASS.



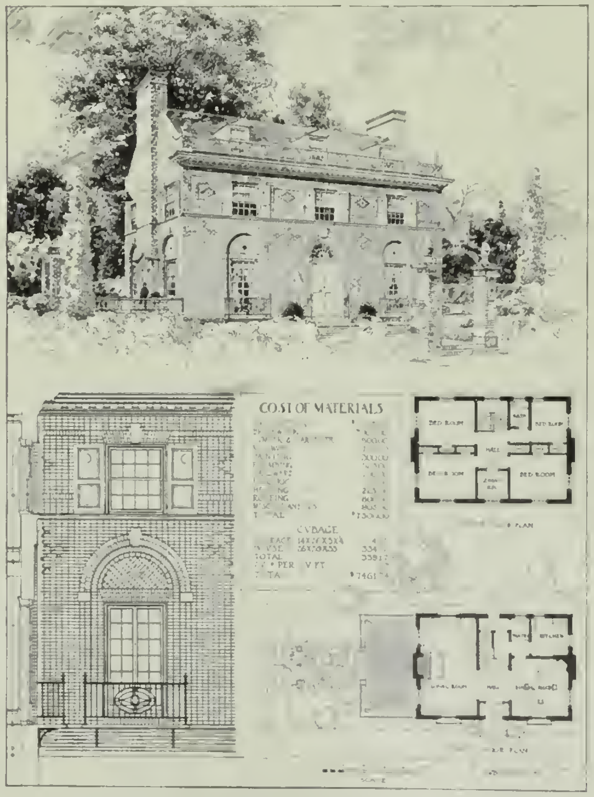
SECOND PRIZE DESIGN.
SUBMITTED BY RICHARD M. POWERS, BOSTON, MASS.



THIRD PRIZE DESIGN.
SUBMITTED BY J. F. MURPHY AND J. R. COLEAN, DES MOINES, IOWA.



FOURTH PRIZE DESIGN.
SUBMITTED BY LELAND H. LYON, NEW YORK, N. Y.



MENTION DESIGN.
SUBMITTED BY ANTONIO di NARDO, NEW YORK, N. Y.

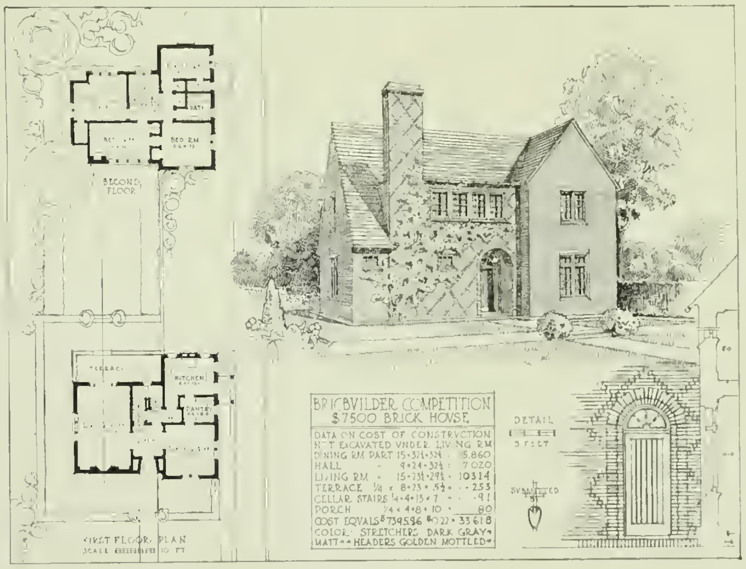
MENTION DESIGN.
SUBMITTED BY DOUGLAS RITCHIE, MONTREAL, CAN.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

Tradition *vs.* Election.

THE divergent tendencies in modern architecture have never anywhere been more divergent than they are in these United States at this day. On the one hand there is the tradition of the Beaux Arts. Increasingly it is the rule for American architects to seek instruction there. The Beaux Arts is without doubt a great school. We may even grant to its enthusiastic graduates that it is the greatest that exists. We might even grant that it is the greatest that ever did exist, if we did not remember those schools of the Middle Ages in which practice went hand in hand with theory, and in which freemasonry, not as a secret society primarily, as it is to-day, but as a course of practical instruction in "operative masonry," produced the astounding and unprecedented and unrepeated architectural triumphs of the Gothic minsters. Those triumphs were won by the straightforward architectural treatment of the actual structural facts. Nothing in the way of tradition or theory was allowed to interfere with this primary requisite of the art of building. Thirty and forty years ago there was an attempt, on the part of many earnest and artistic architects, to revive the mediæval way of working, which did not allow the direct expression of the structural facts of any particular case to be hampered or controlled by the "dead hand" of tradition or by the Procrustean application of precedent, but under which, as Tennyson says of the government of England,

> "Freedom slowly broadened down
> From precedent to precedent."



Mention Design.
Submitted by Olaf William Shelgren, Buffalo, N. Y.

Mention Design.
Submitted by Duncan McLachlan, Jr., Brooklyn, N. Y.

This movement mainly affected architects in England, South Germany, and the United States. It was the "Gothic Revival." The root of the modern matter was unquestionably in it. It took mediæval work as a point of departure. It failed, in spite of the many beautiful and admirable monuments it has left, because, having chosen a point of departure, it did not depart. It either became as slavishly subservient to precedent as the architecture of the Beaux Arts against which it was arrayed, or else, throwing precedent overboard, and undertaking to treat every problem on its own account, it produced work which was untrained and "unscholarly," and which mankind refused to admire or accept as a solution of modern problems. The traditional "school" asserted itself more defiantly than ever. The architectural protest embodied in actual buildings, the literary protests made in the interest of structural logic by Viollet le Duc, in the name of romantic sentiment by John Ruskin, were alike unavailing. The verdict alike of the profession and of the public was an echo of Burke's saying, "We are afraid to put every man to live and trade on his own private stock of reason." There is in this country, to be sure, a propaganda of the traditions established in Greece and Rome in the form of a zealous and efficient Society of the Beaux Arts, which aims to propagate Parisianism in American architecture as it has been propagated all over Europe. But it may be questioned whether its efforts have not been superfluous, and whether its objects would not have been equally attained if it had never been brought into existence. At any rate, the clear fact is that no American architect who has an intelligent appreciation of the adaptation of means to ends in the landing of "the job" would to-day submit to the expert jury, which it has become the judicious custom to invoke in the case of an important public building, any project at variance with the tradition. He would be a bold man if he even ventured to omit an "order."

There are those who think this an admirable and satisfactory state of things. There are others, numerically no doubt a minority, who find it deplorable, and hold that the use of the conventional training is not to enable him who has profited by it to do "the regular thing," but to enable him to do something different. But it is to be noted that such of the dissenters as have made successes have been architects who had the training of which they availed themselves to produce something very different from the "classical" examples of their art. H. H. Richardson among the dead, Louis Sullivan among the living, had acquired "the learning of the Egyptians" before they undertook to launch out on their own accounts. Their successes may fairly be claimed as tributes to the training inculcated by the Paris School and its numerous American branches and offshoots. Richardson by his power of simplification and his inherent "bigness," Sullivan by his unequaled decorative talent, have succeeded in doing things which no instructed Beaux Arts artist would presume to maintain could safely be ignored or put out of court.

At present there are in divers quarters, more particularly in the Middle West, most particularly on the north side of Chicago, manifestations of an increasing impatience with the results of the training of the Beaux Arts, and of an intention to recur to the more straightforward and less conventional expression of the facts of the given and particular case. The impatience seems to be justifiable. The intention is highly respectable. But, after all, it is not by the purity of a reformer's motives that the careless world will judge him, but by the success of his work. And this success in turn must be an artistic success. It must appeal to those who are familiar with and appreciative of the masterpieces of the past, whether these be Greek or Roman or Romanesque or Byzantine or Gothic or of the Renaissance, as having, not necessarily in the same forms, other things being equal, preferably in a different form from these old historical glories of the art by which the appreciation of every taste of all modern students entitled to an opinion on the subject has been formed, something of the artistic quality which inheres in the "standard works." It is almost or quite necessary to this end that the new work should be "scholarly"; that is, that it also should give evidence of the appreciation, on the part of its author, of the historical masterpieces. We have just been saying that Richardson's work showed that, and that Sullivan's work shows that. But we can by no means make that admission in favor of all the reformers. The general criticism to which many of the new and revolutionary works are justly subject is that they are erected and submitted to public appreciation "in the rough." A model which is shown to us "in block," without the modifications of surface and outline which all the past masterpieces, back to Egypt itself, exhibit, may impress us as a promising scheme by dint of the forcibleness of its masses and of their relations. But, when it is enlarged and erected, it cannot impress the cultivated observer as a complete and satisfactory work of art. He will be sure to find it "lumpy," and he will have reason to suspect that its author has not undergone the studies the results of which in the conventional architecture he deplores. It is quite true that one man can no more create an architectural style than he can create a language. But it is equally true that, if he ignores the modifications and nuances which all the masterpieces show, he has produced, not a work of art, but only a more or less interesting suggestion of a work of art, which with further and successful elaboration may become such a work. However desirable it may be to overthrow the domination of the Beaux Arts, that domination is not to be overthrown by "block plans" or "rough sketches."

IT IS seldom we are able to present in a single number so many brick houses of such general good quality as those which we illustrate this month. In devoting all of our plates to country house work we feel that we are giving the architect interesting and workable material at a time when it is of the most interest to him — when clients are thinking of their spring building.

Most of these houses have recently been built in the West and they are interesting alike to the Eastern and Western architect in showing that the country house style based on the precedent of Colonial and English types is becoming more universally appreciated. The style allows for a disposition of rooms in the plan to take advantage of the different exposures, and the many attractive adaptations which architects are constantly evolving give a wide range of treatment for the elevation in which to express the individuality and personal element of the owner.

The several houses designed by Messrs. Cope & Stewardson show a diversity of exterior treatment, although the plans in most respects are of a similar type. The brick gabled house shows an intelligent and consistent use of brick, and the true spirit of the Tudor style is had from this material solely, with the single exception of the entrance porch, where limestone has been used sparingly. The moulded labels and string courses are cleverly handled in moulded brick and they create a more restful effect than if they had been executed in a contrasting white stone as is the more usual case.

The Thompson residence is situated among many fine old trees, and is a singularly attractive English half timber design. The elevations have a picturesque and irregular appearance which, however, has not been gained at the expense of the plan. The living rooms are arranged in a very livable manner with easy access to the spacious lawns, and the manner in which the service end of the house has been arranged to conform to the garden front is specially commendable. Notwithstanding its close proximity to the terrace it is sufficiently screened to not interfere with the fullest use of the latter.

The preliminary examinations for the Rotch Traveling Scholarship will be held at the office of the Secretary, C. H. Blackall, 20 Beacon street, Boston, on Monday and Tuesday, April 13 and 14, at 9 A.M., to be followed by the sketch for competition in design on Saturday, April 18, at the Boston Architectural Club. The successful candidate receives $2,000, to be expended in foreign travel and study during two years. Candidates must be under thirty years of age and must have been engaged in professional work during two years in the employ of a practising architect resident in Massachusetts. Candidates must register at the office of the Secretary before the examination.

THE BRICKBVILDER AN ARCHITECTVRAL MONTHLY

VOL. 23

APRIL 1914

NO. 4

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Competition for a Suburban House and Garage.

On Lot Having a Frontage of 50 Feet and Depth of 100 Feet.

TO BE BUILT OF NATCO XXX HOLLOW TILE.

FIRST PRIZE, $500.
SECOND PRIZE, $250.

MENTIONS.

THIRD PRIZE, $150.
FOURTH PRIZE, $100.

Competition Closes at 5 P. M., Tuesday, June 30, 1914.

PROGRAM.

THE problem calls for a Detached Suburban House and Garage, the exterior walls and foundations of which are to be built of Natco XXX Hollow Tile. The architectural type and plan arrangement of the house to be optional with the designer. The plan, however, should provide for at least three rooms, besides hall and accessories on the first floor and four rooms and bath on the second floor. Attic, if any, to be developed by the designer as he sees fit. The garage should accommodate one automobile.

The house will be located on a lot with a street frontage of 50 feet and a depth of 100 feet. The lot is in the middle of a block with improved property on both sides.

The total cubage of the house must not exceed 35,000 cubic feet, which must include porches and verandas, these latter to be figured at one-quarter their actual cubage. Measurements must be taken from outside face of exterior walls and from the level of the basement floor to the average height of all roofs, measured to a point two-thirds of the distance from highest cornice to ridge. The total cubage of the garage must not exceed 4,000 cubic feet.

The house must be placed at least 6 feet from the lot line on one side and sufficient space left at other side of property for entrance way to garage. The garage may be placed on the property lines if so desired.

The jury will give consideration :

First, to the practical value of the design, its appropriateness for location on the prescribed site and its fitness, in an esthetic sense, to the materials employed.

Second, to the excellence of plans.

Third, the adaptability of the design, as shown on the detail drawing, to the constructive requirements of Natco Hollow Tile.

It is hoped that the submitted designs will prove to be a careful study of the problem ; that the contestants will think of the house as one to be actually built on a 50-foot lot in the outskirts of a large city or at some suburban development. While original designs in good taste and of a high order of merit are desired, attention is particularly called to the first requirement, *i.e.*, that the design must be practical — a design which is useful as well as beautiful in proportions, mass, and detail.

The object of this particular Competition is to stimulate and encourage the more extensive use of Natco Hollow Tile in the solution of the suburban house building problem. That there is a growing demand for houses of this type — houses which will be the all-year-round homes of the owners — should be recognized.

One finds constant evidences of the ability of Natco Hollow Tile to solve the problems — whether these relate to extremes of temperature and climate or other unusual conditions. It has been proven that this modern building material has a wide and practical adaptability to many imposed conditions. Where requirements of fireproofing are unusually exacting this material lends itself to diverse architectural requirements. The new Natco XXX block has accomplished a distinct gain in structural strength. The results of building walls in this material is the bringing of all shells and webs into direct alignment and under complete compression. The double cross web is the reason.

Each drawing must bear the following title : " Design for a Suburban House and Garage to be Built of Natco XXX Hollow Tile."

On the drawing in a space measuring 5 x 6 inches — enclosed within rules — is to be given at a size which will permit of three-quarters reduction the sizes of the various rooms which compose the design and the calculation of the total cubage.

The cubage will be carefully checked before the designs are submitted to the jury.

THE JURY WILL POSITIVELY NOT CONSIDER THOSE DESIGNS WHICH EXCEED THE PRESCRIBED CUBAGE.

CONSTRUCTION.

On the back of this page will be found details of construction which are recommended.

Natco Hollow Tile blocks being heavily scored on all sides permit of stucco being used as an outside finish, and plaster applied direct to the block for interior finish.

The floors and roof need not be of fireproof construction.

DRAWING REQUIRED. (There is to be but one.)

On one sheet, a pen and ink perspective, without wash or color, drawn at a scale of 4 feet to the inch. The character of the exterior finish must be clearly indicated on the perspective and detail. Plans of the first and second floors at a scale of 8 feet to the inch. A section showing construction of exterior walls through roof ; height of floors to be given on section. A key cross section at the same scale as plans showing height from cellar floor through all roofs. Enough detail sketches to fill out sheet. In connection with plan of the first floor give the plot plan. The plans are to be blocked in solid. A graphic scale must accompany the plans.

The size of the sheet is to be exactly 22 inches by 30 inches. Plain black border lines are to be drawn on the sheet 1 inch from edges of the long dimension and one-half inch from edges of the short dimension, giving a space inside the border lines 21 inches by 28 inches. The sheet is to be of white paper and is not to be mounted. Very thin paper or cardboard is prohibited.

The drawing is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawing is to be delivered flat, or rolled (packaged so as to prevent creasing or crushing), at the office of THE BRICKBVILDER, 85 Water street, Boston, Mass., on or before June 30, 1914.

The Post Office Department now requires that drawings sent by mail shall be at the letter — or first class — postage rate.

Drawings submitted in this Competition are at owner's risk from the time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

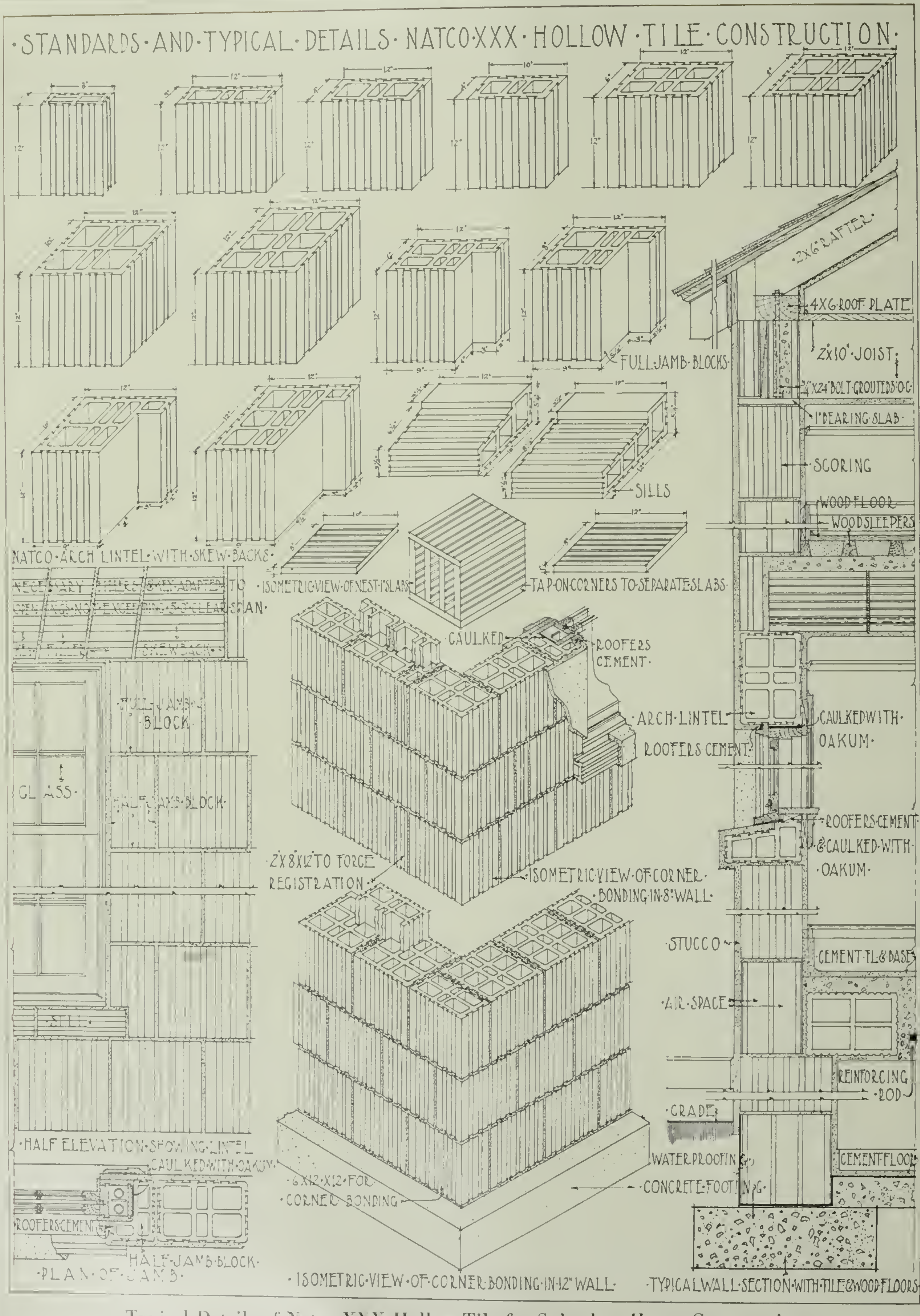
The designs will be judged by five members of the architectural profession, representing different sections of the country.

The prize designs are to become the property of THE BRICKBVILDER, and the right is reserved by THE BRICKBVILDER to publish or exhibit any or all of the others. The full name and address of the designer will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names, 25 cents in stamps.

Drawings submitted in this Competition will be returned direct from the office of THE BRICKBVILDER to the contestants.

For the design placed first there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This Competition is open to all architects and architectural draftsmen.
The prize and mention drawings will be published in THE BRICKBVILDER.
This Competition is conducted under the patronage of the National Fire Proofing Company.



Typical Details of Natco XXX Hollow Tile for Suburban House Construction.

THE BRICKBUILDER

VOLUME XXIII NUMBER 4

CONTENTS *for* APRIL 1914

PLATE ILLUSTRATIONS

LETTERPRESS

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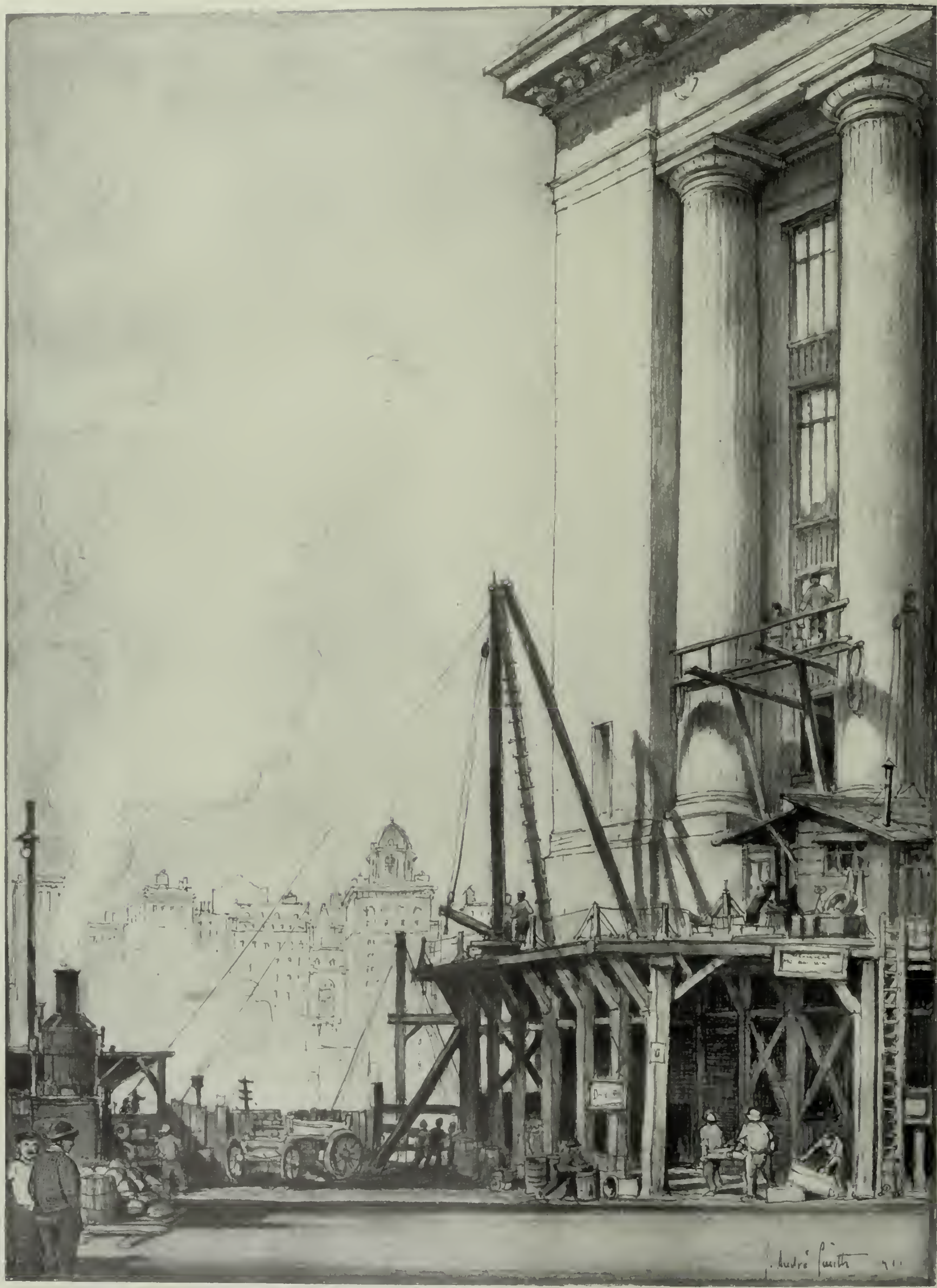


RENDERED COMPOSITION BY J. ANDRÉ SMITH.

THE BRICKBVILDER

VOLUME XXIII APRIL, 1914 NUMBER 4

The Private Library.

By H. T. BOTTOMLEY.

A MAN'S house has been likened to his cloak — both should fit him well and be suited to his needs and the circumstances of his life. A good tailor will make a garment neither too large nor too small, and a good architect will take care to fit a house to the needs of his client. The more nearly a house, and consequently every room in that house, is adapted to the requirements of the man for whom it is built, the more perfect it will be as a work of art.

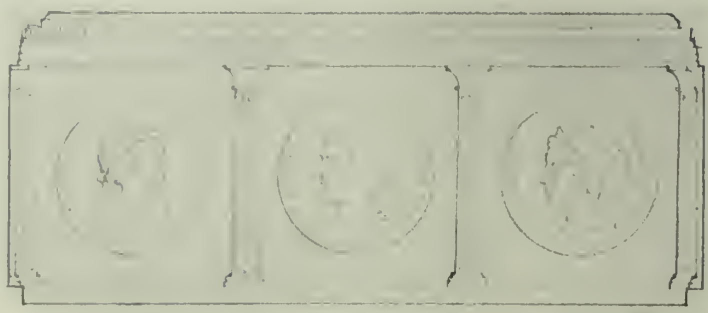
A library, above all rooms, should be the expression of the individuality of its possessor. Here a striving for effect or originality, so often disconcerting in the extreme, is particularly out of place. This should be the room in a house where repose, simplicity, and quiet are to be found; where the parts are all beautiful, with a certain sobriety in the furnishing and ornamentation, as if the owner respected the quality of his books and esteemed the brilliant assemblage of famous guests ranged within his walls. In planning a library the aim should be to attract, not to startle.

We will consider the private library from two points of view: design and comfort. Perhaps it might be better to put comfort first, for of what use is a room intended for the enjoyment of books unless it is an inviting place that tempts one by its convenience and privacy to spend one's time in it? Nobody ever yet read a book without first making himself as comfortable as possible under the existing circumstances. In the pictures of the early saints, even the self-denying St. Jerome in the Desert rolled a stone under his elbow and propped his back against a lion before perusing the Holy Writ. Since then, times have changed, and we moderns provide ourselves with deep easy chairs, plenty of light, and things to please the eye. "Without the great and beautiful arts which speak to the sense of beauty, a man seems to me a poor, naked, shivering creature. These are the becoming draperies which warm and adorn him."

In a room primarily intended for study and leisure the treatment of the detail is of the utmost importance, whereas, in one designed for conversation or amusement, the activities of the inmates are far more interesting than the subtleties of the inanimate objects around them. When one is seated alone in one's library, the critical faculties are awake, every detail is seen and dwelt upon, one notices the profile of each moulding, the quality of every curve, either the design and execution is found to be beautiful or it is likely to become intolerable. Looking up from a book or from writing, the eye rests on the decorations, either with infinite content, if they are fine and suitable, or with growing disgust. Therefore the design of a library should be carefully considered in every detail from the main proportions of the room down to the sizes and shapes of the tables and chairs that furnish it.


Studiolo of Isabella d'Este at Mantua.

The history of private libraries as far back as those of ancient Rome, from which our own are descended, and from which they have inherited many characteristics, is extremely interesting; but it is not the purpose of the present article to discuss this history, except as it offers suggestion to the architect to-day. The accompanying pencil sketch was made from a Roman library discovered on the Esquiline some years ago by Signor Lanciani. Although the book shelves themselves had disappeared before the room was excavated, the charming stucco frieze of delicate pilasters and medallions was still in fairly good condition. The portraits were mutilated, but enough of the inscription remained to tell what the frieze originally had been. The room measured 23 by 15 feet. The pilasters were 5 feet apart from center to center and the medallions 2 feet in diameter. We know from many sources that Roman bookcases closely resembled modern ones. They were often decorated with different kinds of inlaid wood and finished at the top with a cornice, but instead of our flat books, they were, of course, filled with papyrus rolls. The extent of the shelves and their height was governed by individual taste. This library on the Esquiline was lined with book shelves whose exact character cannot now be determined; but its frieze or an adaptation of it would be very decorative in a modern room.



Sketch of Frieze Found in Roman Library.

Although none of the other libraries illustrated approach this one in point of age, some of them are hundreds of years old. After the Dark Ages had very nearly completed the destruction of all libraries and of all learning, the Christian church revived the love of study within its monastery walls. In the cloisters where the brothers congregated to read and to make manuscripts, we find further interesting suggestions for the modern library. So far as the writer knows these have never been materialized.

In the Middle Ages, when books were few, they were kept in locked receptacles in the cloisters, and there the monks "wrote or studied, or conducted the schooling of the novices and choir-boys, in winter and summer alike." In some of the monasteries one side of the cloister was glazed to protect the studious brothers from the elements.

"A charming picture has come down to us of the literary activity that prevailed in the Abbey of St. Martin at Tournai at the end of the eleventh century, when Abbat Odo was giving an impulse to the writing of manuscripts. 'When you enter the cloister,' says his chronicler, 'you would generally see a dozen young monks seated on chairs and silently writing at desks of careful and artistic design. With their help he got accurate copies made of all of Jerome's commentaries on the Prophets, of the works of the Blessed Gregory,'" etc.

Library in a City Apartment.

The cloister, because of the difficulty of properly heating it, was not perhaps the most practical of working libraries, as we see from the following couplet found in the fly-leaf of an old book:

"As we sit here in tempest, in rain, snow and sun
Nor writing, nor reading in cloister is done."

But what could be more picturesque than those cloister libraries — the quiet protected walk, the arched openings looking out upon a lovely, carefully kept garden, the desks in the arcades flooded with light.

The seclusion and beauty of such a library must appeal strongly to a lover of books, and it would seem that with our modern inventions for heating houses, a most ideal library on the plan of the cloister-libraries of the monks of the Middle Ages, with a garden in the heart of it and windows all around it, might be arranged in a country house, especially if the court formed by it were left open to the south. The design of the garden has infinite possibilities, but it should undoubtedly be made with paths running through it, for what Montaigue says is most true: "Every place of retirement requires a walk. My thoughts sleep if I sit still; my fancy does not go by itself as when my legs move it; and all those who study without a book are in the same condition."

While the monastery library was developing in the north, the private library strictly speaking, was coming into existence in Italy — collecting rare and beautiful things was a passion with the nobility of the Renaissance, and they planned many beautiful rooms in which to keep them.

One of the most famous of their libraries was the Studiolo of Isabella d'Este in Mantua. Here the lovely Marchesa gathered together all the treasures of literature and art she could lay her hands on, and here she received her most intimate friends and discussed with them the politics of Italy and the affairs of the whole world. This studiolo has been sadly mishandled by time; but the exquisite fineness of what remains of the architecture, the pilasters, the cornice and base, and the mural decorations, make it still a lovely room.

LIBRARY IN HOUSE OF GEORGE D. PRATT, ESQ., AT GLEN COVE, L. I.
TROWBRIDGE & ACKERMAN, ARCHITECTS

LIBRARY IN HOUSE OF LEWIS J. POOLER, ESQ., AT TUXEDO, N. Y.
CHARLES A. PLATT, ARCHITECT

Drawing by Boucher showing Two Arrangements of Bookcases.

The Marchesa kept her books behind painted wooden doors, which were undoubtedly made for their safe keeping, but which were a distinct decorative feature of the room.

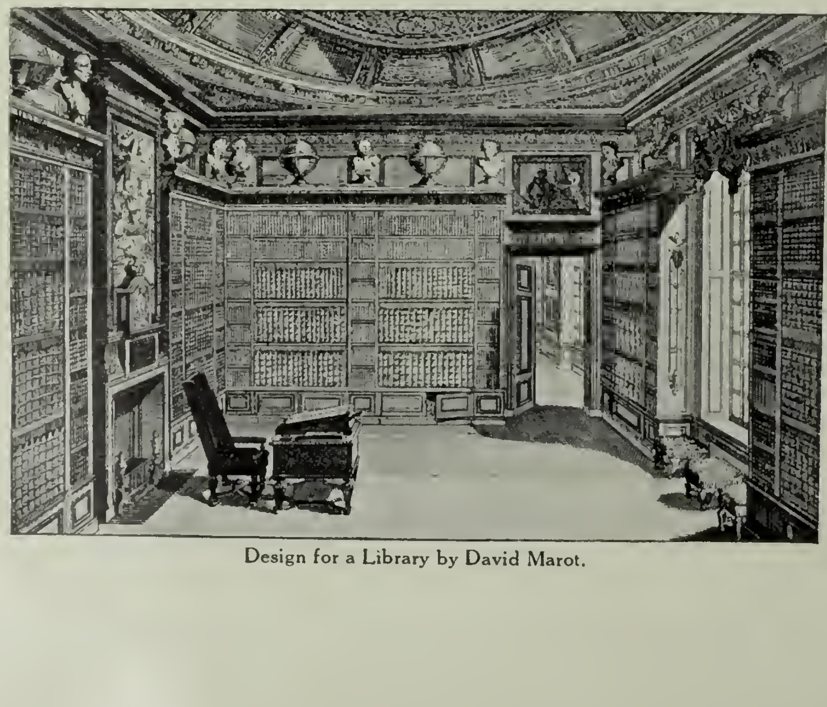
It is difficult indeed to restore it in imagination to what it was when filled with Isabella's collection of books and rare manuscripts and works of art. Here were her favorite paintings and statuettes, an alabaster organ, a collection of musical instruments. "There were antique bronzes, figures of alabaster and jasper, cabinets of porphyry and lapis-lazuli, murano glass — precious vases — and crystal mirrors." The photograph of the room in its present condition, though charming, gives very little idea of what it was when the scholarly Marchesa entertained the learned men of Italy in it.

But a most delightful Italian Renaissance library, which is to-day in its original condition, is that of the Palazzo Sacchetti in Rome. The writer will never forget the impression received on entering it — that of a most satisfying, dignified, home-like room. It is the principal private room in the palace and is used constantly by the Marchese and his family. At the first glance it is evidently the outgrowth of the need or desire of a scholar, and was planned as a setting for a student. There is no conscious arrangement for the chance visitor or for any sort of entertainment. It is simply a beautiful receptacle for the owner's books and kindred possessions. The room is large and oblong and very high, with three long windows reaching almost to the ceiling and diffusing, between the eye and the dark beams above, a misty light which is reflected again from two large blue globes. The bookcases around the walls, of the same dark wood as the ceiling, were about 10 feet high and above them was a fine frieze of old maps in blues and greens and soft browns. These maps made a most unusual and interesting decoration. In the center of the room was a massive table of dark oak covered with papers and writing materials, from which gleamed the scarlet seals of several important documents. The floor was tiled and partly covered by some old Oriental rugs.

Book Stack in Private Room in Cooper Union, New York.

The whole room gave the effect of great richness of color, due in part, of course, to that cleverest of all colorists, time, but due also to beautiful combinations of materials. We to-day are apt to be timid in this respect.

The illustrations, accompanying this article, have been chosen to represent rooms of widely different character so as to offer as many ideas as possible that may be incorporated in the design and fittings of a modest library. One illustration to which we would call special attention is that of a book stack designed by Miss Hewitt for the private library in Cooper Union, from the original drawing by David Marot. Unfortunately, the room itself is now used more as a storeroom than anything else, which explains its unkempt appearance, but the arrangement is so unusual that permission was asked to photograph it in spite of the condition of its shelves. They are made of a soft brown walnut and are divided vertically into wide and narrow spaces. The narrow ones are carried up to the ceiling and the cornice above them is broken, form-



Design for a Library by David Marot.

LIBRARY IN PRESIDENT'S HOUSE, COLUMBIA UNIVERSITY, NEW YORK, N.Y.
McKIM, MEAD & WHITE, ARCHITECTS

LIBRARY IN HOUSE AT NEW HAVEN, CONN.
DELANO & ALDRICH, ARCHITECTS

Library in a New York Apartment House.

ing as it were, pilasters of books around the room. About two and a half feet from the floor is an extra shelf which can be pushed in even with the book shelves or pulled out so as to form a table to rest reference books on. This is an excellent practical arrangement for any library.

It is gratifying to see how worthy many of our American rooms of the nineteenth century are of the best traditions which have inspired them. Nothing could be finer than the classic feeling in the library designed by Mr. Platt which is a room unusually fine in every detail.

In marked contrast to it is the charming white room in a city apartment. Here also the detail is well worked out and the decoration is delightful — the furniture, the engravings and paintings, the arrangement of the books. The compartments under the book shelves are very useful for holding manuscripts, etc., that need to be protected from dust. There is a distinction about this room that is very rare.

A simple, work-a-day room designed for a man unusually fond of books, is the library in a coöperative apartment house in New York. The mantel and the old portrait above it are very dignified, and the other three walls of the room are lined to their full height with severely simple and practical bookcases.

Among these illustrations, which show a variety of styles of suitable bookcases, it should be possible to draw suggestions that will be of value whether the requirements are for only one or more simple bookcases standing against the wall, or a great number of "concealed," that is, built-in bookcases that are finished flush with the walls and are really a part of the architecture of the house.

It is not always possible to carry out the design of a room just as a highly trained architectural sense dictates, and to fit a man's surroundings to his life and habits, is a difficult task; innumerable considerations invariably arise with which compromises must be made. To begin with, few prospective owners of libraries live alone; they have their families, whose varying tastes must be considered, and annoying practical considerations, which cramp and hamper, are almost sure to force themselves forward. But it must be confessed that these considerations are often a blessing in disguise, giving the finished rooms an individuality that is felt to be lacking in many less restricted architectural creations. More than any other important room that is given an architectural character from its design and finish, the library should be considered a practical workshop and study for those who wish to get away from confusion, and as such should be freed from superfluous decoration. Of course too great simplicity may be merely a sign of "a dead imagination," but nowhere is a careful restraint so indispensable as here.

It is necessary in order to have a library worthy of the name that one truly revere its contents. There are libraries for readers as well as libraries for collectors who love the bindings and the editions more than the printed word, but we must have something of the collector's spirit or we shall not think it worth our while to carefully house our books.

Library in a House at Princeton, N. J.
Trowbridge & Ackerman, Architects.

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

IV. THE WORK OF MR. J. ANDRÉ SMITH.

THERE is in New York a society called "The Digressionists," which is composed of architects who engage themselves in followings of various sorts besides architecture, and their annual exhibition is in many ways one of the most interesting in the city, since it illustrates the profound influence which a knowledge of architecture has upon work in the allied arts. Some of the men are sculptors, others painters or etchers, and still others do work in the minor arts,— bookbinding, jewel and metal working, and other crafts of that sort. Any of these men could unquestionably make a very good living at what we may call his hobby, since each of them shows very marked ability, although every one of them, of course, in a way indicative of the profound regard for order and construction which the practice of architecture teaches a man. One of these men, for example, is Mr. J. M. Hewlett, of the firm of Lord and Hewlett, who has invented a new process in painting (if one can call colored designs painting), on which the only brush used is an air brush; and in this medium he has done much theatrical scenery, as well as exquisite screens and wall decorations. Other men have exhibited much skill as landscape painters, and in all this various work there is probably no branch in which so high a degree of artistic and technical skill is reached as in the work of the men who etch. Architectural subjects are particularly suitable for etching, for they afford a man exceptional chance to display his skill, and are particularly interesting to the architect-etcher, because of the natural sympathy which he would have in his own subject. Etching is a fascinating way of illustrating, not only because of the difficulties of technique which one feels have been overcome in a successful etching, but also because there is something in the results produced which differs very greatly from those possible in any other medium, even pen drawing with the finest possible pen. The richness and warmth of color which are characteristic of etching would seem to make it particularly an appropriate medium for architectural rendering, but as far as can be recalled there is no one who has used this mode of expression; and when we find an architect who, like Mr. J. André Smith, is an etcher of great ability, one wishes he would devote more of his work, not to the pictorial representation of work already constructed, but would show some of our clever renderers how excellent a means it would be for the showing of work not yet executed. For Mr. Smith is of all our renderers the man whose etchings are the best; and indeed all his drawings have the flavor of etching about them, whether he uses the graver, the pencil, or the colored crayon; and these are about all he does use, for no drawing of the many he has shown has been a water-color.

Old English Inn. Etching by J. André Smith.

It is interesting to note in his work how strong the influence of the etching has been; it would seem as if that were the thing he took up first and to which all other means were subsidiary, and without knowing the precise course of his artistic development it would be difficult to prove to the writer that his first and real love was not etching.

He has not the facility to execute pictures of large size in flat and carrying tones, as have so many men. His work consists of exquisite miniatures, rather than wall pictures, and for certain sorts of architectural work where reproduction in a moderate quantity is essential, one would think it the ideal process. It would be hard to make a central spot in an exhibition out of one of these things, however well the subject and the execution might warrant it; but to the discerning a more delightful series of architectural drawings was never done than those shown at a recent exhibition of his work, in which over one hundred pencil drawings and etchings were shown together; and not one among them was of unexecuted work, for Mr. Smith is not an architectural renderer primarily, but a designer and etcher; he does renderings of his own work occasionally, and his method is essentially that of an illustrator rather than of an architect. His work has this distinction, however, from the work of the other men who do occasional drawings of architectural subjects, such men, for example, as Vernon Howe Bailey, Joseph Pennell, and Ernest Pexiotto, he knows his architecture thoroughly, and actually draws it, not simply indicating it as they do. Of course the three men whose names have been introduced for purposes of illustration have drawn so much architecture that their indication is exquisite and reasonably accurate, but even so, one can only infer architecture from their drawings; it is not laid down definitely in black and white to be read by every draftsman. Most of the illustrators argue that accurate drawing of an architectural subject destroys, or at least lessens, the artistic quality, reducing the impression of reality except to those men who are themselves architects and are willing to pass their judgment of the picture on an accepted architectural formula. Mr. F. Hopkinson Smith argues in some such way as this, although not precisely in these terms; were he to see a series of drawings and etchings by Mr. André Smith, he would, I think, be convinced that the most precise architectural drawing can be combined with illustrative indication of shadows and surfaces without at all lessening the interest of the drawing to the general public, and greatly increasing it to the architect, since while the picture interests the architect as well as the layman, the architecture is of equally important interest.

Color is not Mr. André Smith's favorite means of expression, only two of the drawings illustrated in this article are anything but black and whites, and those two, the sketch for a country house and the sketch of a public building in process of erection (see frontispiece) are really in method black and whites, since his shadows are not variations of tone, but real blacks, and color is applied only on the lighted surfaces. The illustrations in this number are thus essentially black and white drawings, and of three different subjects, two pencil drawings of Florence, two etchings, and two drawings made in this country, and out of the whole six, after all, only one is an architectural rendering in the sense that a rendering is a drawing made to show how a proposed building will look; this is the drawing of the little country house.

The pencil drawings of Florence are among the most beautiful travel studies that an architect has ever made, not only because of their drawings of architectural detail, but also because Mr. Smith has chosen his composition with an eye so completely a painter's, and has seized upon the exact moment in each when the lighting was most interesting. That of the entrance to the Ponte Vecchio, for example, has a fascinating shadow thrown by the buildings on the opposite side of the street, and the time of day which made the drawing of this detail exceedingly difficult, would also of course greatly enhance its pictorial interest. The drawing of the Loggetta Vasari is much less surprising, but not less interesting, since the picture was made apparently at such a time of day when no sunshine was able to enter the narrow streets, and all the light was reflected, and the fact that Mr. Smith has been able to work an all over tone over the entire surface without the result being uninteresting, is quite as much an achievement as being able to appreciate a particularly picturesque time of day. Of the etchings the writer feels himself unable to say very much, since a lack of knowledge deters him from attempting an appreciation of technical merits and proc-

Robin Hood's Bay. Etching by J. André Smith.

THE APPROACH TO PONTE VECCHIO, FLORENCE

LA LOGGETTA VASARI, FLORENCE

PENCIL DRAWINGS BY J. ANDRÉ SMITH

esses, but they seem of unusually interesting character, both bold and delicate, with a delicious indication of broken surfaces, and great ability to enrich plain surfaces without detracting from their simplicity. The two architectural renderings have apparently had a basic all over tint on them, there are no whites left; the drawings have then been made in pencil with considerable use of colored crayons, and the blacks thrown in, in the case of the country house with conte crayon, and in the drawing of the public building in the course of erection, with ink, and the whole drawing is then varnished. They are of unusual mellowness of color, and in no wise brilliant, but extremely restful, and in spite of their general calm treatment are of much vigor and strength.

It is impossible to show in six examples how great a variation in treatment is possible within the rather narrow boundaries that Mr. Smith has set for himself; it would need thirty examples to begin to give an idea of the tremendous variety of effect possible to him in black and white. His renderings range from the quietest of low-toned drawings of subdued and twilighted streets to a blaze of sunshine in the open country, with detail almost utterly lost in harsh black shadows; but through them all we feel the same skilful and architectural handling of the theme, and while it would have perhaps been more interesting to have shown more of Mr. Smith's renderings for tentative buildings, as a matter of fact it is so much more the other side of his art which interests him, and so many of his drawings have been made, either as travel studies or etchings, that it has seemed fitting to select those which are reproduced here, especially since they illustrate a way of working almost completely different from the usual method employed and which will likely suggest a wider range of mediums for the delineation of architectural subjects.

A SMALL COUNTRY HOUSE
COLORED CRAYON SKETCH
BY J. ANDRÉ SMITH

DISTINCTIVE AMERICAN ARCHITECTVRE

A SERIES OF ILLVSTRATIONS OF THE MOST NOTABLE WORK OF THE YEAR WITH APPRECIATIVE TEXT *BY*

MONTGOMERY SCHVYLER

Chapel of the Intercession Trinity Parish, New York, N.Y.

Bertram Grosvenor Goodhue; Cram, Goodhue & Ferguson, Architects.

IT IS fortunate for the student of architecture, beset with the task of trying to disentangle individualities from "firms," that the church of St. Thomas in New York, of which the plan and "lay out" have been so clearly understood to be the work of Mr. Cram, of the late firm of Cram, Goodhue, and Ferguson, and of which the working out and detail have been with equal clearness understood to be the work of Mr. Goodhue, should be so swiftly succeeded by the Chapel of the Intercession, which is with equal clearness understood to be Mr. Goodhue's individual work. The fact must be a comfort to the individual architect of this latter and latest work. It is certainly a comfort to the commentator.

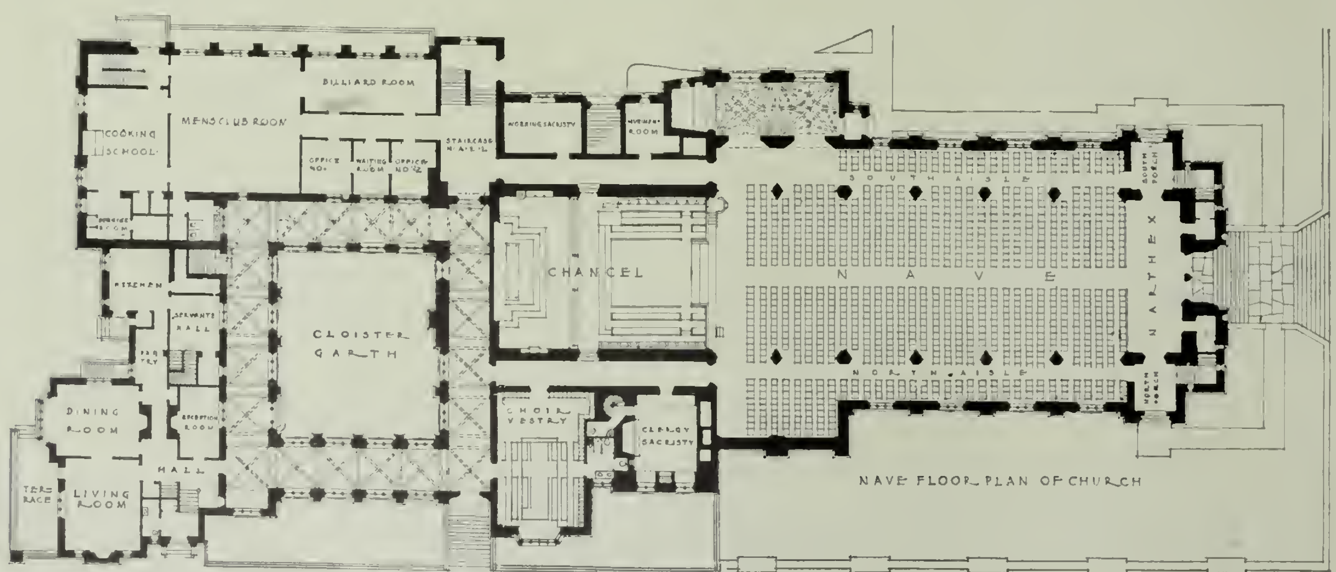
For the reader who is not a New Yorker, and who therefore is not "charged with knowledge" of the "paramountcy" of Trinity Church, in matters relating to ecclesiology and to church building, from the latter part of the seventeenth century to the beginning of the twentieth, in the city of New York, the very word "chapel" may denote a misconception which it is worth while to clear up. "Chapel," when it is not used, as it is in England, to denote a place of worship which signifies a dissent from the religion of the state, denotes an accessory and subordinate place of worship of the mother church, which has its main seat elsewhere. That is the case with the new Chapel of the Intercession. It is equally the case with the other "chapels" of the great historical foundation of Trinity Church. As no one more readily than the architects who have been the creators of the "chapels" would allow, the architectural as well as the ecclesiological primacy and paramountcy of Old Trinity, commanding the vista down Wall street from Broadway, have always, since the consecration in 1846 of Richard Upjohn's rededification of the mother church, remained unchallenged. But it was by no means always so. When the elder John Adams visited New York on his way southward in 1774, the lion of the architecture of Trinity was by no means Trinity itself, standing where it still stands at the head of Wall street and from all accounts a shabby and negligible shed of a "meeting house," shortly to be demolished by fire in the course of the British occupation, but the new "chapel" of St. Paul, designed by the now almost irrecoverable McBean, in which Washington subsequently had a pew, and upon which the said John Adams delivered a series of more or less inept architectural remarks. Similarly, and subsequently in fact, in the first decade of the nineteenth century, when some now forgotten genius in the way of real estate promotion and development undertook to convert the despised swamp of "Lispenard's meadows" into the "court end" of Manhattan Island, and succeeded in so converting them by the laying out of St. John's Park and the building of St. John's "Chapel," of which the putative and possibly the real architect was that John McComb who was the putative but certainly not the

Detail of Main Entrance.

Cloister Garth.

real author of the contemporaneous City Hall; the new "chapel" effaced in public appreciation not only the elder St. Paul's, but also and still more the shabby old mother church itself. So when the indurated New Yorker comes upon this new and stately church, laid out upon an ample scale, something like two hundred and seventy feet by one hundred feet in extreme dimensions, — a church which seats some 1,400 people upon its main floor, without any makeshifts or addenda of galleries or side-chapels,— he is not startled by hearing it called a "chapel," when it is understood that it is a "chapel" of Trinity. But he forgives the jar which the nerves of the stranger undergo at such a designation of such an edifice.

And here again, and at the outset, those to whom the new church gives most artistic pleasure cannot fail to do homage to the past of Trinity Parish, which has enabled him to achieve this success, unique on Manhattan Island, where every new edifice is so cabined, cribbed, and confined by the cost of land and the occupation of every available square foot of the surroundings of an eligible site as to deprive the building erected upon it of all the dignity of detachment and isolation. The enormous advantage the new church possesses in this respect it derives from the fact that it stands upon the ground providently preempted, a generation or two ago, by Trinity Church for Trinity Cemetery, as a relief to the overcrowded graveyards of the parish "down town" at a time when it seemed that the actual site in the neighborhood of 150th street and Broadway might remain not merely suburban but rural for many generations yet to come. How fallacious that expectation was the visitor to the new church has only to look around to see, in the multitudinous and towering outlines of sky-scraping apartment houses. Nor has the providence of Trinity been manifested alone in the "preemption" and reservation of the ground. No suburban cemetery can have been more judiciously guarded than this was from vulgar invasion by architectural device. The architectural device was that of the late Frederick Clarke Withers, one of the most sensitive and cultivated of the Victorian Gothic designers. He sharply set off the sacred precincts from those open to ordinary occupation by a massive wall, of the native "trap rock" of which Manhattan Island is composed, punctuated at due intervals by piers in which there was judiciously introduced "wrought work" in a more tractable material. In effect, though not in tint, the same combination, and giving the same contrast, as appears in the choice of material for the new church to which all his so long antecedent labors now appear in the light of a promise and a setting. 'Tis true, 'tis pity, and pity 'tis, 'tis true, that the dominating feature of his otherwise unpretentious work has been forced to give way to the march of improvement. I do not know



Ground Floor Plan.

Chapel of the Intercession, New York.

Bertram Grosvenor Goodhue; Cram, Goodhue & Ferguson, Architects.

WEST FRONT

CHAPEL OF THE INTERCESSION, TRINITY PARISH, NEW YORK, N. Y.

BERTRAM GROSVENOR GOODHUE; CRAM, GOODHUE & FERGUSON, ARCHITECTS


Pulpit and End of Choir Stalls.

the chronology of the improvements. But it must have been after the preëmption by Trinity of the site for its new suburban cemetery that the city of New York determined to extend Broadway through the center of it. The bisection of the cemetery thus accomplished, Mr. Withers undertook to mitigate by a suspension bridge across Broadway, the bridge remaining until its demolition only a few years ago, one of the most exemplary achievements in New York in the way of a decorative treatment of a practical necessity. The demolition of the bridge in fact made room for the new church. That nobody who contemplates the church can regret the destruction of the bridge, seemly and picturesque as the bridge was, is one of the strongest tributes that could be paid to the later architect.

There can really be no question of the use the later architect has made of his unequaled advantages and opportunities. Among his advantages is the rare one, to all appearance, of not having been controlled or limited in any expenditure required to carry out his conception of what this church ought to be. It were unprofitable to inquire into the actual cost of this beautiful and most successful work. I may have been told, but I really prefer not to know. It is enough to know that there is nowhere any evidence of "skimping." He has, in the first place, used, without abusing, his rare chance of taking advantage of his ample area. He has "expatiated" in laying out a complete parochial "plant." The plant consists of the church proper, of a parish house apparently destined, though that is the concern rather of the rector than of the architect, to exert a wholesome and efficient civic and social influence upon the life of a neighborhood of which the conditions indicate that, though the work of the new church is by no means among the destitute, or even the necessitous, the church is yet a "chapel" and even a missionary chapel — a chapel *in artibus*, maintained, at least originally, by the contributions of the faithful elsewhere. And, naturally, it includes a rectory. These various requirements are accommodated upon the ample area provided and gracefully "accommodated" to one another. A connecting link which is a necessary part of the accommodation one regrets to find not sufficiently exhibited in the photographs. That is the quadrangular and nearly square cloister which intervenes between the church and its dependencies. Though here by no means designed for the promenade of cloistered and tonsured monks, it has the air of seclusion from common and mundane affairs which belong to the traditional notion of a cloister. At any rate, it is a feature which a sensitive architect could not omit in a scheme of this kind if he could by any means find it practicable to include it, and it is very delightfully treated.

But rectory, parish house, cloister, are each and all subordinate and accessory to the church itself, much as by their grouping they contribute to detaching and isolating it as well as completing its effect. The church is "the thing." Its "orientation" is fortunately correct. The West front, at the extremity down the moderate slope of the hillside, is the proper West front. The "East end," a proper and Anglican flat East end, is really the East end, up the hill. The slope, though slight, is sufficient to indicate if not to require some emphatic feature which shall


Choir Stalls and Organ in Chancel.

INTERIOR LOOKING TOWARD CHANCEL

CHAPEL OF THE INTERCESSION, TRINITY PARISH, NEW YORK, N. Y.

BERTRAM GROSVENOR GOODHUE; CRAM, GOODHUE & FERGUSON, ARCHITECTS serve the purpose of securing to the eye the stability and repose of the edifice by visibly anchoring and spiking it down, as it were, to the acclivity. It seems to have been this feeling which determined the situation and the design of the tower at what would be a transept if the church did not essentially consist merely of nave, aisles, and chancel. The effect of weight and anchorage, which has been denoted as necessary to the chief architectural function of this tower, has been kept in view in its design. It is a simple, four square, unbuttressed mass, solid and unbroken up to the belfry stage, or broken only by the crossing bands of lighter tint which in the lower part conform to principal lines which are continued on one side or the other along the adjoining walls. The simplicity is in the upper stages carried to a degree unusual in Mr. Goodhue's work, but to an excellent effect in emphasizing the relation of tower to church. The battlemented parapet itself is severely plain, denying itself even the customary pinnacles, of which the place is advantageously taken by the single central flèche which dominates the four square mass more effectively than would the four equal members at the angles which Ruskin has compared, in King's College Chapel, to a table upside down with its legs in the air. The interior is given up below to the organ loft, opening upon the two bays of what may be called a rudimentary transept, to the visual as well as acoustical advantage of the elaborate and successful design of the instrument, while the corresponding projection across the nave is given to a lady chapel.

The position of the tower leaves the West front as a simple and symmetrical composition, with no features but the central doorway and the central window, and excepting these no openings but the slits which rather punctuate and emphasize the flanking expanses of wall. The central feature in fact makes up a single feature in two stages, effectively united by the notably ingenious framing of them between buttresses receding from the plane of the wall below, while the frame is completed across the top by an equally effective blind gallery, relieved against the upper wall. The rectilinear canopy of the doorway with its flanking niches is an effective preparation for the curvilinear and flowing tracery of the great window above. In design, in scale, and in adjustment all this detail is equally successful and satisfactory, and makes up one of the most admirable of our church fronts in its kind, the effect, as everywhere, being much enhanced by the detachment and isolation accruing from the spacious setting.

Equally effective, in its very different and yet quite congruous way, with the simplicity of the front is the picturesque and harmonious grouping of the *multipartite* flank. The ranged arcade of the four great clerestory windows, in itself a feature as simple as it is noble, is succeeded by what we have called the rudimentary transept, by the mass of the tower, by the projecting gable of the parish house, by the cloistral arcade which connects this with the rectory, and finally by the rectory itself. Evidently there is here a sufficient and even a dangerous variety. The danger is that the variety will become a miscellany, that it will "scatter" and fail to produce a total effect. This danger has been obviated by various devices which are worthy of study, as indeed much study has obviously been spent upon them, but perhaps mainly by the skill with which the "cordons," composed of belts of a lighter tint than the field of the wall, have been introduced to tie the parts together and to connect them into a whole.

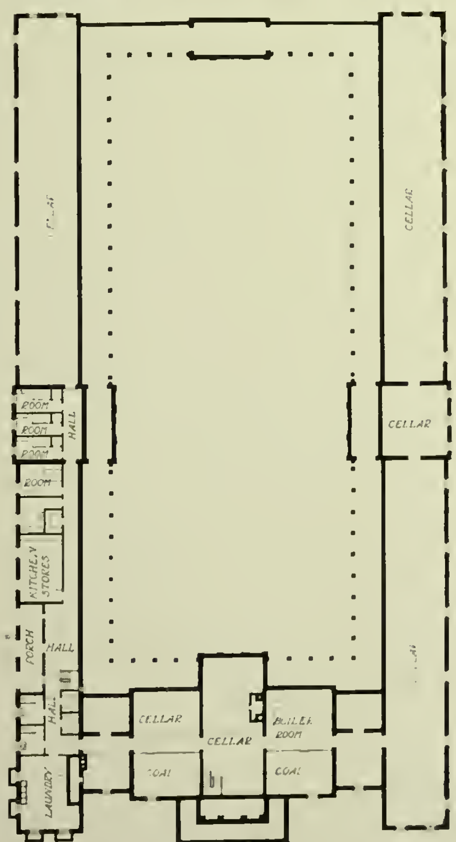
The interior is worthy of the exterior, and here there is even more of the sense of spaciousness and amplitude, which, to the stranger, makes the name of "chapel" seem so absurd a misnomer when applied to one of the largest churches in New York. Here, also, the prevailing impression is rather of simplicity than of complication. The largeness and fewness of the parts of the four-bayed nave, or five-bayed counting the western gallery, of the two-bayed transept, if we may continue to call it so, and of the three-bayed chancel, gain an effect of repose which cannot subsequently be disturbed by all the elaboration that has been applied in the richness of the traceries, in the elaboration of the screen under the western gallery, in the intricate and exquisite wood carving of the choir. You are to note that the treatment of the main structural features is all the while characterized by as much simplicity as their general form and disposition. Only in the vaulting of the lady chapel is there anything that can fairly be called fantastic in the elaboration of the masonry, and here the designer has "treated resolution" to excellent effect. One exception to the rule there may be in the equipment of the inner archivolt of the nave arches, with its separate vaulting shaft continued to the floor, and of the emphasis given to the arrangement by a moulded capital not continued through the other mouldings of the pier. Mr. Goodhue, as all students of his work know, does not at all aspire to the praise of a purist, but the introduction of this abundantly precedented feature suggests the formular element from which the design in general is so delightfully free. Moreover, it seems to detract from the weight and dignity of the mass of the pier to have its inner moulding and the archivolt it carries thus detached and isolated from the mass. But there is nothing like this anywhere else. Another point that may perhaps be marked for animadversion is that the steep hammer-beamed ceiling, which has been decorated in color with great richness of effect where and when it is apprehensible, is so high above the clerestory and so steep that it is only under very favorable conditions of weather that it exerts the influence to which it is entitled. But even if these things be blemishes, they are hardly worth mention — certainly are worth no more than mention — in the presence of a success of ensemble and detail so conspicuous as that of the Chapel of the Intercession. We can pardon those who even prefer it to St. Thomas's, though, indeed, the crowded and hampered site of St. Thomas's makes a comparison with its free standing successor almost impossible and quite inadvisable. It suffices to note the evident fact that the new church is one of the most interesting examples of ecclesiastical architecture in New York, or for that matter in the United States.

ENTRANCE FRONT

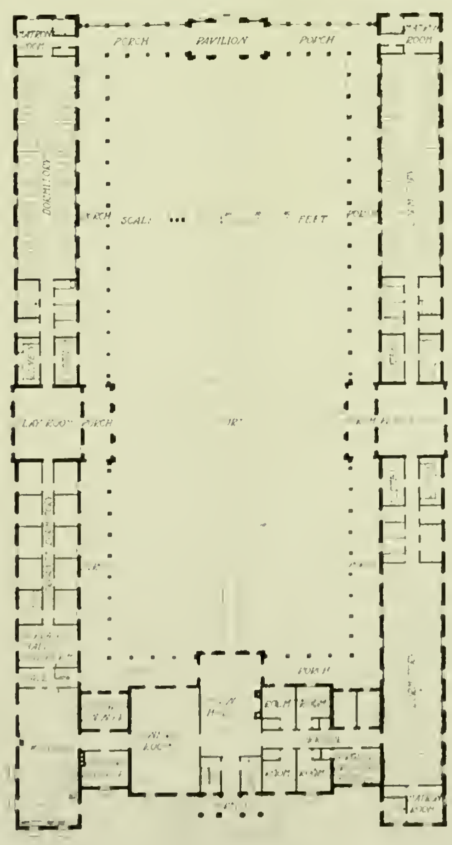
SEASIDE BRANCH OF THE WIDENER MEMORIAL SCHOOL, LONGPORT, N. J.

HORACE TRUMBAUER, ARCHITECT

MAIN FACADE



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN

SECOND FLOOR PLAN

SEASIDE BRANCH OF THE WIDENER MEMORIAL SCHOOL, LONGPORT, N. J.

HORACE TRUMBAUER, ARCHITECT

VIEW OF COURT LOOKING TOWARD OCEAN

COURT FACADE OF MAIN BUILDING

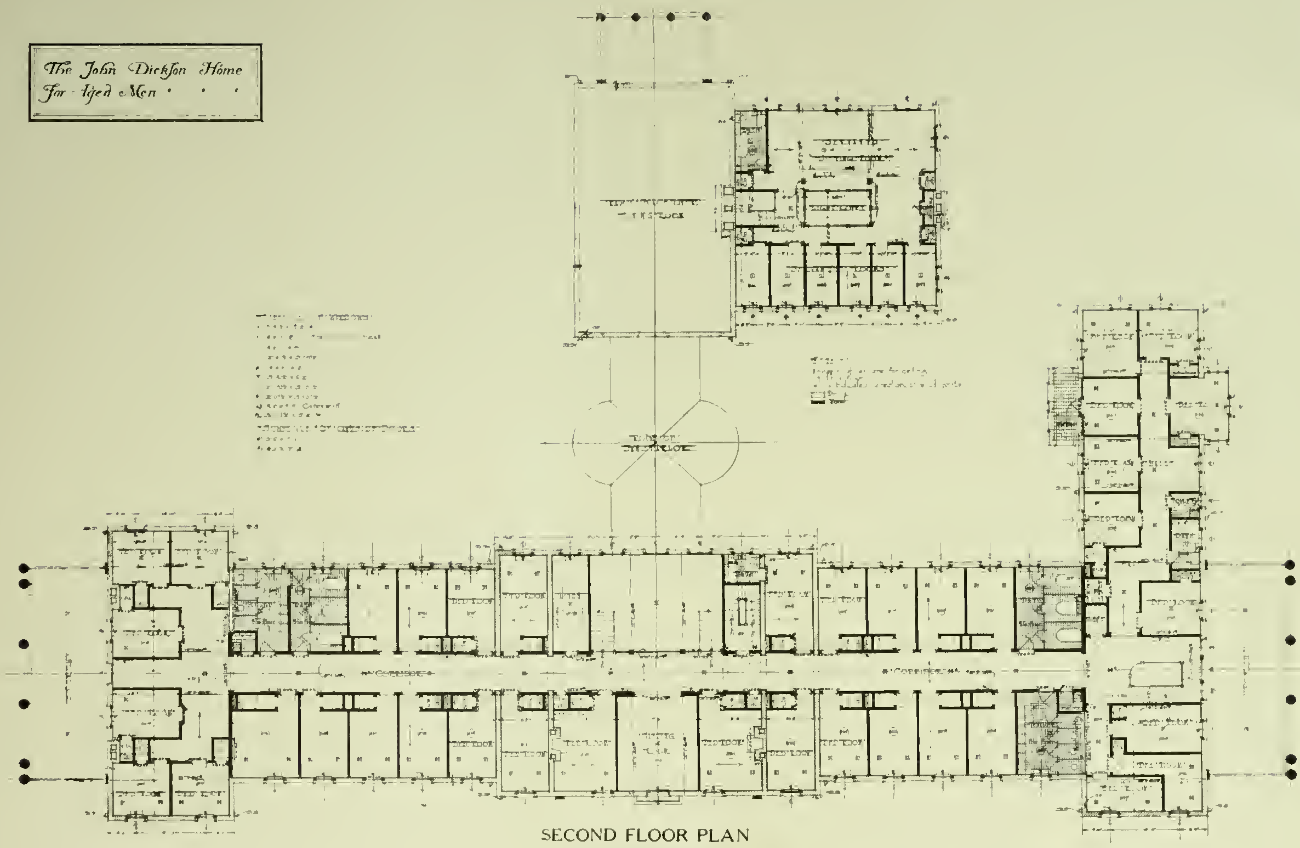
SEASIDE BRANCH OF THE WIDENER MEMORIAL SCHOOL, LONGPORT, N. J.

HORACE TRUMBAUER, ARCHITECT

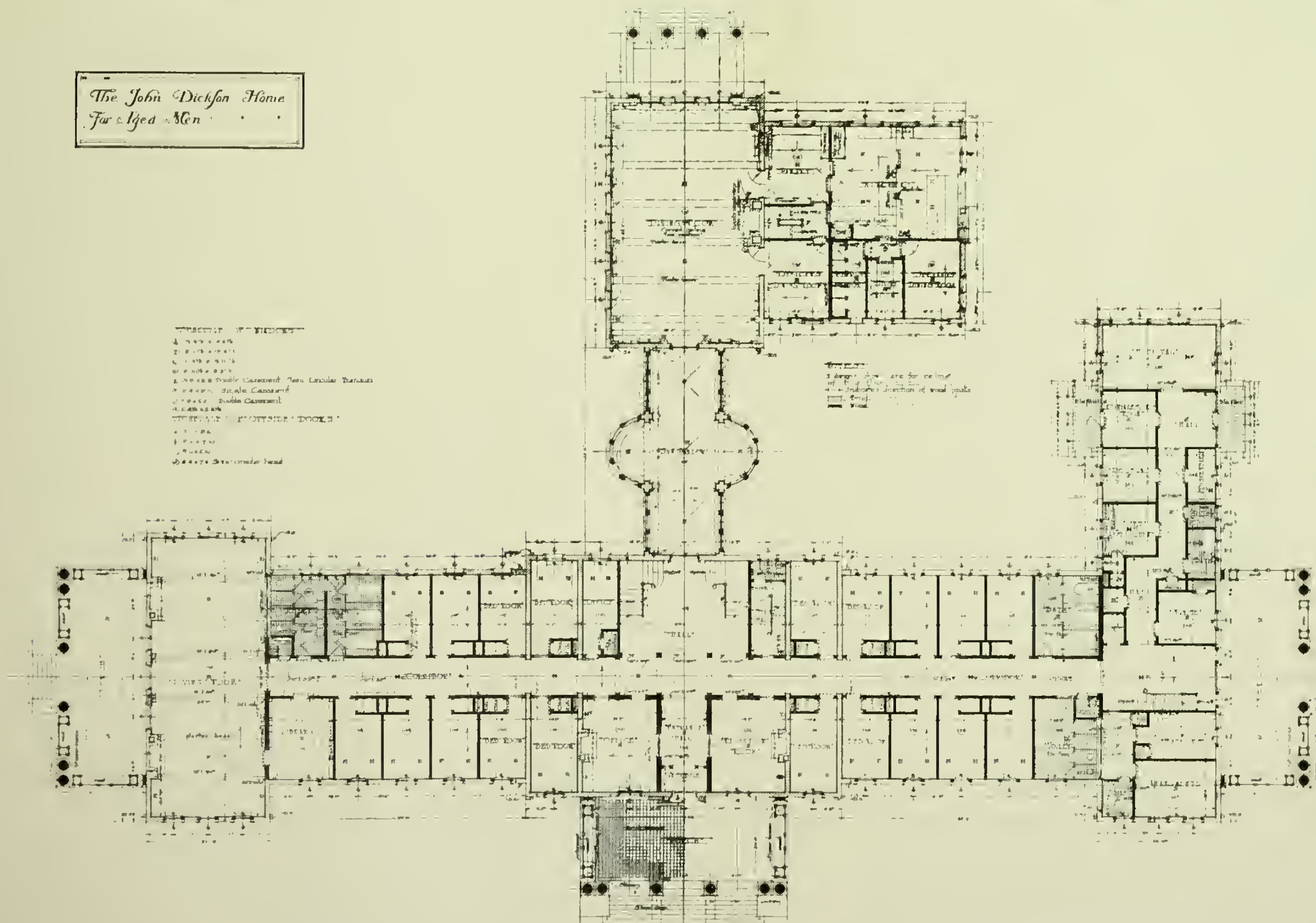
GENERAL VIEW OF MAIN FACADE

DINING HALL LOOKING TOWARD MAIN BUILDING

THE JOHN DICKSON HOME FOR AGED MEN, WASHINGTON, D. C.
ARTHUR B. HEATON, ARCHITECT



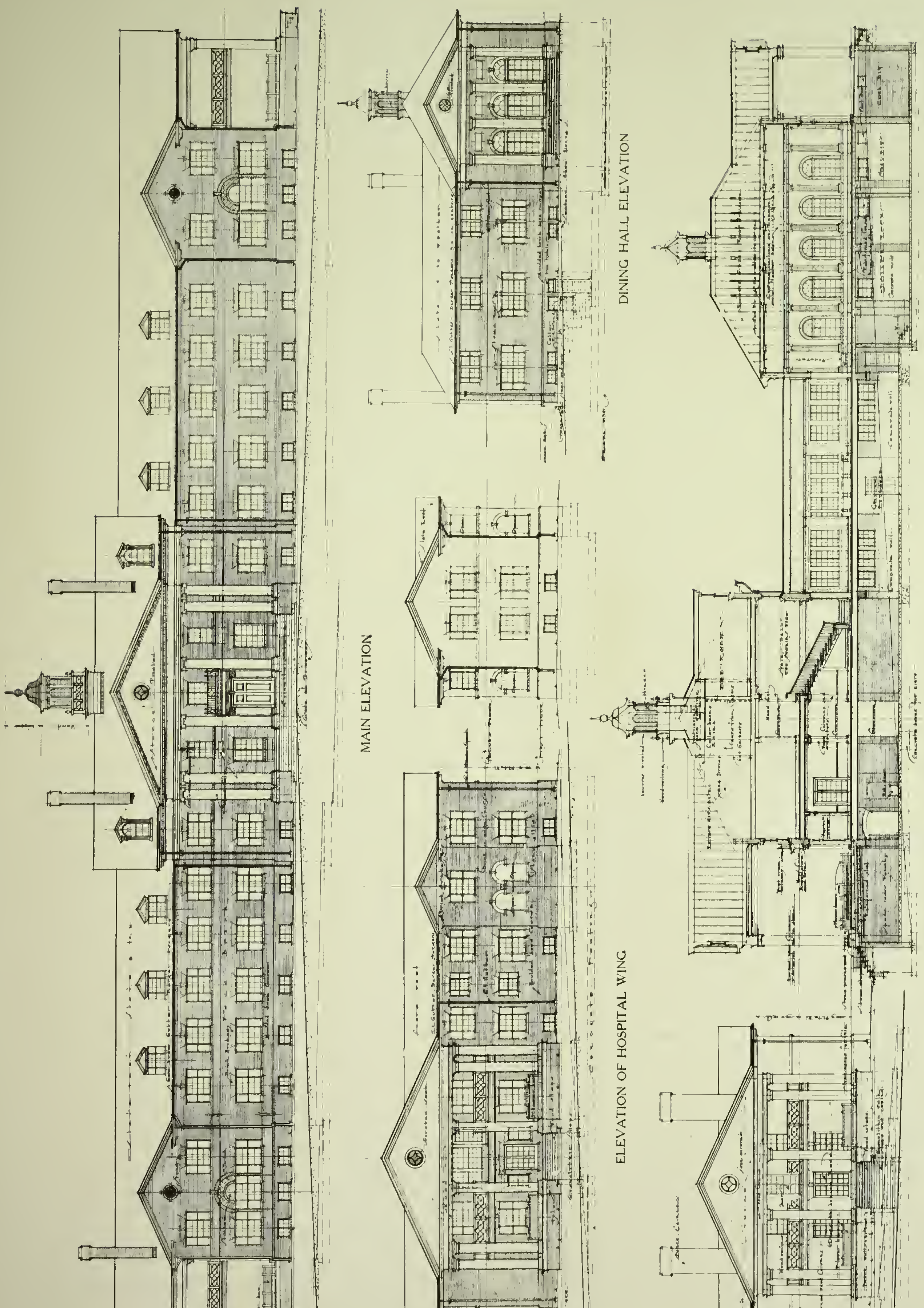
SECOND FLOOR PLAN



FIRST FLOOR PLAN

THE JOHN DICKSON HOME FOR AGED MEN, WASHINGTON, D. C.

ARTHUR B. HEATON, ARCHITECT



MAIN ELEVATION

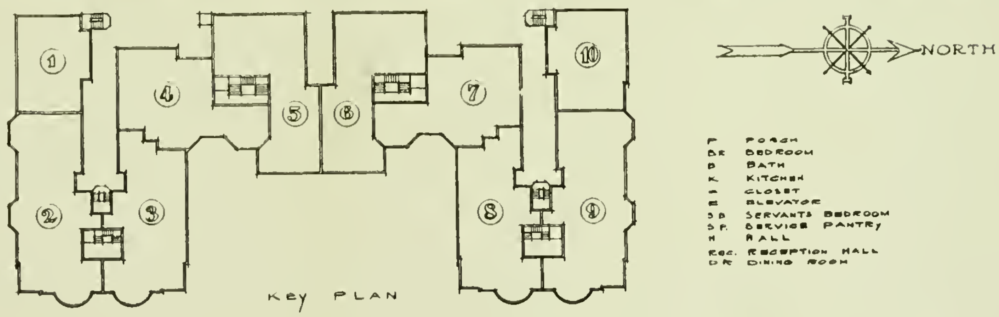
DINING HALL ELEVATION

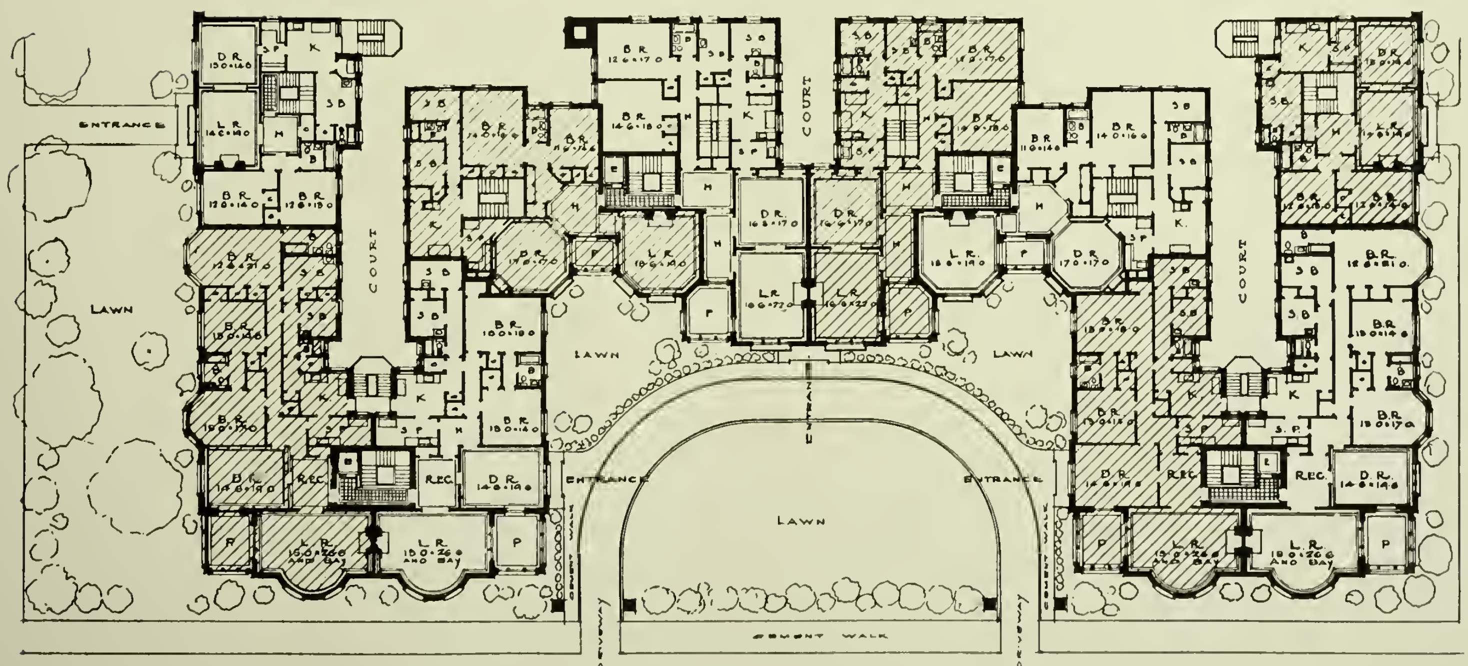
ELEVATION OF HOSPITAL WING

THE JOHN DICKSON HOME FOR AGED MEN, WASHINGTON, D. C.

ARTHUR B. HEATON, ARCHITECT

GENERAL VIEW OF MAIN FACADE

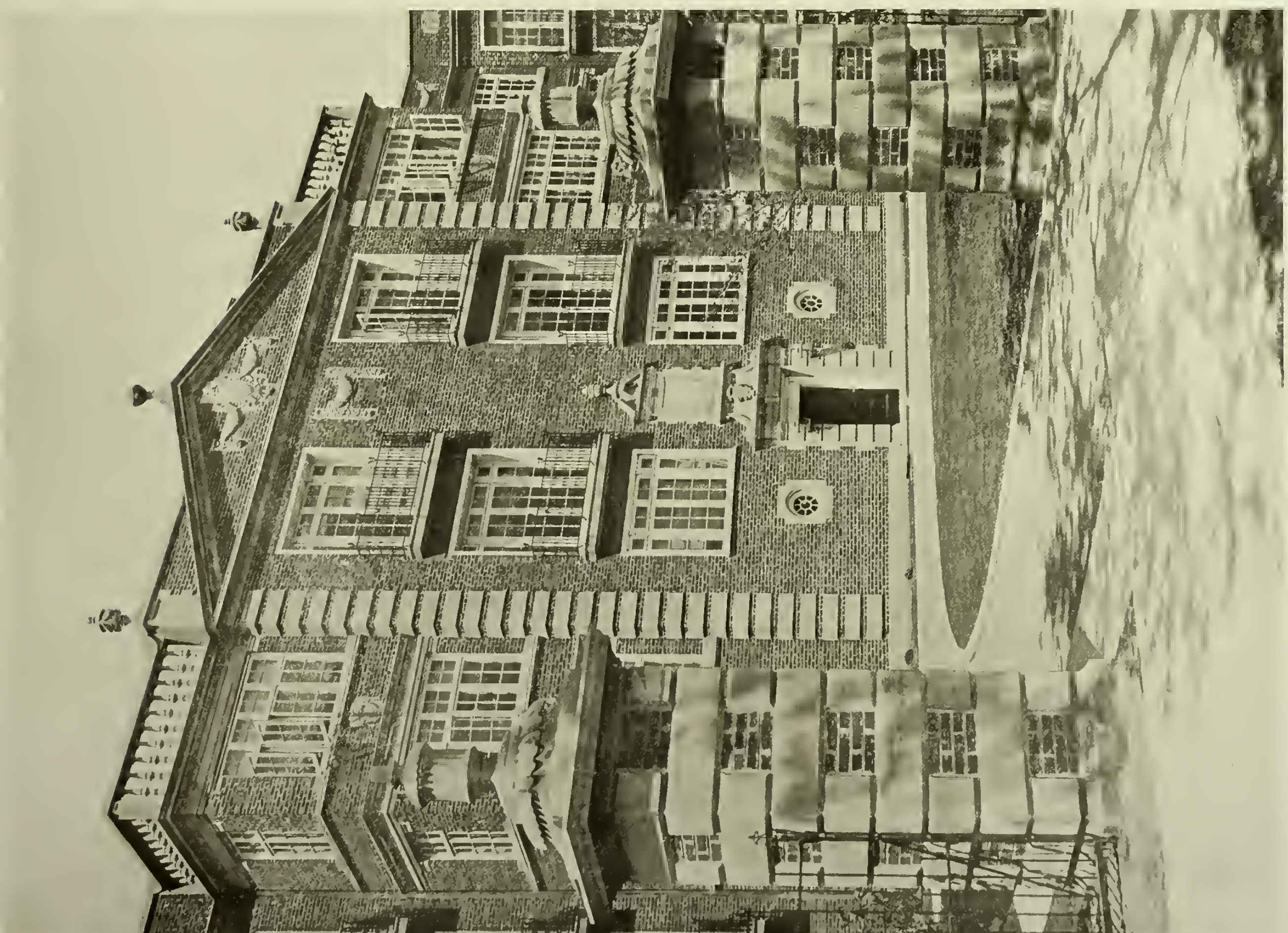




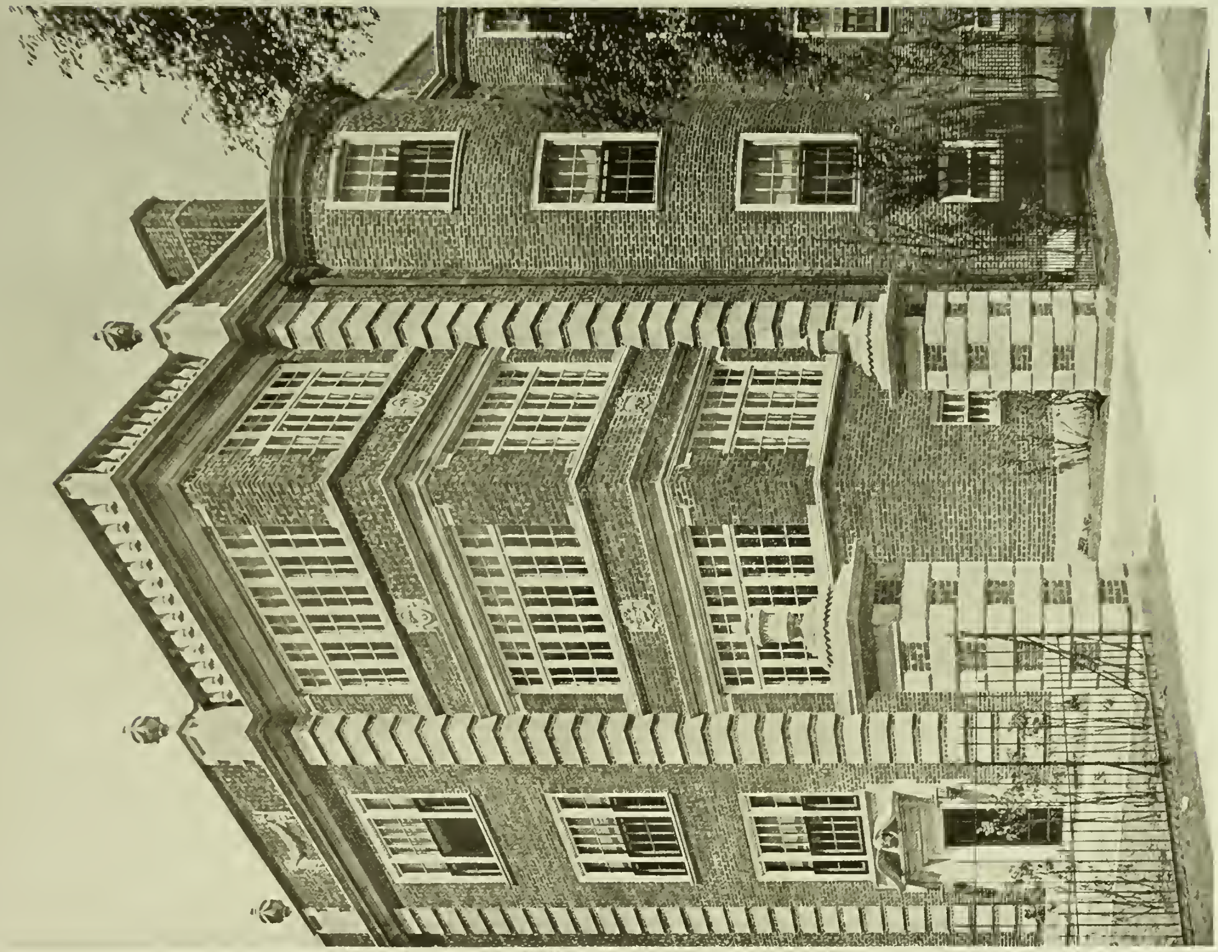
TYPICAL FLOOR PLAN

LOCHBY COURT APARTMENTS, SHERIDAN ROAD, CHICAGO, ILL.

RICHARD E. SCHMIDT, GARDEN & MARTIN, ARCHITECTS



DETAIL OF CENTRAL PAVILION AND ENTRANCE



DETAIL OF PORCHES AND SIDE ENTRANCE

LOCHBY COURT APARTMENTS, SHERIDAN ROAD, CHICAGO, ILL.

RICHARD E. SCHMIDT, GARDEN & MARTIN, ARCHITECTS

ENTRANCE FRONT

THE FREDERICK DOUGLASS SCHOOL, WALNUT HILLS, CINCINNATI, OHIO

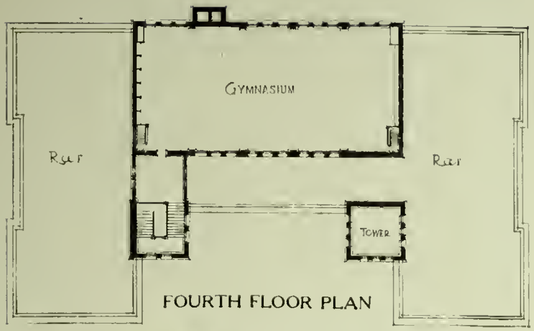
GARBER & WOODWARD, ARCHITECTS

DETAIL OF MAIN ENTRANCE

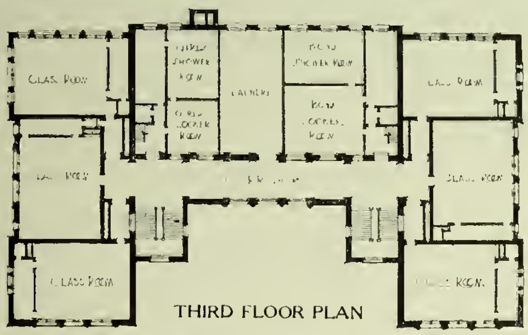
REAR ELEVATION

THE FREDERICK DOUGLASS SCHOOL, WALNUT HILLS, CINCINNATI, OHIO

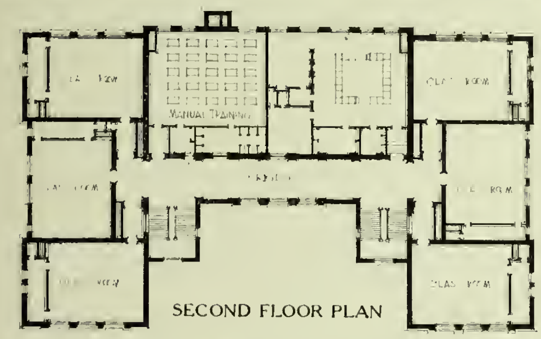
GARBER & WOODWARD, ARCHITECTS



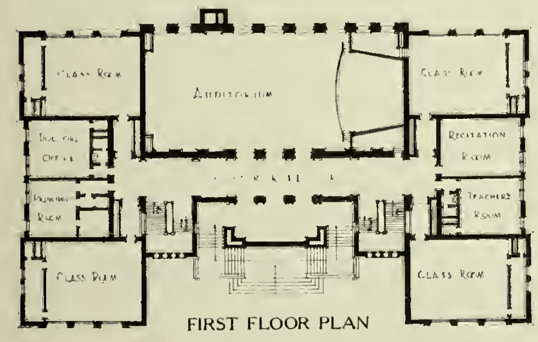
FOURTH FLOOR PLAN



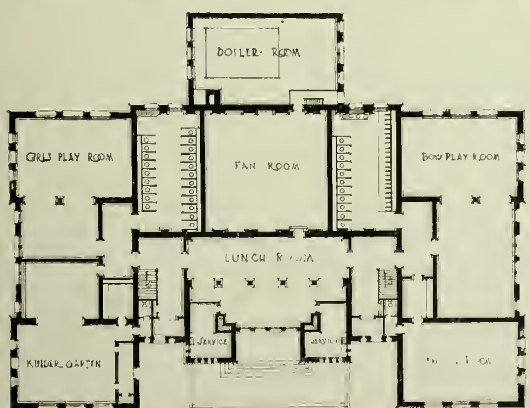
THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

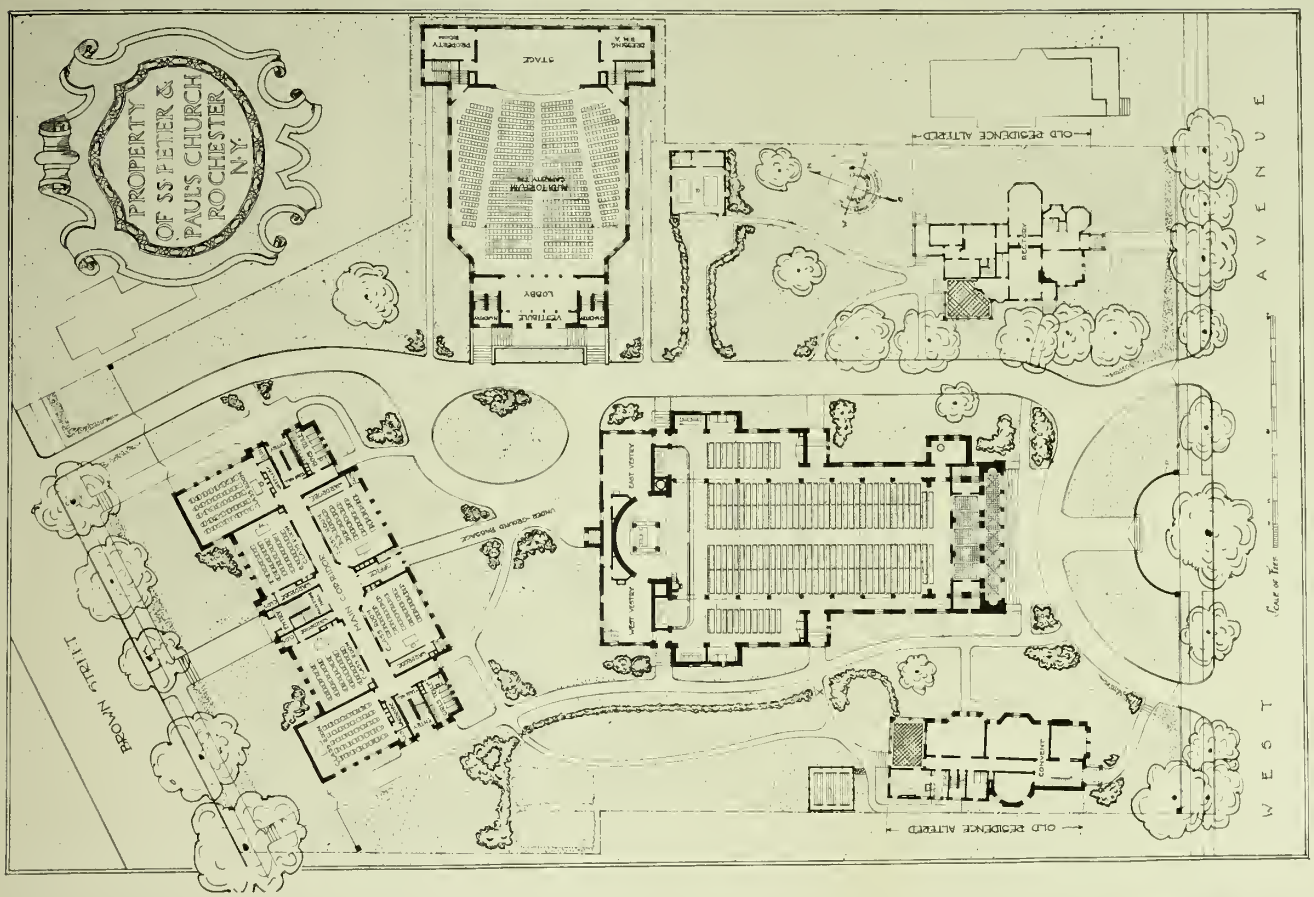


BASEMENT FLOOR PLAN

DETAIL OF TOWER AND APPROACH

THE FREDERICK DOUGLASS SCHOOL, WALNUT HILLS, CINCINNATI, OHIO

GARBER & WOODWARD, ARCHITECTS



PLAN OF COMPLETED GROUP

MAIN FACADE

SS. PETER AND PAUL'S CHURCH, ROCHESTER, N. Y.

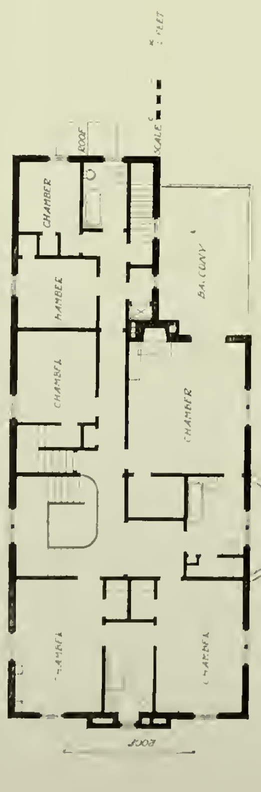
GORDON & MADDEN, ARCHITECTS

GARDEN FRONT

HOUSE OF ARTHUR P. DAY, ESQ., HARTFORD, CONN.

SMITH & BASSETTE, ARCHITECTS

STREET FRONT



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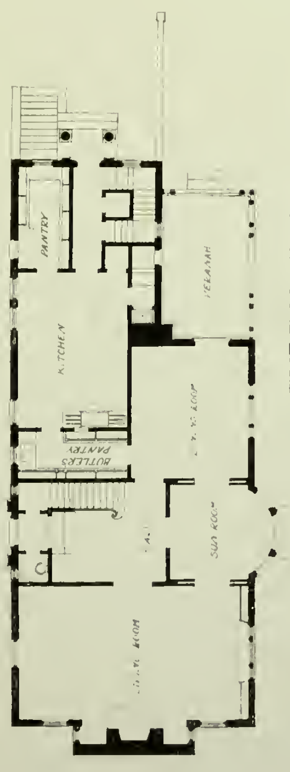


FIRST FLOOR PLAN

ENTRANCE DETAIL

HOUSE OF ARTHUR P. DAY, ESQ., HARTFORD, CONN.

SMITH & BASSETTE, ARCHITECTS

VIEW LOOKING TOWARD HORSE BARN

VIEW LOOKING TOWARD COW BARN

FARM BUILDINGS OF PERCY R. PYNE, ESQ., BERNARDSVILLE, N. J.

ALFRED HOPKINS, ARCHITECTS

See page 94 for floor plans

TEA HOUSE

FARM COTTAGE AND PUMP HOUSE

FARM BUILDINGS OF JACOB SCHIFF, ESQ., RED BANK, N. J.
E. HARRIS JANES, ARCHITECT

Farm Buildings, Estate of Jacob Schiff, Esq., Red Bank, N. J.

Modern Farm Buildings.*

CONCLUDING PAPER.

A TREATISE ON THEIR DESIGN, PLAN, AND EQUIPMENT.

By ALFRED HOPKINS.

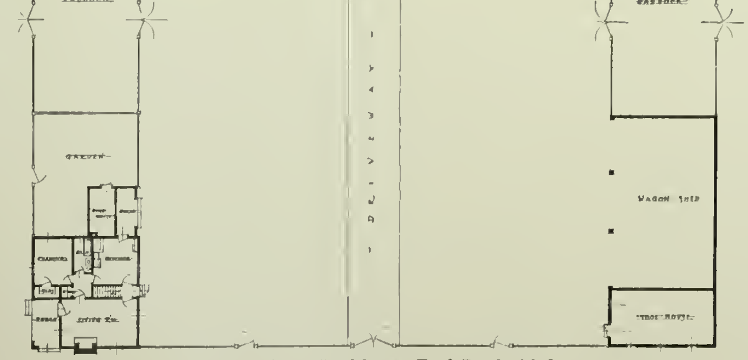
Architect and Author of the Work, "Modern Farm Buildings."

IN the preceding article on the requirements of farm buildings the writer considered the cow barn in detail, since it is perhaps the most important of the group from the standpoint of sanitation and because it probably presents more difficulties to the designer than any of the other buildings in arranging the floor space and providing for the cattle which on most farms constitutes the important portion of the live stock.

It was specially pointed out that the cow barn should be amply provided with windows to give fresh air in summer and to take advantage of the sun in winter. It will be furthermore found advantageous to fit all the windows with blinds. These should be hooked in and not swung. The interior sash should be entirely removed in the summer time and the building kept dark by closing the blinds. The only way to keep flies out of a barn is to keep it dark — screens are useless. Fig. VII shows a desirable type of window and blind suitable for the cow barn.

The interior woodwork of the cow barn is best painted with enamel paint; white though it soils quickly is preferable for the simple reason that all dirt may be readily seen. It is a great advantage to enamel the walls and ceiling, though it is better not to paint the cement dado, as this frequently wants more vigorous scrubbing than a painted surface would allow. The cement plastering, though sometimes unsightly at first, improves in appearance with age and use. The iron work for the stalls can be painted any color desirable, but it is well to brighten them with aluminum, which is light in color, and though more easily rubbed off than paint, is more easily renewed.

The plumbing for the cow barn is very simple and has been worked out to a perfectly satisfactory solution. All bell traps should be extra heavy and well galvanized. The ordinary cast-iron trap rusts and is a nuisance. The soil line from all bell traps should invariably be of heavy iron pipe. Outside of the building tile pipe may be used, but it is poor practice to use this within the building. The soil lines from the gutters should run to an outside mason's trap, and this line can take the outlet from the trough and the bell trap in front of the trough. The outlet to the watering trough should always



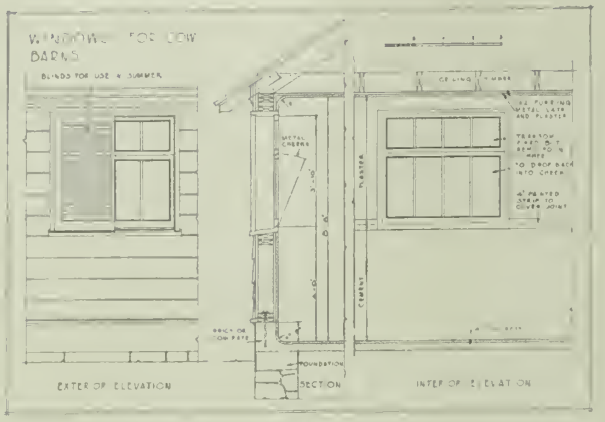
Plan of Farm Buildings, Red Bank, N. J.
E. Harris Janes, Architect.

*The first paper on this subject appeared in THE BRICKBVILDER, March, 1914.

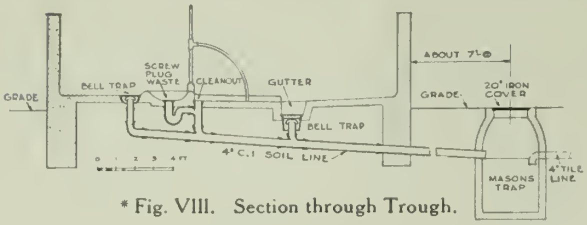
be trapped. This outlet should not be less than 4 inches in diameter, and a deep seated plug is necessary to keep the cows from pushing it out. Fig. VIII will make this clear.

The leaders to the building should never be connected to any soil line, as a stoppage at the end of the leader line will cause the water from the roofs to back up and empty itself through the nearest bell trap on the stable floor. The leaders must always run into a separate system of their own. The supply at the end of the cow trough should never be less than 2 inches. Adequate outlets for hosing down should be had in all parts of the building.

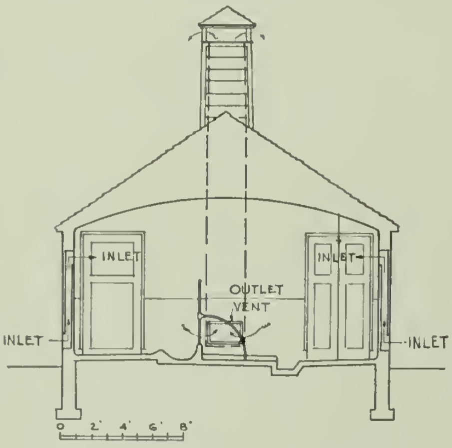
The subject of ventilation is a prime one, for no matter how carefully an architect may plan his ventilating system, it is almost impossible to find cattlemen who will take the trouble to acquire sufficient knowledge to use it intelligently. The theory of all exhaust systems of ventilation is to take the air out at the bottom of the room and let it in at the top. This management of the air currents creates a circulation absolutely necessary for ventilation. Professor King has worked out for the stable a system of ventilation which is generally known by his name. The outlet vents are seldom made less than 2 feet square, which gives an area of 4 square feet, and this is considered sufficient for twenty cows. This duct ought to be 30 feet from the floor of the cow barn to the top of the duct. If lower, this ratio must be increased. This duct can be in one end of the cow barn as shown in Fig. IX, which is the best place for it in a small stable, with a single row of cows. In a stable with a double row of cows an excellent contrivance is an outlet duct of the sliding type which will come down in the central passageway, where it is placed at night when ventilation is most needed, and in the daytime is pushed up to the ceiling. Additional outlet ducts may be run from the side up the slant of the roof and into the ventilator on the roof as shown in Fig. X.



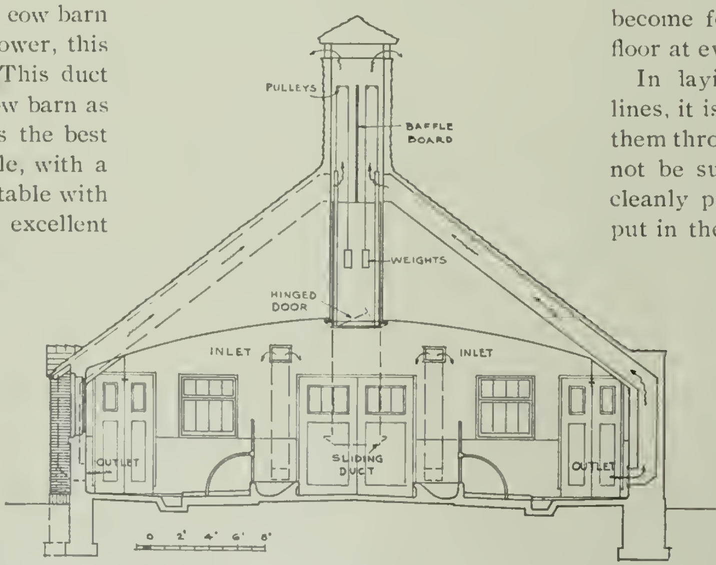
* Fig. VII. Detail of Windows for the Cow Barn.



* Fig. VIII. Section through Trough.



* Fig. IX. Outlet Duct at End of Barn.



* Fig. X. Outlets at Sides Terminating in Central Ventilator.

** Reproduced from "Modern Farm Buildings," by Alfred Hopkins. McBride, Nast & Co., Publishers.*

The inlet ducts should be placed so that they are equally distributed, and their combined area should be equal to the area of the outlet vent. The inlet vent should be open at the bottom on the outside and at the top on the inside. This prevents the air blowing directly through it into the building, as would be the case if the opening on the outside was opposite that on the inside.

There are differences of opinion as to artificial heat in the cow barn. There is no doubt that heat is desirable on very cold nights. The great trouble with using artificial heat is that the stableman is liable to keep the barns at a temperature comfortable to himself, which is too warm for the cattle. The barn should never be heated to over 55 or 60 degrees Fahrenheit. The great advantage of artificial heat is seen in the ventilation. It allows the taking in of a greater amount of fresh air without chilling the stable. Artificial heat, then, should always mean more ventilation, not less.

The most satisfactory way to remove the manure is by overhead trolley, and the track should be hung 2 feet back of the gutter, which brings the carrier in exactly the right position for convenient transfer of the manure from the gutter to the carrier. The carriers are much better and cleaner than the old system of the cart, the wheels of which, if they become foul, grind the dirt into the floor at every revolution.

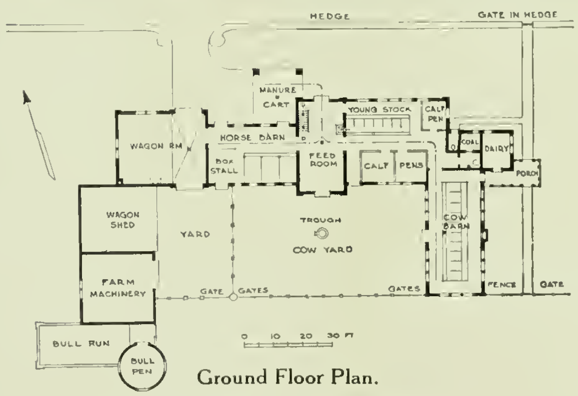
In laying out the manure trolley lines, it is frequently desirable to take them through the feed room. It must not be supposed that this is an uncleanly process, as the manure once put in the carrier stays there and the car and contents can pass through the feed room without fouling it. It is almost always more direct to trolley through the feed room than to go around it, and it is well to remember that simplicity in doing the work throughout the whole group of farm buildings is the most important factor in having it well done. While the horse manure and cow manure can be tracked to the same ultimate place, the cow manure should not have to go through the horse barn to get there, or *vice versa*.

The place for unloading the carriers should under no circumstances be near the milking cow barn, but as far away as possible. All manure draws flies; horse manure breeds them. Absolute cleanliness in this regard is important, for the milking barn can have nothing dirtier in it than the fly. The openings through which the manure trolleys pass should never be narrower than 4 feet, and the trolley will not run on a track whose curve has a radius of less than 3 feet.

Many farmers prefer to save the liquid manure, and in order to do this, it is necessary to conduct the drains from the gutters in a separate line to the liquid manure pit. All other floor drains should be taken out of this line. In large herds, say forty milking cows or upwards, it is always desirable to collect the liquid manure in a separate pit. In computing the capacity of the liquid manure pit, it is well to allow about 400 gallons per cow.

Wherever possible, all the stable's sliding doors should invariably be used in preference to swinging doors. Swinging doors are a nuisance in a stable. The large hay barn door may sometimes swing out, but even here the sliding type of door is better. It is necessary to have a heavy stop for all sliding doors, which can be admirably made upon the floor in concrete, as shown in Fig. XI. All outside doors are best glazed, so they will let in as much light as possible; and inside doors should be glazed as well, as it is convenient to see from one compartment to another. No door for cattle should be less than 4 feet in width, and a 6-foot door will enable two cows to go out at a time. The lower half of a Dutch door should be 4 feet 6 inches high for horses and 3 feet 8 inches high for cows. All Dutch doors should open out and hook back flat against the building. All door frames occurring in rooms with concrete floors should have their frames cut off 6 inches above the floor, and the form of the frame carried out in concrete.

View from Cow Yard.



Ground Floor Plan.

Farm Buildings of S. T. Peters, Islip, L. I.

Alfred Hopkins, Architect.

Garage on Estate of S. T. Peters, Islip, L. I.

Doors are made 7 feet 6 inches high for horses, 7 feet is high enough for cows; the large hay doors are usually made 12 feet wide and 14 feet high. In machinery rooms, for the storing of farm machinery, doors 8 feet wide by 8 feet high are usually sufficient.

With regard to the other buildings of the farm group, the hay barn is perhaps the most interesting to the architect, as it is the largest structure and dominates the group. There is no feature to this building which is specially important, except that it be framed in such a manner as will allow the hay fork to run continuously from one end of the building to the other. Fig. XII shows the detail of the framing as it is usually carried out, and is sufficient for all spans under 50 feet. The trusses should be placed from 14 to 16 feet on centers. It is also quite practicable to fill the hay barn from either one or both ends, in which case the hay track is projected through the end of the building some 8 feet and a door not

Left Wing of Group.

Ground Floor Plan.
Farm Buildings of Percy R. Pyne, Esq., Bernardsville, N. J.
Alfred Hopkins, Architect.

smaller than 6 feet wide and 8 feet high is located just below it. This door is best hung to slide down, and should be weighted with counterweights. The proper ventilation of the hay barn is necessary, and in addition to the usual central ventilator, louvres should be placed underneath the eaves and at the gable ends. These should be arranged to be closed with batten doors in the winter time. In computing the capacity of the hay barn, it is usual to allow for each animal two tons of hay per annum, and for every ton of loose hay, 500 cubic feet of space. Baled hay takes up approximately one-third the room which loose hay does — 150 cubic feet per ton of baled hay as compared with 500 cubic feet per ton of loose hay. Baled hay has the immense advantage of greatly reducing the fire risk, as it will not burn, while there is scarcely anything more inflammable than loose hay in bulk.

The farm stables should include a general wagon room, where the better class of vehicle may be kept; the horse stable, a place for harness, either in the stable or in a separate harness room, and for the farm wagons ample accommodation in the way of sheds, a machinery room, and tool room. The wagon room is an enclosed room for an express wagon, farmer's buggy, etc. It is well to have a chimney in this room, so that a stove may be used in the winter. This is the only room of the horse department of the farm barns which need be heated. It should never be less than 24 feet in depth, and 30 feet in width is a minimum dimension. In planning for a number of vehicles, it is usual to allow 7 feet for the width of each wagon and 11 feet for length. In close placing of many wagons, it is possible to get the average width down to 6 feet 6 inches per vehicle. There should always be a place for washing the wagons in the wagon room, preferably opposite the entrance, and for convenience there is nothing equal to the overhead washer.

In the horse barn, as in the cow barn, all mouldings or projections of any kind should be avoided. The horses may be arranged in double or single rows. The single row of stalls is very much better, as it enables one side of the stable to be thrown open to the sun and air. The type of stabling which has a passage in front of the stall, though requiring a larger building, is an excellent idea, giving more ventilation and comfort for the animals than any other kind. It keeps the horses away from the light, which frequently blinds them, and makes a cooler and better lighted stable. The windows in the horse stall where the stall is against the outside wall should never be lower than 6 feet 6 inches.

The manure trolley is advisable in the horse stable, and the ventilation should be carefully worked out as in the cow barn. Usually a high ceiling for the horses is desirable. The gutters to the stalls are always shallow and their corners rounded, exactly the reverse of the cow stall gutters, and, above all, open, for the covered gutter is hard to keep clean.

The simplest possible stall partition is merely a pole hung between the animals.

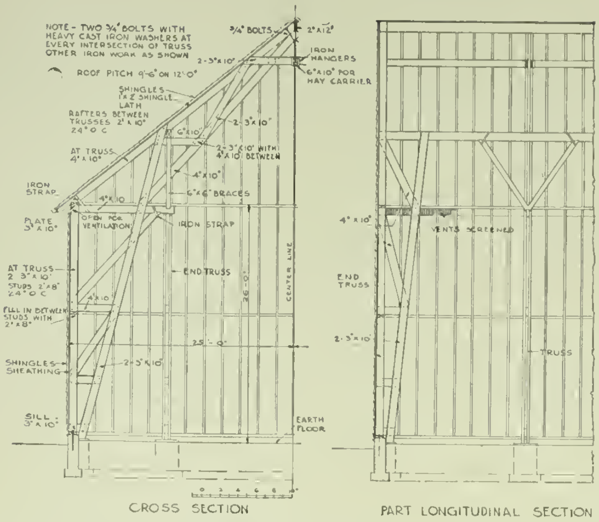
This has been used in England for a long time, but it seems impossible to adopt such a stall here. The rigid stall partition is consequently generally used. The stalls are usually 9 feet in depth,

Entrance to Hay Barn Opposite Yard.

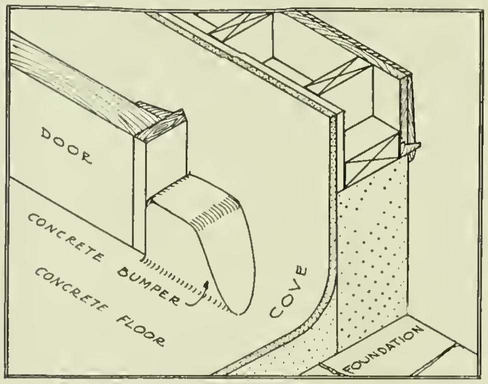
though a shallower stall of 7 feet answers all requirements and allows more of the horse to be seen. Stalls can vary from 4 feet 6 inches to 5 feet in width, and there is nothing in the superstition that a horse will cast himself in a stall which is between 4 feet and 5 feet wide. Where few horses are provided for, there is no stall equal to the one 6 feet in width. A 6-foot stall is wide enough to allow cleaning or harnessing the animal in it. Hay is best fed upon the floor, and no hay rack is necessary.

The farm horse usually does well on a concrete floor, but where there is a prejudice against it, the wooden slat floor with an iron pan below is the best type. The pans should be connected with the water system so that they can be flushed out. Stalls with wooden slats have the advantage over the concrete, that the urine drains out of them more quickly, and the bedding is drier in consequence. A cork brick for the floor is frequently used, and while it does not drain off as rapidly as the slat floor, it is warmer than the concrete and is to be preferred on that account.

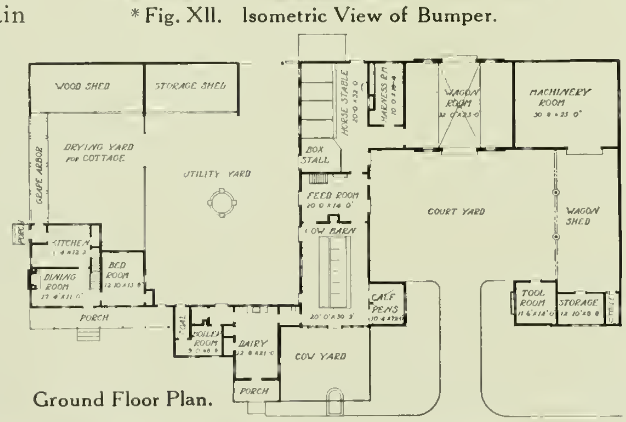
A feed room for the horse stable is desirable. It is better to have all hay and grain come into the feed room in preference to the stable. The practice of storing hay above the horses, and throwing it down into the stable through the ventilator, is bad.



* Fig. XI. Detail of Framing for Hay Barn.



* Fig. XII. Isometric View of Bumper.



Ground Floor Plan.

Farm Buildings of Clifford Brokaw, Esq.

If hay has to be kept over the horses, it is better to have no communication between the hay loft above and the stable below.

A shed is a place for the storage of all farm wagons, carts, extra tongs, shafts, and the various things valueless and valuable which accumulate in the practice of agriculture, and in any farm group, no matter how large, there is seldom shed room enough. The shed should never be less than 24 feet deep, and the supports for the roof are best as few and as far apart as possible. The shed need not be over 9 feet in height, and 8 feet 6 inches is usually all that is required under average conditions. It is inexpensive and often desirable to have a loft over the shed for general storage. The hay barn can be made high enough to store the hay in a second story, leaving the space below for shed room, and in small farm groups this is an economical way of obtaining such space.

In connection with the shed and generally at one end of it a convenient place is found for the storage of all farm machinery, which is used only for a short time during the summer, and when not in use, is best kept under cover in an enclosed room. It is similarly desirable to provide a small room for the storage of tools, hoes, rakes, spades, and other small farm implements.

Farm Buildings of Clifford Brokaw, Esq.
Alfred Hopkins, Architect.

* *Reproduced from "Modern Farm Buildings," by Alfred Hopkins. McBride, Nast & Co., Publishers.*

The Professors and the Profession.

By ALBERT KELSEY, F.A.I.A.

I HAVE hesitated over the selection of a title for this paper, feeling, after having listened to a discussion which took place recently before the Philadelphia Chapter A. I. A., on the relation of the profession to the schools, led by Professor Laird of the University of Pennsylvania, and debated by Mr. C. C. Zantzinger, chairman of the Institute's Committee on Education and by Mr. Henry Hornbostel, that it should have been "The Profession *vs.* the Professors," or even "The Profession without the Professors," though I confess no revolutionary ideas, such as these tentative titles convey, ever occurred to me until then, having, on the contrary, theretofore felt that these two groups of sincere and ardent workers were supplementing one another's endeavors in perfect harmony. And even now, notwithstanding the eminence of the debaters and their divergent and startling points of view, I mean to ignore any spirit of rivalry or antagonism which may exist, still believing, as always, that for the average student regular and methodical instruction by a well-organized and permanent staff is better and productive of surer results than any intermittent, offhand teaching, no matter how brilliant, by architects in active practice. On the other hand I cheerfully concede that the presence of an architect, now and then or at regular intervals in the lecture room or leading a criticism is much to be desired. But I cannot for a moment admit that such a man's time, for such fragmentary and often too uncoördinated instruction is worth more than that of a professor permanently in charge. To make such a claim in comparison with the services of a professor who has patiently and laboriously built up, watched, and studied a school's growth, day by day, and month by month, for years is obviously absurd.

At the meeting of the Philadelphia Chapter referred to, Professor Laird felt that the profession was not doing as much as it might for the schools, while strange to say, no one rose to ask what the schools were doing for the profession in the sense of educating the public, establishing ideals, and raising standards. Indeed, both factions seemed to regard these institutions as mere training schools for the young, overlooking the possibility that from such an eminence a certain impartial, contemplative, and scholarly influence might radiate and exert a potent influence upon both the public and the profession.

There were occasional flashes of idealism in Mr. Hornbostel's remarks, though on the whole he took a sordid practical point of view, admitting that the schools were at last turning out excellent draftsmen, though giving but grudging credit to the pedagogues for this result, and by way of constructive criticism thought that the schools might increase their usefulness by a greater liberality in the conferring of honorary degrees.

Mr. Zantzinger who, recently in the discharge of his official duties had made a tour of inspection of the leading schools of architecture, referred to "instructors more or less incompetent" and to the growing practice of "importing Frenchmen with foreign points of view" to teach design, and made several thoughtful recommendations, the most radical being that the schools should extend the length of their courses and that the teaching of design should be confined to American architects in actual practice, like Mr. Hornbostel.

In short to meet the commercial and intensive demands of the day seemed both the burden and the limit of desire of both factions. They said not a word about architecture as a fine art — architecture that will endure. Nor did they even refer to real architecture, either commercial or spiritual (I use this last word in the French sense), but confined themselves to paper architecture,— training on paper,— to the plan-factory and competition-mill, and to bigger and stronger schools in which to grind out more, quicker, and sharper draftsmen to feed into omnivorous office hoppers where whole departments are set aside for gladiatorial competitions, and where the architect himself often says, "the execution of buildings is left to the office, that does not interest me."

Now, in all this I see a splendid opportunity for some school to try and stem the tide. Dr. Laird explained that it had taken twenty years for the schools to get their pace, and now having got it, let us inquire what one might do, on its second wind. The machine being on a good going basis, those in charge now have time to look about for new worlds to conquer and, moreover, time to estimate, with a fair degree of accuracy, the esteem in which their graduates are held by the general public. In short, how does the public rank an architect? Usually as a more or less incompetent business man; often as an impractical dreamer, but seldom as a practical artist. I think this is both the usual point of view and a very just point of view. Well, "the public be damned." Let us seek the judgment of the cognoscente, let us go to art circles and to realms of intelligence, where certainly we will get our due. Surely that will be the great test; and what do we find? That the oldest and most active Academy of the Fine Arts in the country is unappreciative as are the directors and curators of most of our other art schools and museums; while the authorities of the next great World's Fair have deliberately and purposely ruled to exclude an architectural exhibit from the Department of Fine Arts! Likewise college presidents, litterateurs, editors, musicians and actors, and other thoughtful men do not seem to appreciate us. This is all very sad but there must be a reason for it. Perhaps it is because the profession has not made good, or perhaps it is because there is no disinterested and recognized authority to speak for us. Let us pursue this comforting thought. Possibly if in one or more of our colleges there was a professor of architecture unhampered by the desire to follow the wishes of a money-making profession, if there was a man thundering truths against the commercialization of architecture to the entire nation, while extoling "the glory that was Greece and the grandeur that was Rome" through the medium of the best popular magazine and from the lecture platform (a fully accredited professor doing as much to popularize good architecture as an Elmendorf or a Burton Holmes), a public sentiment might be formed and an incentive for more beautiful and more finished architecture might be created, thereby making some worthy practitioners deserving of the consideration they now expect but seldom get.

A Charles Elliott Norton, a Goldwin Smith, a modern John Ruskin or a Dr. Elliot commanding the confidence and respect of the public because of his academic position and rugged independence would exert an authority and an uplifting influence no organization of practicing architects could hope to equal. Why? Because talking down from the heights so far removed from the possible job-getting and possible job-giving world, he would command an attention and a respect which is given only to those who are intelligent, sincere, and absolutely disinterested.

It may be that it will require a retired architect, who has been used to meeting the fierce conditions of actual practice, used to real architecture, as well as paper architecture; who understands climatic conditions, who knows materials and the action of the weather upon them, who understands their artistic juxtaposition and treatment; who knows besides the theory of ornament, the right tricks of undercutting and high lighting, and other variations necessary for the successful and effective use of a well known classical motive in different positions and under different conditions; who understands color and especially the difficulties and differing conditions to be fought when using stained glass, etc. Who, in short, is equally a cosmopolitan in the use and knowledge of all the styles, as in the use and knowledge of all the crafts. It may be, and perhaps is, expecting too much of a pedagogue to know and feel and insist upon all the refinements that went into the work of classical antiquity and that also goes into the best work of to-day, but at least he can lead his followers, in and out of school, in the right direction. Surely, without holding himself too much aloof he can maintain his dignity and keep constantly in touch with the active work of the profession. He can continue to advise those about to build, cautioning them in no uncertain terms that the finest architecture is not as apt to result from a competition as by direct appointment; and then, if overruled, he can point out, very clearly and firmly, that many of those who are best at winning competitions are not always best at executing buildings! That, therefore, limited competitions are desirable, but not only limited in the present recognized sense, but more especially that they should be limited — for instance, to architects who have not more than two or three partners-of-convenience in widely separated cities, to architects with permanently established offices, and to those whose competition-mills are not taxing the faking capacity of their "hands" by "manufacturing" too many competitions at one and the same time. Also a thoughtful college professor once having reached the necessary eminence, will not be required to give much time to mere routine school work, but will have leisure, and above all the eager desire and keen wish to visit and study the buildings already executed by those he proposes to invite; and will examine their buildings with such care as to know without any possibility of doubt whether the execution is better or worse than the original drawings promised, whether they have settled or cracked, whether they are good in detail and color, texture and finish, and above all whether the "winning partie" has been adhered to and if so how it suits the actual needs of those using it. He will make up his mind whether a genius capable of designing and building a stupendous stunt, dwarfing a state capitol, and throwing a whole city out of scale is really serving the community to the best advantage, and so on, *ad infinitum.*

Proud of his influence and renown, his university will give him his sabbatical year abroad, so that he may refresh himself also by actual contact with the best the past has produced. Thus once every seven years he will come home more and more convinced of the fact that the bulbous domes, tapering towers, fair temples, and wondrous tombs of the Mogul Empire still display an exquisite perfection of workmanship and an infinite variety of design which is neither taught nor practiced to-day; that the almost unknown ruins of Indo-China disclose grand flights of imagination, a type of architectural sculpture, a richness of ornamentation, a truly fine contrast in scale, a nicety of construction neither taught nor practiced to-day; that the mosques and minarets of Mohamet, strewn the length of the Mediterranean, still plainly show evidences of patient study and careful execution neither taught nor practiced to-day; while classical antiquity with its more exquisite art — which we profess however to venerate, study, and emulate; he will then see that in reality, as it is at present taught, furnishes us with only a box of tricks, or a book of rules which we use in the same uninspired manner we use a Carnegie handbook, or a building trades pocketbook. He will see with horror that we are willing to take it all for granted, and swallow it whole, without understanding or appreciation. And, moreover, that there really is a chance for the pedagogue to kindle the flame and keep it burning for the benefit of the public, the refreshment of the profession, and the inspiration and enlightenment of the student.

Then perhaps he will devise a way to make his advanced students see as he sees, and feel as he feels — by requiring them to study classical forms in a dark room — by passing their hands over certain casts and describing what they feel; so that they may thereby become excited and aroused to some real understanding of Greek refinement, and the true spirit of Greek art; thus teaching that purity of form is not limited, nor archaic and obsolete, but universal and eternally young.

As to his particular concern for the undergraduate body and scholarship holders at home and abroad, he will give them incisive and searching criticisms on the work of the day, pointing out its promise and its failures, in vivid unforgetable terms; and will himself come to the conclusion that the great demand of the day, as well as for so long as this country continues to grow and prosper, will be for a utilitarian and more or less commercial architecture. And then he will gradually rearrange his courses so that the three or four year courses, and special courses, shall only be courses in commercial architecture; so that those continuing for two or three years longer, either at college or under its influence in travel, study, and research, either at home or abroad, alone shall get the most coveted degree of all — that of architect! Thus by this or some similar method he will establish in the eyes of the public, what to my mind is the matter of very greatest importance to-day, viz., that there are architects and architects.

While I have great respect for the opinions and sincerity of the gentlemen who took part in this debate, I do not at all agree that a more promiscuous distribution of degrees will in any way help present conditions. True, we find common ground in the fact that there are already too many young architects honored with degrees of the dental and veterinary caliber, but differ as to the proper number of elderly practitioners to be singled out and honored. It being my contention that already some have been so honored beyond their deserts; which prompts me to remark, *en passant*, that I once heard some cultivated college graduates in an exclusive club say that they could not see why an architect should receive a degree any more than a policeman! Special point is given to the story by the fact that they were referring to a Ph.D. which had that day been conferred on the late Charles F. McKim, the most conscientious and most highly cultivated architect our profession has thus far produced; showing conclusively that a truly great architect and his work meant little, if anything, to a rather superior group of men.

Now, I contend, it is for the college professor, first through the students and the faculty, and then through the press and the public, to create a better general understanding of what an architect really is; and if such a cult or caste as I have suggested could be created, made up of men thinking in different terms from those in the commercial group — an aristocracy of architects whose attainments would be understood and respected by all men of education — then the degree of architect would mean much; but so long as the present promiscuous system of associating obscure and rapacious commercial architects with brilliant soldiers-of-fortune prevails and is encouraged by those in charge of our leading schools, and so long as one and the same office produces buildings of varying standards, good, bad, and indifferent, according to the ability of the designer temporarily employed, or according to the pressure put upon the office and the eagerness of its chief to expand business, so long is it going to be impossible to impress the public with the sincerity of architects and to fool the people into believing that we are "holier than thou" artists and scholars, untainted by the commercial rapacity of the age. If, however, the heads of the principal schools will set about to produce highly trained artists and scholars — uncompromising and stanch — then within a short time we shall have a select group of architects, peculiarly fitted to design and execute the great religious and secular buildings of a new land, whose names will live long after we are dead and gone, not because of the volume of work they produced nor the recognition they exacted, but because of their steadfast and patient and self-sacrificing devotion to an ideal. And it is only because such men in the past lived and struggled, that we of to-day can raise our tired, jaded eyes to gaze, now and then, here and there, upon a truly sublime structure which, the more frequently we view it and the better we know it, awakens in us an ever-increasing feeling of restful awe and genuine admiration.

EDITORIAL.

A FEW months ago we brought to the attention of our readers the general dissatisfaction which is felt with present methods of estimating and their resultant effect on competitive bidding, calling attention at the same time to the efforts which are being made to establish an American System of Quantity Surveying, which it is claimed will be effective in bringing about better conditions of estimating, equally beneficial to owner and contractor. We published in recent issues of THE BRICKBVILDER expressions of opinion from chapters of the American Institute of Architects and from individual architects, which came to us as a result of our presentation of this subject. Their letters indicated that they recognized the need for improved methods in estimating, and that they were agreeable to welcome and further any sincere efforts which were made to attain this end.

The advocates of the Quantity System are constantly enlarging their sphere of influence, and as the advantages to both owner and contractor become more apparent they are arousing the interest and securing the support of the architectural profession. This is, however, as it should be, for architects should be eager to support and adopt any measure which will effect a clear and just understanding between owner and contractor. In the architect's professional employment he assumes the unique and exceptional legal combination of an agent for the owner and at the same time arbitrator between the owner and the contractor. Such an exceptional duty makes the offices of an architect particularly difficult, and it is evident that anything which can be construed to lessen the difficulties which may arise in the fulfilment of his duties should be warmly welcomed by him. It is easily acknowledged that the chief disputes which arise between owner and contractor, and which require arbitration on the part of the architect, are due to misinterpretation of what the contract calls for, and in the settlement of charges incurred by extra work which are due in some cases to omissions in specifications and other causes directly chargeable to the architect, and in others of equal frequency, to express desires on the part of the client to include other items than those in the original contract.

The first reason for such misunderstandings, however, the Quantity System of Estimating as proposed would remove, for before completing the bill of quantities all omissions and other defects would be determined and cleared up, with the result that the documents when they reach the contractor will be as complete and accurate as it is possible to make them.

It is not so with plans and specifications, which may be, and often are, contradictory and capable of two or more interpretations. In such cases the bidder has forced upon him a condition which causes and encourages guesswork methods, as to what another person has in his mind, as to what he really means by certain lines and words, and occasions often arise when it is difficult, if not impossible, to determine what the true intention is until perhaps after the estimate has been submitted.

The bill of quantities carefully prepared will entirely remove this dangerous element of chance. It should be furnished to each bidder and contain everything which is essential for the contractor to have when making up his figures. It should be prepared by efficient men whose competency and integrity have been assured, and should further be guaranteed by them and made the basis of the contract equally with the drawings and specifications.

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PLATE ILLUSTRATIONS

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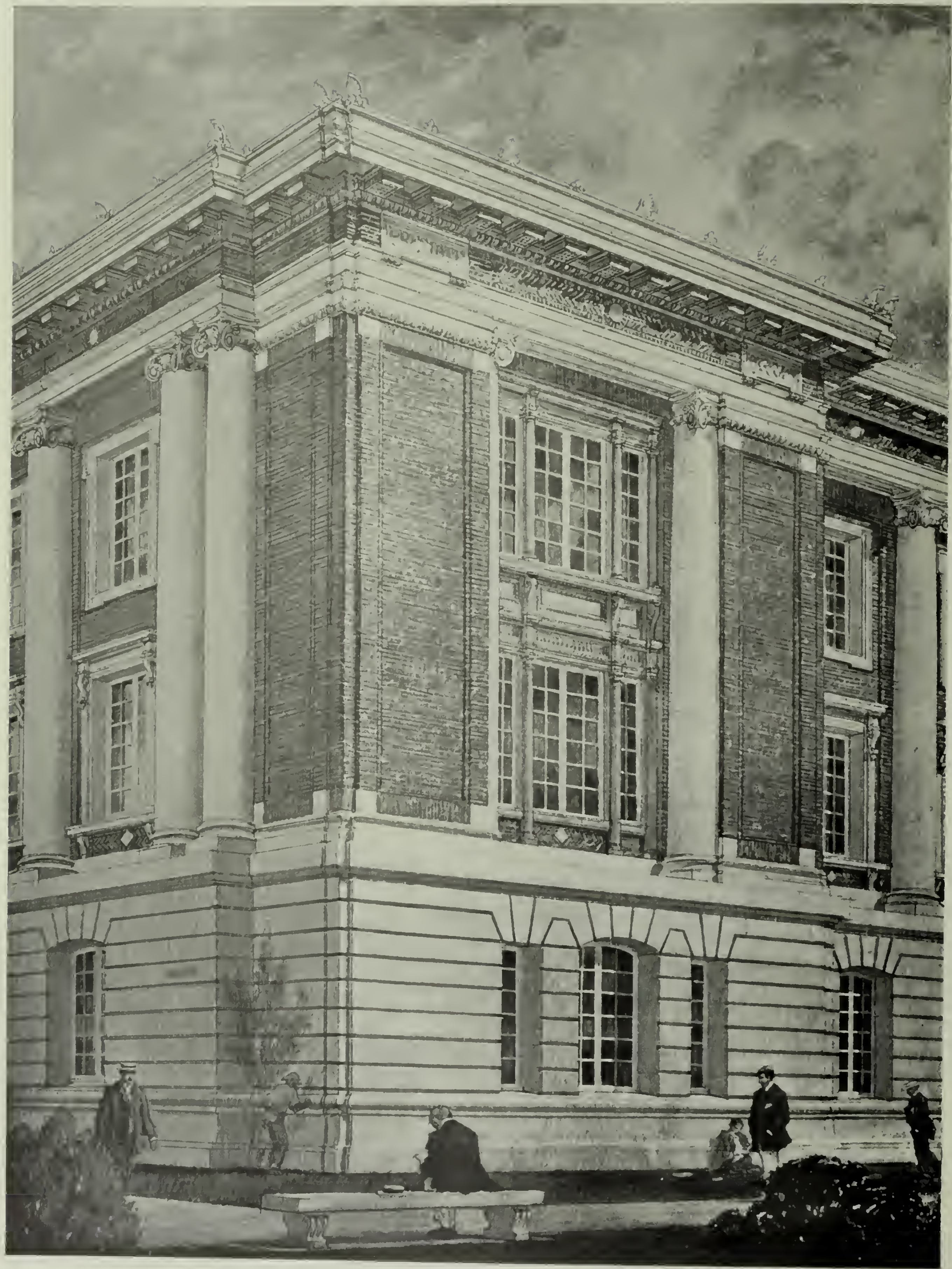


RENDERED DETAIL OF UNIVERSITY BUILDING IN SOUTH CAROLINA

ALFRED BUSSELLE, ARCHITECT
THOMAS R. JOHNSON, DELINEATOR

THE BRICKBVILDER

VOLUME XXIII MAY, 1914 NUMBER 5

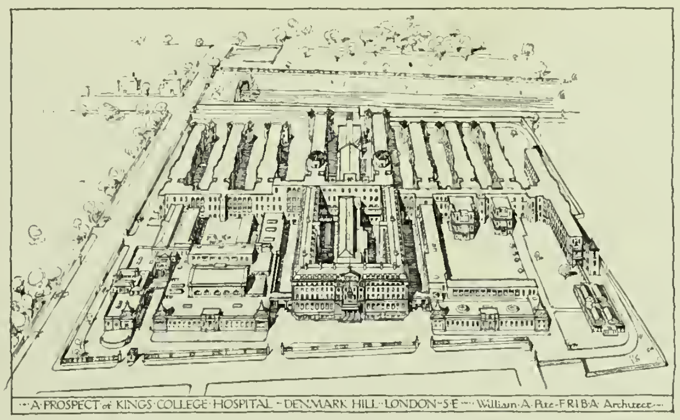
The New King's College Hospital, London, England.

WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

By R. RANDAL PHILLIPS.

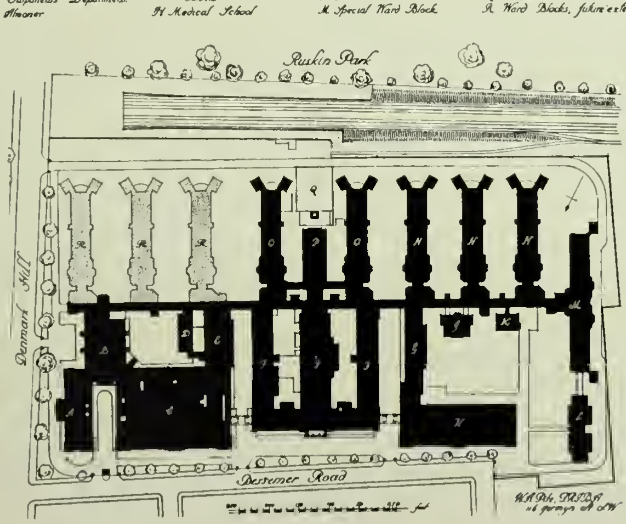
IT has long since been apparent that the public hospitals of London are not in positions best suited to the population they are intended to serve, for with the never ceasing growth of the metropolis there has been a corresponding migration from the central districts towards the outskirts. Twenty years ago a committee of the House of Lords went carefully into this subject and recommended that a process of decentralization should be followed whenever opportunity offered. The first institution to act on this recommendation is King's College Hospital; and others, including Westminster and St. George's, are preparing to do likewise. The conditions will be clearly realized if past history is surveyed. King's College Hospital, for example, when established in 1839 adjacent to the site now occupied by the Law Courts, was in the midst of the densely populated district around Clare Market. The clearance of this slum area, as part of a London improvement scheme, caused a migration of the former inhabitants, and as time went on the hospital found itself getting more and more out of touch with those who stood most in need of its succor and aid. About ten years ago, therefore, steps were taken towards removing the hospital to a district where it could render greater service. The committee of the House of Lords had recommended that at the first opportunity a general hospital should be built at Camberwell, on the southeast side of London, where a large and densely populated area remained unserved by any such institution; and to that location the authorities decided to transfer King's College Hospital. In 1904 a site on Denmark Hill was selected, and here the great new building has been erected. The site is in every respect an admirable one, comprising twelve acres, rising gently towards the south, and overlooking on this side a pleasant open piece of wooded ground called Ruskin Park. The site is almost rectangular, having a length of 1,000 feet and a depth of 500 feet.

When the removal had been decided upon, six leading architects were invited to submit designs, the plans of Mr. William A. Pite, F.R.I.B.A., being selected. Work on the site was commenced in 1908. In the following year His Majesty, the late King Edward VII (who took a keen interest in the hospitals), laid the foundation-stone, and the present sovereign, King George V, in company with Queen Mary, inaugurated the building in July last, so that altogether about five years have been taken in erecting the hospital. It is not, however, complete at the present time, as only five of the eight ward blocks projected in the scheme have been built, and work on the erection of the medical school and other buildings is still in progress.



Bird's-eye Perspective of Completed Group

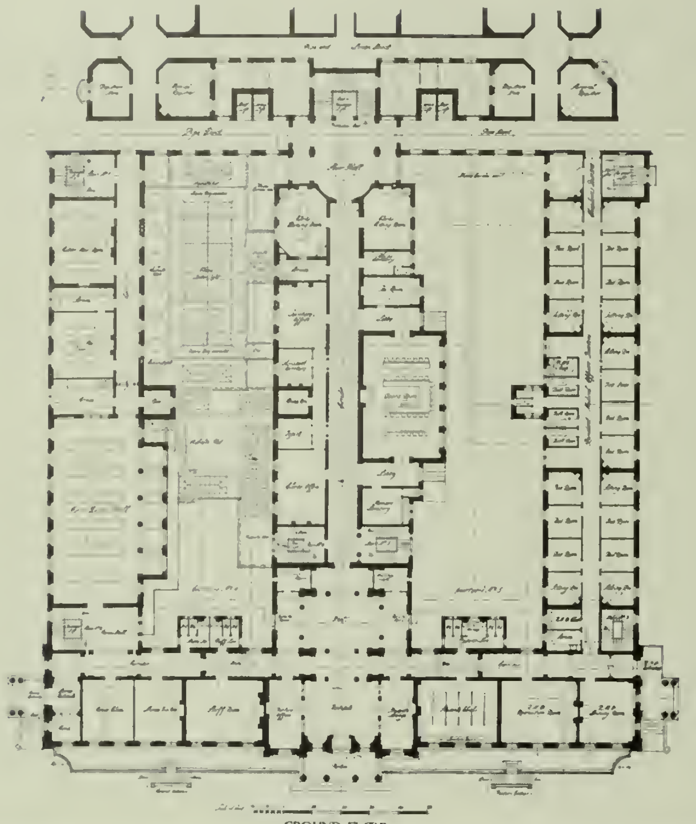
Casualty Department
Baths and Electrical Department
Outpatients' Department
Almoner
E Dispensary
F Administration Block
G Pathological and Post-Mortem Block
H Medical School
J Operation Theatres
K Gynaecological and Clinical Theatres
L Isolation Block
M Special Ward Block
N Two Storey Ward Block
O Three Storey Ward Block
P Chapel
Q Central Station
R Ward Blocks, future extension



Group Plan

As will be seen from the accompanying block plan, the hospital is practically divided into two parts by the central corridor (nearly 900 feet in length), the eight ward blocks being grouped on the south side of this corridor, while the administration block, the casualty and outpatients' department, and the medical school are arranged on the north side.

Administration Building. The administration building, centrally placed, has secretarial offices, board room, nurses' dining hall, and resident medical officers' quarters on the ground floor. The wards are worked from the first floor, where matron's, sisters', and nurses' quarters are provided, the floors above comprising bedrooms, bathrooms, and other accommodations. The nurses' bedrooms are 12 by 9 ft. At present their number is 188, but when the west wing is completed there will be 303. (The hospital at the present time provides accommodation for 320 in-patients, but eventually this number will be increased to 600, so that, adding the nursing and other staff, the total population of the hospital will not be far short of 1,000.) In the administration building the following will eventually be the proportion of nurses' rooms: bedrooms 303, bathrooms 50, toilets 42, boot-cleaning rooms 13, hair-washing rooms 6.



Casualty and Outpatients' Department. The casualty and outpatients' buildings on the east side of the administration building comprise five distinct departments grouped around a large waiting hall. These departments are, — casualty, baths and electrical, outpatients', almoner, dispensary. The casualty and outpatients' departments are close to the main road and are placed in juxtaposition on either side of an entrance court 40 feet wide, spanned by a glazed roof across the two main entrances. The casualty department provides for the immediate treatment of surgical and medical accidents, and includes, in addition to the usual accommodation, a 24-hour

General View and First Floor Plan of the Administration Building
King's College Hospital, London, England

observation ward on the first floor, comprising eight beds, each in a glass-screened cubicle. Here doubtful cases can be watched before being admitted to the wards proper. Similarly, a padded room (the walls and door being lined with rubber cushions) is provided for infuriated cases. In fact, throughout the building every detail has been studied with the object of securing the greatest convenience and safety in working and service.

The underlying plan of effective organization is even better illustrated in the outpatients' department, where, around the central waiting hall (capable of seating 500 people, for whose convenience a central buffet is installed, where refreshments can be obtained), the examining rooms, etc., are so arranged that, after having seen the doctor and received treatment or medicine, patients do not retrace their steps, thus enabling the work of the hospital to go on without disturbance. There are top-lighted corridors on either side of the waiting hall, that on the north giving access to the surgical consulting rooms, with operating theater, and that on the south giving access to the medical consulting rooms, throat and ear department, and children's department, in connection with which last it may be mentioned that there is a separate entrance for whooping-cough cases, just as special provision is made for the immediate removal of infectious cases to the isolation hospital. On the south side, too, on the first floor, is the dental department. Opening off the west end of the waiting hall is the women's and gynæcological department, which includes a large examining room having six undressing boxes, so that while one patient is being seen others may be preparing. In the baths and electrical department all kinds of baths are provided, — alkaline, lime and sulphur, vapor, douche, needle, as well as rooms adapted for X-ray and other electrical treatment. Finally, in this section of the hospital is the dispensary. This is very extensive, being adapted to serve both the outpatients' department and the hospital proper. Lifts communicate with the drug and surgical stores.

Medical School. On the other side of the administration building the medical school is now being erected. The medical school has always been a great feature of King's

Outpatient and Casualty Buildings

College, from the inception of the hospital in 1839, and the names of many eminent physicians and surgeons — Dr. Robert Bentley Todd, Dr. George Budd, Sir William Ferguson, and Lord Lister among them — are associated with it. Hence much importance attaches to the new building. It comprises a fine lecture theater, library, museum, and laboratories.

Main Wards. Wards are grouped on the south side of the main hospital corridor and, as already stated, five are built, but three more will eventually be added. The two middle blocks, called respectively the King Edward VII and King George V Ward Blocks, are of three stories, the others being of two stories only. All have blow-through arches at ground floor, to prevent the air becoming stagnant between the blocks. The accompanying plan shows the disposition. It will be seen that there is a cut-off lobby between the main corridor and the ward rooms at one end, and blow-throughs between the ward and the sanitary towers at the other end. The wards are each 27 feet wide and accommodate twenty-four beds. The ceiling is of plaster, and the windows extend from 3 feet 3 inches above floor level to within a few inches of the ceiling; they are of a patented type pattern, working in grooves and having lever arms which allow them to be easily adjusted, the sashes always overlapping and also allowing them to be reversed for cleaning purposes; there is a hopper at the top. The floors of the wards are laid with linoleum, the skirting being of a patent composition swept at the angle and finishing flush with the linoleum. The walls and ceilings of the wards are finished with granite silicon plaster, painted with white enamel. Warming is by central double-stoves (two in each ward), supplemented by low-pressure steam radiators. The sanitary towers have water-closets and sink rooms on the one side, and baths and lavatories on the other, every provision being made for the utmost cleanliness and convenience; thus, there is a special cupboard for bed-pans, with external ventilation, and the sink room is so placed that patients do not pass through it. Between the arms of the sanitary towers a sun balcony is provided on each floor, overlooking Ruskin Park.

Special Ward Block. At the west end of the main hospital corridor is a special ward block, of two stories, containing four wards of fourteen beds each, for ophthalmic cases and diseases of the ear, throat, and skin. Detached

Waiting Room in Outpatients' Building

from this block, in the northwest corner of the site, is the isolation hospital. This is quite an advance in buildings of its kind — a development from a similar scheme at the Pasteur Institute in Paris. Accommodation is provided for eight patients, in glass-screened cubicles entered off a central nursing corridor, ample ventilation being provided by blow-throughs in the upper part of each room. The patient is bathed in his cubicle, and the soiled linen is taken away in a cylindrical box to be disinfected.

Operating Theaters. The principal operating theater blocks, two in number, each two stories high, are on the north side of the main hospital corridor, between the pathological block and the north wing of the special ward block. They are carried out in the most modern manner, the floors being laid with terrazzo and the walls white enameled. The sinks, sterilizers, etc., are placed in a bay, on one side of which is the anæsthetizing room and on the other the surgeons' room with sterilizing room adjoining. Space is provided for eighteen spectators, who, however, do not come on the actual floor of the theater, but are accommodated in tiers, with separate entrance. Heating is on "panel" system, the pipes being laid within the wall. In all, there are nine operating theaters.

Kitchen Department. This is a most admirably planned department. It is on the basement level of the administration building and has a complete plant for cooking by steam and gas. The floor is laid with tiles, and the roof, of reinforced concrete, is planned with a duct all round communicating with an exhaust fan, which withdraws all fumes and discharges them at the roof level. Thus, no smell of cooking reaches the rooms above the kitchen.

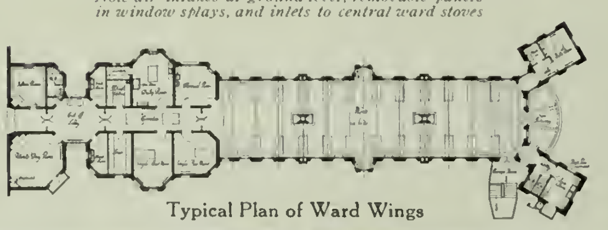
Of the many other parts of the hospital, space does not here permit any extended description: sufficient to say that a refrigerating plant provides the considerable amount of ice that is required daily, a calorifier provides a constant supply of hot water, dynamos driven by oil engines generate electricity for lighting and power, and a special apparatus enables bedding, etc., to be thoroughly disinfected.

Altogether King's College Hospital may be regarded as a very notable example of a large general hospital. It is skilfully planned as a finished group, allowing for a distribution of parts which guarantees efficiency and convenience among the hospital personnel. The accommodation for patients has been determined upon with a practical view to future demands of the community. The various departments are equipped in the most perfect fashion, and the whole displays much architectural distinction.

Interior of Ward

Exterior Detail of Ward Wings

Note air intakes at ground level, removable panels in window splays, and inlets to central ward stoves



Typical Plan of Ward Wings

Entrance to Casualty Building

Sun Balcony at South End of Wards

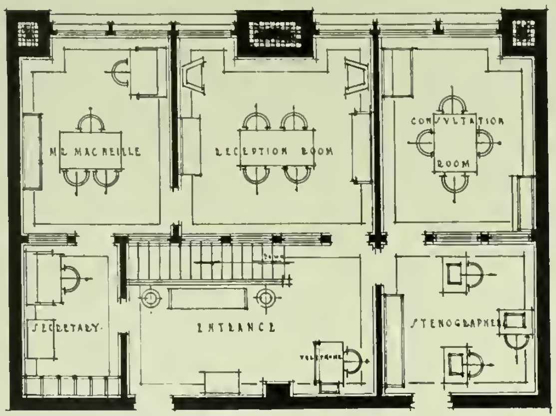
The Business Side of an Architect's Office.

THE OFFICE OF MESSRS. MANN & MacNEILLE, NEW YORK.

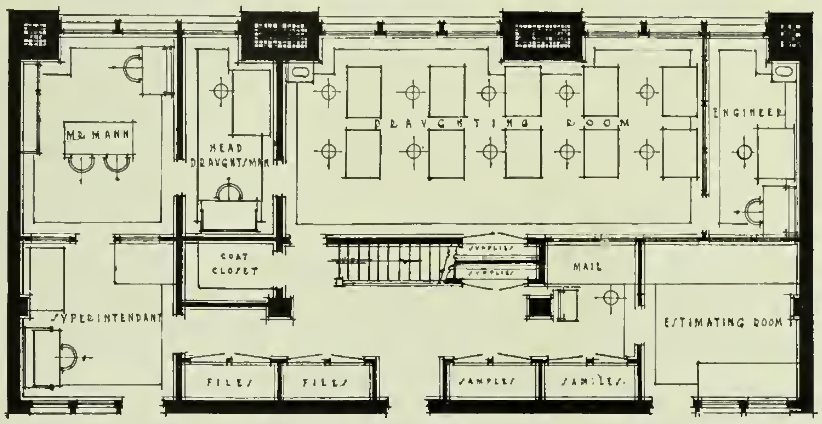
By D. EVERETT WAID.

THE offices of Messrs. Mann & MacNeille, 70 East 45th street, New York City, are of exceptional interest, for the reason that this firm of architects undertakes the direct execution of construction work, not as contractor, but as agent for the owner. Many architects are called upon to do such work occasionally and to a small extent; but perhaps only one architect known to the writer other than the firm mentioned possesses a construction department that has developed a complete organization trained to estimate costs, to buy material and hire labor, and to execute construction work according to their own standards.

The tendency among architects to sublet work and even to execute it by employing labor and contracting for materials themselves is perhaps due to the existence of many incompetent brokers who call themselves general contractors. That tendency may receive an impetus, when architects realize that their proper standing is jeopardized by the growing power of a class of contractors who are dealing altogether with owners and with an avowed purpose of standing between owner and architect, and even employing architects as a subservient part of their own organizations. Desire for self-preservation should warn present-day architects that they must thoroughly qualify themselves with practical knowledge of materials and construction and structural design. Otherwise they may find themselves on a salary basis making artistic sketches for a business man whose main interest is money profit, and who has not the æsthetic appreciation which animated the craftsmen-architects of old.



Administration Floor Plan



Drafting Department Floor Plan

Entrance Hall showing Stairs to Drafting Department

Returning to Messrs. Mann & MacNeille, the visitor to their office will agree that the plan conveys no adequate idea of its attractiveness. Mr. Mann, the sponsor for the designing abilities of the firm, has his headquarters nearby, if not always in the drafting room, which is located in the "pipe-gallery" story of one of the new Grand Central office buildings, where the rent is about half the rate of the upper portion of this duplex office.

The photographs and plan together give some idea of the arrangement and fine furnishing of the entrance hall and the reception room, which is supported by a corresponding businesslike elegance and richness throughout the remainder of the office.

Mr. MacNeille, who is a trained engineer and who had valuable experience in one of the big engineering offices before he became a practising architect, is especially interested in the construction work of his

Form F

1

E.O. No 406

Emergency Order

Placed Subject to Contract Conditions on Back Hereof

Put this Order Number on your Bill and procure Material Receipt from Foreman to charge when you deliver the goods.

Work No. . . . Owner . . . .

Date . . Location of Work

Shipping Instructions . . . .

Quantity	Description	@	Amount

N. B. Execute in Triplicate. Send Grey Copy to Mann & MacNeille, Tissue Copy to the Building and Yellow Copy to Dealer.

MANN & MacNEILLE

Per. . . . .

2

New York,

Name

Address

We beg to inform you of the following alterations which we have made in your plans and specifications at

Your request to

Your letter of

Or for the best interest of the work.

We estimate the above will entail

an additional cost / a saving } of $

Yours

MANN

Execute in triplicate
One copy to Owner
One copy to Secretary
One Copy to General Foreman

OWNER HOUSE No.

3 STATE HERE EXPLICITLY WHAT IS TO BE INCLUDED IN THIS CONTRACT

AWARDED TO CONT PRICE $

START WORK

COMPLETE WORK

PAYMENTS

AMOUNT ALLOWED $ APPROVED FOR $

☐ A ✓ IN THIS SQUARE MEANS THAT THERE IS A MEMORANDUM ON REVERSE SIDE OF THIS CARD.

EMPLOYEES' RECORD CARD WORK No.

4

EMPLOYEE TO SIGN HIS NAME ON THIS LINE AT TIME OF EMPLOYMENT

GIVE ADDRESS WHERE EMPLOYEE CAN BE REACHED BY MAIL OR TELEGRAPH

FOREMAN TO FILL OUT INFORMATION BELOW AND MAIL TO HOME OFFICE AT ONCE

EMPLOYED AS	HOUR	DAY	MONTH	YEAR	RATE
THIS LINE TO BE FILLED IN LATER AT HOME OFFICE	HOUR	DAY	MONTH	YEAR	LAID OFF

FOREMAN TAKE NOTICE THAT WHEN THIS EMPLOYEE IS LAID OFF YOU SHALL NOTIFY THE HOME OFFICE ON "DAILY POSTAL CARD" GIVING HOUR AND DATE

Mann & MacNeille, Agents for Owner

5

THIS AGREEMENT, made in the City of New York this day of , 191 , between MANN & MacNEILLE, (hereinafter called the "Architects"), parties of the first part, and ———————— (hereinafter called the "Owner"), individually and as the duly authorized agent of ———————— party of the second part

WITNESSETH:

The Architects have prepared for the Owner plans and specifications for the construction on the Owner's property at ————————

of ————————

The Owner desires to engage the Architects to manage the construction, and as agents for h to take full charge of the work to be performed under said plans and specifications, and such additional work as he may from time to time direct.

Now, therefore, in consideration of the premises, and of the mutual covenants herein contained, the parties hereby agree as follows:

I. The Architects shall, as agents for the Owner, and for h account, engage or contract for the labor and purchase or contract for the purchase of the materials necessary to perform the work above referred to, and shall inspect the work and materials and manage and direct the construction.

The services to be rendered by the Architects hereunder are as follows: procuring estimates, placing orders, employing and supervising the workmen, negotiating, preparing and signing contracts, auditing and paying the bills and pay rolls out of money furnished by the Owner as herein provided, and in general acting as the Owner's agents in managing the entire work.

II. The Architects will provide the services of a general foreman or superintendent in charge of construction, charging the Owner with only so much of his time as he actually spends on the work outside the office of the Architects.

III. The Owner shall pay the Architects as compensation for the services rendered hereunder ten per cent. of the cost of the construction, due in pro rata monthly instalments as payments for account of the Owner are due and payable.

IV. The Owner shall deposit with the Architects in advance, from time to time, sufficient money to pay the bills accruing on the work and their own commissions, and the Architects shall, prior to each new deposit, if the Owner so desires, render a statement of the disbursements made from the previous deposit, accompanying same with receipted bills or vouchers.

V. The cost of the construction shall include the cost of all labor, material, freight, expressage, traveling expenses, permits, telephone, indemnity insurance, and the time of the general and other foreman, and of the pay clerk and the cost of legal services and surveyor's services where they are necessary.

6

MANN & MacNEILLE
70 East 45th Street, New York

PETTY EXPENSE ACCOUNT

Work No. . . . . Owner. . . . .

Week Ending. 191

Date	For What Spent and by Whom Procure Receipt where possible and attach to this slip	Class'n No.	Amount
	Total		

Amount on hand at commencement of week
Received during the week. . . . .
Total . . . .
Spent during week. . . . .
Amount on hand this date. . . . .

. . . .
Signature of Foreman

7

PROFESSIONAL CODE AND CHARGES FOR MANAGING CONSTRUCTION

MANN & MacNEILLE, Architects

70 EAST 45th STREET, NEW YORK

SERVICES RENDERED

Procuring estimates from sub-contractors, after separating the work into its different divisions for this purpose; negotiating for, preparation of, and signing of the sub-contracts: and the direction of the construction.

Listing the quantities of materials required, procuring prices on same, placing the orders and auditing the bills.

Employing and supervising the workmen, foremen, general foreman, and when necessary a pay clerk, issuing the pay rolls, paying and auditing same:

And in general acting as the owner's agent in managing the building operations.

CHARGES

10 per cent. of the cost of the work for managing its construction. He is also charged the cost of telephone service, expressage, traveling expenses surveys, law suits and other disbursements for his account.

Payments to the Architects are due pro rata as payments for labor and material become due.

When the owner desires, in advance, a complete detailed estimate of the cost of the labor and material for his house, this will be charged for at the cost of preparing same to the Architects.

FINANCING

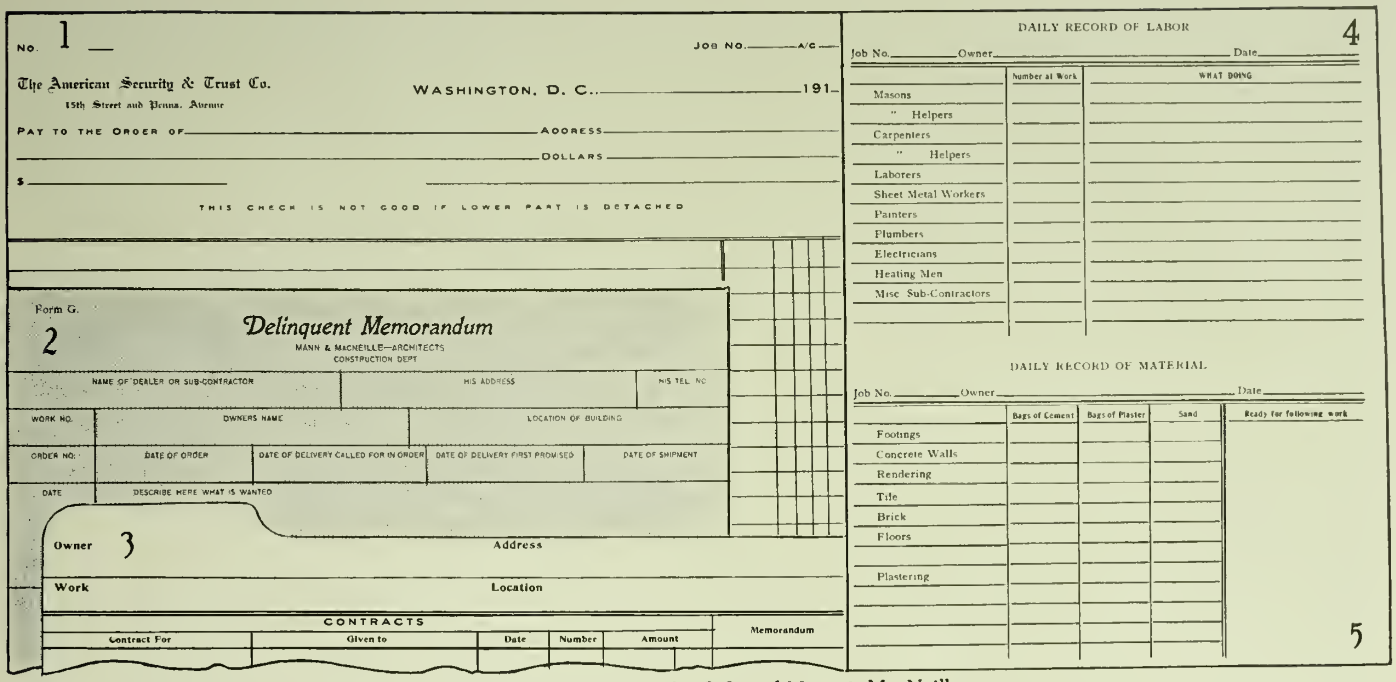
The arrangement for financing which we have found most satisfactory is for the owner to deposit with us about ten per cent. of the proposed cost at the time the work is commenced.

From this amount we pay the bills for labor and material as they become due, taking advantage for the benefit of the owner of any professional, cash or other discount. When the sum deposited approaches exhaustion we render an itemized statement to the owner of the amounts expended, accompanying same with vouchers or receipted bills if he desires.

He then reimburses us this amount. This arrangement continues until the building is completed and final accounts rendered.

1. Order for materials or labor issued and accepted under conditions of contract printed on reverse side. Materials called for in such order when delivered at the building are checked by foreman, who gives contractor an itemized receipt which forms the basis for checking his bill. 2. Printed notice to inform clients of additional expense made necessary in the course of construction. 3. Card for office use attached to tabulation of bids authorizing letting of contract. 4. Card record of each employee on construction work. 5. Form of agreement for managing construction. A sixth condition permitting the owner to terminate the contract at any time by compensating the architects to date of termination and space for signatures of the contracting parties appears on the reverse side. 7. Form stating services rendered and compensation for the same to the architects.

PRINTED FORMS IN USE IN THE OFFICE OF MANN & MacNEILLE


NO. 1
JOB NO. A/C
The American Security & Trust Co.
15th Street and Penna. Avenue
WASHINGTON, D. C. 191
PAY TO THE ORDER OF ADDRESS
DOLLARS
$
THIS CHECK IS NOT GOOD IF LOWER PART IS DETACHED

Form G.
2
Delinquent Memorandum
MANN & MACNEILLE—ARCHITECTS
CONSTRUCTION DEPT
NAME OF DEALER OR SUB-CONTRACTOR | HIS ADDRESS | HIS TEL. NO.
WORK NO. | OWNERS NAME | LOCATION OF BUILDING
ORDER NO. | DATE OF ORDER | DATE OF DELIVERY CALLED FOR IN ORDER | DATE OF DELIVERY FIRST PROMISED | DATE OF SHIPMENT
DATE | DESCRIBE HERE WHAT IS WANTED

Owner 3 Address
Work Location
CONTRACTS
Contract For | Given to | Date | Number | Amount | Memorandum

DAILY RECORD OF LABOR 4
Job No. Owner Date
Number at Work | WHAT DOING
Masons
" Helpers
Carpenters
" Helpers
Laborers
Sheet Metal Workers
Painters
Plumbers
Electricians
Heating Men
Misc. Sub-Contractors

DAILY RECORD OF MATERIAL
Job No. Owner Date
Bags of Cement | Bags of Plaster | Sand | Ready for following work
Footings
Concrete Walls
Rendering
Tile
Brick
Floors
Plastering
5

Printed Forms in Use in the Office of Mann & MacNeille

1. Bank check voucher used by architects in special accounts for construction work. ***2.*** *Form for notice to office of delayed shipment of materials.* ***3.*** *Guide card for use of chief draftsman. Behind this guide is kept register of drawings and records of their issue and other memos relating to the building.* ***4*** *and* ***5.*** *Work slip and follow-up memorandum for office use.*

firm. In developing their system he adopted the rule of providing printed blanks for simplifying business administration only after experience had demonstrated their need and indicated the form they should take. Their forms therefore represent the demands of experience and not the result of theory.

Mann & MacNeille, after preparing drawings and specifications, make detailed estimates of cost while they are getting bids from contractors. If their own estimate, plus their charge of 10 per cent, does not better the contractor's bid by 10 per cent or more, they advise the client to let the contract. If the client wishes them to undertake the construction, they execute a special contract agreeing to act as agent to manage construction. The owner is expected to deposit with them funds sufficient to cover liabilities at all times and permit them to secure the best prices by reason of their custom of paying cash or discounting bills. Close scrutiny is kept on the progress of work, and daily reports provide a record of costs of both labor and material. A daily comparison of estimated and actual costs of construction is thus possible. It may be remarked that such checking is most essential, and it will be found the rule in the business of successful contractors.

Their system also avoids friction over extras, by written notices which inform the owner of the cost which any change may involve. Several of their more important blanks are here reproduced which may interest those who are not yet equipped to manage construction work.

Reception Room
Office of Mann & MacNeille

MAIN PORTAL
HOSPITAL DE SANTA CRUZ, TOLEDO

Some Old and Unfamiliar Spanish Buildings.

PART II. HOSPITAL DE SANTA CRUZ, TOLEDO.

By ARTHUR G. BYNE.

Illustrated from Photographs Specially Taken by the Author.

THE Hospital of the Holy Cross was a foundation by Cardinal Pedro de Mendoza, who had already built the one of the same name at Valladolid. Enrique de Egas was architect for both. The Toledo edifice was built between 1505–1515.

De Egas and his powerful patron had fallen out over the Valladolid hospital, because the façade was too severe. Mendoza was enormously wealthy and proportionately ostentatious, and in his eye it was "poor and wretched." He died before the Toledo work was begun, which left De Egas to carry out his schemes unafraid that the façade would not be found rich enough. The influence of the Valladolid incident is apparent, nevertheless, for the portal is much more heavily ornamented than in the preceding structure.

Starting as a Gothicist, this architect had become an enthusiast over the Italian importation of Renaissance and tried to understand it not only in its ornament but fundamentally. How well he succeeded is shown by the classic symmetry of plan in his four great hospitals, — the two already mentioned, and those of Granada and Santiago. Considering Spain's remoteness from the Renaissance movement, and the fact that long internal disturbances had retarded her intellectual growth, these early Renaissance structures are specially remarkable. It is hard to believe that they were designed only fifty and sixty years after Brunelleschi's Pazzi Chapel at Florence, which, very Roman though it is in many features, is considered the first completed building of the Italian Renaissance; and harder still to believe that De Egas had probably never been in Italy, but got his knowledge through Italian builders who sought employment in Spain.

The Toledan example is in the form of a great Maltese cross. It shared the fate of other over-ambitious architectural undertakings — never to be finished; but even incomplete, it ranks with the Archbishop's Palace at Alcala as heading the list of fine Spanish Renaissance buildings.

Only the doorway (with detail) and the lower part of the staircase are shown. All is much dilapidated; for Toledo, besides being overtaken by poverty, was badly battered by the French in 1808. A restoration is on foot, but unless this is more intelligently carried out than the restoration of *San Juan de los Reyes* in the same city, the decrepit old hospital might better go unpropped to its death. There are encouraging signs, however, in the very small portion of the patio thus far repaired, that the work is in sympathetic hands.

The doorway is of a fine, white stone, called *piedra blanca de la Rosa*, and marble, and the whole has turned into fascinating old ivory tints. It can be clearly seen that the detail is purer Renaissance than the ensemble, since the latter, particularly at the top, takes some egregious liberties with the style. This portion, one feels, must have bothered the architect greatly; till at last, in desperation of a Renaissance solution, he turned to his early Gothic training to help him out.

The lower part, on the contrary, is admirable. The rectangular door frame and its adjacent colonnettes are surprisingly pure; and the spot of *amorini* supporting the Mendoza arms is as charming and as early as any similar motif in Italy. Throughout the lower portion the detail resembles early Lombardy work, particularly certain door and window motifs of the Certosa de Pavia which antidates De Egas' work by only a few years. It is hardly assuming too much to say that among the stream of Italian workmen employed in Toledo from the foundation of its great cathedral down to the middle of the XVIth century some must have come straight from Pavia. This would explain why the doorway is so like terra cotta ornament, for in Lombardy the early use of burnt clay products had a pronounced influence later on stonework.

In the staircase illustrated is a newel post that is popular throughout Spain, this one probably being the father of the large family. Undeniably crude in places, as at the intersection of the rail with the capital, it is chiefly interesting as having formed a style in newels. The shapeless block on top is a much mutilated heraldic shield. The balusters here, as later in Alcala, have been cut, each three, out of one block of stone. The feat was a prodigious one, more remarkable, indeed, than commendable. To turn out a single spindle whose rings follow the rake of the stair instead of being horizontal to itself, is too difficult to be worth while; to work out three in this manner by piercing a block of stone, and to retain, besides, a connecting band, is too stupendous to be believed if one had not examined into it. The string piece of the staircase has a beautiful section, and, furthermore, it makes a very creditable intersection with the base of the newel.

Another structural peculiarity here is a big Gothic segmental relieving arch passing behind the three semicircular Renaissance arches that support the floor over this staircase. It would seem that De Egas, after constructing these latter, could not believe that they would do their work adequately, and so swung the great flat arch behind to reinforce them — another instance of his only half understanding the new architecture and calling upon the old to help him out.

DETAIL OF MAIN PORTAL
HOSPITAL DE SANTA CRUZ, TOLEDO

DETAIL OF STAIRCASE
HOSPITAL DE SANTA CRUZ, TOLEDO

Rendered Drawing of Elevation, Detroit Public Library

Cass Gilbert, Architect

Thomas R. Johnson, Delineator

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

V. THE WORK OF THOMAS R. JOHNSON.

LIKE many of the other men who have made a distinguished success at architectural rendering, Mr. Johnson began his art life with the idea of becoming a painter or an illustrator. He is by birth a Canadian, and his first training was acquired in a Canadian art school, but as a comparatively young man he came to New York and entered an architect's office. His tremendous ability, both in rendering and in design, was not at first appreciated, and it may be of interest to note that the designer of the Singer tower did not think the man who was intimately associated with the designer of the Woolworth tower worth $15 a week, and discharged him. The Woolworth tower is spoken of because Mr. Johnson has been for many years in Mr. Cass Gilbert's office, and for most of that time has been Mr. Gilbert's chief reliance in matters of design, at least as far as a man of Mr. Gilbert's strong artistic personality can rely on any one else; but Mr. Johnson is no less capable as a designer than he is as an architectural renderer. Mr. Gilbert early perceived the merit of the rare combination of gifts which Mr. Johnson possesses, that of being able not only to design well, but to throw his designs into perspective with the utmost freedom and rapidity; and so accurate is Mr. Johnson's knowledge of perspective that faults not apparent in direct elevation become surely visible in his perspectives, and much of the work from Mr. Gilbert's office is now designed in perspective aided by Mr. Gilbert's criticism and suggestions.

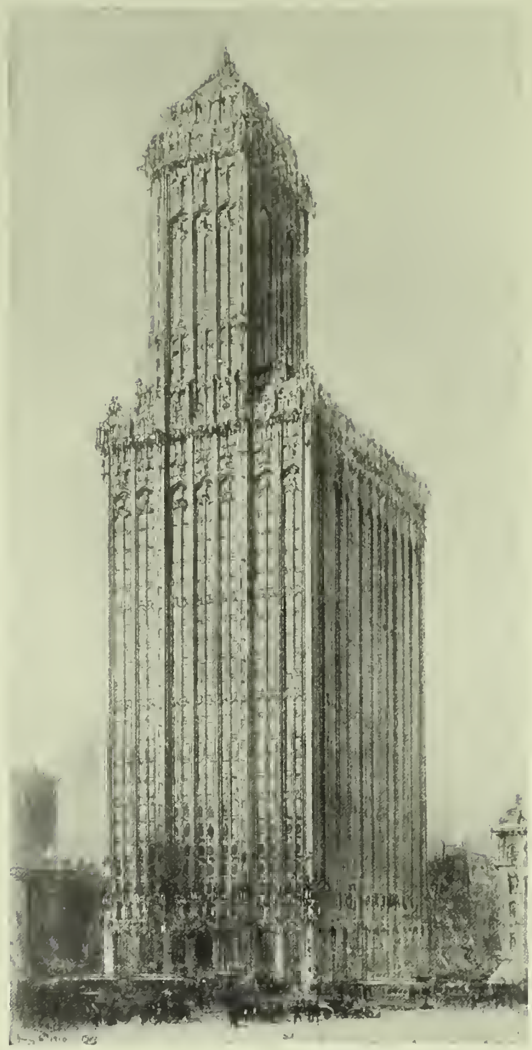
To one who knows the man's manner of work well, the most fascinating things Mr. Johnson has ever done have been these quick and brilliant studies, in which he mingles pencil, water color, and colored chalks with the most remarkable effectiveness and truth of representation. Nor does his knowledge of architecture stop at design. He was for some years, and perhaps still is, one of the most finished draftsmen in New York, probably the only comparable men being Mr. H. Van Buren Magonigle and Mr. Albert Randolph Ross, both of whom have at least a good deal of Mr. Johnson's facility in perspective and water-color rendering.

Study for a Board Room in a Suite of Offices
Cass Gilbert, Architect
Thomas R. Johnson, Delineator

The working drawings of some of Mr. Gilbert's work which have been from time to time published, that are signed T. R. J., will be found in every architect's office, and they are not only a delight to the eye in the arrangement of the sheets, in lettering, and in beautiful indication of ornament, but are also very complete and adequate construction details. Mr. Gilbert's office has always turned out extremely well finished working drawings, because Mr. Gilbert is himself a draftsman of superior grade and likes and appreciates technically good drawings; but of them all none have been so fine as those which Mr. Johnson has made, although in all of them his technique may be found to have been reflected.

Another phase of Mr. Johnson's ability which may not be out of place to mention in an article of this kind, although perhaps illustrations of it are hardly necessary, is his skill at caricature; his sketches of the different men he worked with when in Mr. Gilbert's office are delightfully gay exaggerations without being in the least unkind; many of them are better than portraits, in that the real spirit of the man has been grasped and set upon paper; and while little of Mr. Johnson's work has ever been done for the humorous magazines, his ability in that direction is far beyond that of many men who make their living from it.

In architectural rendering there is no phase that he has not completely mastered; his rendered plans, while perhaps not as brilliant as those turned out by Mr. Hornbostel, have a severe and sober dignity which makes them models for competition work, and probably no more beautiful renderings of elevations have ever been produced either here or abroad than his. Our competitions now are conducted under very rigid rules, prohibiting the use of color, or as some of them read, "perceptible color"; this, of course, with the idea that the work will have as uniform a quality as it is possible to produce, so that the judges may not be misled by the tricks of rendering; and while Mr. Johnson in his renderings uses no "perceptible color," its presence is felt even though it may not be perceived, and even a photographic reproduction, such as that of the Detroit Public Library, shows this peculiar quality, which is the happy possession of but a few.



Study for the Woolworth Building
Cass Gilbert, Architect
Thomas R. Johnson, Delineator

Purely architectural renderings of elevations, when carried as far as is this one, are apt to become cold, hard, and forbidding machine drawings rather than soft, warm, architecturaldrawings; but somehow Mr. Johnson's are never pushed over the edge — they are perfection, but not the perfection which repels.

Perspective View of University of Minnesota Buildings, Minneapolis, Minn.

Cass Gilbert, Architect

Thomas R. Johnson, Delineator

The black sky is a trick which everybody knows as making a building stand out with great strength; but in nine-tenths of the drawings where the dark sky is used, it is at the expense of all luminosity, the building becomes dull and opaque, and the delicacy of fine rendering of detail becomes lost through too great contrast between building and entourage.

Sketch of Warehouse in Brooklyn, N. Y.
Cass Gilbert, Architect Thomas R. Johnson, Delineator

Mr. Johnson's office studies have been spoken of above as being the most interesting things he does, and two of them have been reproduced in this article — a study for the Woolworth Building and study for the board room in a suite of offices. The study for the Woolworth Building was made in pencil on tracing paper, mounted, tinted with water color and picked out with Chinese white; the shadows are part in pencil and part in color. The great utility of drawings of this kind is in the fact that Mr. Johnson is able to make them so quickly; that of the Woolworth Building, for example, not taking over six hours to draw, mount, and render, and a comparison with photographs of the executed building will show how useful this perspective study has been in developing weak spots in the design and also in the study of fenestration and the projection of the vertical lines. This was but one of many similar studies made for this building, some of them on tracing paper, some on detail paper, and some on heavy hot-pressed paper, all of them extremely rapid in execution, but accurate in perspective. Of course "accuracy" is more or less a comparative term, applying to the mass of the building rather than to such things as the perspective of the elliptical arches; but the roof heights, the projection of the principal vertical lines, etc., were all carefully laid out.

Another study for a similar purpose, but of an entirely different character, is that for the board room in a suite of offices. It was executed entirely in water color with not even much pencil lay out over which to work, and a water-color study like this which takes into account the color scheme and the lighting, as well as the proportions and system of decoration, is, of course, of great value in determining design.

The making of innumerable sketches of this character in which buildings and rooms are studied with as near an approximation to actual conditions as can be obtained in drawings, is the most valuable function which an architectural renderer can perform, and this is, of course, one which requires an intimate knowledge of design, and further than that, of the particular type of design desired by the office for which they are made, and perhaps they could only be made by a man who was very closely in touch with the design of the office and thoroughly familiar with the ideas at the head of it.

The rendering of the warehouse for Austin Nichols and Company was made in pencil on Bristol board, no color at all being employed; while it was started as a study sketch it was finally developed into a drawing to show the clients. It was accepted, and the structure built substantially as indicated in the sketch. The other large rendering, that of the Washington avenue frontage of the University of Minnesota, is a very carefully drawn and rendered water color, and is so absolutely truthful in the delineation of the type of the trees that one sees around a new building, the fencing of the parking space, and the character of the traffic, that it gives a pictorial effect suggestive of work done from a completed scheme.

It will be noticed in all these drawings that Mr. Johnson's mastery of entourage is not excelled even by his rendering of the architecture itself, and part of the illusion of reality which his renderings adequately convey must be due to this. Architectural rendering is usually more or less conventional, even in the offices of very successful men, although architects are so accustomed to see conventions that they do not realize that conventions are being used; and if an architectural rendering is pleasing in color, and of an agreeable pattern, the architect regards it as a finished work, although to the layman it may be nearly as incomprehensible as a working drawing.

The work of Mr. Jules Guerin even may be included in this class, but by sheer beauty of color and also to some extent at least by the familiarity of the laymen with his subjects, he manages to make the necessary appeal to the public; but an architect whose structures are executed as yet only in his own brain cannot push convention too far, and succeed in the main purpose of all architectural rendering, which is to convince the clients of the plausibility of his ideas. Mr. Johnson's work in this way is undoubtedly adapted to popular use, since his colors please the popular as well as the educated taste, without disguising the sound architecture behind them.

Beside his work in Mr. Gilbert's office he has occasionally made renderings for other people in the past, one of which is here reproduced as a frontispiece, and it is of particular interest, because of the admirable indication of materials all the way through — marble is evidently marble, just as the brick and tile cannot be mistaken for anything but what they are. While the drawing is of large scale, and the indication of each individual part is carried to a workmanlike conclusion, the pictorial effect has by no means been neglected.

In considering Mr. Johnson's work, one characteristic must be noted which is eminently desirable in work that must have a practical value, — where the men discussed in former articles of this series have each been remarkable for some particular sort of rendering, some trick or talent, of which he has made the most, we find Mr. Johnson's work steady, sober, consistent, of very wide range, both of technique and of subjects, and yet piquant and brilliant as it is refined and quiet.

DETAIL OF ENTRANCE TO COURT

VETERINARY BUILDING, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.

COPE & STEWARDSON, ARCHITECTS

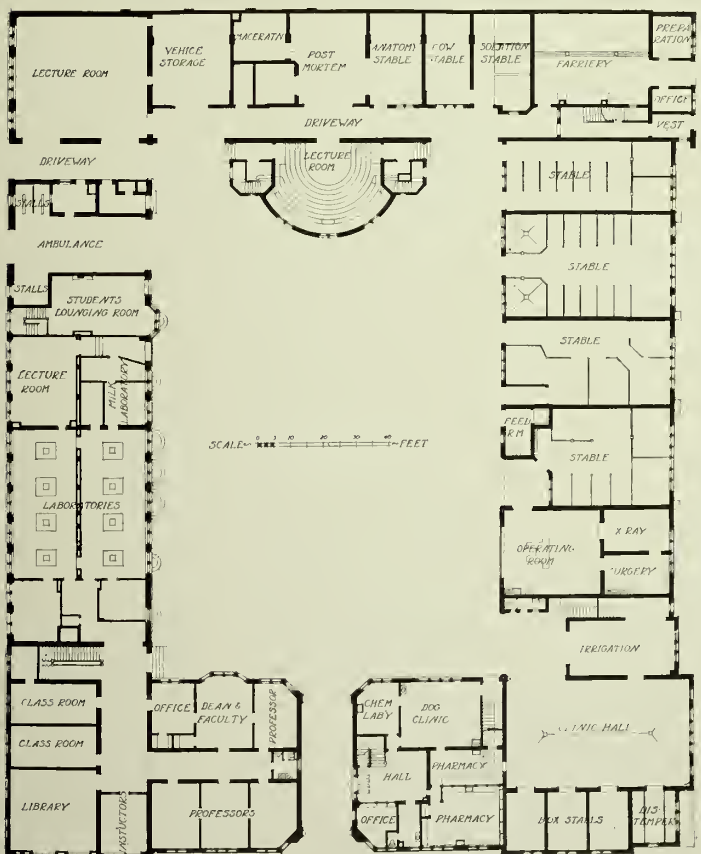
VIEW IN COURT LOOKING TOWARD LECTURE ROOM

GENERAL VIEW OF EXTERIOR

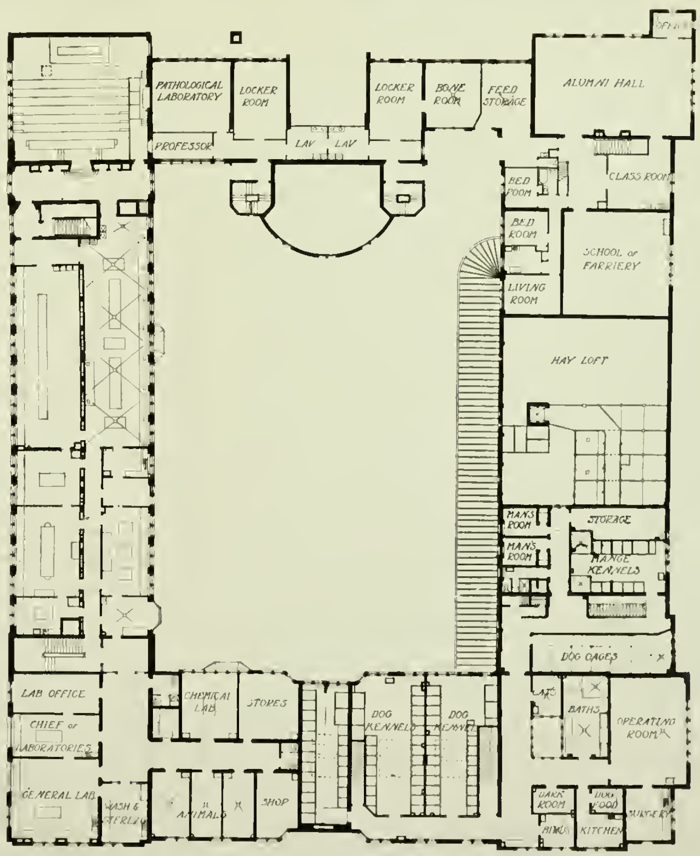
VETERINARY BUILDING, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.

COPE & STEWARDSON, ARCHITECTS

VIEW IN COURT LOOKING TOWARD MAIN ENTRANCE



FIRST FLOOR PLAN



SECOND FLOOR PLAN

VETERINARY BUILDING, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA

COPE & STEWARDSON, ARCHITECTS

UPPER STORIES

LOWER STORIES

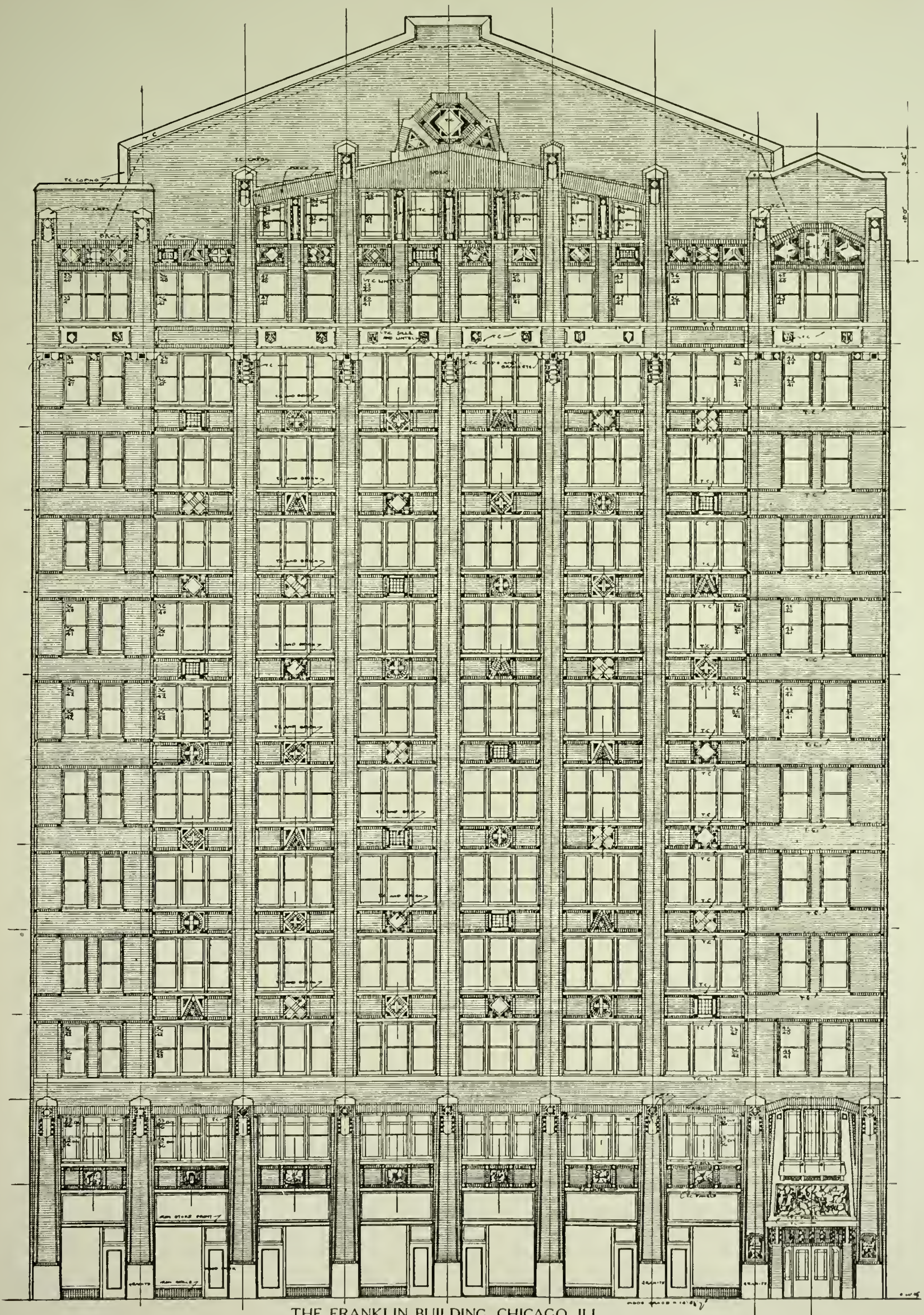
THE FRANKLIN BUILDING, CHICAGO, ILL.

GEORGE C. NIMMONS, ARCHITECT

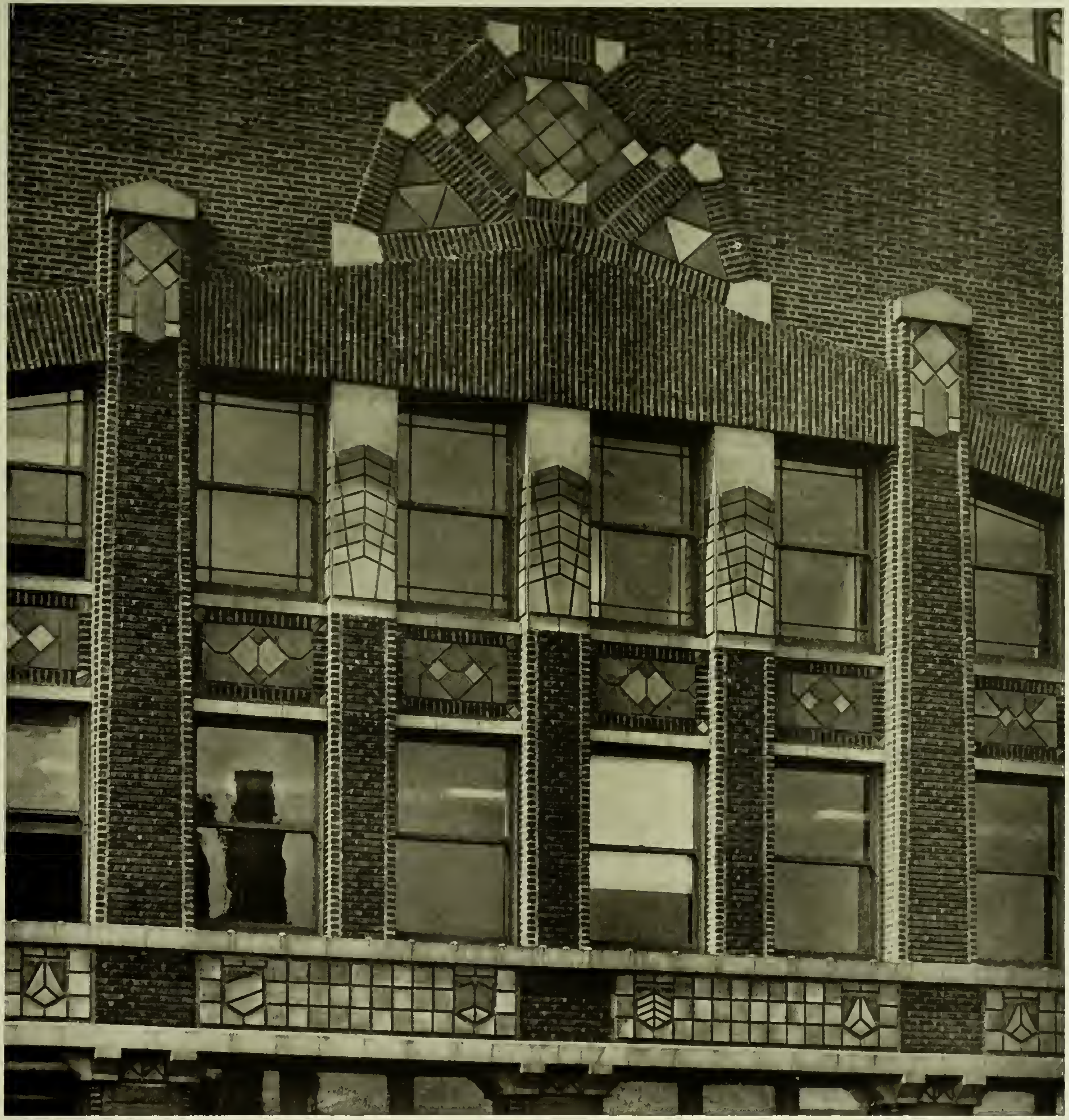
UPPER STORIES

LOWER STORIES

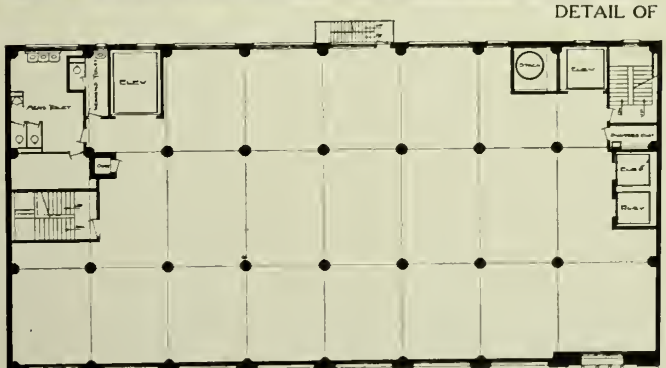
THE FRANKLIN BUILDING, CHICAGO, ILL.
GEORGE C. NIMMONS, ARCHITECT



THE FRANKLIN BUILDING, CHICAGO, ILL.
GEORGE C. NIMMONS, ARCHITECT



DETAIL OF UPPER STORIES



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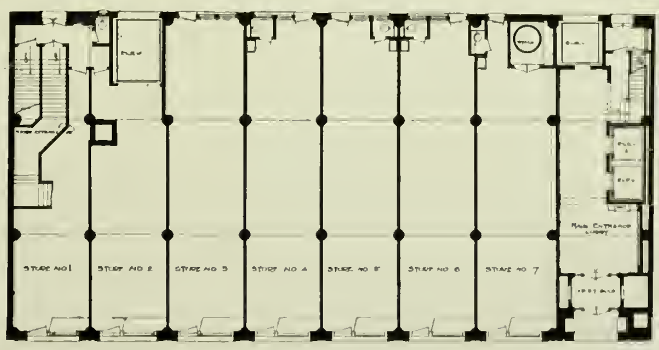
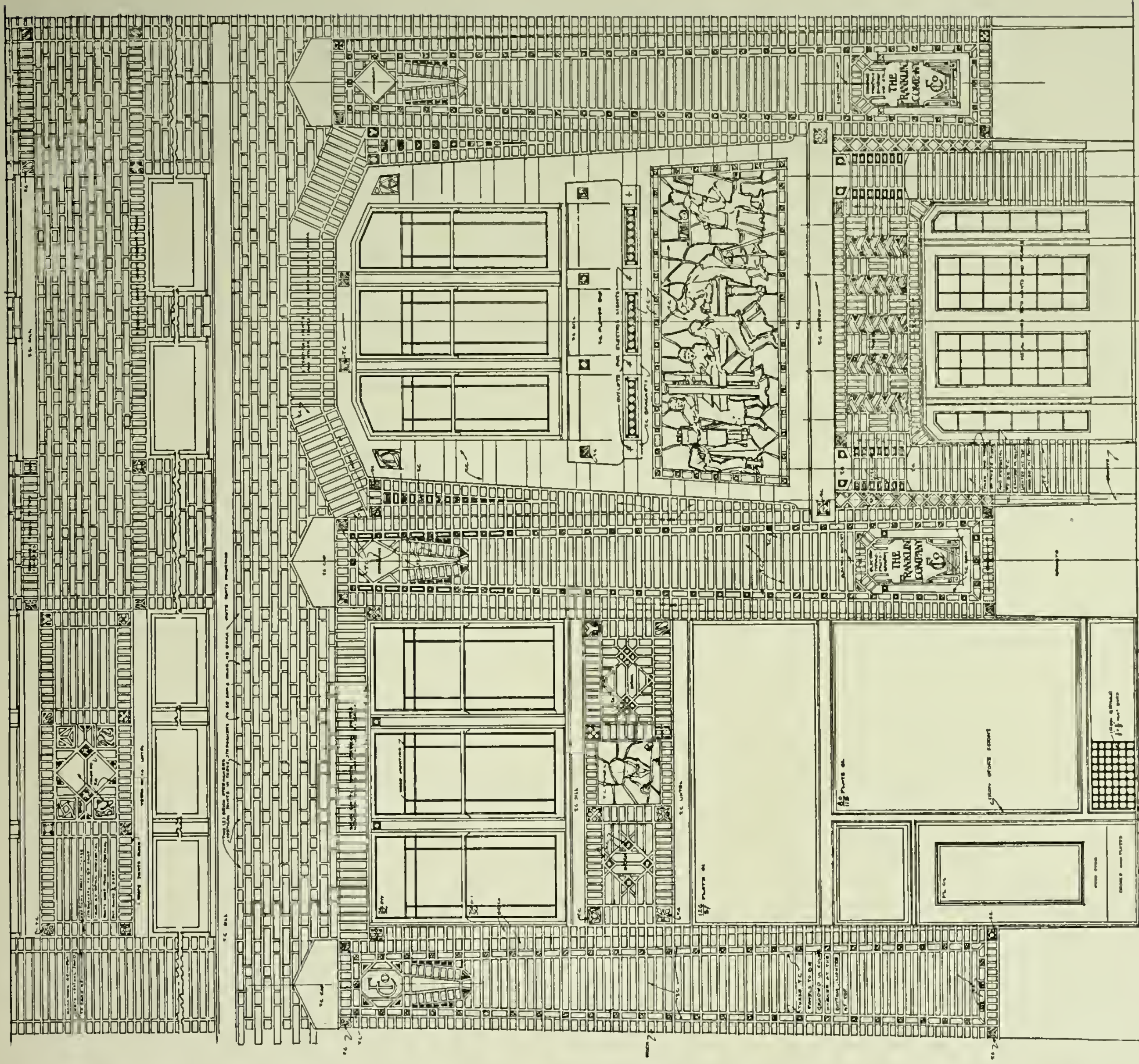


TYPICAL FLOOR PLAN

THE FRANKLIN BUILDING, CHICAGO, ILL.

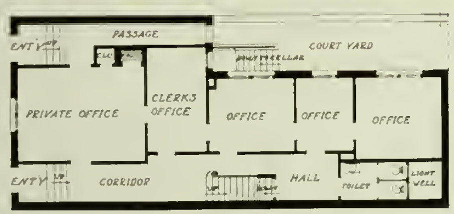
GEORGE C. NIMMONS, ARCHITECT



DETAIL OF ENTRANCE AND STORE FRONTS

DETAIL OF ENTRANCE

THE FRANKLIN BUILDING, CHICAGO, ILL.
GEORGE C. NIMMONS, ARCHITECT



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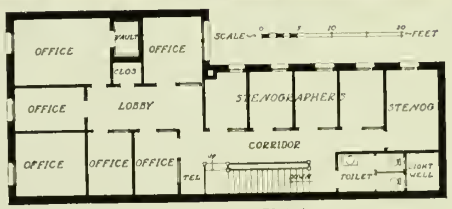
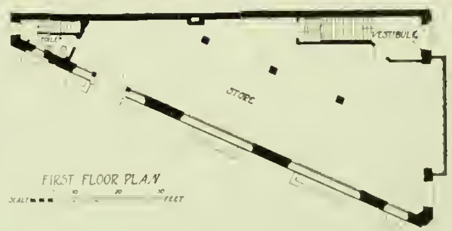


TYPICAL FLOOR PLAN

LAWYERS' OFFICE BUILDING, WASHINGTON, D. C.
ARTHUR B HEATON, ARCHITECT



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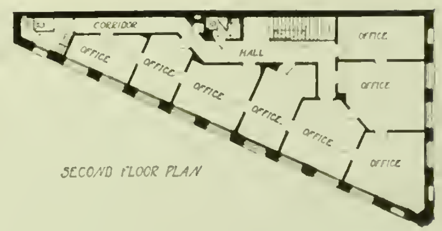
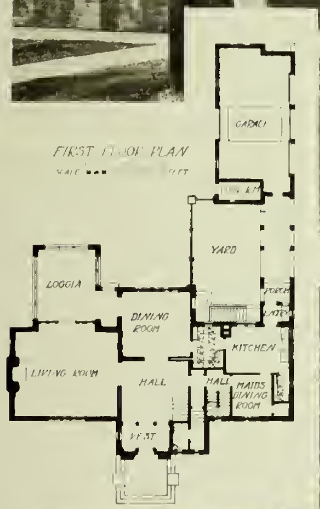


SECOND FLOOR PLAN

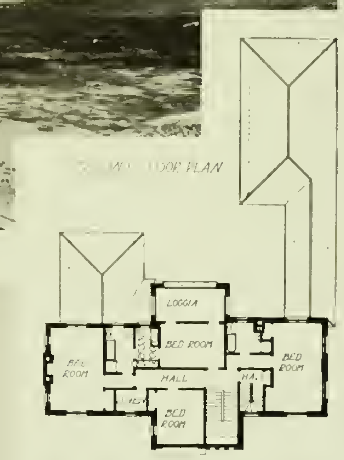
STORE AND OFFICE BUILDING, WASHINGTON, D. C.
APPLETON P CLARK, JR., ARCHITECT

DETAIL OF ENTRANCE

HOUSE AT OAK PARK, ILL.
SPENCER & POWERS, ARCHITECTS



STREET FRONT



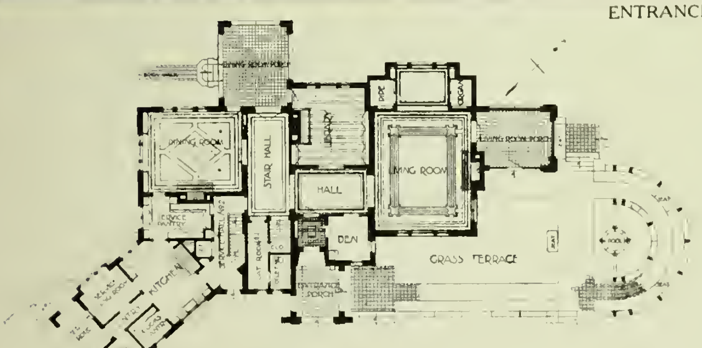
GARDEN FRONT

HOUSE AT OAK PARK, ILL.

SPENCER & POWERS, ARCHITECTS

HOUSE OF MRS. DENKMANN-HAUBERG, ROCK ISLAND, ILL.
SPENCER & POWERS, ARCHITECTS

ENTRANCE FRONT



FIRST FLOOR PLAN

SECOND FLOOR PLAN

VIEW FROM THE EAST

HOUSE OF MRS. DENKMANN-HAUBERG, ROCK ISLAND, ILL.

SPENCER & POWERS, ARCHITECTS

LIVING ROOM

LIBRARY

LIVING ROOM MANTEL

HOUSE OF MRS. DENKMANN-HAUBERG, ROCK ISLAND, ILL.

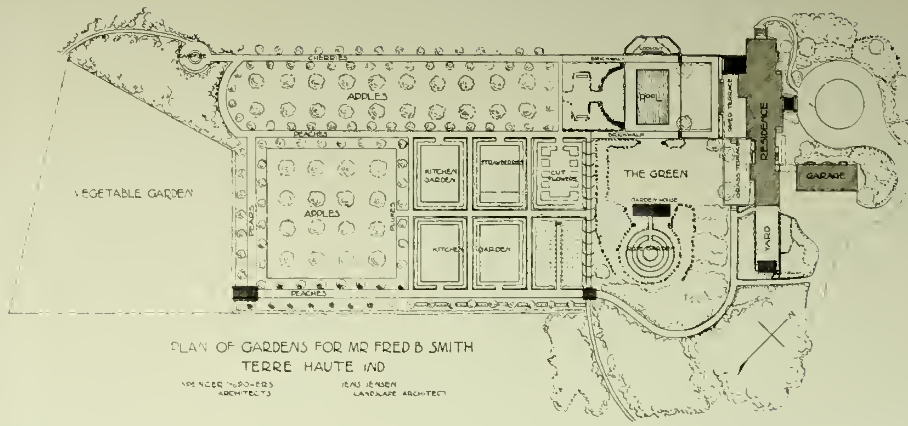
SPENCER & POWERS, ARCHITECTS

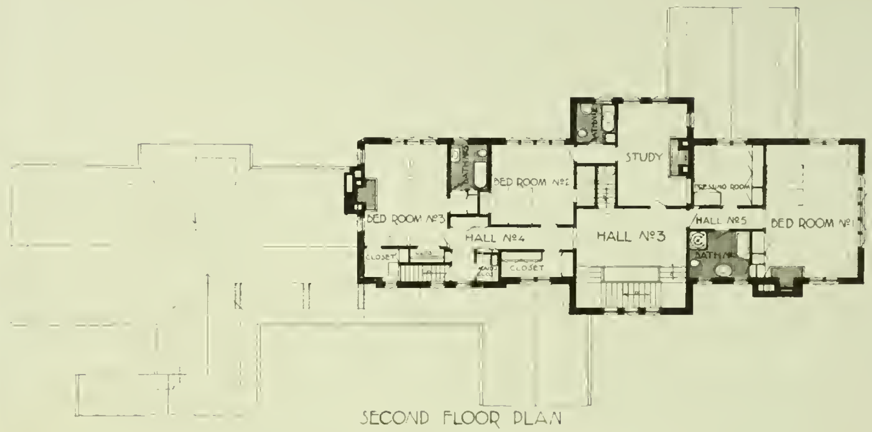
VIEW FROM APPROACH

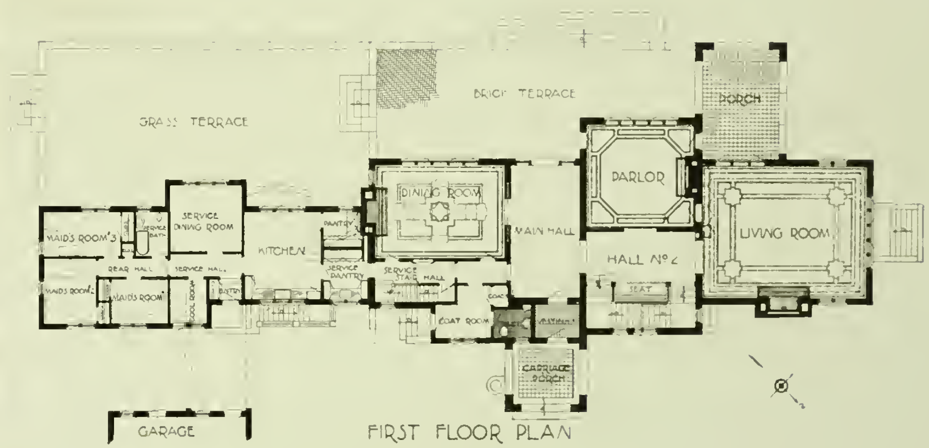
VIEW FROM GARDEN

HOUSE OF FRED B. SMITH, ESQ., TERRE HAUTE, IND.
SPENCER & POWERS, ARCHITECTS

DETAIL OF ENTRANCE FRONT







HOUSE OF FRED B. SMITH, ESQ., TERRE HAUTE, IND.

SPENCER & POWERS, ARCHITECTS

STABLE OF FRED B. SMITH, ESQ., TERRE HAUTE, IND.

STABLE OF MRS. DENKMANN-HAUBERG, ROCK ISLAND, ILL.
SPENCER & POWERS, ARCHITECTS

The Modern Use of Casement Windows.

WITH NOTES ON THE CONSTRUCTION OF METAL AND WOODEN FRAMES ILLUSTRATED WITH AMERICAN AND ENGLISH EXAMPLES.

By HOWARD V. BOWEN.

SUCCESSFUL architecture takes careful account of the smallest particular of building and designing. The effect of a completed work depends upon the thoughtful treatment of a great variety of minute details. The architect, accustomed as he is to observing a nicety of balance and possessing a keen appreciation of the value of selecting from a number of possibilities the exact detail which well schooled judgment has taught him to be the one most desirable, regards nothing as undeserving of the most careful consideration.

Hardly any other single detail of planning has more to do with forming the character of a building than its fenestration. The windows of a building are its eyes, upon which depend not only its survey of the world but also its expression. Upon its windows and its doors devolves much of the duty of imparting character and what may be called architectural accent, and the success or failure of a work is often dependent upon the handling — careful or otherwise — of its openings.

But the thoughtful and intelligent planning of such openings is not all which is demanded of the architect. They may be planned with the utmost care, and their positions may be determined after the most thoughtful "visualizing" of the completed structure, and yet be only partially satisfactory to a man who values at their proper worth the *minutiæ* of design. Upon the filling of the windows themselves depends, in a large measure, their architectural value.

Some one has said that building to-day has been hindered as well as helped by the inventiveness of some manufacturers who, by producing what is inexpensive and useful, and therefore likely to be employed, have made of less frequent use other things which are equally useful and far more decorative, but which, for various reasons, seem to win a less ready acceptance into popular favor. Large sheets of glass are, of course, of inestimable value for many uses. One can hardly imagine their not being used for certain windows of shops where the revealing of what may be placed within them is of prime consideration; but windows for other purposes naturally demand a different treatment.

Just the extent to which the careful filling of window spaces affects the appearance of a building cannot always be realized until one sees the same structure, or a building exactly similar, treated in different ways. In a certain street in New York City there still exists a row of fine, old houses built, probably, about 1850. The windows of these houses have sashes with very large panes, but recently, in the rearranging of one of the row, casement windows filled with small panes have been installed. The house so altered now possesses a character, individuality, and distinction which is wholly lacking in the other houses.

Many an architect surveys the work of a few centuries ago and wonders if the designers of that day were not blessed either with unusual opportunities or with a special gift for using just what would best interpret or express the meanings which they wished to convey. Neither can be said to be wholly true, but in using the materials which their times made possible they discovered a fortunate method of employing them which may well serve as models for those who practise to-day, especially when the possibilities offered by materials at this time are infinitely greater.

Those who admire the long, horizontal mirrors frequently used over mantels in old-fashioned interiors are apt also to admire the taste and judgment which guided the breaking up of the

House at Hewlett Bay, L. I.
Albro & Lindeberg, Architects

Group of Metal Casements with Leaded Glass

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Group of Metal Casements with Leaded Glass

Casements in House at Bryn Mawr, Pa.
Duhring, Okie & Ziegler, Architects

surface into three panels — a larger panel at the center divided by a narrow band of gilt frame from a smaller panel at either side. The use of smaller mirrors, however, was no doubt necessitated by the fact that such large surfaced mirrors as would be required were the frame filled with one piece of glass, were either not obtainable or of such great cost as to render their use impossible. Just so with the architects who — say, in the eighteenth century — designed windows; large panes of glass were not always to be had, and in the use of glass which made smaller panes necessary there was found the most successful window treatment. The greater ease with which larger panes are now to be had, and particularly their comparatively small cost, has led to their use to an extent which many architects regret and against which they are not always able to prevail.

An Unusual Form of Casement Windows in an Old House in Lancashire, England

Much of the absence of expression of our windows is due not only to the use of large surfaces of glass, but also to the form of the windows themselves. The type popularly known as the "guillotine," or double hung window, has been, until lately, almost wholly in use, and it is difficult to supplant it in popular favor, even though it possess few claims upon popular approval and many defects. The double hung window, besides being hopelessly ugly and usually wholly without character, is balanced or hung upon weights concealed behind the woodwork of the window. These weights occasionally have to be examined, or the cords upon which they hang must be renewed and the woodwork removed to make access to them possible. Besides being difficult to clean, their very nature makes it impossible to open the window more than, at most, halfway.

The casement window, upon the contrary, possesses every advantage which is conspicuously lacking in the former. Consisting, as it ordinarily does, of vertical panels filled with small panes of glass, it confers upon the window opening an expression and vitality which at once improves the appearance of the building. Its use compels careful designing, for instead of there being a single opening filled with one or two large surfaces of glass, the use of casements suggests the division of the space into a group of several smaller windows separated by slender mullions. This form of treatment would be hardly possible were double hung windows used, for each window must have a separate system of weights, and the space which must be allowed for them would necessarily be so

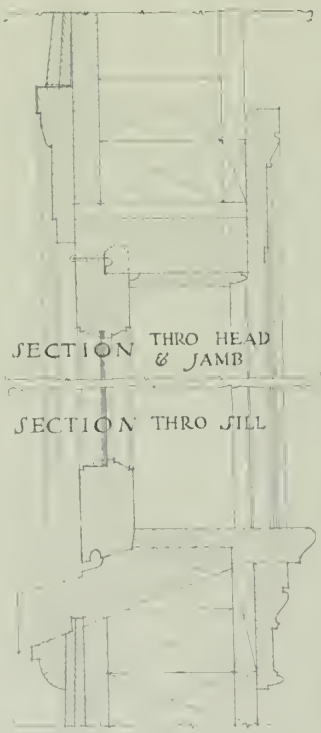


Fig. I. Detail of Wooden Casements Opening Out, Set in a Frame Wall

Detail of House at Cynwyd, Pa., Showing Casement Windows
Mellor & Meigs, Architects

large as to defeat the object of the grouping. A very effective arrangement, where space and particularly where height permits, is to place them one over another. Such grouping, of course, belongs particularly to the buildings of the Tudor or the Jacobean style, but it can be appropriately used in many modern types of houses which lay claim to no definite style.

The value of the casement window, however, is by no means wholly architectural nor based upon advantages which have anything to do with attractiveness of effect. They possess many good qualities which are entirely utilitarian and upon them an architect may often base so strong an argument that the balance, in the mind of a somewhat reluctant client, may be turned in their favor.

Every housekeeper has struggled with the difficulty of keeping double hung windows reasonably clean. The problem is not always difficult of solution where houses are but one or two stories high, for sitting upon a window sill to wash the outer surfaces of a window presents no particular obstacle to the average housemaid, provided the window be not far from the ground. But this is the day of lofty buildings — tall city dwellings or towering structures containing apartments or business quarters — and the cleaning of their windows can hardly become a part of the duties of even the most courageous woman servant.

House at Wynnewood, Pa., with Leaded Casements
David Knickerbacker Boyd, Architect

Wooden Casement Windows in Country House at Southampton, L. I.
Albro & Lindeberg, Architects

Casement windows offer no such difficulty, for as they are not often more than eighteen inches in width the arm may readily be passed about them and every part of their outer surfaces be easily reached from within. Then, too, casement windows are very often hung with the device which makes possible their being turned about or "inside out," and either the inner or the outer surface presented for cleaning.

An argument in favor of the casement may be based upon the fact that it makes possible the opening of the *entire* window. Almost every part of the country is subject to extremes of heat during a few weeks of the year, at least, and there is nothing more annoying than to be unable to open a window more than halfway, yet this is the most which can be expected of any double hung window.

The use of the casement is the logical remedy for this defect, for it opens to the air every square inch of the window opening — it is "100 per cent window." Indeed, it sometimes does even a little more for,

Detail of House at Bernardsville, N. J., Showing Metal Casement Windows
Delano & Aldrich, Architects

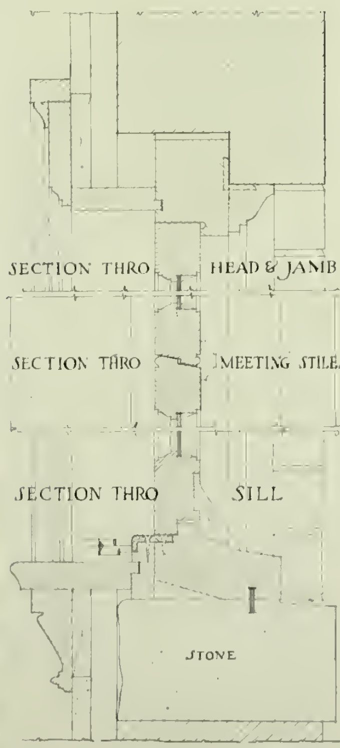


Fig. II. Detail of Wooden Casements Opening In, Set in a Masonry Wall

Detail of Single Metal Casement and Frame Showing Suitable Hardware

projecting as it often does over the sill, it may act as a screen to catch and deflect into a room any stray breeze. Its affording the maximum of ventilation secures for the casement its use in many mercantile buildings where the welfare and comfort of workers during the summer must be considered, and it should certainly recommend itself to architects who are planning rooms with dormer windows where, unless the rooms are to be insufferably warm during the summer, every possible precaution must be taken that adequate ventilation is provided.

In so full and frank a statement of the casement window's advantages and merits it would be hardly fair to omit some reference to the various objections which clients are apt to urge against its use — objections not numerous and, founded as they are upon a misunderstanding of its structure and workings, not difficult to refute. Many a client will say vaguely that he has heard that casements are not weather tight nor burglar proof. Casements when made to swing inward, and particularly when made of wood and set within wooden frames, may not always be weather proof; for wood unfortunately is subject to shrinkage and even when well and thoroughly seasoned is apt to contract, leaving a crevice between the casement and its frame. But precisely the same objection may be brought against every window built of wood, and experience has proved that casements, even though of wood, when arranged to open out, in which case the detail of the sills of both types are identical, are fully as weather tight as double hung windows — the hardest of rains must be driven steadily against them to make possible the entrance of water.

With a reasonable amount of care and time expended in studying the detail of wooden casements, satisfactory service may be had from them when they are not placed in extremely exposed positions. In the detail drawings reproduced herewith are shown examples of construction for casements which have been found to be satisfactory and which can be used with equal success in masonry or frame walls. Figure I shows details of the jambs and sill for frames with sashes opening out, and Fig. II for sashes opening in. In England the ordinary method of forming the rebates in the joint is shown by the dotted lines in Fig. I, but in this country this half round rebate and the astragal mould, shown by dotted lines on the section of the meeting stiles in Fig. II, are usually omitted, the ordinary method for the sides of the meeting stiles following the detail shown here or some variant of this idea.

The position of the frame in Fig. II, would only allow the sash to swing a little more than 90 degrees. If it is desired to have the sashes swing against the walls, the frames must be arranged to set nearly flush with the inside face of the wall if they swing in, or the outer face if they are to swing out. The frames and sashes should be made at least 1¾ inches thick and the sills should be worked from heavy stock to allow for sufficient slope and some form of rebate to prevent the passage of rain and snow. The details of the sills shown here are considered effective in this respect for most sections of the country. Casement sashes are frequently made too large for convenience and become unwieldy and difficult to adjust in heavy winds — 20 inches to 2 feet for width and not over 5 feet for height will be found in most cases to be the largest size that will prove satisfactory.

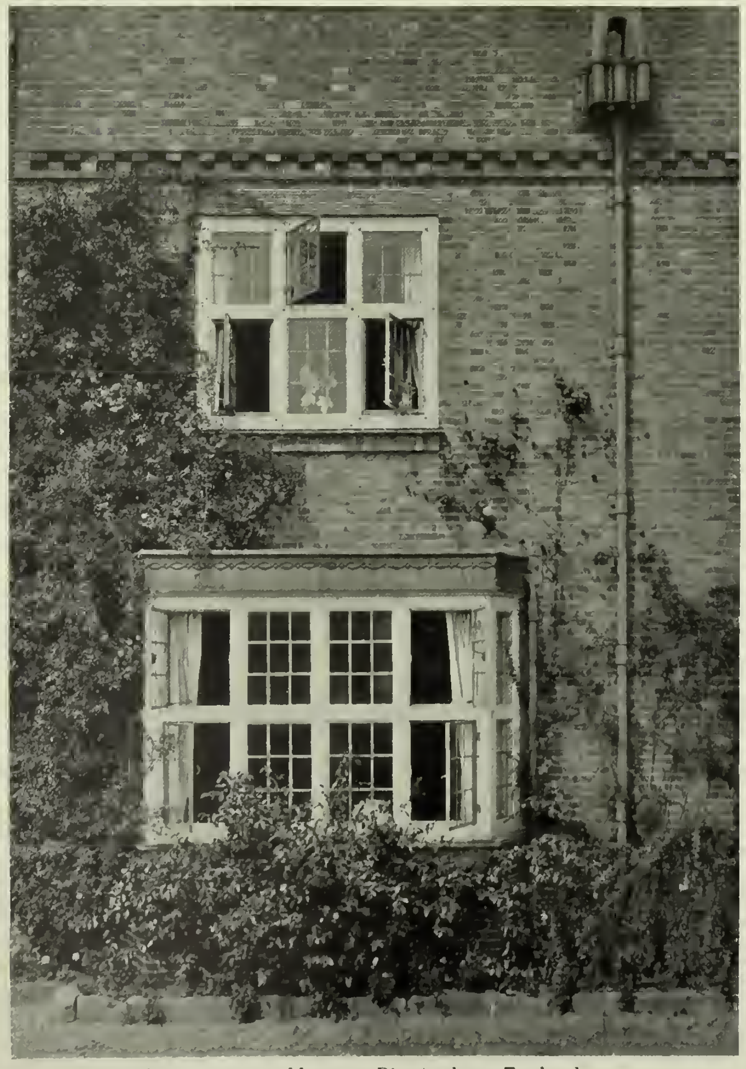
There are very few casements, however, being made of wood where durable qualities are demanded. Very satisfactory casements and frames are now being made of bronze or steel, and one need only examine a few of these to

Detail of Metal Casements and Transom Set Within Stone Mullions and Transom Bar be convinced that they are as absolutely weather proof as human ingenuity can make them. The glass is set within a metal sash which fits with mathematical exactitude in a metal frame arranged for the sash to swing outward. Over the crevice between frame and sash there is placed a strip of metal sometimes an inch wide attached to the sash to protect this joint. There is often attached to the lower rail a condensation gutter designed to catch the water condensing on the inside and carry it out on to the sill by means of weep-holes. All this metal work is so thoroughly welded and fitted together that the entrance of water is an impossibility.

To refute the objection that casements are not burglar proof, examine the accepted mode of fastenings of both types of window. The usual fastening for the double hung window consists of a catch which secures the top of the lower sash to the bottom of that above. In windows of this type where the meeting rails are not counterchecked, and in practically any wooden sash after it has been exposed to the weather, a crevice due to shrinkage occurs between the rails, and into this space a thin blade may be inserted which will unfasten the catch.

By way of contrast examine the fastenings of a casement window. The frames being of metal cannot contract, and the fastening, which even in the case of the wooden sash is after the style of a bolt, prevents the window being forced open from the outside. The outer strip of metal, welded to the swinging casement and which renders it proof against the weather, makes it equally secure against burglars.

Detail of Casement Windows in House Shown Below



Metal Casements in House at Birmingham, England

The advantages of casements from the decorative point of view are many. Their possibilities, in so far as they deal with the exterior of a building, have already been touched upon; but an architect must design the interior fittings as well as the exterior details, and the effect of casements upon the interior should not be overlooked.

They suggest the use of leaded glass to an extent which is interesting alike to architects and decorators. Casements and leaded glass seem closely related from the almost universal use of leading in the windows of old European buildings. Examine any old village cottage or vine-clad Tudor residence in England, or the venerable half timbered façades in Rouen or Rheims, and it will be seen that the casements are filled with leaded glass in patterns often highly ornate but sometimes fully as beautiful by reason of their quaint simplicity. Leaded glass, even when not old, has a tendency to fall somewhat out of perpendicularity; the softness or pliability of the leads makes possible the holding of some fragments of glass at angles which, varying as they do from exact position, afford a play of light and shade which lends added quaintness and picturesqueness to the window.

The resourcefulness of the manufacturers of casements has provided a considerable variety of appropriate hardware for their use. The locks or fastenings used for casements, and the stays or braces by which they are held in position, when open, heighten immeasurably the quaintness of any interior in which they are used.

Heating and Ventilating.

II. SPACE REQUIRED FOR APPARATUS.

By CHARLES L. HUBBARD.

THE data and observations set forth in this article are intended to assist the architect in the planning of airways in buildings of large size and also in approximating the space required for boiler and fan rooms under different conditions.

This subject has been suggested by the experience of the writer in receiving from architects numerous plans for laying out heating and ventilating systems, where the space reserved for this purpose was either much too small or else so arranged as to be difficult of utilizing to the best advantage.

It is evident there can be no hard and fast rule for laying out the ducts and flues, as the governing conditions vary so widely in different buildings. However, there are certain general principles which may be made to apply in a majority of cases by varying them somewhat, and which will serve as a guide to the architect in planning the general scheme of his building.

The first step in any case is to determine the volume of air to be supplied to each room; next the size of the flue; and finally its location, which, to a certain extent, depends upon its necessary size.

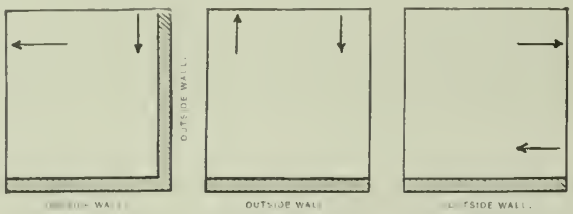


Fig. I Fig. II Fig. III

Arrangements of Inlet and Outlet

Air Volume. The volume of air depends upon the use of the room and the number of occupants, modified to a certain extent by local conditions, such as cost limit of ventilating system, arrangement of rooms, length of time they are used continuously, etc. Tables I and II, from "Power, Heating, and Ventilation," will be found of assistance in assuming the volume of air to be supplied.

TABLE I.

AIR SUPPLY FOR VARIOUS BUILDINGS.

Air supply per occupant for	Cubic feet per minute	Cubic feet per hour.
Hospitals	80 to 100	4,800 to 6,000
High schools	50	3,000
Grammar schools	40	2,400
Theaters and assembly halls	25	1,500
Churches	20	1,200

TABLE II.

AIR SUPPLY FOR VARIOUS ROOMS.

Use of room.	Changes of air per hour.
Public waiting rooms	4 to 5
Public toilets	5 ,, 6
Coat and locker rooms	4 ,, 5
Museums	3 ,, 4
Offices, public	4 ,, 5
Offices, private	3 ,, 4
Public dining rooms	4 ,, 5
Living rooms	3 ,, 4
Libraries, public	4 ,, 5
Libraries, private	3 ,, 4

Size of Flues and Ducts. Having determined the volume of air to be supplied to the different rooms, the sectional area of the flue, in square feet, is found by dividing the cubic feet of air per minute by the velocity to be maintained. For gravity circulation, in the case of buildings like churches, hospitals, schools, etc., it is customary to assume average velocities in the supply flues about as follows:

	Ft. per min.
1st floor	250
2d floor	300
3d floor	350

The velocity in the vent flues will be somewhat less on account of the lower air temperature, and may be taken as below:

	Ft. per min.
1st floor	220
2d floor	260
3d floor	300

In work of this kind the heater should be placed directly at the base of the flue and the cold air connection made as short and direct as possible, and the full size of the warm air flue. When two or more heaters are supplied from a trunk line, the main duct should have a sectional area equal to all of the warm air ducts connecting with it. If the trunk line has two inlets, on different sides of the building, each should equal the full size of the duct.

When a fan is used, considerably higher velocities may be employed as follows:

	Ft. per min.
Inlet windows to heater	1,000
Main duct from fan	1,200
Branches to flues	900
Vertical flues to rooms	600
Through registers	350
Vent flues	350

In the case of court-houses, municipal buildings, etc., where there are a large number of rooms and several floors, it is necessary to reduce the flue space to a minimum.

For buildings of this character and of fireproof construction it is customary to use terra cotta flue linings, on account of their smooth interior, and employ a velocity of about 1,000 feet per minute by speeding up the fan. The same velocities may be obtained in the vent flues by connecting them with a centrifugal exhauster placed in the attic. When these high velocities are employed, great care must be taken to make all ducts and flues tight against leakage, to have the interior smooth and without abrupt bends, so far as possible.

Arrangement and Location of Airways. The arrangement of the flues will depend largely upon the type of building. In the gravity heating of halls and churches of small and medium size the air may be brought in at points near each corner, preferably through wall registers 7 or 8 feet above the floor. If the rooms are not too large, the discharge ventilation may be through grilles or registers in the front of the platform and connecting with a flue carried up on the rear wall. It is well to supplement this with one or more ceiling vents for use in mild weather. If the auditorium is of considerable length, it is best to add a second vent flue at the other end. In the case of school buildings, where the rooms are large and the arrangement similar, or the same on each floor, more definite rules may be given. One inlet and one outlet is usually sufficient for a standard class room, and either of the general arrangements shown in Figs. I, II, and III may be used according to choice as to which is the more convenient. The inlet registers should be from 7 to 8 feet above the floor and the vents either at the floor or just above the baseboard. A typical arrangement for a bank of flues on the scheme of Fig. III is shown in plan and elevation in Fig. IV. In this case the supply flues are carried up near the outer wall and the vents at the inner end of the partition, with the space between utilized for closets or bookcases. This is probably one of the best arrangements for general schoolhouse work, being fairly compact and bringing the supply and vent openings in positions for the most effective results. On account of the offsets in the supply flues it is rather better adapted to sheet metal than to masonry construction, although either material may be employed.

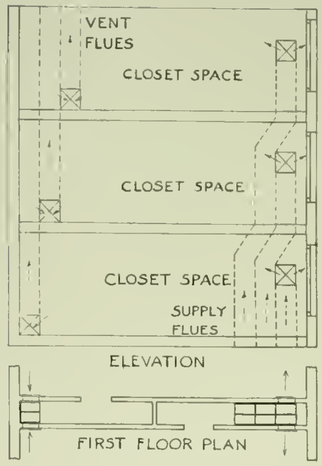
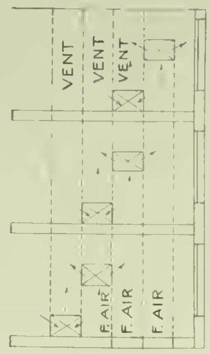


Fig. IV



A compact arrangement of flues without offsets which will give a satisfactory distribution of air.

Fig. V

A very compact arrangement of flues, in which there are no offsets, is shown in Fig. V. The only objection to this is the location of the vent flues, which are too near the outer wall for ideal conditions. However, the supply flues are well placed, which is of greater importance, and a very satisfactory air distribution may be obtained with this arrangement.

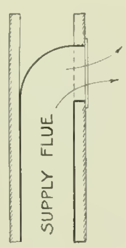


Fig. VI

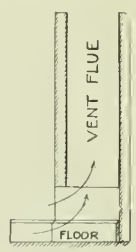


Fig. VII

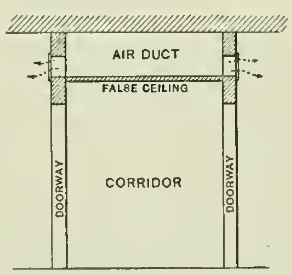


Fig. VIII

In order to avoid offsets, or double partition walls, the supply flues are made the same size as the vents. This scheme is especially adapted to masonry construction and where the space is limited. Each building, of course, requires special treatment; but the diagrams given represent standard practice and may be modified to fit a variety of conditions. The flue arrangement in Fig. II is practically the same as shown in Fig. IV, the only difference being that the flues are located in a rear or corridor wall and therefore only a single bank may be used.

The top of the supply flue should be curved and the register opening made the full width of the flue in order to obstruct the air flow as little as possible. One of the most sanitary arrangements for the vent outlet is to omit the usual grille or register face and extend the floor and baseboard so as to include the flue. Typical diagrams for inlet and outlet openings are shown in Figs. VI and VII. The fan and heater room should be centrally located in order to make the supply ducts symmetrical, thus equalizing the resistance to air flow and assisting in the distribution to the various rooms.

The connecting ducts between the fan and the vertical flues form an important part of a ventilating system. All bends should be well rounded and adjustable deflectors provided at the junctions. These airways are usually constructed of galvanized iron and carried at the basement ceiling, although underground ducts of concrete are often used where the basement rooms are utilized for class-room purposes and it is desired to keep the ceilings free from all obstructions. Underground ducts are more expensive to construct and produce a considerable loss of heat unless lined with some sort of insulating material, which adds still further to their cost. Care should also be taken in work of this kind to make the ducts waterproof when the soil is such as to call for this precaution. Sometimes the building arrangement is such that the upper part of the basement corridor may be made to serve as the main distributing airway by constructing a false ceiling 2 or 3 feet below the main ceiling. This serves as a supply reservoir under pressure from which branch ducts may be carried to such flues as are off the direct line of the main airway. In cases of this kind care should be taken to provide either adjustable dampers or deflectors as may be best adapted to give to each flue its proper proportion of air.

In large churches and theaters the air is best distributed by delivering it into a closed space beneath the floor and discharging it into the room through specially constructed slots or grilles in the pews, or through "mushroom" outlets beneath the chairs. In small churches and halls the treatment is more nearly like that employed in school buildings.

In the case of hospitals the method will depend a good deal upon the type of building. Indirect heat is largely used in cottage hospitals one or two stories in height, bringing the warm air in through wall registers beneath the windows. The basements of buildings of this kind usually provide ample space for any arrangement of cold air supply desired, and often the entire basement, or a considerable portion of it, is used as an air chamber. In larger institutions a fan system should always be employed, and owing to the large number of small rooms comparatively high velocities are made use of to reduce the flue space required. In buildings of this kind the rooms are commonly arranged along main corridor-ways and the flues carried up in banks along the corridor walls. The general arrangement may be similar to those shown in Figs. IV and V, with a supply fan in the basement and an exhaust fan in the basement or on the roof as is most convenient.

In the ventilation of tall office buildings, where it would be practically impossible to reach all of the rooms with separate flues from the basement, the best plan is to carry up one or more large flues of sufficient capacity to supply the entire building and at each floor connect with distributing ducts formed by furring down the corridors, as shown in Fig. VIII. Deflectors are placed in the main flue at each floor for regulating the air flow, and the inlets to the rooms lead directly from the horizontal ducts as indicated in the diagram.

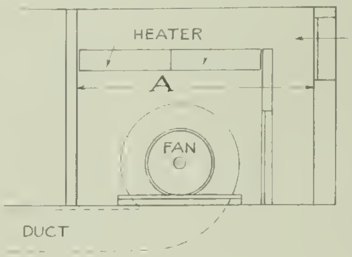


Fig. IX

The fresh air supply for a fan system in city buildings should be taken from a point well above the street level in order to avoid surface dust as much as possible. There seems, however, no particular advantage in placing the inlet more than 20 or 30 feet above the street grade, for above that level the principal impurity is soot, which is found at all elevations to the top of the building. In the case of schools, churches, etc., which are surrounded by a considerable extent of lawn, the air supply may usually be taken in at the ground level without picking up an excessive amount of dust. The supply duct should enter the building as near the fan as possible in order to keep the frictional resistance at a minimum. In planning for indirect heating the supply flues and heating stacks should first be located and the cold air inlets provided for with reference to them.

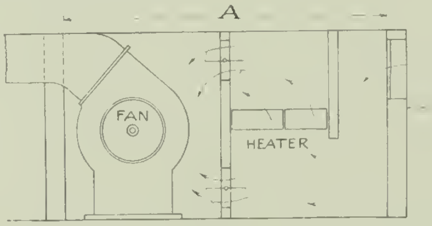


Fig. X

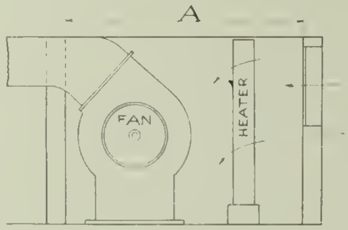


Fig. XI

Space Required for Ventilating Apparatus. The space required for the fan and main heater will vary of course with the particular arrangement used. Three different schemes are shown in Figs. IX, X, and XI. In the first of these the heater is made up of cast-iron sections supported on iron beams above the fan as indicated. A fan with a three-quarter housing is used in this case, discharging into an underground duct, although an angular up-discharge may be employed if it is desired to use overhead distributing ducts.

In making up Table III the required space is based on heating the air from zero to 110 degrees, using standard pin radiator sections rated at 20 square feet per section. For lower temperatures, such as are employed in purely ventilating work where direct radiation is used for warming, shallower sections would be used, but the horizontal dimensions would be practically the same. Hence, Table III applies approximately to all ordinary conditions for this particular arrangement of fan and heater. The size of the fan is based on capacities and speeds given in the previous article in the February issue. The dimensions are for fan and heater rooms combined, and allow for the space required for interior division walls, supports, etc. It is also assumed that direct connected motors or engines will be used for driving the fan.

TABLE III. (See Fig. IX.)

Cubic feet of air per minute.	Height of room.	Length of room ("A").	Width of room.
5,000	9′	13′	8′
10,000	10′	14′	8′
15,000	12′	16′	9′
20,000	13′	20′	9′
25,000	14′	20′	10′
30,000	15′	20′	11′
40,000	16′	22′	12′
50,000	18′	26′	13′

Another layout is shown in Fig. X, using the same type of heater based upon the same capacity. In this case the heater is suspended midway between the floor and ceiling and the path of the air is indicated by the arrows.

Table IV gives dimensions for this arrangement. For capacities up to 20,000 cubic feet per minute, full housed fans have been assumed, as shown in the accompanying diagram, while for larger air volumes the three-quarter housing for the fan has been taken, as shown in Fig. IX, in making up Table IV in order to reduce the required height of room.

TABLE IV. (See Fig. X.)

Cubic feet of air per minute.	Height of room.	Length of room ("A").	Width of room.
5,000	9′ 0″	14′	8′
10,000	9′ 6″	18′	8′
15,000	10′ 0″	20′	11′
20,000	10′ 6″	22′	15′
25,000	11′ 6″	26′	15′
30,000	11′ 6″	28′	16′
40,000	12′ 0″	30′	19′
50,000	12′ 6″	32′	23′

Table V refers to Fig. XI, in which a pipe heater of standard form is used. Two different lengths of room ("A") are given, one for the apparatus as shown in the diagram, and the other when an air washer is employed.

TABLE V. (See Fig. XI.)

Cubic feet of air per minute.	Height of room.	Width of room.	Length without air washer ("A").	Length with air washer ("A").
5,000	9′	8′	12′	20′
10,000	9′	9′	13′	21′
15,000	11′	11′	15′	23′
20,000	11′	16′	17′	25′
25,000	11′	19′	18′	26′
30,000	12′	20′	20′	28′
40,000	12′	20′	22′	30′
50,000	12′	20′	25′	33′

In special cases where room is limited, the space given in the tables can be reduced somewhat by laying out the apparatus to scale and by making arrangements especially adapted to the case in hand. The dimensions given are for average conditions and are intended to give ample room not only for the apparatus but also working space for the attendants.

Space Required for Boiler Rooms. The first step in determining the size of boiler room is to approximate the horse-power which for heating may be done by means of the charts given in the preceding article. The boiler horse-power for ventilation may be found by multiplying the cubic feet of air to be supplied per *minute* by 0.0026. When the building is to contain a power plant, or combined power and heating plant, the total horse-power to be provided should be obtained from the engineer, as the problem of determining it becomes somewhat complicated and depends upon varying conditions.

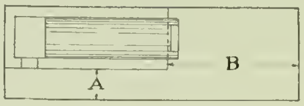


Fig. XII

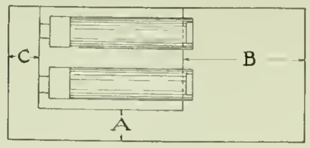


Fig. XIII

In all plants of any considerable size, at least one spare boiler should be furnished for an emergency.

In laying out a boiler room there must not only be sufficient space for the boiler itself, but also for cleaning, firing, and drawing the tubes. Fig. XII shows a horizontal return tubular boiler placed in a corner of the boiler room. When this is done, the outer wall of the setting may be omitted by providing an air space, at least 4 inches in depth, between the setting and building wall on the side and rear.

The space "A" for reaching the cleanout door should not be less than 3 feet. The space "B," in front of the boiler, should be about 6 inches greater than the length of the tubes. This amount of space is not required for firing purposes but for drawing the tubes.

Two boilers set in a battery are shown in Fig. XIII. In this case a space is allowed at the rear for reaching the cleanout doors. When possible the distance "C" should be made about 3 feet, although 2 feet may be made to answer when the available room is limited.

Reference has been made above to the space required for drawing the tubes of a boiler. There are different ways of reducing this, two of which are shown in Figs. XIV and XV. In the first of these a window is provided in front of each boiler, either in an outside or inside wall, furnished with a removable sash. The second case is sometimes used where the boilers are well below the street grade and face an outside wall. Here a special excavation is made to a point slightly above the tops of the tubes as indicated, without carrying it up to the top of the boiler room.

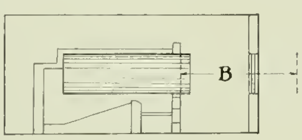


Fig. XIV

TABLE VI.

Diameter of shell.	Length of tubes.	Horse-power.	Diameter of shell.	Length of tubes.	Horse-power.
30″	7′	10	54″	13′	41
30″	8′	11	54″	14′	44
30″	9′	13	54″	15′	47
36″	9′	15	60″	14′	56
36″	10′	17	60″	15′	60
36″	11′	19	60″	16′	64
42″	10′	21	66″	14′	70
42″	12′	26	66″	15′	75
42″	14′	29	66″	16′	80
48″	11′	33	72″	15′	94
48″	12′	35	72″	16′	100
48″	13′	38	72″	17′	106

After determining the total horse-power required, the number of units should be decided upon, after which the diameter and length of shell may be taken from Table VI.

The horse-powers given in the table are based on the tube arrangement recommended by the Hartford Steam Boiler Inspection and Insurance Co. The lengths given are those of the tubes.

Table VII, taken from "Power, Heating, and Ventilation," gives the over all dimensions of horizontal tubular boilers with both light and heavy settings, and may be used in determining the required floor space.

TABLE VII.

HEAVY SETTING FOR POWER.

Diam. of shell.	30″	36″	42″	48″	54″	60″	66″	72″
Length of setting − Length of tubes +	3-6	3-8	3-8	4-2	4-2	4-2	4-2	4-2
Width of setting. 1 boiler	5-8	6-10	7-4	7-10	9-0	9-6	10-0	10-6
Width of setting. 2 boilers	9-8	11-8	12-8	13-8	15-8	16-8	17-8	18-8
Width of setting. 3 boilers	13-8	16-6	18-0	19-6	22-4	23-10	25-4	26-10
Width of setting. 4 boilers	17-8	22-4	23-4	25-4	29-0	31-0	33-0	35-0

LIGHT SETTING FOR HEATING.

Diam. of shell.	30″	36″	42″	48″	54″	60″	66″	72″
Length of setting − Length of tubes +	3-2	3-4	3-4	3-10	3-10	3-10	3-10	3-10
Width of setting. 1 boiler	5-8	6-2	6-8	7-2	7-8	8-2	9-10 9-4	11-4 9-10
Width of setting, 2 boilers	9-8	10-10	11-10	12-10	14-0	15-0	17-8 16-8	18-8 17-8
Width of setting. 3 boilers	13-8	15-6	17-0	18-6	20-4	21-10	25-6 24-0	26-6 25-0
Width of setting. 4 boilers	17-8	20-2	22-2	24-2	26-8	28-8	33-4 31-4	34-10 32-10

NOTE.—Upper figures at bottom of last two columns to be used when width of grate equals diameter of boiler.

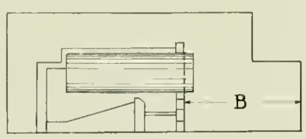


Fig. XV

The minimum height of room is given below, which allows 3 feet above the boiler for pipe connections. When possible, an extra foot or two should be provided, especially in case of the larger sizes, when there is considerable piping over the boilers and numerous valves to be reached.

TABLE VIII.

Diameter of boiler.	Height of room.	Diameter of boiler.	Height of room.
30″	9′ 6″	54″	11′ 6″
36″	10′ 0″	60″	12′ 6″
42″	10′ 6″	66″	13′ 6″
48″	11′ 0″	72″	14′ 6″

The various makes of water-tube boilers vary so much in form and size for a given capacity that the actual dimensions of the type and power of boiler to be used should be obtained before reserving the space. In general, a water-tube boiler requires less floor space than a return tubular, but usually needs more head room, except in case of certain forms made especially for low basements.

up in banks along the corridor walls. The general arrangement may be similar to those shown in Figs. IV and V, with a supply fan in the basement and an exhaust fan in the basement or on the roof as is most convenient.

In the ventilation of tall office buildings, where it would be practically impossible to reach all of the rooms with separate flues from the basement, the best plan is to carry up one or more large flues of sufficient capacity to supply the entire building and at each floor connect with distributing ducts formed by furring down the corridors, as shown in Fig. VIII. Deflectors are placed in the main flue at each floor for regulating the air flow, and the inlets to the rooms lead directly from the horizontal ducts as indicated in the diagram.

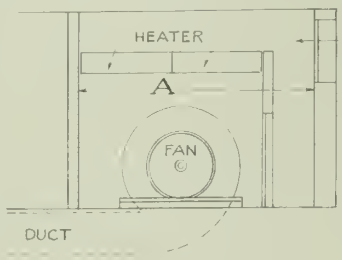


Fig. IX

The fresh air supply for a fan system in city buildings should be taken from a point well above the street level in order to avoid surface dust as much as possible. There seems, however, no particular advantage in placing the inlet more than 20 or 30 feet above the street grade, for above that level the principal impurity is soot, which is found at all elevations to the top of the building. In the case of schools, churches, etc., which are surrounded by a considerable extent of lawn, the air supply may usually be taken in at the ground level without picking up an excessive amount of dust. The supply duct should enter the building as near the fan as possible in order to keep the frictional resistance at a minimum. In planning for indirect heating the supply flues and heating stacks should first be located and the cold air inlets provided for with reference to them.

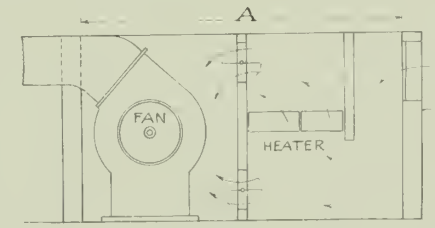


Fig. X

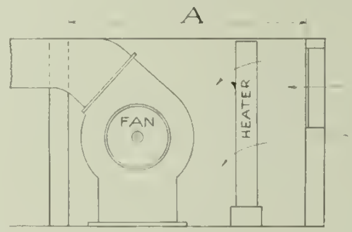


Fig. XI

Space Required for Ventilating Apparatus. The space required for the fan and main heater will vary of course with the particular arrangement used. Three different schemes are shown in Figs. IX, X, and XI. In the first of these the heater is made up of cast-iron sections supported on iron beams above the fan as indicated. A fan with a three-quarter housing is used in this case, discharging into an underground duct, although an angular up-discharge may be employed if it is desired to use overhead distributing ducts.

In making up Table III the required space is based on heating the air from zero to 110 degrees, using standard pin radiator sections rated at 20 square feet per section. For lower temperatures, such as are employed in purely ventilating work where direct radiation is used for warming, shallower sections would be used, but the horizontal dimensions would be practically the same. Hence, Table III applies approximately to all ordinary conditions for this particular arrangement of fan and heater. The size of the fan is based on capacities and speeds given in the previous article in the February issue. The dimensions are for fan and heater rooms combined, and allow for the space required for interior division walls, supports, etc. It is also assumed that direct connected motors or engines will be used for driving the fan.

TABLE III. (See Fig. IX.)

Cubic feet of air per minute.	Height of room.	Length of room ("A").	Width of room.
5,000	9′	13′	8′
10,000	10′	14′	8′
15,000	12′	16′	9′
20,000	13′	20′	9′
25,000	14′	20′	10′
30,000	15′	20′	11′
40,000	16′	22′	12′
50,000	18′	26′	13′

Another layout is shown in Fig. X, using the same type of heater based upon the same capacity. In this case the heater is suspended midway between the floor and ceiling and the path of the air is indicated by the arrows.

Table IV gives dimensions for this arrangement. For capacities up to 20,000 cubic feet per minute, full housed fans have been assumed, as shown in the accompanying diagram, while for larger air volumes the three-quarter housing for the fan has been taken, as shown in Fig. IX, in making up Table IV in order to reduce the required height of room.

TABLE IV. (See Fig. X.)

Cubic feet of air per minute.	Height of room.	Length of room ("A").	Width of room.
5,000	9′ 0″	14′	8′
10,000	9′ 6″	18′	8′
15,000	10′ 0″	20′	11′
20,000	10′ 6″	22	15′
25,000	11′ 6″	26′	15′
30,000	11′ 6″	28′	16′
40,000	12′ 0″	30′	19′
50,000	12′ 6″	32′	23′

Table V refers to Fig. XI, in which a pipe heater of standard form is used. Two different lengths of room ("A") are given, one for the apparatus as shown in the diagram, and the other when an air washer is employed.

TABLE V. (See Fig. XI.)

Cubic feet of air per minute.	Height of room.	Width of room.	Length without air washer ("A").	Length with air washer ("A").
5,000	9′	8′	12′	20′
10,000	9′	9′	13′	21′
15,000	11′	11′	15′	23′
20,000	11′	16′	17′	25′
25,000	11′	19′	18′	26′
30,000	12′	20′	20′	28′
40,000	12′	20′	22′	30′
50,000	12′	20′	25′	33′

In special cases where room is limited, the space given in the tables can be reduced somewhat by laying out the apparatus to scale and by making arrangements especially adapted to the case in hand. The dimensions given are for average conditions and are intended to give ample room not only for the apparatus but also working space for the attendants.

Space Required for Boiler Rooms. The first step in determining the size of boiler room is to approximate the horse-power which for heating may be done by means of the charts given in the preceding article. The boiler horse-power for ventilation may be found by multiplying the cubic feet of air to be supplied per *minute* by 0.0026. When the building is to contain a power plant, or combined power and heating plant, the total horse-power to be provided should be obtained from the engineer, as the problem of determining it becomes somewhat complicated and depends upon varying conditions.

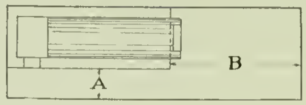


Fig. XII

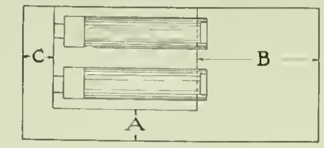


Fig. XIII

In all plants of any considerable size, at least one spare boiler should be furnished for an emergency.

In laying out a boiler room there must not only be sufficient space for the boiler itself, but also for cleaning, firing, and drawing the tubes. Fig. XII shows a horizontal return tubular boiler placed in a corner of the boiler room. When this is done, the outer wall of the setting may be omitted by providing an air space, at least 4 inches in depth, between the setting and building wall on the side and rear.

The space "A" for reaching the cleanout door should not be less than 3 feet. The space "B," in front of the boiler, should be about 6 inches greater than the length of the tubes. This amount of space is not required for firing purposes but for drawing the tubes.

Two boilers set in a battery are shown in Fig. XIII. In this case a space is allowed at the rear for reaching the cleanout doors. When possible the distance "C" should be made about 3 feet, although 2 feet may be made to answer when the available room is limited.

Reference has been made above to the space required for drawing the tubes of a boiler. There are different ways of reducing this, two of which are shown in Figs. XIV and XV. In the first of these a window is provided in front of each boiler, either in an outside or inside wall, furnished with a removable sash. The second case is sometimes used where the boilers are well below the street grade and face an outside wall. Here a special excavation is made to a point slightly above the tops of the tubes as indicated, without carrying it up to the top of the boiler room.

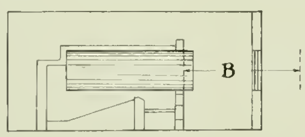


Fig. XIV

TABLE VI.

Diameter of shell.	Length of tubes.	Horse-power.	Diameter of shell.	Length of tubes.	Horse-power.
30″	7′	10	54″	13′	41
30″	8′	11	54″	14′	44
30″	9′	13	54″	15′	47
36″	9′	15	60″	14′	56
36″	10′	17	60″	15′	60
36″	11′	19	60″	16′	64
42″	10′	21	66″	14′	70
42″	12′	26	66″	15′	75
42″	14′	29	66″	16′	80
48″	11′	33	72″	15′	94
48″	12′	35	72″	16′	100
48″	13′	38	72″	17′	106

After determining the total horse-power required, the number of units should be decided upon, after which the diameter and length of shell may be taken from Table VI.

The horse-powers given in the table are based on the tube arrangement recommended by the Hartford Steam Boiler Inspection and Insurance Co. The lengths given are those of the tubes.

Table VII, taken from "Power, Heating, and Ventilation," gives the over all dimensions of horizontal tubular boilers with both light and heavy settings, and may be used in determining the required floor space.

TABLE VII.

HEAVY SETTING FOR POWER.

Diam. of shell.	30″	36″	42″	48″	54″	60″	66″	72″
Length of setting = Length of tubes +	3-6	3-8	3-8	4-2	4-2	4-2	4-2	4-2
Width of setting. 1 boiler	5-8	6-10	7-4	7-10	9-0	9-6	10-0	10-6
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Width of setting. 4 boilers	17-8	22-4	23-4	25-4	29-0	31-0	33-0	35-0

LIGHT SETTING FOR HEATING.

Diam. of shell.	30″	36″	42″	48″	54″	60″	66″	72″
Length of setting = Length of tubes +	3-2	3-4	3-4	3-10	3-10	3-10	3-10	3-10
Width of setting. 1 boiler	5-8	6-2	6-8	7-2	7-8	8-2	9-10 9-4	11-4 9-10
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NOTE. — Upper figures at bottom of last two columns to be used when width of grate equals diameter of boiler.

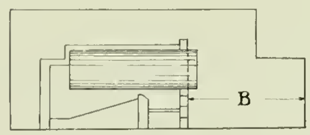

Fig. XV

The minimum height of room is given below, which allows 3 feet above the boiler for pipe connections. When possible, an extra foot or two should be provided, especially in case of the larger sizes, when there is considerable piping over the boilers and numerous valves to be reached.

TABLE VIII.

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The various makes of water-tube boilers vary so much in form and size for a given capacity that the actual dimensions of the type and power of boiler to be used should be obtained before reserving the space. In general, a water-tube boiler requires less floor space than a return tubular, but usually needs more head room, except in case of certain forms made especially for low basements.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

MODERN architecture has been discussed much of late to its detriment. We have heard how architecture of the present day is the result of borrowing; but we have failed to note any instance which has been given or any suggestion which has been made as to how borrowing may be avoided or by what other means architecture can be bettered. There are those who contend that an architectural system based upon borrowing either as a constructive or as a decorative principle is as prejudicial to healthy artistic growth as a persistent habit of borrowing from one's neighbors in terms of dollars and cents is contrary to sound domestic finance and harmful to social amenities. Others claim that we are all borrowers and shall continue to borrow in architecture until the end.

It is admitted that it is undertaking what seems impossible to create a new style in the present day. Traveling has become common and with the increased knowledge of things architectural, propounded by the literature of the day, sharp distinctions between the styles are bound to drop. The enormous number of books have helped to transplant into alien territories the different styles we see to-day. Some one has said that the evil genius of the art of architecture has always been the literary man. To go back a long way, the Romans were happily and successfully building beautiful, ample, round, arched structures when the literary person of the age declared that true chasteness was to be found only by using the straight lines of Greece. The man in the street combined with the literary man (these two have much in common) forced the architect out of the way of his inclination into the paths of dulness. Again, at the Renaissance the men of letters, also in conjunction with the public, forced the designer to forsake his preference. Now when we have become accustomed to our borrowed finery we are driven with suddenness into all sorts of styles until, with the latest extremists, we are threatened to be denuded of all our accumulated rags as being wholly unnecessary for clothing the nakedness of our structural forms.

Does not constructive criticism of the situation suggest that the pressing hindrance to good architecture to-day is not alone attributable to the use of borrowed forms, but to the love of wealth for wealth's sake? Can it not be said that the worship of wealth for wealth's sake alone has gone far in upsetting the production of good work? Rome set out to conquer the world, and her object was to increase her wealth. In the process she appropriated the architecture of Greece and debased it. With the arrival of the Renaissance there was a great output of wealth, a great increase in trades, a great striving for money for its own sake. Of what use was the architecture of Greece to the people of this age? That was an intellectual effort, but the making of money was not. They could not understand the subconscious influence of the Greek, his high ideals and noble aspirations. They turned to the martial and wealthy people — the Romans — for their inspiration.

Is the outburst of enthusiasm for classical forms evidenced to-day due to the fact that we are still worshiping wealth for wealth's sake? Do we erect almost endless colonnades before our public buildings as did the Romans to satisfy our love for wealth and the ostentation which it encourages? Are we really sincere in our efforts to indicate in terms of structural and decorative materials the function of a building which it is claimed is the primary object of architecture, or do we solve our problems in design by formula based on the varying imposing effects which architectural contrivances will produce?

Intelligent study of economic and social conditions to-day should be the foundation of architectural style, and it must have an important bearing upon the development of any new architectural forms. If conditions to-day are the same as those that brought into being the imposing and masterful architecture of Rome, let us make use of their forms; for if architecture is really an expression of the life of the people, those same forms would be produced to-day. If there is to be developed an American style differing from any that has been produced in the preceding ages, it will be the result of differing conditions. If we are to abandon the old established forms for better ones, we have first to change the economic conditions of our time, to improve the people's thoughts and ideals, which give rise to architectural styles — then we may expect the stimulating impetus and need for newer and better architectural forms.

THE jury of award of the George Washington Memorial Association has accepted the design of Messrs. Tracy & Swartwout for the proposed new auditorium. The building is to be not only a fitting memorial to the first president and his interest in higher education in America, but also a national headquarters for patriotic, scientific, educational, literary, and similar organizations.

It is interesting to note that with the exception of the Mormon Temple in Salt Lake City, this Washington memorial will be the first large building in which the audience — in this case six thousand — will be seated in accordance with the modern theory of acoustics. To make sure that there would be no "deaf spots" or places where the speaker's voice could not be heard by a large part of the audience, the elliptical plan for the auditorium was adopted. The theory is that there is a line of equal sound extending from the speaker's platform around the room, and that this line is an ellipse. A man sitting in the last row and directly facing the speaker hears just as well as one who sits nearer but off to one side. The ellipse by permitting more people to sit facing the speaker within a given area is therefore regarded as the most economical arrangement. The auditorium will have a flat domed roof constructed of tile especially adapted to absorb sound and will be 270 feet in length by 200 feet in width.

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VOLUME XXIII NUMBER 6

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WARRINGTON G. LAWRENCE, ARCHITECT
FLOYD YEWELL, DELINEATOR

THE BRICKBVILDER

VOLUME XXIII JUNE, 1914 NUMBER 6

The Use of Color in Architecture.

By BIRCH BURDETTE LONG.

THE use of color in architecture is a problem than which there is none more fascinating to practitioners of the art, nor is there any branch of the profession in which failure is more frequent, nor disappointment more keen than in this. We have been here in America through an experience of a general and successful revival of architectural taste which has expressed itself not alone in our churches, our residences, and our public buildings, but also in our hotels, stores, and even factories; and examination of these buildings will show that we have depended immensely upon purity of line and delicacy of detail and little upon the factor of color, either for all portions of the building or for the decoration of specific portions. Our lack of success in this respect has been probably due to two causes — the first being that so much of our architecture of the Victorian period was lavishly colored, and in our revolt from the execrable work of that time we have come to regard its good qualities in the same rank with its bad. The other and principal reason is, I think, the difficulty of selecting materials to produce the desired effect; it is, of course, easy to suggest a color scheme in a rendering, assuming that the man making the rendering has himself an accurate feeling of color; but as the success of the color scheme of a rendered drawing depends, not upon the positive colors in the drawings but on their relations to each other, one can hardly use the rendering as a sort of sample and match the materials to it. Even if the coloring of the materials in the sketch could be exactly matched in the building, two of the colors in every rendered drawing, namely, the foliage and the sky, cannot be artificially harmonized in the completed work, and the result will not approximate that indicated by the sketch. This does not mean that the rendering is necessarily false, since its purpose is mainly pictorial, and if it conveys to the eye a correct impression of the completed result, it is successful in its purpose because the *comparative* values of the colors are correct, and not their positive values. In order to make this point perfectly clear take, for example, an exhibition of paintings: one finds not infrequently landscapes which are similar in character, which convey to us the impression of having been painted, at not only the same season, but at the same time of day, and which impress us equally with their sincerity and accuracy; but comparison between them will show that the color scheme is entirely dissimilar — the sky in one may be mauve, where in the other it is blue, and the grass yellow in one and blue in the other.

These pictures are satisfactory, not because the absolute colors appear as they do in nature, but because the relationship established between them varies in the same degree that it does in nature; we are not apt to see color absolutely, but comparatively. The architect therefor who endeavors to follow the color scheme of a rendering should remember that he is seeking not for the identical colors but for those which will convey a similar impression.

Most architects whose work is pleasing in its relationships of color have succeeded by begging the question, and by using in place of really positive colors, monotone schemes, or by including a few very simple colors which years of experiment have proven to be satisfactory. Let us take two examples of monotone color schemes which are each highly successful: the big waiting room of the Pennsylvania Station is perhaps one of the most beautiful rooms in America — warm, sympathetic and rich — but the scheme is essentially a monotone in a dull light brown or buff, relieved only with the pale blue and tan of the maps placed high up on the walls which are after all not so much different colors as variations of the brown tone. Of similar type as regards color scheme, although an example completely different in character, is the house designed by Messrs. Albro and Lindeberg, at Easthampton, in which the basic tone is again the warm buff of the stucco, which is repeated in slightly darker color in the roof, brightened by white trim and very dull green blinds. It is essentially a one-color scheme, since the green is dulled to such a degree that it is hardly a distinct color, but rather a variation of the ground tone.

The two examples above described have exactly the same qualities of suggestion of color that a first rate black and white drawing or etching has: one feels almost sure that they are full of color (as in a certain way they are), but it is one color with variations, not a combination of several colors.

The other class of colors in which success is easy, because there has been so much experiment in them that no particular thought is required about the color scheme, has one prominent example — the green and white of Colonial architecture. A white house, with either light or dark green blinds, and a roof of a shade of green to harmonize with the blinds (easy for even an uncultivated color sense to find), or with a roof of any neutral colored brown or gray, could hardly fail to be a success from the point of view of color; and the knowledge of this is so widespread that the first thing which an architect prescribes when he is asked to improve a house is often to paint it white with green blinds. Now I do not imagine that this combination of white and green is the only good one possible for a house, but as the average of Colonial houses which were painted in these colors was much higher than the average of our country houses painted in any other color combination, we have become accustomed to regard any green and white house as being pretty good, and to accept it as pretty good, because of the slovenly and unanalytical train of thought that we are to follow when our attention is not especially aroused.

Aside from the classes of structures which we have just mentioned we find that pretty nearly all of our buildings have been done in a strict monotone, relieved only when the material is changed, and even then if the additional material can be made to approach in color the basic tone, it is very frequently so used. We have numerous examples of this style which are so familiar that no illustration is necessary: perhaps the one we have most often seen being the office or loft building in which the lower stories are of limestone, the shaft of brick, matching the limestone as closely as can be, the crown of terra cotta fashioned like limestone, and the window trims painted white or dull gray. Nor am I prepared to say for a minute that this decent and orderly succession of materials would be bettered by varying them in color. As a matter of fact as most buildings of this type are designed, the reverse would probably be the case, and yet a much more interesting building could be conceived in which the motives themselves were adapted to the use of color, and executed with its very liberal use.

Nevertheless the fact remains that where color has been used in buildings of this class, even in a timid and hesitating way a greater variety of effect and interest of treatment has been secured than could possibly have been the case without it. Take, for example, the Dreicer building; this is a rather low store building of good proportions, and of excellent detail, executed in limestone for the most part, but with the lower story of black and gold marble with gilded capitals; the metal work of the window and door frames is again gold colored, and this lower story has an extraordinary richness, which would hardly be possible in any other material. The building looks like a jewelry shop, and is intended so to look, and although in the photograph the lower story does not appear stable enough to support those above, in reality there is no such feeling, except that one realizes that the pilasters are not structural, but purely ornamental, which is quite as it should be. Beyond the first story the architects dared not venture, and while the building is admirably successful as a whole, in monotone, it might have been still more attractive had a color scheme been worked through the upper stories so as to make the contrast between the upper and lower portions of the building a little less hard and definite.

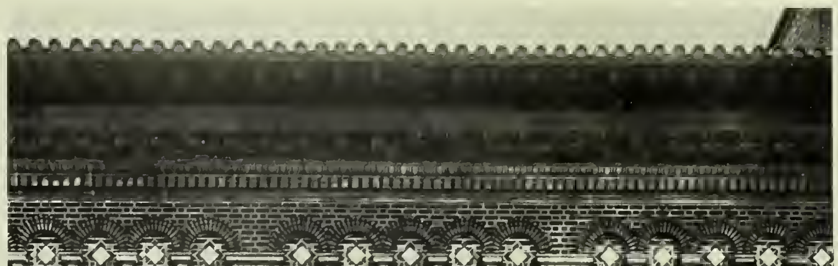
Of course the use of color in a building composed of purely natural materials is always a little difficult, since nature affords us a limited palette with which to work. In stone there are few varieties, white, gray, reddish brown and buff being those readily accessible, although curiously colored green limestone has been used in some very poorly designed buildings of the University of Pennsylvania and the University of Virginia, and is never used now, principally, I suppose, because those buildings were unattractive, and their faults were assumed to include their color. Now, as most of the decorative motives which were employed have been transmitted to us through the medium of stone architecture, we have more or less unconsciously imitated with these forms, in our artificial materials the stone colors, with the single exception of brick, which has a natural color of its own. Even in brick there have been constant attempts made to produce a surface texture, graining and color like that of stone, and the same effort, many times magnified, is apparent in our buildings of terra cotta. Now, architectural terra cotta, like brick, is a rational

Country House at Easthampton, Long Island, N.Y.
Albro & Lindeberg, Architects

and sensible building material, with attributes which are individual to it, and of which, up to the present time, we have not made the most, but have preferred to treat it as an imitation stone. This practice has been so universal that we can see terra cotta thus constructed without feeling its impropriety, although when we can go out into the country and see a building built of cement blocks surfaced like rock-faced ashlar, we instantly realize its falsity and dislike it for that reason. Brick has had worked out for it during the many centuries of its use a rational and decent system of ornament and of construction; brick cornices do not imitate stone forms, although they occupy the same positions and have the same apparent weight.

Dreicer Building, Fifth Avenue, New York
Warren & Wetmore, Architects

It is good to see most architects coming back to a simple and rational use of brick after fostering, in the attempt to achieve the unusual, a demand for textures and colors foreign to their nature. We are now able to find colors other than white which harmonize with the various tones of red of the brick. An excellent example of the current method of using brick is the Barge Office in New York City, which was designed during the term of office of Mr. James Knox Taylor, as supervising architect of the Treasury. While brick is the principal material used, and the building is evidently a brick structure, Mr. Taylor has not hesitated to introduce practically the whole range of other building materials suited to fireproof structures into the ornamental parts of the design; and while the result in the photograph is satisfactory, the executed building is still more so. Let us enumerate these simply for the sake of showing how many colored materials there are which can be used in combination with brick: the bases of the piers are granite, their capitals limestone, the rope ornament around the architrave of the arches is also of limestone, while the concluding ornament of the architrave is terra cotta with some color; the diamond pattern insets are of brick and matt glazed tiles, the tiles in a number of different shades, the corbels under the pilasters at the second story and the caps of these pilasters are of limestone, while the frieze between the little brick arches above the windows is again of colored tiles. The lower part of the cornice is limestone and the upper part of copper, with a green tiled roof. The columns, acting as mullions, are of marble with terra cotta caps; and thus we have an assemblage of practically every one of the building materials which are ready to hand, but there is no incongruity apparent in their several uses, and they have an excellent fitness to their purposes in design as well as in color. The pattern brickwork in this building is again worthy of remark, since the patterns have been made quite as much by the selection of various shades of brick as by the jointing.



Detail of U. S. Government Barge Office, New York
James Knox Taylor, Architect

Another of the schemes for introducing color into buildings which is of recent development is through the employment of sgraffito work, and there are illustrated in this article two very notable examples of its use. The Alexander Building is a combination of limestone and sgraffito, with a marble trim around the show window of the first story. Some of the sgraffito is raised, but most of it is flat, and the colors are extremely simple, the background being brown, while the ornament is worked out in color, not very different from that of limestone. The other building in which sgraffito is used is the Booth Theatre. As has been unfortunately the case with much of the work in which color has been liberally introduced, the design cannot be as heartily admired as one could wish ; but the principles of the application of the ornamentation are sound and commendable, as is the freedom of the building from too close imitation of stone forms. It is, of course, true that much of it is evidently a derivative of stone ornamentation, and yet is used in so free a way as to redeem it from a suspicion of stereotyped copying. The color of this building is derived from four different materials — terra cotta, marble, brick and sgraffito. Most of the fine ornamental work of the bands and amusing detail is in a lavender or violet colored background of sgraffito with the patterns nearly white. For the most part the terra cotta is in monotone, but where color has been thought necessary by the architects, they have not hesitated to use it, and in fact the whole building has been worked out, not as a monotone scheme, but as a polychrome one, the colors employed being gray, white and lavender for the brick, architectural terra cotta and sgraffito, respectively.

There is one other building which must be included in any discussion of the use of color deco-

Alexander Building, Fifth Avenue, New York
Carrère & Hastings, Architects

The Booth Theatre, New York
Henry Herts, Architect

ration, and unfortunately to my theory that colored terra cotta should not reproduce stone forms, it is the Madison Square Presbyterian Church in which a stone pattern as well known as the Corinthian capital has been executed in terra cotta with excellent results. This building is in the main of gray brick with a little color introduced into the brickwork, the columns are of greenish marble, and the frieze of a curious blue and yellow marble; but the cornice, the ornamental patterns, and the cupola are all of yellow white and blue terra cotta, and the sculpture executed by Mr. A. A. Weinman in the pediment, which is Della Robbia in design, is likewise Della Robbia in coloring. Now, although this building is full of unusual and interesting colored terra cotta, the general effect is not that of a polychrome building, but that of a monotone one, and if there is anything in the principle that colored terra cotta should not imitate stone forms, which this most successful building seems to confute, the explanation may lie in the fact that the balusters, cornice, cupola and the cheneau are of low projections and of an intricacy and delicacy of detail which is foreign to architecture which is really stone, and in spite of this tremendously successful building in colored terra cotta, I believe that color which is introduced into a building through an artificial material should not hesitate to express the material of which it is composed.

One other point which should be borne in mind in designing a structure is the proper effect of age and deterioration on materials; a good many of the colors, for example, those used in stucco, are fleeting; even brick and glazed tile change color through age, so we find that the architect must always bear in mind, not only the color scheme of his building at its completion, but also its probable change of tone during a few years after its construction in a city where dust, soot, and the acid fumes from chimneys attack and change almost any color, no matter how permanent it may be when fully protected.

I have taken up in this article the principal aspects from which the use of color is usually regarded, and also the principal materials in which colored work is usually executed; but it is, of course, impossible to do justice to such an enormous subject in so few words and with so few illustrations. The subject is one which is immensely interesting to architects, and especially to a man whose livelihood has been dependent upon his knowledge of color, and while I have illustrated the article with photographs of buildings of good design, they each represent a class of work of which the vast majority is not completely thought out and is unintelligently executed.

Madison Square Presbyterian Church, New York
McKim, Mead & White, Architects

The Private Library.

(Continued from the April Issue.)

By H. T. BOTTOMLEY.

IN A private library the comfort and the decorative effect are both dependent upon two things: the general proportions and the lighting by day and by night. On these two fundamental considerations will be found to hang all the livableness of the finished room. Mere size has nothing to do with the charm of a library. One of the most successful that I know measures only twelve by eighteen feet, but the relating of its component parts to each other and to the general measurements of the room is of vital importance.

Proportion is that attribute of any design which concerns the arrangement and adjustment of its elements. If we would achieve good proportion in our libraries, there are rules to help us — simple enough most of them are — rules of composition which the dissectors of design have discovered for us. They are undoubtedly helpful, but we may follow all the laws that have ever been laid down and yet the result may be cold and dry. Balance, repetition, symmetry, contrast, are all factors of good proportion, and yet to attain success the designer must put vitality and imagination into his work — not a feverish striving after originality, but a constant seeking for "truth which is old and yet ever new."

The component parts of the shell of the room are the openings: the fireplace, windows and doors; and the solids: the floor and ceiling and the wall spaces. The wall spaces, though really no more important than the other parts, should be given special consideration on the plan, for when the room is finished it is they that will appear to be the room; they should be large and simple, punctuated symmetrically by the openings and so planned that the books and furniture and lighting fixtures may be conveniently arranged. By the placing of the openings, the comfort of the room will be made or marred. The fireplace — there must be a fireplace if only because of its attraction for the idler — should be away from the main entrance door, so that those seated around it may have greater privacy. The windows should be accessible, and the doors as few as possible under the conditions governing the plan.

Mantel in the Library of William G. Mather, Esq., Cleveland, Ohio
Charles A. Platt, Architect

In general, with reference to the design of the private library, it is safe to say:

1. Make the windows large.
2. Make the doors small.
3. Make the ceiling high in proportion to the floor area.

Usually the floor area of any room, for one reason or another, is limited. Either it is to be in the city where party walls not only define but almost invariably confine it, or it is in the country where space is unlimited but where such practical questions as the number of books to be housed, or the relation of this room to the rest of the house, are determining considerations. Often we cannot make the shell of a room conform to our ideas and prejudices, or even to the laws of good proportion, but must accept what comes to us ready made; but in that case there are many tricks by which the eye may be fooled and bad sizes or shapes may be overcome or palliated. A white ceiling, for instance, will greatly increase the apparent height, while a beamed or coffered one or a frieze will decrease it. Large furniture will make the room seem smaller than it really is. If the center is kept open and free from furniture, the size to all intents and purposes will be greatly increased.

The lighting of a library, that is the arrangement of the windows, is very closely allied to its proportions. Symmetry and balance in their placing will be found to increase its livableness. An abundance of light is unquestionably of vital importance and the artificial lights, as well as the windows, should be so arranged with reference to the placing of the furniture that any one wishing to

LIBRARY IN HOUSE OF MRS. S. A. HITT, WASHINGTON, D.C.
JOHN RUSSELL POPE, ARCHITECT

LIBRARY IN HOUSE OF HENRY A. WHITE, ESQ., WASHINGTON, D.C.
JOHN RUSSELL POPE, ARCHITECT

read or write may have a flood of light upon his book or desk at any time. This does not mean that large sheets of plate glass must be used. Both from the point of view of the exterior and the interior of the house, it is well to make the windows a part of the architecture of the building — not mere gaping rectangles. Small panes separated by muntins of wood or by leads do not materially decrease the light that comes into a room, while they serve an important purpose in harmonizing the world outside with the interior.

Under ordinary circumstances the small panes increase the charm of a view. Nature is by their intervention brought into accord with the pictures on the walls and the other objects in the room.

Library in House of Mrs. Alfred A. Pope, Farmington, Conn.
McKim, Mead & White, Architects

The choice of the style and size of the windows is dependent upon the character of the house as a whole, but their treatment is largely governed by what is seen through them. A pleasant view is almost a necessity, and is usually obtainable by a little judicious planting; but if it is not all one could wish, an uneven glass may be used which will blur the outline of what is seen, and give it some of that charm which is always possessed by the unknown.

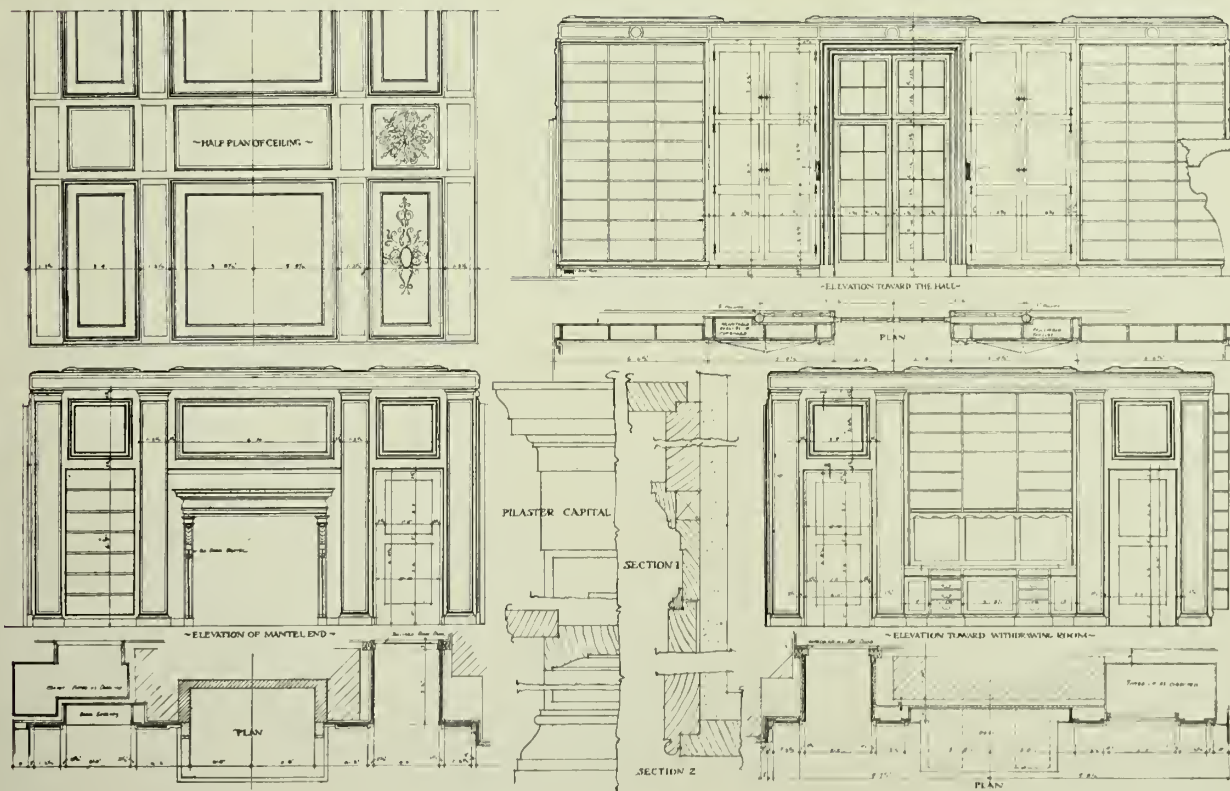
The accompanying illustrations have been chosen largely because of the very successful arrangements for lighting shown in them. The artificial lights have been well placed in every case; low reading lamps with tables to put them on have been provided near the sofas and large chairs, and well shaded lights have been placed at intervals around the walls. The torches hanging on brackets in the house in Gramercy Park are almost indispensable in a library of any size. They may be unhooked and passed along the shelves whenever a special book is wanted.

The exposure is another very important consideration in the choice of the decoration of a library, especially in the use of color. A north room should be, of course, warm in tone, and here paneling in natural woods is very effective. In a south room light, cool colors are best, and white woodwork is always lovely if the mouldings and detail are in fine scale.

Library of House in Gramercy Park, New York, N. Y.
McKim, Mead & White, Architects

A restful color scheme, however, for the entire room should always be sought after. Dignity and even a certain amount of somberness is the atmosphere which the decorative scheme should convey — qualities which are conducive to a serious, calm, and peaceful state of mind. Gay decorative treatment — intense and strong color schemes — should not be considered for a library.

Brown oak finishes which approach the neutral in color are good. These are best when obtained on genuine oak, but can be imitated on other woods, by



LIBRARY IN HOUSE OF WILLIAM G. MATHER, ESQ., CLEVELAND, O.

CHARLES A. PLATT, ARCHITECT

means of stains and fillers. The dignity of mahogany is excellent for libraries. Equally effective is the simplicity, beauty, and restfulness of mahogany and white. The white helps to reflect the light, thereby facilitating the illumination of the room — an important consideration as we have before demonstrated in a room where much reading is done. Whitewood, owing to its unobtrusive grain, is the ideal wood for white enamel finish, although any other close grain wood may be used. Birch, red gum, and maple are excellent woods for the imitation of mahogany. An acid stain on woods of sufficiently hard grain will give a clearer effect than an oil stain. In the illustration of a small library in a city apartment (in the first part of this article, April, 1914), we see a white paneled room that is beautifully worked out, not only in the wall treatment but in every detail of the furnishing.

Library in House of Geo. L. Nichols, Esq., Katonah, N. Y.
Charles A. Platt, Architect

In these days of countless fires from defective electric wiring and careless painters on the one hand, and of comparatively cheap fireproof construction on the other, it is rightly becoming more and more the custom to have the heavy construction of our houses made of incombustible materials. If the walls and floors of a house are entirely fireproof and the finished floors are made of tiles or some other material that cannot burn, there is very little danger of fire.

The furnishing of libraries is almost more important than the furnishing of any other room in a private house. I have always believed that the elements of good taste were in every human being — and yet how few of our rooms are really satisfactory. The library in Farmington, Conn., by McKim, Mead & White, is a perfect example of suitability in furnishing. To begin with, the shell of the room was well designed and well carried out. Its proportions are good (though the wide angle lens of the camera has distorted them in the picture), the paneling of dark wood, the mantelpiece, the doors, the lighting fixtures, are all admirable. These fundamental characteristics are enhanced by the more temporary decorations — the table and chairs, the engravings, and the quaint clock over the mantelpiece. This room is simply furnished, as a room for books always should be. It is a fine example of a contemporary style, — a style that is — which has been used continuously since its origin by English and American architects to express the finer sentiment of the home.

A far more ambitious and very dignified room is the library of Mrs. Hitt in Washington, designed by Mr. John Russell Pope. It is interesting to note how well thought out it is in design — the line of the top of the bookcases is carried across the mantel and door and window transoms; the cornice and the architraves are carefully detailed, and the fine engravings and rich tapestry have been framed in by the mouldings of the paneling and placed where they would be most effective.

A library is the room above all others where a painted ceiling is appreciated. The detail and the color are a delight to those who are quietly enjoying its hospitality.

After the general proportions have been determined, the first thing to be considered in deciding upon the decoration and treatment of the library is the number of books and their appearance. Are they to be the chief decorative feature of the room, or merely a small factor in the furnishing of it? Are they sufficiently numerous to line the walls, or will they fill only one or two bookcases? Nothing is more decorative than built-in bookcases lining the walls with fine books — not necessarily first editions; but books to be effective must be well bound, and size, as Arnold Bennett says, "has a distinct moral value." But this treatment is possible only when there are a great many books to be housed.

Glass doors do undoubtedly protect books from dust, but on the other hand they mar the fine color effect of the bindings of the books and they prevent the air from circulating as it should to keep them in good condition. The best modern practice is to exclude dust from the library as much as possible, but to leave the books open to the free circulation of the air, which should be neither too dry nor too moist.

After all books are easy to dust and they lose much of their charm and personality when they are shut behind imprisoning bars. It is better to have the shelves reach no higher than one foot below the ceiling, as extreme heat dries the bindings.

In planning a library, let us remember that there are many beautiful models to study, that there are many possible arrangements, differing from those already made, and that the keynote should always be quiet, ease, literary coziness, private proprietorship; if anything more should be added, it must surely be refined hospitality to personal friends.

DETAIL OF ENTRANCE

PUBLIC LIBRARY BUILDING, BEVERLY, MASS

CASS GILBERT ARCHITECT

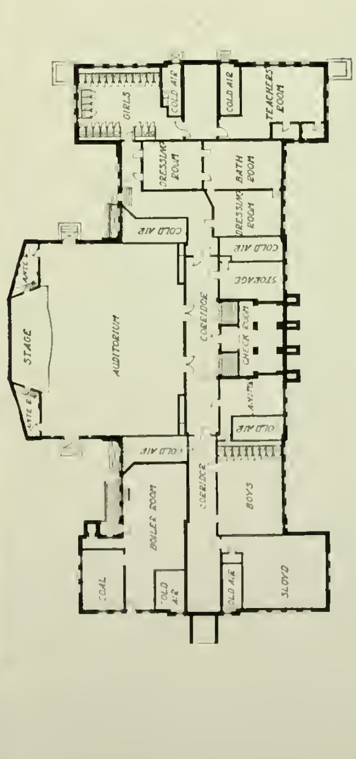
PUBLIC LIBRARY BUILDING, BEVERLY, MASS.
CASS GILBERT, ARCHITECT

PUBLIC LIBRARY BUILDING, BEVERLY, MASS
CASS GILBERT, ARCHITECT

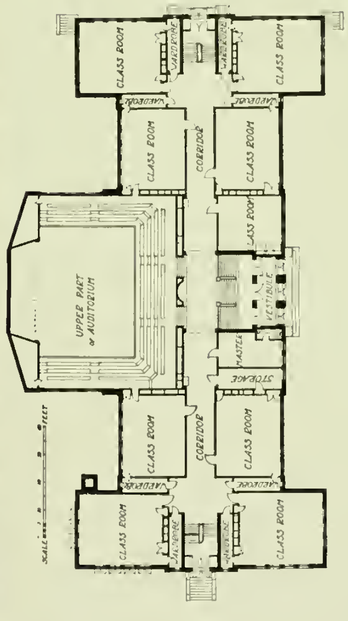
DETAIL OF ENTRANCE

THORNDIKE SCHOOL, EAST CAMBRIDGE, MASS.

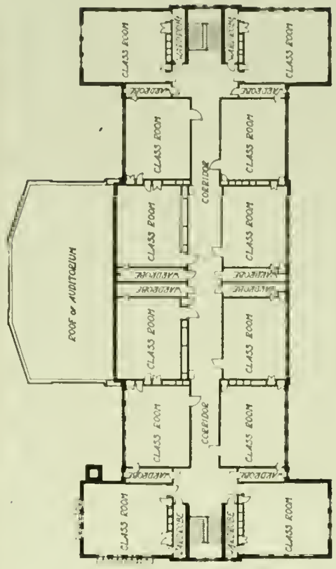
CHARLES R. GRECO, ARCHITECT



BASEMENT FLOOR PLAN



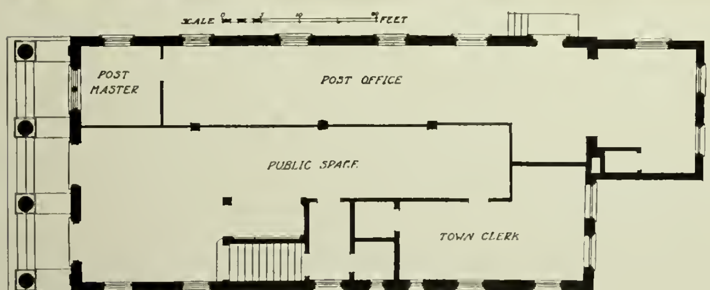
FIRST FLOOR PLAN



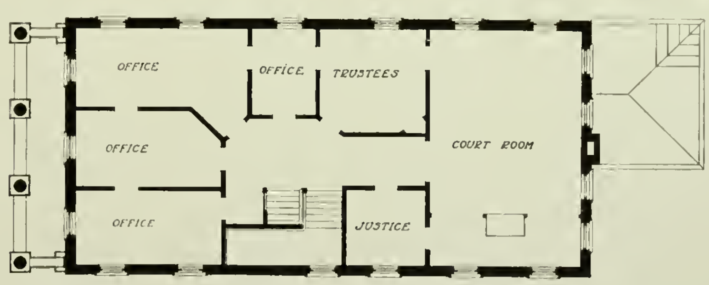
SECOND FLOOR PLAN

THORNDIKE SCHOOL, EAST CAMBRIDGE, MASS.

CHARLES R. GRECO, ARCHITECT



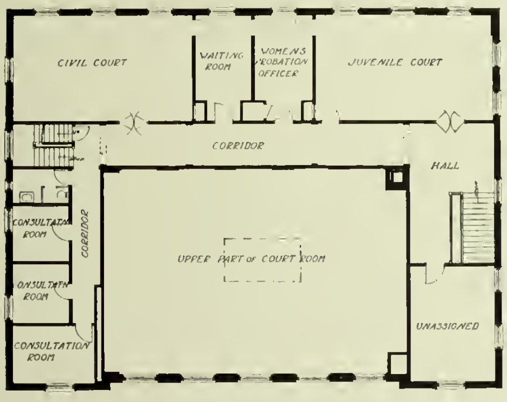
FIRST FLOOR PLAN



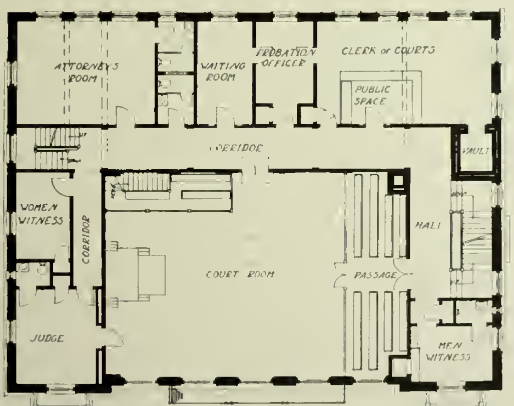
SECOND FLOOR PLAN

MUNICIPAL AND POST OFFICE BUILDING, SOUTHAMPTON, LONG ISLAND, N. Y.

F BURRALL HOFFMAN, JR., AND HISS & WEEKES, ASSOCIATE ARCHITECTS



THIRD FLOOR PLAN



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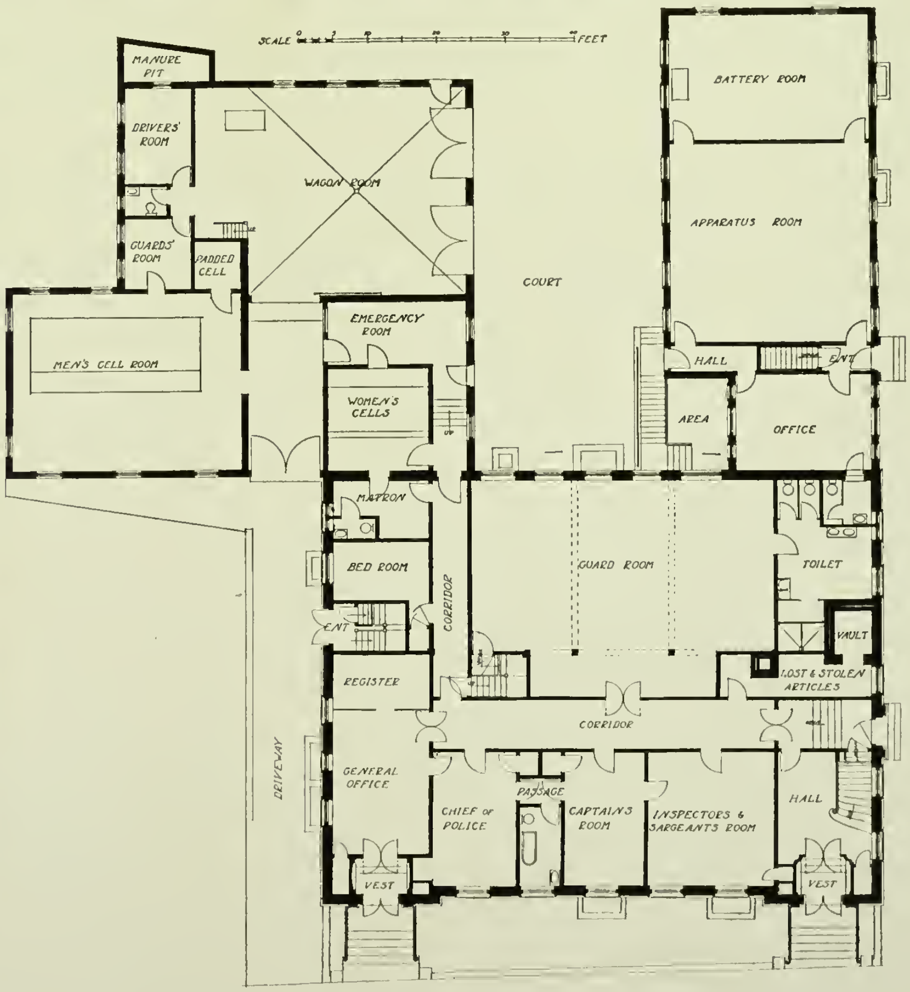
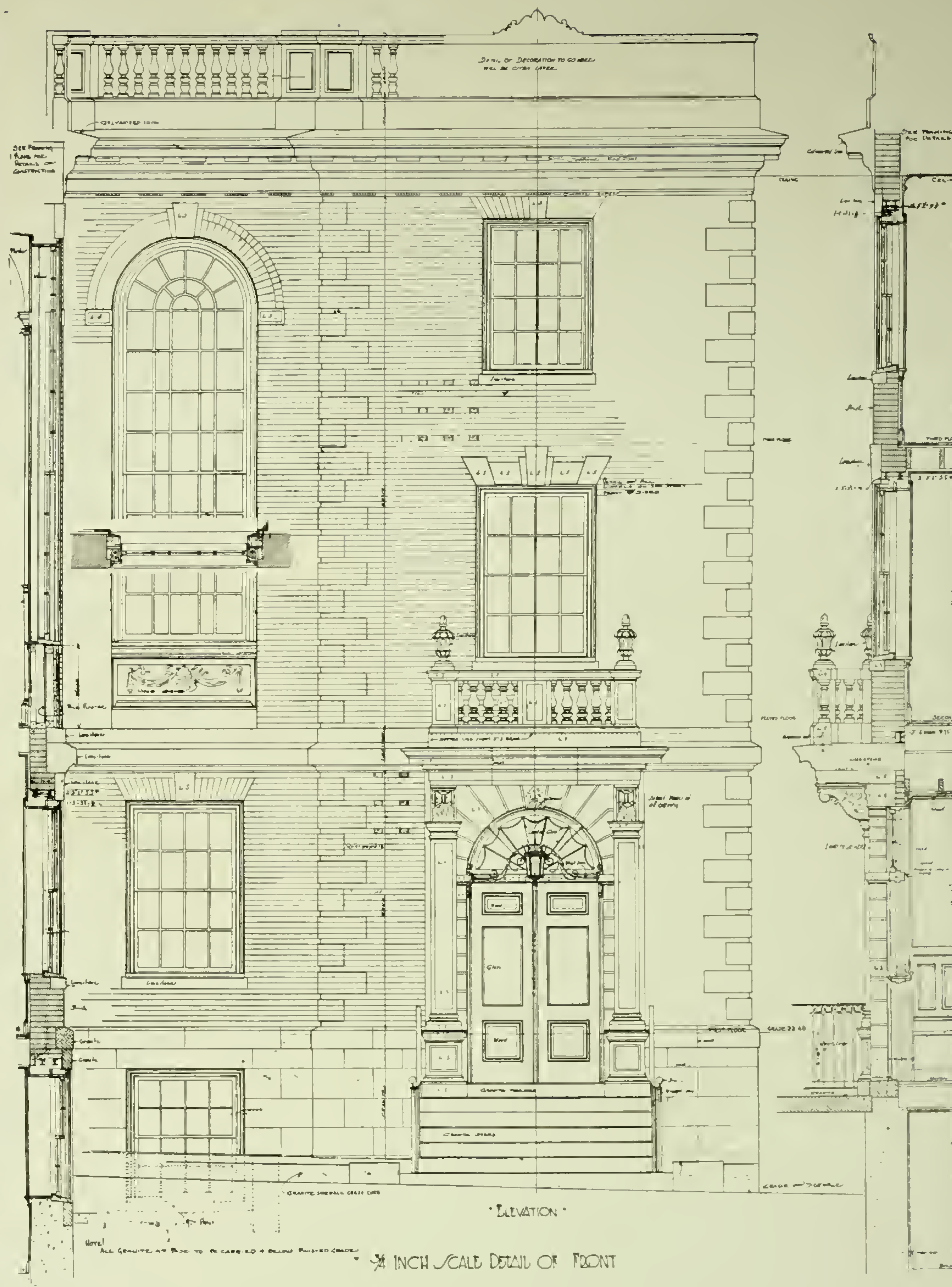


FIRST FLOOR PLAN

POLICE HEADQUARTERS, DISTRICT COURT, AND ELECTRICAL STATION, SALEM, MASS.
IOHN MATTHEW GRAY, ARCHITECT

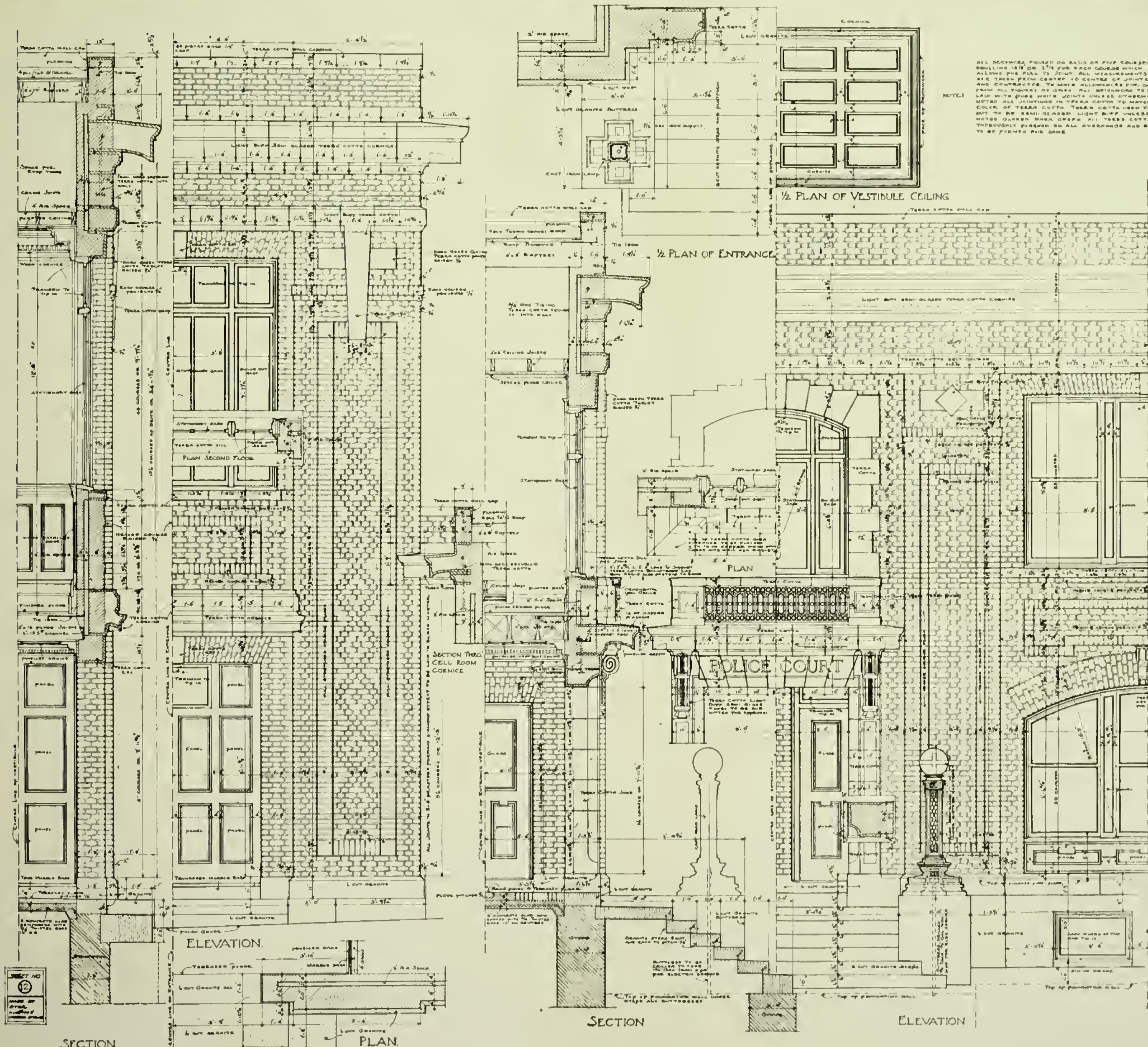
DETAIL OF ENTRANCES



DETAIL OF PRINCIPAL FACADE

POLICE HEADQUARTERS, DISTRICT COURT, AND ELECTRICAL STATION, SALEM, MASS.

JOHN MATTHEW GRAY, ARCHITECT

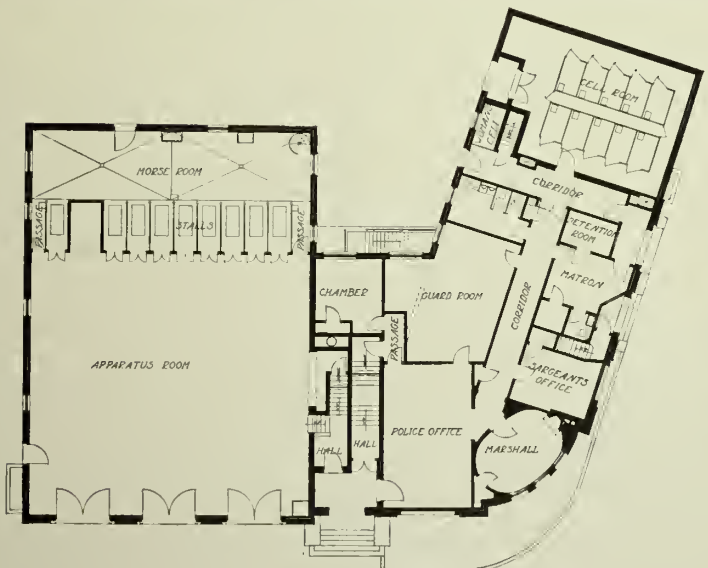


POLICE HEADQUARTERS, DISTRICT COURT AND FIRE STATION, MARLBOROUGH, MASS.

BIGELOW & DYER, ARCHITECTS

EDWARD PERCY DANA, CONSULTING ARCHITECT

DETAIL OF ENTRANCE AND CORNER



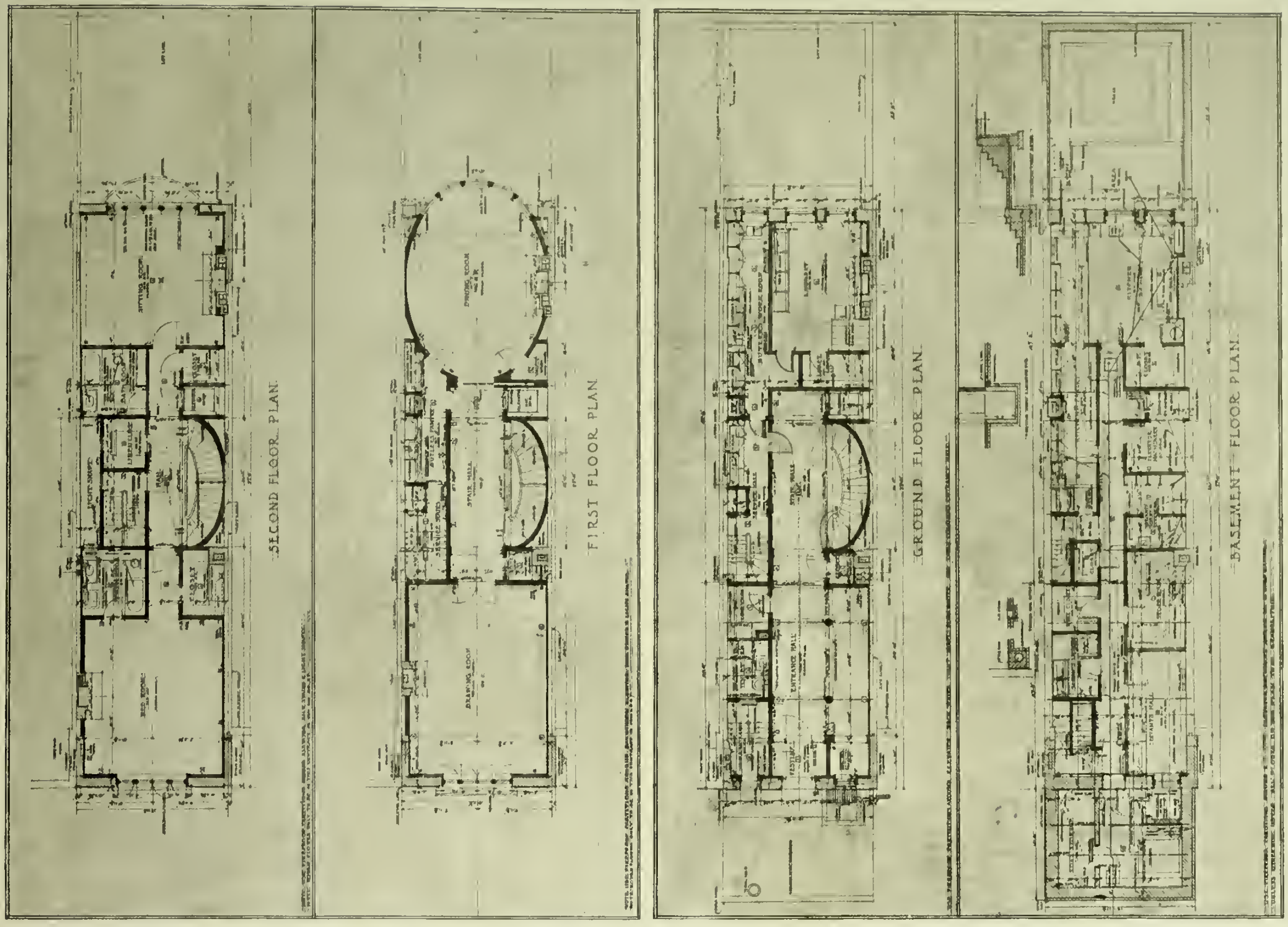
FIRST FLOOR PLAN

SECOND FLOOR PLAN

POLICE HEADQUARTERS, DISTRICT COURT, AND FIRE STATION, MARLBOROUGH, MASS.

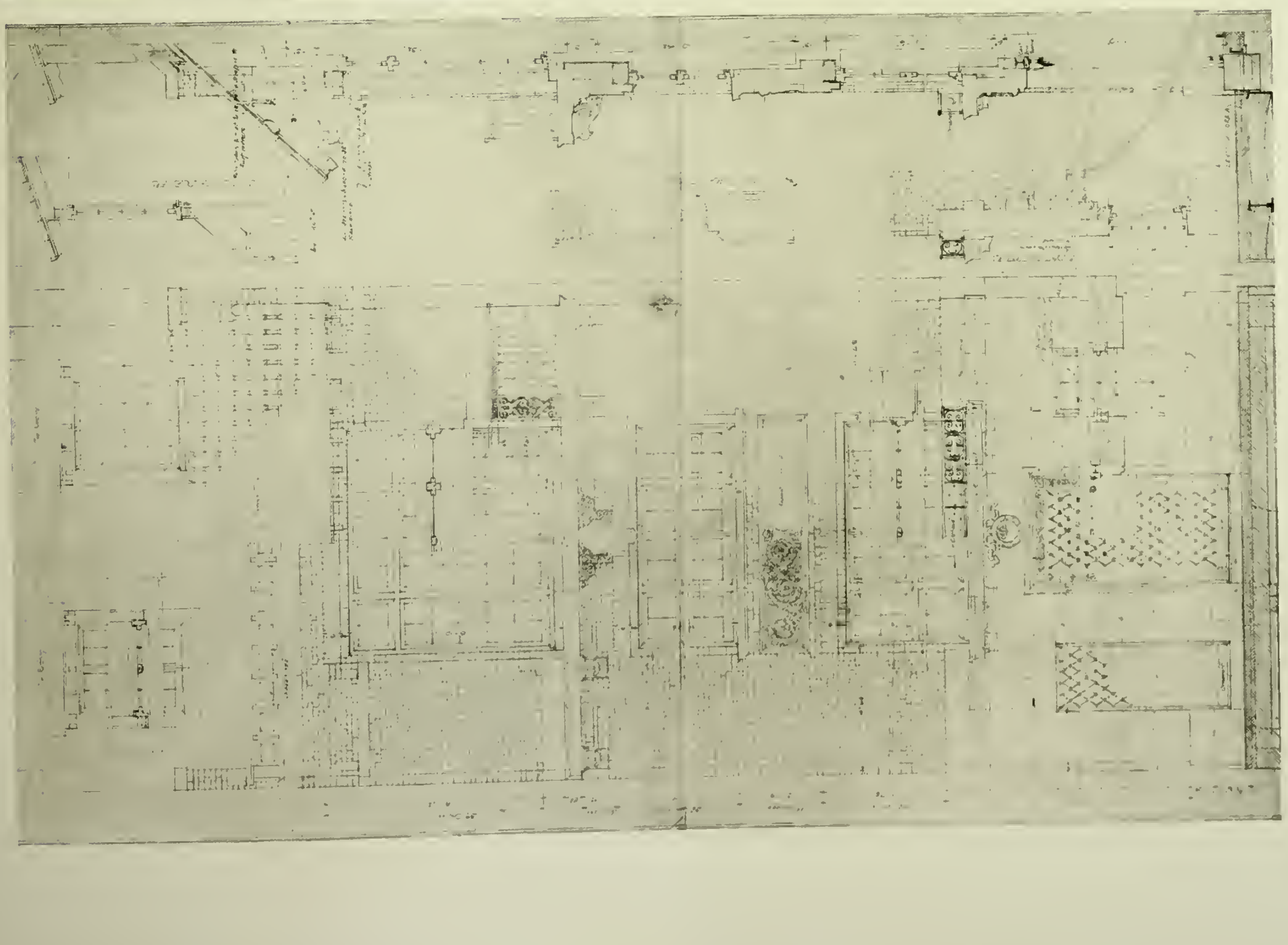
BIGELOW & DYER, ARCHITECTS

EDWARD PERCY DANA, CONSULTING ARCHITECT



HOUSE AT 14 EAST 76TH STREET, NEW YORK, N. Y.
YORK & SAWYER, ARCHITECTS

DETAIL OF ENTRANCE



DETAIL OF ELEVATION

HOUSE AT 14 EAST 76TH STREET, NEW YORK, N. Y.

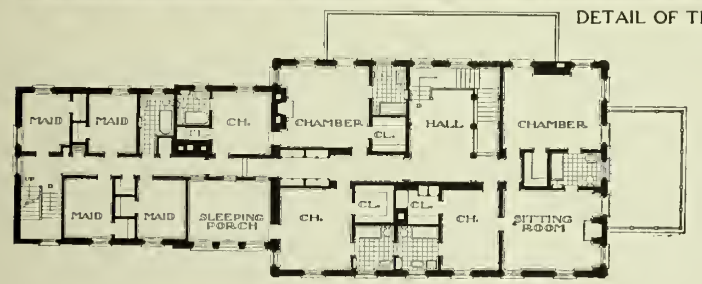
YORK & SAWYER, ARCHITECTS

VIEW FROM BELOW TERRACE

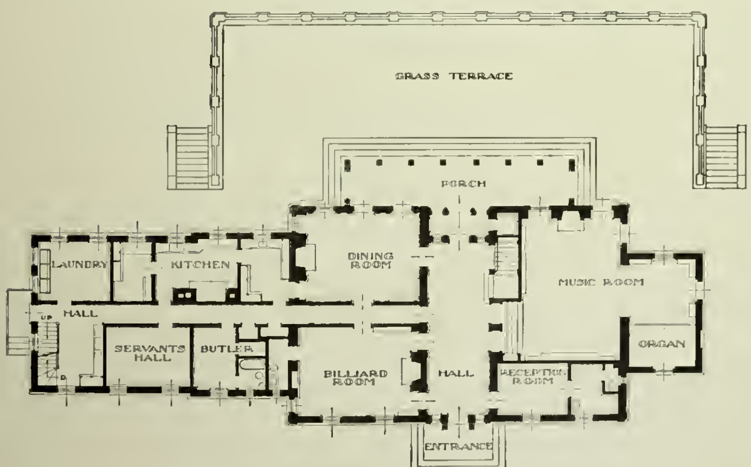
VIEW FROM APPROACH

HOUSE OF E. F. ROBBINS, ESQ., PASADENA, CAL.
MYRON HUNT, ARCHITECT

DETAIL OF TERRACE FRONT



SECOND FLOOR PLAN



FIRST FLOOR PLAN

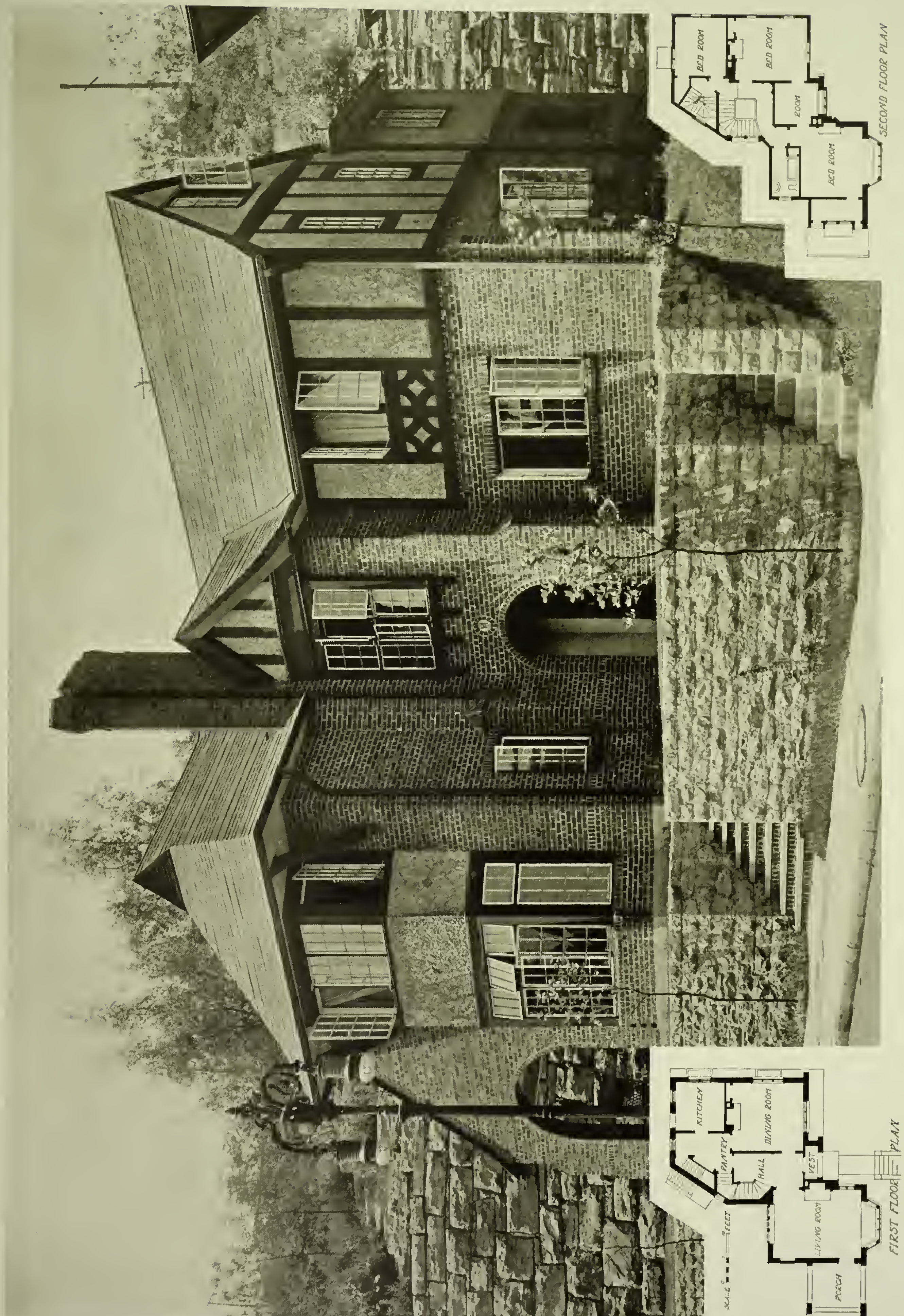
DETAIL OF FRONT ELEVATION

HOUSE OF E. F. ROBBINS, ESQ., PASADENA, CAL.
MYRON HUNT, ARCHITECT

MUSIC ROOM

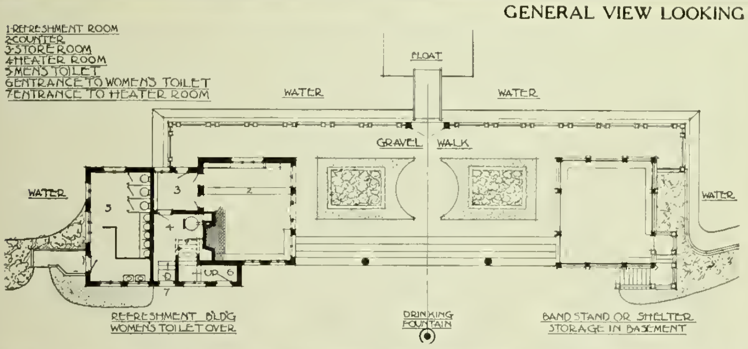
ENTRANCE HALL

HOUSE OF E. F. ROBBINS, ESQ., PASADENA, CAL.
MYRON HUNT, ARCHITECT



HOUSE AT PITTSBURGH, PA.
THOMAS PRINGLE, ARCHITECT AND OWNER

GENERAL VIEW LOOKING TOWARD WATER



REFRESHMENT BUILDING AND BAND STAND FOR THE DEPARTMENT OF PARKS AND RECREATION OF THE CITY OF BOSTON AT JAMAICA POND

WILLIAM DOWNES AUSTIN, ARCHITECT

Bathing Pools Within and Out of Doors.

By WILFRED CAREW.

THE attraction of the out of town home is its being in the country. One of the very definite tendencies in present day living is toward a wider and more practical use of country life and the enthusiastic enjoyment of the pursuits and diversions which it makes possible. This full acceptance of out of door living makes for everything which could heighten the attractiveness of the country home, and architects began years ago to add to the out of town estate every possible adjunct for enjoyment and recreation for which the open country affords space and abundance of opportunity.

Bathing pools have for many years been more or less well known in athletic clubs or associations, occasionally in hotels and frequently upon ocean vessels, the equipment of which often includes almost everything imaginable to make the passing of days at sea as attractive as possible. Perhaps it is the making the acquaintance of the bathing pool in some such more or less public place which has brought about its presence upon many country estates, where it appears within as well as out of doors and in the simplest of forms as well as under the most magnificent of guises.

The bathing pool can hardly be considered anything new. Like many of the details of a modern home it is merely a revival or, perhaps, an adaptation, of an idea exceedingly old. During the days of ancient Greece and Rome the despots and the Cæsars instituted the most sumptuous of baths maintained by the state for the benefit of the people, and within the villas and palaces of the wealthy classes the bathing pool — *impluvium* — was a recognized necessity. An adjunct which could so readily be made to assume an appearance highly architectural could hardly escape the attention of the clever designers of the old Roman and Pompeian villas which are beautiful to-day even in the sadly defaced ruins which yet exist. Very often such a bathing pool would be set within a court of its own about which there extended a broad ambulatory walled and paved with marble or mosaic, and with a row of columns set about the edge of the basin to support the roof of the ambulatory, the space directly over the pool itself being left open to the sky. These cool and spacious courts and corridors formed most inviting retreats from the heat and glare of an Italian summer and, adorned with the fountains, the lamps, and the bronze or marble furniture which the splendid craftsmanship of the day produced, and used as the setting of the gorgeously picturesque life of the period, they must have been beautiful indeed. There, surrounded by these magnificent accessories, the ceremony of bathing assumed a pomp and circumstance — a certain ritual which lent additional splendor to what is now considered one of the most commonplace and prosaic details of the day's routine.

The ancients with the splendor of their bathing arrangements would have looked with complete disdain upon our modern facilities much as we ourselves, proud in the possession of our bath tubs of porcelain, are pleased to regard the tubs of tin or zinc which some of us remember were considered luxuries in the homes of a generation ago. But like so many details of ancient life this splendid picture possessed a reverse — another aspect — which was much less attractive, for these beautiful pools were often lined with marble or with mosaic made of various kinds of marble, both being highly absorbent and becoming in time more or less filled or saturated with impurities absorbed from the water and the air even when the accumulation of such impurities was removed from the surface of the marble or mosaic. Then, too, the method of caring for the pool rendered inevitable the formation of more or less mud or slime at the bottom, and which was of course impossible to remove without emptying the pool of water.

Men who have been trained in designing and in the selection of materials best suited to the work in hand may be interested in the several phases of the development of the modern bathing pool. The earliest of the modern examples were little else than large square or oblong holes in the ground, floored and walled with brick plastered over with cement or, in some later developments, both floor and walls were of concrete. A pool built by either method left much to be desired upon several grounds. Where the pools were out of doors, as was very

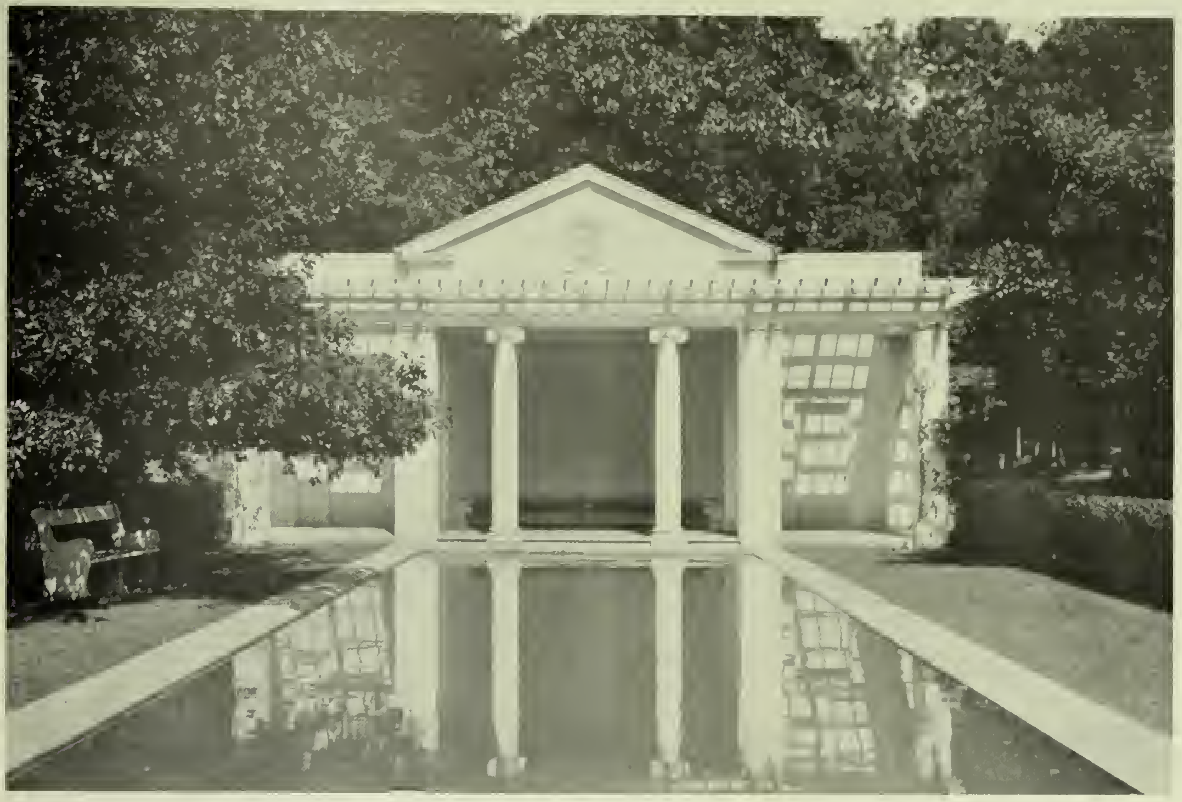
Bathing Pool on the Estate of Mr. Mortimer F. Swift, Oyster Bay, Long Island
C. P. H. Gilbert, Architect

often the case with those first built, the walls of brick and cement or of concrete showed a decided tendency to crack, particularly under the influence of the low temperature of winter, and the freezing of such water as might enter, even though the pools were carefully drained. The making of repairs to a pool thus injured was both difficult and costly, and unless such repairs were very carefully made the water might gradually escape through a crack imperfectly mended. There were also serious objections to pools so constructed upon the score of cleanliness, for both cement and concrete are more or less absorbent and will take in impurities from both water and atmosphere. Any one familiar with pools of these earlier days will recollect the lines of grease just above the water line, — a kind of scum which unless continually removed increased in thickness to become in time a menace to health. Then, too, such pools could not be thoroughly cleansed unless emptied, with considerable waste of water, and unless the pools were frequently thus cleansed the water became so murky with sediment that its use for bathing was anything but a pleasure. The bathing pools of that era were hardly an improvement upon those of ancient days, being built and operated upon almost exactly similar principles. It is singular to have to record that since the days of antiquity until quite recently there has been very little improvement in the building of such pools, but such is the case.

Bathing Pool on the Estate of Mr. H. R. Rea, Pittsburgh, Pa.
MacClure & Spahr, Architects

The construction of plunge baths or bathing pools to-day has attained a high degree of mechanical and artistic excellence. Such pools are often built upon the grounds of country estates and being entirely open are naturally intended for use only during the months of summer; quite

Bathing Pool within a Sunken Garden
Charles W. Leavitt, Jr., Landscape Architect



OPEN AIR BATHING POOL AT "WOODSTON," MT. KISCO, N. Y.
CHARLES A. PLATT, ARCHITECT

BATHING POOL IN A BUILDING DEVOTED TO ATHLETICS AT "FERNCLIFFE," RHINEBECK, N. Y.
McKIM, MEAD & WHITE, ARCHITECTS

as often, however, they are built within permanent and solid structures and being provided with every device which could make them attractive during the winter as well as the summer, they may be equally useful at any season.

The most approved method of bathing pool construction, used for pools in the open air as well as for those within doors, calls for the building, within the excavation, of a concrete bed foundation and retaining wall which is frequently reinforced to withstand the outer water pressure. The walls and floor thus laid are then covered with several alternating layers of tar and tar paper, or occasionally of tar and heavy burlap, and upon this foundation is built a thin wall of one course of ordinary brick. The inner lining of the pool is apt to be of some such highly non-absorbent material as enameled brick or ceramic mosaic laid in cement which has been thoroughly waterproofed. Of whatever material the pool be lined the cove base used in the angle where floor and walls unite, and also the portions of the lining where the walls unite with the surrounding floor, are apt to be of terra cotta modeled and enameled or else covered with ceramic mosaic like the facing of the lining of the pool. The high excellence of the pools now being built is due very largely to the ingenious method by which the water within the pool is freed from such impurities as must necessarily find their way into it. About the edges of the pool, and at precisely the water line, there extends a narrow outlet gutter generally of enameled terra cotta and which is so inclined that the water which flows into it is at once carried away through drains. The water which is being continually forced into the pool is first filtered, then frequently heated and sterilized, and the continued inflow causes an equally continued overflow into the outlet gutter. By this method any particle of dust or any animal or vegetable germ which falls into the water at once rises to the surface and is removed by the continued movement of the surface water toward the drains.

The floor about the pool frequently ends in a cap course of terra cotta enameled, sloping very slightly toward the pool. Water used for the cleansing of such floors thus flows toward, but not into, the pool but rather into the gutter, capillary attraction assisting. Quite as often,

Bathing Pool at "Ft. Tyron Hall," the Estate of Mr. C. K. G. Billings, New York
Guy Lowell, Architect

Bathing Pool of Mrs. Finley J. Shepard, Irvington, N. Y., Suggesting the "Impluvium" of a Pompeian Villa
Crow, Lewis & Wickenhoefer, Architects

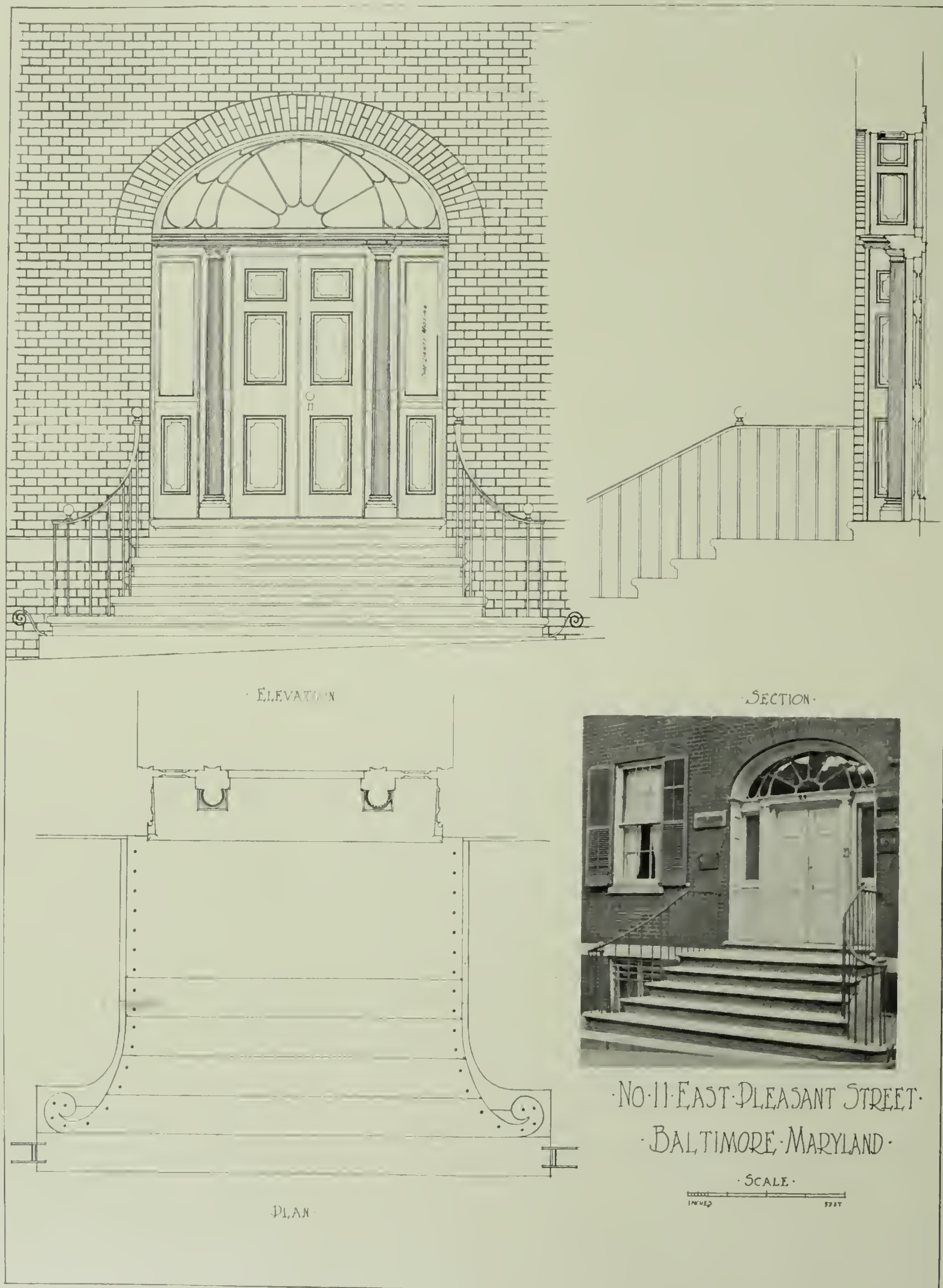
Reception Room in Building Containing the Bathing Pool on the Estate of Mrs. Finley Shepard, Irvington, N. Y.
Crow, Lewis & Wickenhoefer, Architects

however, such floors may slope very gently away from the pool toward a valley provided with drainage valves of its own. The edge of the gutter performs a highly necessary and useful service as a life guard, placed as it is where a life guard should be, at the water's edge rather than some distance above the water where it cannot always be readily grasped by a bather who may be in need of it. This provision for a life rail renders unnecessary the use of unsightly and unsanitary ropes or the metal rails which project above the water and which may easily be the cause of accident to a bather beneath them in the water.

It may be hardly necessary to dwell upon the architectural dignity with which a bathing pool may be clothed. Where the pool is placed out-of-doors it may be, and frequently is, made a part of a stately and formal setting of the garden. It may occupy a sunken space below terraces and be approached by flights of steps to increase the formal effect, or it may be placed between rows of tall poplars which will be reflected in the water. In any event the usual shelter, including dressing rooms and lavatories is often so designed as to heighten the stately effect.

When the pool is intended for use during the entire year and is placed within a permanent structure, the opportunities for its decorative treatment are fully as great. It may be surrounded by very complete reception and dressing rooms, retiring rooms, and apartments containing shower baths, and at the end of one bathing pool which is illustrated herewith there is a great fireplace. A most brilliant effect can be secured by the use of ceramic mosaic in color for the lining of a pool, for with the highly developed mechanism for supplying, purifying and renewing, the water should be of a crystal clearness beneath which the mosaic may easily be seen. The surroundings of a bathing pool, like a greenhouse, must be maintained at a high temperature and in planning them together great economy of operating may be secured.

Exterior of Building Containing the Bathing Pool on the Estate of Mrs. Finley J. Shepard, Irvington, N. Y.
Crow, Lewis & Wickenhoefer, Architects



DETAIL OF NO. 11 EAST PLEASANT STREET, BALTIMORE, MD.
MEASURED DRAWING BY RIGGIN BUCKLER

Colonial Doorways of Baltimore, Md.

By RIGGIN BUCKLER

THE greatest charm of the Colonial house is in its doorway. Especially in the city where the houses are built adjoining one another and the opportunities for any elaborate details are few, the doorway is the touch that relieves the plain façade and gives to the whole the individuality and charm that is so much sought after to-day in modern work. The doorway also expresses the interior to a certain extent. In the old work the double doors with columns and side lights nearly always opened directly into a spacious hall, for there were no vestibules, and the elliptical arch over the entrance was generally repeated in an interior arch supported by either columns or pilasters.

Doorway at 9 East Pleasant Street

The requirements of the modern home are so very different from those of a hundred years ago that it is only in the use of detail that the spirit of the Colonial work may be caught. Modern adaptations of old doorways often fail because of the absence of this spirit. Many architects carefully follow old details in their drawings to have their work go for naught in the poor execution of some dependent and related feature, as the leaded glass ornaments, for instance. The ornaments of the old head and side lights were beautifully designed and executed. Unfortunately, the same cannot be said of the modern. Some architects nowadays remove the ornaments from the old lights and either use them intact on their own work or have castings made from them.

The old doorways in Baltimore, as in every other large city, have suffered greatly from the hand of time and man. It is almost impossible to find any in their original condition; sometimes it is the headlight that is missing; more frequently the side lights and occasionally the fine old paneled doors have been replaced by a single door with a large plate glass light, and in almost every case the delicate mouldings are obliterated with numerous coats of green or black paint.

The doorways selected for illustration in this article show the great variety that Baltimore possesses. Even those of the small two-story houses have great charm, although they have little detail to boast of. The Whyte house, 207 North Calvert street, is situated just off Battle Monument Square and, with its beautiful fan light and delicately moulded elliptical columns, is one of the best in the city. A curious feature is the slot behind the side lights for shutters to be put up in case of any disturbance.

Several of the doorways illustrated are on Pleasant street. This street leads directly off Charles street, in the center of the shopping district, but due to the steep grade which makes it impracticable for business purposes the old houses have thus far escaped demolition. There are other houses in this block than those illustrated which are of almost equal merit, and the whole group, with its cobbled street, is a glimpse of the Baltimore of the past.

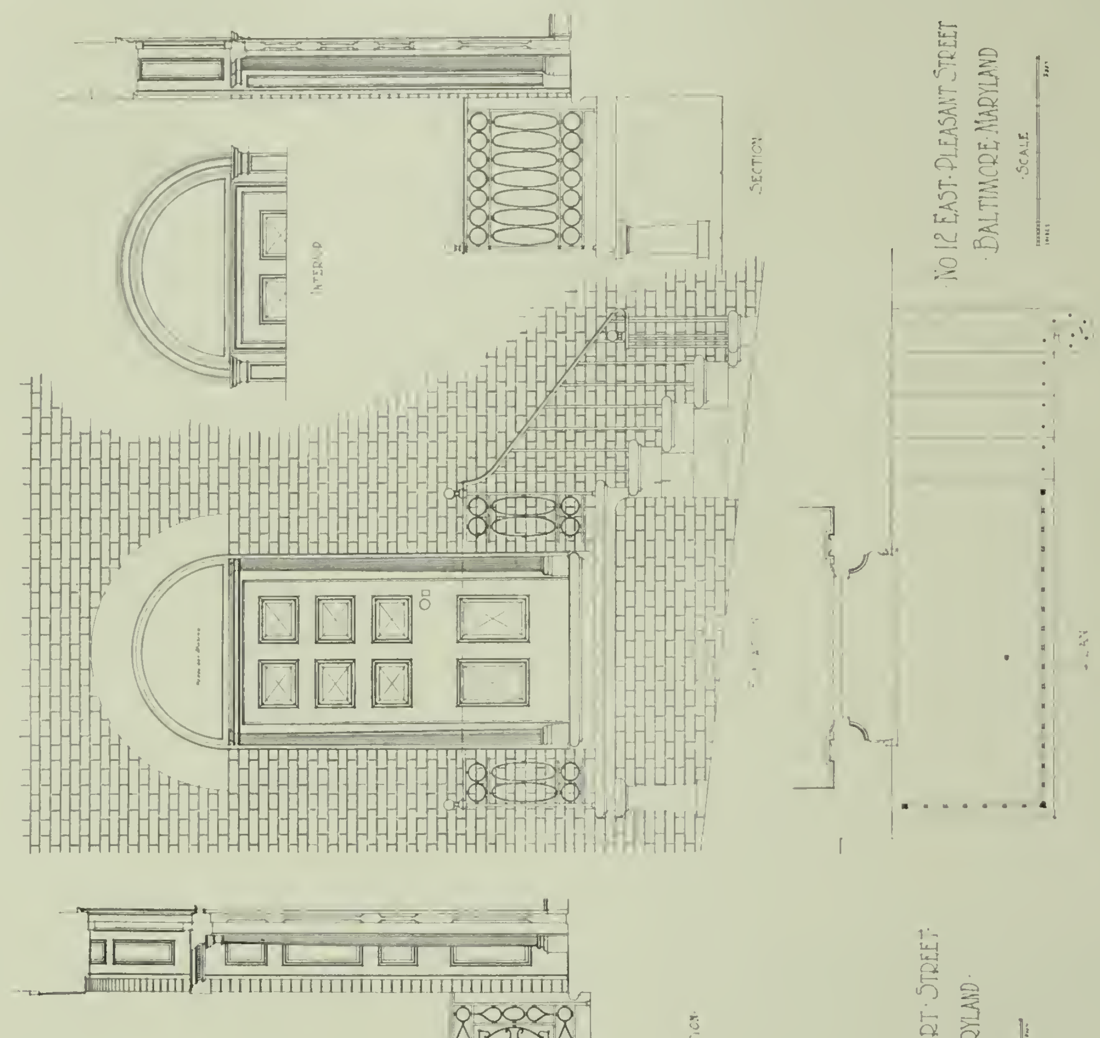
Number Eleven, with its broad steps reaching out hospitably, is an excellent example of the double doorway with the elliptical arch treatment. The house is now used as an office building, a number of architects, the author being one, having their offices in it, and for this reason the building will probably be preserved until the growing demands of business outweigh the sentiment attached to these early houses.

209 St. Paul Street

417 North Charles Street

539 Columbia Avenue

COLONIAL DOORWAYS IN BALTIMORE, MD.



DETAILS OF COLONIAL DOORWAYS AT BALTIMORE, MD.
MEASURED DRAWINGS BY RIGGIN BUCKLER

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

VI. THE WORK OF FLOYD YEWELL.

THE youngest of the men who have achieved any prominence as architectural renderers is Mr. Floyd Yewell, who has made himself known through his excellent colored drawings exhibited at the architectural exhibitions during the last two years. To become known in such a manner is in itself a mark of considerable distinction, because the constant raising of the standards of rendering of the drawings shown at the architectural exhibitions has made these exhibitions almost as much painting shows as architectural ones. There has been, in fact, within the last year or two, a reaction in the architects' offices in favor of drawings which can be made by draftsmen and not painters, many architects feeling that the expense of the wonderful colored drawings is an added burden which would be unnecessary if it were not customary. In other words, if all architects submitted the same sort of sketches to their clients, no man would feel that he had lost work because of the superior presentation of an inferior scheme by some one else, and many men have said of late that clients are being educated to expect far too much in this way from their architects. Without regard to the propriety of limiting the pictorial effect of architectural drawings, one can only say that the client with the untrained eye obtains a much better idea of what his building is going to look like, from a colored drawing, than he can in any other way, although the black and white drawings required in THE BRICKBUILDER competitions are by no means a bad method of showing work, and judging from the great number of excellent drawings received in these competitions are not so difficult of execution but that most offices can find men who can make them.

Mr. Yewell is a Baltimorean who took a course in the Maryland Institute of Art and afterwards went into the office of Messrs. Wyatt and Nölting of Baltimore, where he stayed for several years, at the same time working in the Baltimore Beaux Arts atelier. Two years ago he came to New York and since then has worked in the offices of Messrs. Guilbert and Betelle, and Mr. Aymar Embury II, but latterly has not been connected with any particular firm, doing independent rendering as Mr. Birch Burdette Long has done for so many years, and he has lately been working with Mr. Long. Like all young men in almost every profession, he has not yet fully developed a technique of his own: we see in his work reminiscences of the manners and methods of the best of our architectural renderers, and he is gradually working away from the imitative stage of his art and growing in sureness, individuality, and strength. Even before he came to notice as an architectural renderer, some of his very delightful *esquisse-esquisses* rendered in the various Beaux Arts competitions attracted notice, and several of them were selected by the school committee of the Beaux Arts Society for inclusion in the Annual Exhibition of the Architectural League of New York, to which the Beaux Arts Society send annually a handful of its best drawings. These were in most cases not so much water color renderings as black and white drawings, either in pencil or in ink, with a few flat washes — a way of working which will be readily recognized by any one who has tried to do architectural rendering as a quick and effective method of making sketches if (and only if) the draftsman has a sound knowledge of his architecture and a sureness of draftsmanship. Both these qualities Mr. Yewell has, and even in those of his drawings, which are distinctly water colors as distinguished from colored black and white drawings, he exhibits this same characteristic grasp upon the architectural skeleton

Country House at Great Neck, Long Island
Aymar Embury II, Architect
Floyd Yewell, Delineator

underlying the colored picture. He does not, however, render as do so many architects, with invariable attention to the "diagonal of a cube," shadow lines; but his drawings rather suggest paintings, in that he has realized that the time of day affects the angle of light as well as the coloring, and if we find in any of his drawings that the shadows are caused by a midday sun, we need not study the shadow angles to see why, for the color and tone of the drawings express it by themselves.

Masonic Temple, Toronto, Canada

H. P. Knowles, Architect — Floyd Yewell, Delineator

The five drawings which illustrate this article display very well the various stages of development through which Mr. Yewell has passed up to the present time, and it should be remembered in examining even the latest of his drawings that these are representative of the stage of development and not of a final and definite conclusion. Any sort of art work which is made by a man in process of evolution is apt to have something fascinating about it, and though it may not show the power and ability that the same artist exhibits in the matured work, and it may not have the same mastery of technique or the same complete knowledge of the subject, and though none of the early work of a great artist would probably be included in the list of his master pieces; all works of art executed during the formative period of an artist's career have a quality which is lost in his later work; his matured expressions are apt to become repetitions of previous experience, based on a result of previous experiment, and while they may be fine and sure and of exquisite taste and vigor, they do not have the delicacy and spontaneity and the instinctive response to a man's own need for artistic expression that his earlier work has. And though they may be less imitative of other men's work, there is after all something very charming in the eager response of a receptive, sensitive temperament to the appeal of fine things. So with Mr. Yewell, we must not look upon his work as being exactly the sort which will finally be known as the "Yewell" way of rendering. It is less a product of his previous experience than a tentative (but not stumbling) search for his exact *metier*.

Bird's-eye View of Apartment House, Newark, N. J.

Guilbert & Betelle, Architects — Floyd Yewell, Delineator

The nearest in type to his atelier work is the rendering of a house at New Canaan, designed by Mr. Alfred Busselle. It is a pencil drawing, both delicate and lovely, the shadows hinted at not insisted upon, the surfaces distinguished as much by the penciled texture of the walls as by their colors, and the relations of the various planes of the building to the direction of light are made known by faint luminosities rather than by brilliant high lights. It is a drawing of quiet but undoubted charm, and executed with almost complete freedom from the influence of other men.

Mr. Robert Louis Stevenson says, in one of his essays, that the artist must learn to do two things — to omit the irrelevant and unnecessary, and to suppress the relevant and tedious — and the excellence of this particular drawing is due as much to the omission of unnecessary and to the suppression of necessary entourage as it is to emphasis on the building itself.

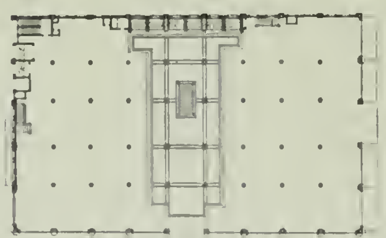
The perspective of the Newark apartment house, designed by Messrs. Guilbert and Betelle, is of another type, and while it does not in method at all resemble the work of Mr. Hughson Hawley, it has both the good points and the defects of his work. One feels that too much has been made of the foreground, and that the building suffers because of this emphasis, although close observation shows that the building has been rendered carefully and well. The background has been well treated, both in giving the impression of distance and in the manner of its subordination; but the over careful rendering of the schoolhouse in the foreground with its gardening, etc., makes us wonder which is the thing the drawing is intended to show. It is probable that there is a very good reason back of this, since the apartment house is evidently designed to harmonize with the schoolhouse opposite, and so that the parking and landscape work would count together, in spite of the cross street between the two gardens.

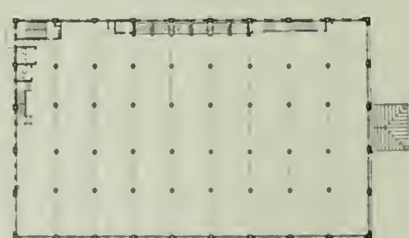
In the renderings of the bank building (see frontispiece) for Mr. Warrington G. Lawrence and the Masonic Temple in Toronto, designed by Mr. H. P. Knowles, Mr. Yewell has frankly made use of some of the tricks and mannerisms of Mr. Eggers, especially in the employment of the air brush on the foreground and the sky, and there might have been cause for complaint had Mr. Yewell handled this implement in a slovenly or unintelligent manner; but the success of any borrowing of this kind is the measure by which it may be justified, and while Mr. Yewell has not carried this sort of rendering nearly as far as has Mr. Eggers, his results are hardly less admirable. Especially in the rendering of the Masonic Temple we find that he has been able to successfully combine blown surfaces with ordinary brush work in a manner interesting and harmonious, securing admirable impressions of distance to the right and left of the façade, as well as a vibrant quality in the whole drawing. The air brush is, of course, no new invention: they say it has been used for centuries in the Beaux Arts, but it is due to the tremendous success with which Mr. Eggers employed it that it has of late come so into favor.

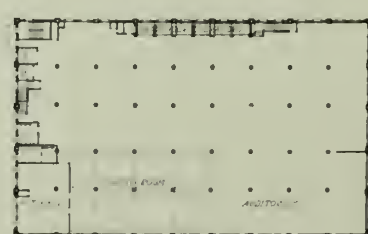
The fifth of the drawings illustrated, a small country house, is also suggestive to some extent of Mr. Eggers, but the faintly shadowed trees in the foreground are evidently reminiscent of Mr. Guerin's work.

While it cannot honestly be said that Mr. Yewell's work is as yet on a plane with that of Mr. Johnson or Mr. Eggers, it must be remembered that these men are nearly twenty years older than Mr. Yewell, and their maturity is indicated by a vigor and power quite distinct from the delicacy and freshness of youthful work. Of all our American renderers, we can look to him with the surest confidence in his continuing development, because he is still in the formative stage of his career, and is displaying an ability in both draftsmanship and color which was not surpassed by the other men at so early a stage.

Alfred Buselle, Architect — Country House at New Canaan, Conn. — Floyd Yewell, Delineator



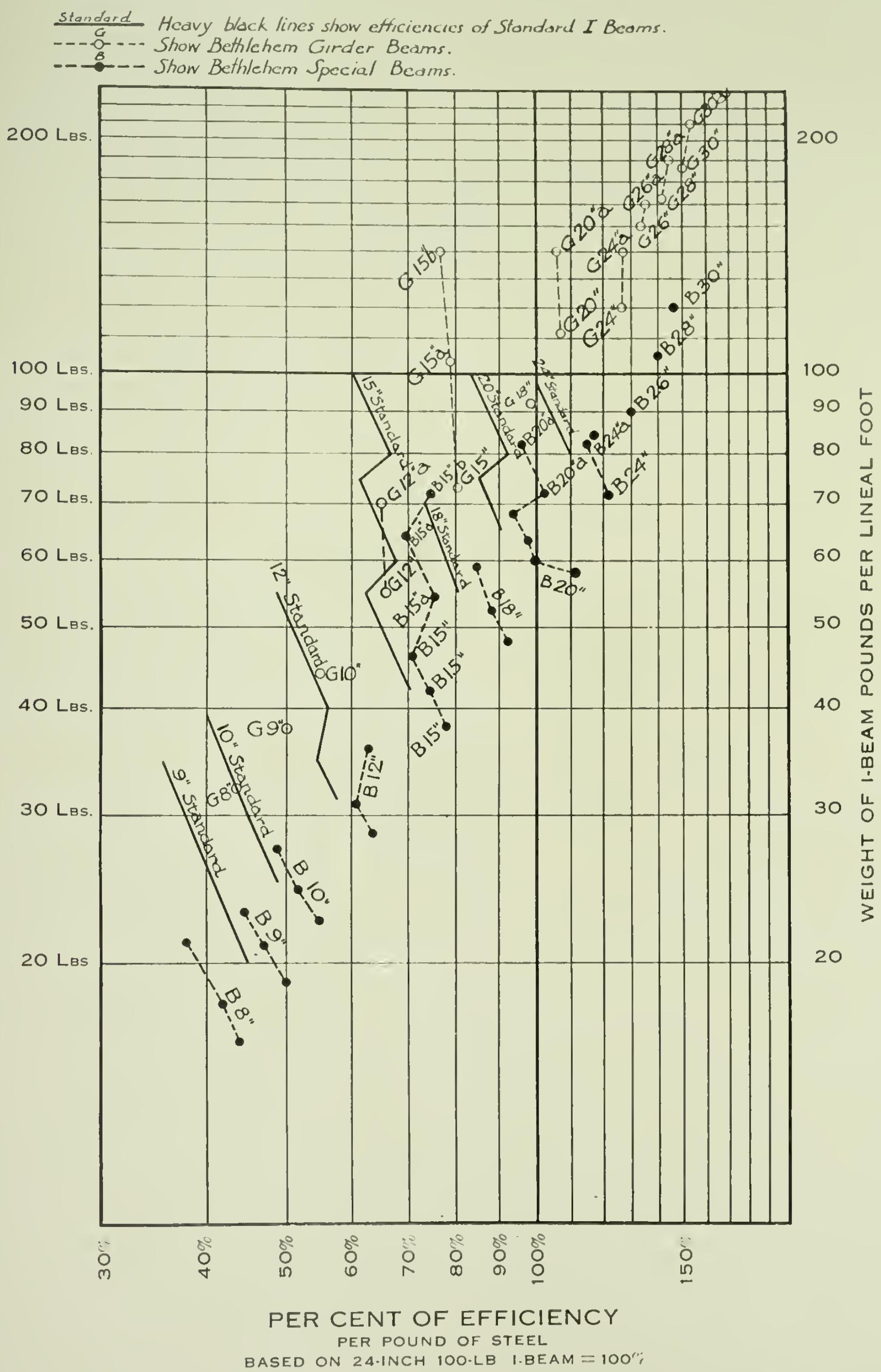




DEPARTMENT STORE BUILDING, INDIANAPOLIS, IND.
VONNEGUT & BOHN, ARCHITECTS

A Comparison of the Structural Efficiency of I-Beams.

By FRANK H. CARTER, Assoc. Mem. Am. Soc., C.E.



In making a study of the per pound efficiency of various types and weights of I-beams, the writer plotted the results of his computations on a logarithmic scale diagram after the manner of one drawn by William Fry Scott and published in his book entitled "Structural Designer's Handbook."

A 24-inch standard 100-lb. I-beam was taken as the standard of efficiency (100%) and all others, both standard shapes and Bethlehem shapes, referred to the 24-inch standard 100-lb. I-beam. The lighter weights of each depth are found most efficient per pound of metal. The Bethlehem shapes, particularly the girder shapes, are markedly more efficient per pound of metal than the standard types. In the 30-inch 175- and 200-lb. Bethlehem girder type, a gain of 50% in efficiency is shown over the 24-inch standard 100-lb. shape.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

IT IS sometimes valuable to turn to the past and to note that our problems are no less the problems of twenty centuries ago. Vitruvius, in writing of the position of architects of his day, tells us that, "The other architects go round canvassing. I was always taught rather to be sought after than to seek for work. What are we to think of the architect who advertises save that he hopes to profit himself at your expense? And so before our day it was the custom to employ architects of social standing and secondarily to consider their education. They would rather trust a gentleman's honor than the protestations of a drummer. Artists would only educate their own sons or relatives, and they took care that they should be upright men such as might unhesitatingly be entrusted with large financial interests." He goes on to say, "But when I realize how this noble calling is the plaything of the ignorant, of men who know nothing of architecture, nay, even of practical building, then indeed am I driven to approve the action of those men of property who trust to the works on the subject and do their building themselves; if it is to be a case of an ignorant architect, at least let him spend his money on his own contrivances. And so it comes about that though you would never expect to come across an amateur cobbler, or an amateur anything else where skill is required, the amateur architect is common enough."

It may not be quite in keeping with the methods of modern business to wait for recognition without making any worthy effort to obtain it, but in other respects the observations of Vitruvius may be a guide for the young architect in his professional conduct.

THIS journal has so persistently and consistently advocated measures of fire prevention that it is a special pleasure to notice the recently published work on the subject of automatic sprinklers by Mr. Gorham Dana.* The automatic sprinkler is almost the only absolutely dependable means of preventing the spread of fire, and the device itself, as now perfected, practically never fails to accomplish its purpose when properly installed and maintained. With standard equipment and proper maintenance and adequate water supply, the automatic sprinkler is practically certain to control any fire that may occur, and even greater than the protection of property is the safe-guarding of human life. The records of the Factory Mutual Insurance Company show that in thirty-eight years out of 1,500,000 people employed in covered risks only five lost their lives because of fire, and the records seem to show that within the past ten years there has not been a single loss of life due to a fire in a building properly protected by sprinklers.

The whole trend of modern legislation and fire prevention activity is towards the increasing use of this most excellent device and the rendering of it compulsory by law. Mr. Dana's book is a very admirable presentation of all the facts connected with the origin and development and present use of this system. The subject matter is presented clearly and in a readily accessible form, the illustrations are most ample, the statistics are sufficiently complete to answer every practical purpose, and the book is reinforced by a very carefully prepared index. It may not be a book for light reading, but it is certainly a valuable addition to the library of every architect, engineer, and real estate owner, and Mr. Dana is to be commended for the thoroughness with which he has treated the subject.

THE widely different opinions of the medical profession make it very hard and often impossible for architects to decide as to the necessities and requirements of mechanical ventilation of hospital buildings.

The questions, "Is artificial or mechanical ventilation harmful or beneficial?" and "Is it a step forward or backward?" should be definitely answered. Mr. T. J. Van der Bent has written a very timely article upon this subject in the April number of *The Modern Hospital.* The points raised are interesting and instructive and should stir up some action among architects and engineers. From his experience he cites as facts that:

1. The need of ventilation in hospitals is variable and dependent on the climate, the location, and general design.

2. Under certain weather conditions and during a certain number of days per year, air in hospital wards will be stagnant without mechanical ventilation, window openings not being sufficient to create draft. The number of days that this happens is dependent on the three factors named above.

3. Even if theoretically possible to obtain sufficient ventilation through windows, these windows will not be opened during severe weather conditions, and, if opened at all, not sufficiently to obtain the required amount of fresh air.

4. The best installation can be made useless or unsatisfactory if run by an incapable engineer.

As pointed out by Mr. Van der Bent, it would be very satisfactory from a purely architectural point of view to omit all consideration of mechanical ventilation in buildings if it can be considered unnecessary. The complications which arise from the installation of a mechanical ventilation plant are extremely annoying and expensive for the architect, and frequently interfere with the most successful solution of other very desirable features. Aside from the cost of such plants themselves, they materially increase the area of a building and therefore its cost. If unnecessary, the money expended on the plant would be better spent otherwise, and the increased area of the building devoted to other purposes.

* "Automatic Sprinkler Protection" by Gorham Dana S.B. Published by Thomas Groom & Co., Boston.

THE BRICKBUILDER

VOLUME XXIII NUMBER 7

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PLATE ILLUSTRATIONS

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WATER COLOR DRAWING OF CHURCH TOWER
ST. MARY'S STAR OF THE SEA CHURCH, NEW LONDON, CONN.
DELANO & ALDRICH, ARCHITECTS
ROCKWELL KENT, DELINEATOR

See article on page 167

THE BRICKBVILDER

VOLUME XXIII JULY, 1914 NUMBER 7

The "Dead Hand" in Architecture,

or

(A NEW SPACE-LANGUAGE FOR TO-DAY).

By CLAUDE BRAGDON.

WHEN an architect is called upon by the editor of a magazine to discuss some subject more or less germane to the practice of his profession, the last thing that is looked for from him is a confession of the failure of that profession to live up to its high opportunities and responsibilities. Candor, nevertheless, compels the present author to express this opinion.

The paramount responsibility which we architects have thus far failed to meet, consists in the finding and formulating of a *space-language* which shall express modern life in terms of beauty. I use the term "space-language" because the time-language of to-day already exists in the modern drama, the modern novel, and modern music — new art forms made to meet new needs of expression. The need is not less urgent to express modern psychology through and by means of the arts appropriate to space. This is preëminently the work of the architect, yet for the most part he arbitrarily limits himself to the great styles of the past, with the result that as yet our age has no architecture eloquent of it.

Now it is true that architectural styles are not created merely by taking thought of the matter, but grow imperceptibly, new conditions modifying old traditions. Conservatism in architecture is, therefore, a good and necessary thing; but there comes a time when conservatism ceases to be a virtue. The architect who clings blindly to precedent in dealing with the unprecedented, as he is now constantly forced to do, is much in the position of the boy who stood on the burning deck. This habitual attitude of looking backward at the past over the shoulder of the present, instead of fronting the future, has resulted for the architect in the atrophy of his creative faculty. Too long a contemplation of the beautiful Medusa face of an art which is not ours turns us to stone.

Of course, no architect can afford to dispense with a knowledge of his art as practised down the ages. It is well that he should train himself to think and work in terms of this style or that, if only to learn that a style is a garment which takes its shape from the materials and methods of construction employed, and its ornament from the racial and national psychology. We cannot eliminate the past. Let us assimilate it, therefore, and learn its lessons.

What are these lessons? One is that a change of construction or a change of consciousness demands fresh architectural forms for its expression. To-day we use a kind of construction unknown to the ancients, and our psychology is different. The architect of to-day must believe in himself and in his time; he is face to face with an urgent, arduous, and sacred duty — that of bringing to birth the essential spirit of this democracy in a body of new beauty. Instead of fulfilling this sublime destiny, he is discovered in the act of palming off some foundling of alien parentage, under pretense that it is the legitimate offspring of the age.

These are hard words, but are they not true ones? I think the architect who is honest with himself, and not blinded by the glamour of Paris and of precedent, will acknowledge that they are, though he may reasonably plead in extenuation the many difficulties which beset his path.

These difficulties are too numerous to name, too obvious to need naming; the chief are: the necessity for haste, the necessity for profit, the institution of the middleman, the incompetence of artisans, the lack of critical discrimination on the part of patrons and public. But when all is said, the greatest hindrance to the architect is absolutely self-imposed; it is the ghost of Europe by which he insists upon being haunted. He is as much an ancestor-worshiper as any Chinaman.

The retort to all this is easy, obvious — yes, and effective. "Say the gods we worship are dead; say they are false; look at the work of the men who consider themselves emancipated from tradition: is it any better than ours? Is it as good? Is Chicago any more inspiring a spectacle architecturally than New York?"

Candor compels me to concede that with a few eminent exceptions the fruit of the tree of liberty is as bitter as the academic apple is rotten. In presence of emancipated architecture we must needs exclaim, with Madame Roland, "Oh, Liberty, what crimes are committed in thy name!" She, poor lady, was the victim of political anarchy masquerading as political liberty, and architectural anarchy masquerades as liberty in similar fashion. Ours is an art in which the element of *restraint* should never be absent, and herein lies the value of schools and precedent: they act as a curb upon ignorant and irresponsible originality. Their restrictions can only be removed with impunity when a wise *self*-restraint is practised. What do our young men know of this rare and precious virtue? where is it taught?

where practised? It may be answered that the schools supply this need; that the study and analysis of the architectural masterpieces of the past form the best possible preparation for original creative effort. So it may be in some cases; perhaps it might be universally if the pupil were continually reminded that he must throw away his laboriously acquired knowledge and keep only the fine gold of his discrimination and his facility. But this would bankrupt the man who is taught only to discriminate between French Gothic and English, Rococo and Baroque, or some such matter; whose facility is exercised only in the sedulous aping of the mere externals of style.

Yes, were our young man urged always to repeat to himself in the presence of any masterpieces Michael Angelo's apostrophe to Brunelleschi, "Like you I will not build," he might discover and develop his own personal tastes and talents. So long, however, as education in design takes the form of mere imitation, followed as an end and not as a means to an end, it will do more harm than good — *for it enslaves.*

The trouble with our architectural education is that it is based upon totally false premises. It is conducted on the assumption that we are inheritors of certain modes and methods developed through the ages which are useful and useable — the current coin of the realm. As a matter of fact, we are castaways on an Island of New Endeavor, and our inheritance is of no more use to us than Robinson Crusoe's gold was to him. Education is not to be dispensed with, but it must be modified to suit our changed condition. Ours is not an old and artificial civilization: we are pioneers — founders of the future. Teach us, then, not to remember, but only to forget.

Let us re-state our problem and suggest a manner in which it may be met. We are to weave, with new materials, new patterns on the loom of space. How shall we go about it? By learning the art of *space-composition* unrelated to any of the so-called styles. We have the tools, which are the eye and mind; and the materials are all about us in nature — the source of every kind of formal beauty. Let us, dedicated to the production of beautiful organisms, learn from nature how beautiful organisms are produced.

This injunction is simple, but it is vague, and needs elucidation. I shall not attempt to elucidate it here, since such is not the purpose of this essay. Besides, to do so would only be to repeat what I have already written.* The purpose of this essay is to urge that we give up our inheritance — the spoils of Europe — in order to use the opulence which is here at hand. What we need most is mastery; but what we need first is courage, and mastery will come of itself. And our courage must consist in confessing that we have wandered blindly and far, that we are lost in a Sahara of sterile æstheticism. Our immediate business, therefore, will be to ascend the nearest eminence and look about.

Suppose we concentrate our attention upon burnt clay products and consider the relation of the architectural profession to these alone.

In point of technical excellence — precision, durability, workmanship, speed and economy of manufacture — burnt clay products stand to-day at a higher level than ever before. But when they are examined from the æsthetic standpoint, as to style, design, color, they suffer in comparison with the corresponding products of past ages. Then the artist was himself the artisan: now, on the contrary, these two functions are fulfilled by separate individuals, differently educated, differently circumstanced. This fact may in itself account for our æsthetic inferiority; but if so, it makes the artist, in his own proper capacity, inferior to the artisan in his. And may not this be because the finest talents have not been enlisted; because the men who ought to have interested themselves — the architects — have held aloof? Such is my personal belief.

This is an opinion easily challenged, and arguments might be marshaled, both *pro* and *con*. As against such a view, it is certainly true that several distinct advances in the direction of more beautiful brickwork have been taken by architects — by Richardson in his Sever Hall, at Cambridge; by the Philadelphia triumvirate associated in the Archeological Building of the University of Pennsylvania; by McKim, Mead & White in the introduction of Harvard and Roman brick, and by such innovations as are embodied in the Colony Club and in the Parkhurst Church; for though some of these represent reversions, they mark advances beyond the standard of the then current work. When it is considered, however, that these developments were the work of only three firms or individuals, there is still ground for my opinion that the rank and file of the architectural profession have had small part in the modern development of the æsthetic possibilities of brick as a building material. In the field of ceramics and architectural terra cotta there is still less to show. What advance these arts have made has been due to the manufacturer who was himself an artist, or who enlisted the services of artists. I can mention no architect, in the strict sense of the word, whose name is indissolubly connected with the development of these industries on their æsthetic side.

At this point I hear a clamor of voices telling me that every architect interests himself in these matters; that the rapport between architect and manufacturer is exceedingly close. I should like the testimony of the manufacturer himself on this point. How much real enthusiasm and devotion do his architectural friends bring to the solution of the problems vital to them both? How many details does the manufacturer make which ought properly to be made by the architect? How much attention do shop drawings and models get from the architect? How often does he visit the works, and how much time does he spend there? I can only judge of all this from my own personal knowledge and experience. On the few occasions (yes, few, *mea culpa*) when I spent a day with my coat off at two of the large terra cotta factories, it was treated as an unusual event. I was informed that once only in that year had an architect spent an entire day informing and inspiring the workmen engaged in carrying out his designs.

This is sad enough and bad enough, but the architect's failure to follow the fabrication of his work in all its details is after all due to the impossible and preposterous demands made upon his time and attention. Being human, he can only follow a line, whereas he is expected to cover a plane — he would doubtless gladly do it if he could. His real remissness lies in another direction altogether, and one quite within his power to correct. It is primarily a matter of taking thought, though it involves his honesty and sin-

* "The Beautiful Necessity."

cerity — not towards persons, but towards principles which do not change from age to age. I will put what I have in mind in the form of a threefold indictment.

First. The architect fails to think and work in terms of his materials.

A proof of this failure is the common practice of substituting one material for another — wood for iron, terra cotta for stone, stone for concrete, or *vice versa* — by reason of their differences in cost, without essential modifications in design. One of the most important functions of architecture is thus violated — the showing forth of the splendor and beauty (be it a beauty of strength or of fragility) of different materials, making the most of their unique characteristics.

Now the beauty of terra cotta is not less than that of stone, but it is different. Witness a Della Robbia lunette, and a granite or black basalt carved Egyptian statue. Imagine, for example, the terra cotta arcades of the Certosa of Pavia carved in stone. One would fairly ache at the thought of so much labor, and feel a sort of terror at so great a weight so insufficiently supported. On the other hand, were the rusticated street front of the Pitti Palace translated without change from stone to terra cotta, the result would be not less distressing, but for an opposite reason. There would be no charm of detail, color, and texture to compensate for the splendid ponderosity of stone. These are some of the lessons which the past might teach us, but which we have failed to learn.

Second. The architect fails to think and work in terms of his place.

One proof of this failure is the unsuitability of so many of the commonly used architectural forms and features to practical needs and to climatic and other conditions. Cornices, made for the projection of strong shadows and for protection from a tropic sun, are used in our cloudy northern cities, where they gather dust and soot in summer and in winter become traps for snow and ice; arcades and colonnades originally designed for shade and shelter now unnecessarily rob overstrained eyes of the precious light of day. Expensive balustrades protect waste spaces of roof where people could not take their pleasure if they would. In brief, much of our architecture has no vital relation to its environment, nor to the common life of every day.

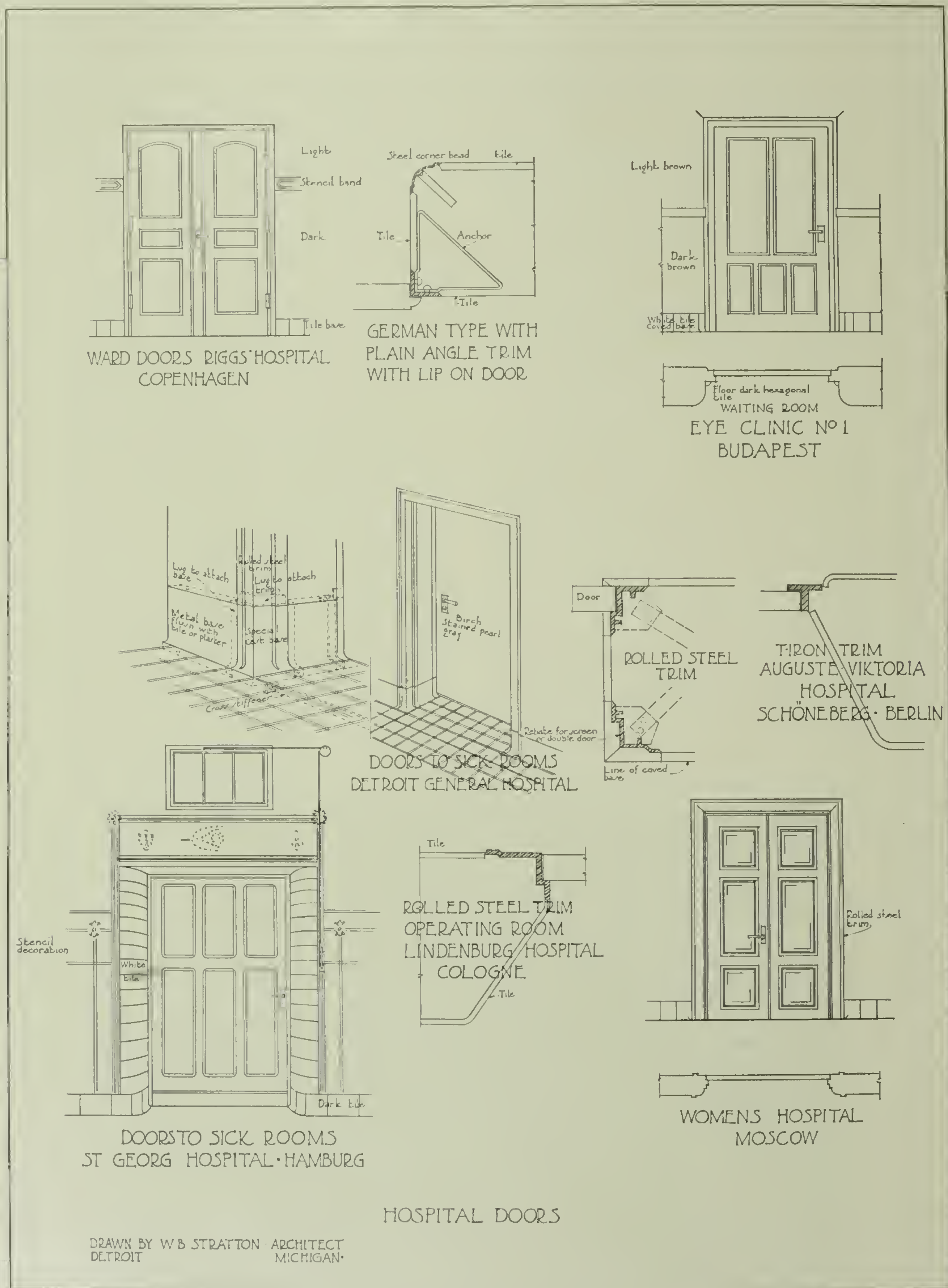
Third. The architect fails to think and work in terms of his time.

One proof of this failure is in the perfectly meaningless character of architectural ornaments in common use. What are they? The acanthus scroll, the egg and dart, the Greek fret and waterleaf, the festoon and wreath, a cartouche, a shield, a lion's head, an eagle, a helmet — *not one* eloquent of the things and ideas of to-day.

Need I go on? Is it not plain enough that we are attempting to put the new wine of life into old, cracked, and musty bottles? Unless we break them now, the ferment of the potent liquor will break them in the end.

This essay is deliberately iconoclastic, but it is not upon this note that I would close. While there is life there is hope, and not in Athens, Rome, nor Florence, at their prime, did the tide of life flow stronger than here in America to-day. I have said my worst of the profession which I love and practise, whose brother members I honor and respect. In some future essay I hope to write in a more gracious and constructive strain.

Interior of Church of St. Francis at Assisi



EUROPEAN HOSPITAL DOORS

DRAWN BY W. B. STRATTON, ARCHITECT

Hospital Doors and Windows.

By WILLIAM B. STRATTON, *Architect of the Detroit General Hospital.*

THE principal requirement for a hospital door is that it shall be wide enough for all possible traffic. This includes provision for the kind of bed selected, with ample additional width to allow easy handling. The doors should be easy to operate, and frequent cleaning demands a perfectly plain surface. Double veneered doors built up on a framed core are easily obtained. These can be enameled or stained to any color desired and varnished. The latter finish forms a pleasant variety to the usual monotony of color seen about our hospitals. Where there are apt to be great differences in temperature on opposite sides of the door, plain steel doors should be used. In rooms where there is cross ventilation, double doors can be used to good advantage and the room entirely insulated from the sounds of the corridor.

If a wooden trim is used, a plain band casing should cover the joint between the jamb and the plaster. The use of a wooden jamb, flush with the plaster, almost invariably shows an open joint from shrinkage.

The perfect trim is of metal, as there is no shrinkage, and the secure anchoring to the mason work helps the frame to withstand the heavy strain of the large doors.

The form used at the Detroit General Hospital is of heavy rolled steel, with welded angles and cast fittings. The door is hung on concealed, wrought steel hinges that throw the door entirely clear of the opening and leave it flush with the jamb when open.

While the rolled sections seem perfect in all respects, there are also satisfactory trims formed of heavy sheet steel made to a similar section. Both types are well anchored to the masonry work and form a perfect and permanent joint with plaster or tile.

I prefer the lever handle to the knob, as it can be operated without grasping with the hand. In contagious wards, this handle is lengthened into a loop and operated with the elbow. The handle should be about ten inches higher than is usual in residence work.

In Continental hospitals, the decoration seems to be concentrated about the doorways. A dark wainscoting will have bands of stencil work above and these will be continued around the doorway and elaborated to form a panel for the word designating the purpose of the room.

It is in the window that building tradition and even hospital tradition has held us most firmly to the old type.

Miss Nightingale, at the time of the Crimean War, pointed out the advantages of fresh air in abundance, and the speedy removal of foul emanations from the neighborhood of the sick.

The open window still gives the nearest approach to the out-of-door conditions she found so efficient.

The introduction of direct sunlight through the wide open window, and air fresh from the sunlight with its stimulating changes of temperature, is very desirable in most cases.

A certain sterilizing quality exists in direct sunlight that sunlight through glass does not possess. This is proved by the fact that the sterilization of water by the Ultra Violet Ray has to be through quartz, and that the same sterilization cannot be accomplished through glass.

Of the forms of windows in hospital use, the double hung type with which we are familiar seems to be the least efficient. The fullest opening obtainable is only one-half of the total sash area, and it is usually difficult to operate.

Were it not for our problem of screening, some form of pivoted sash would meet all our requirements.

The type of window used in the wards of the King's College Hospital, London,* is a great improvement over the double hung type. The windows extend to the ceiling, having transom sashes with glass side cheeks. The lower sashes are of the austral type. This window is very easily operated, a single pull opening the lower sash in and the upper sash out at the meeting rail. By deepening the rebate at the stool, considerable ventilation in an upward direction can be obtained at the meeting rail before the lower sashes clears the bottom. The sash when fully opened gives somewhat more open area than the double hung, and screening is possible. Both sashes pivot so that they can be fully cleaned from the inside.

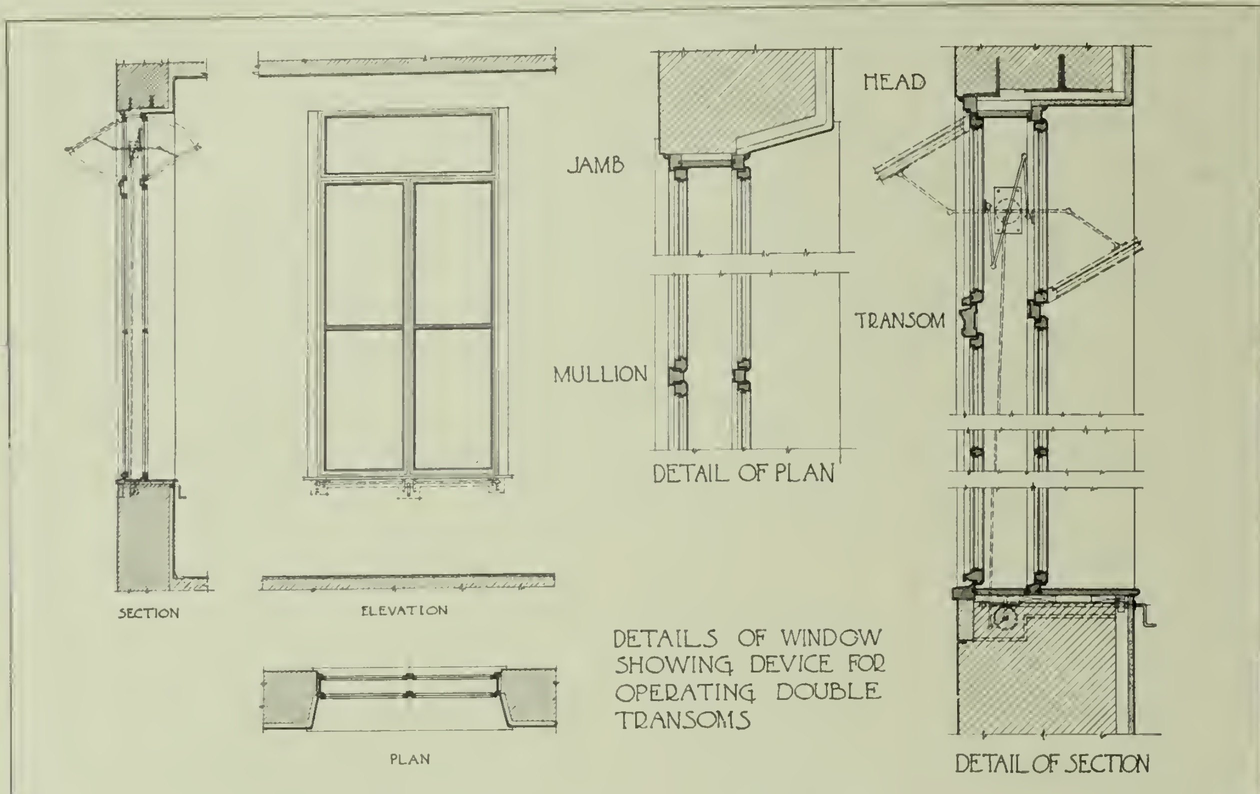
Another type is that used in the Charing Cross Hospital, where the sashes form a series of transoms operating together, and give a 100 per cent opening, with an upward deflection of the air.

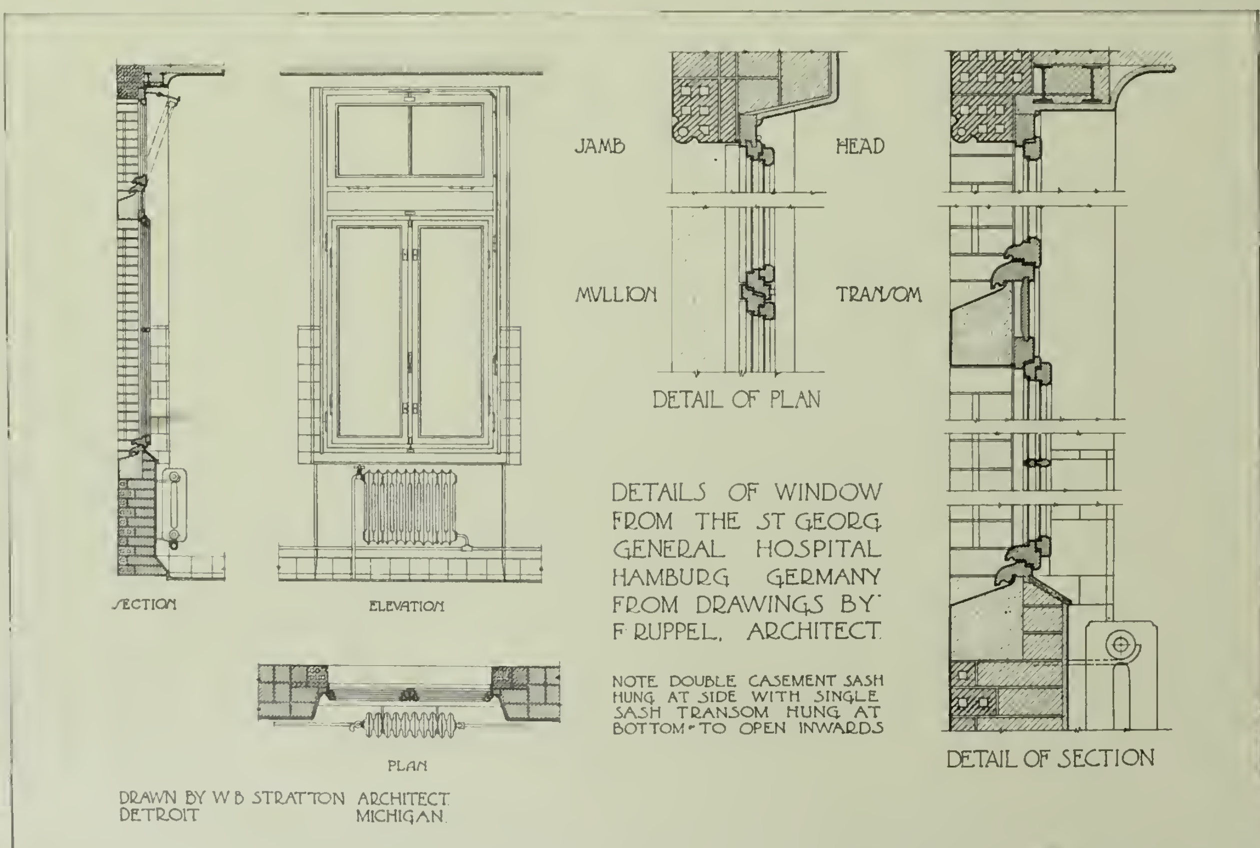
The casement form, opening inward, seems to meet the hospital requirements more perfectly than any other type. Casements are easily and quickly operated, easy to clean, can be fully screened, and give 100 per cent of opening. They are sufficiently weather tight and can be equipped with any good form of outside shutter, and can be decorated with the only kind of curtain permissible about a hospital, that is, a curtain hung on a rod so that it can be easily removed for washing.

Various types of double sashes are shown which give ample control of the direction of air and have all the advantages of perfect and free opening. The chilling of the air along the glass surface, which requires additional heating and in no way aids the ventilation, is very ingenuously taken care of by the double arrangement used at St. Georg, Hamburg. The flexibility of design desirable in order to meet the various hospital requirements is easily accomplished by the casement form. The Continental form of casement adjuster works on the scissors principle. It is rather clumsy in appearance, but very effective, as it grasps the top of the sash at the point of best advantage, and a single throw of the lever handle opens the transom to the fullest extent.

While waiting for the doctors to decide on the question of the desirability of washed air, plenum ventilation, etc., it would be well to furnish our hospitals with the simplest and most complete opportunities for natural ventilation.

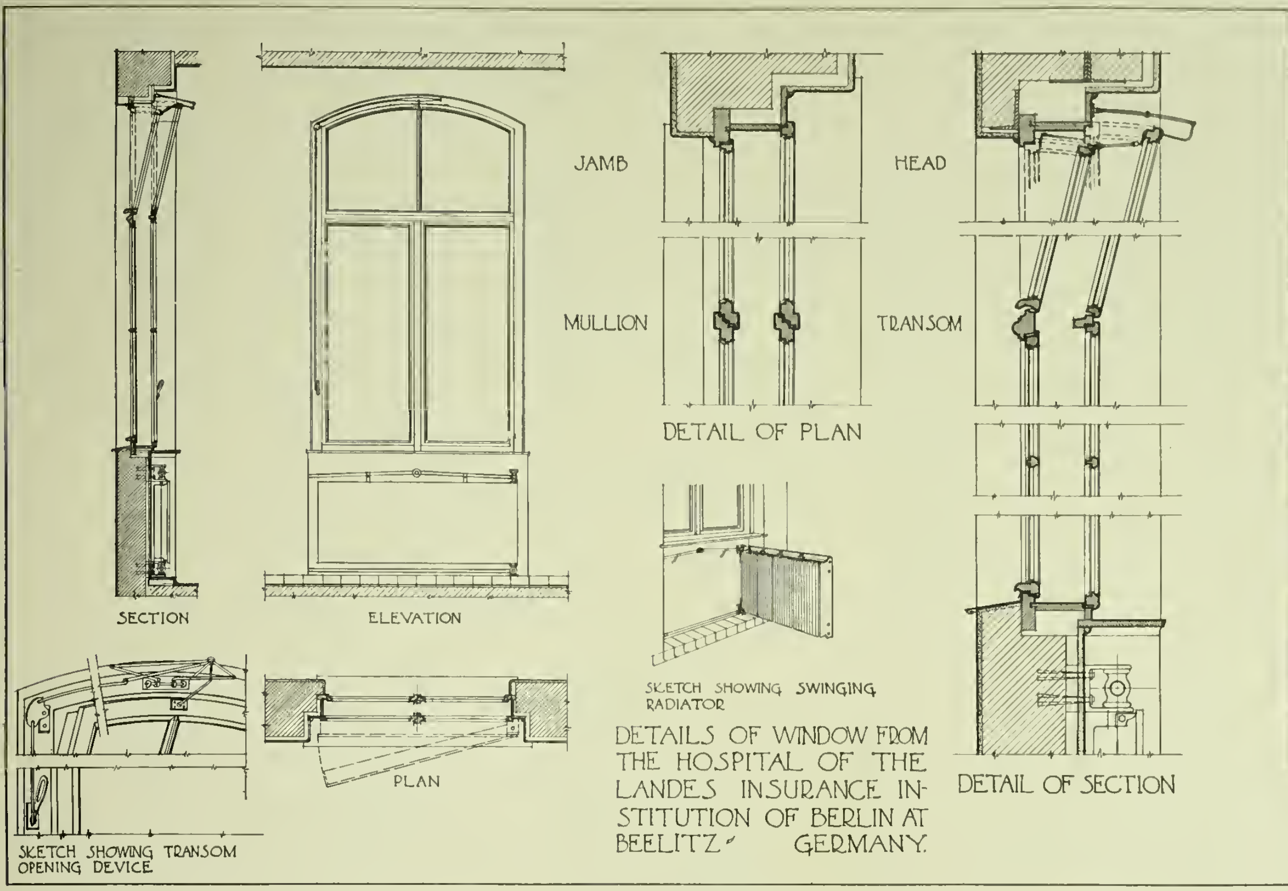
*See article on King's College Hospital in THE BRICKBUILDER May, 1914.

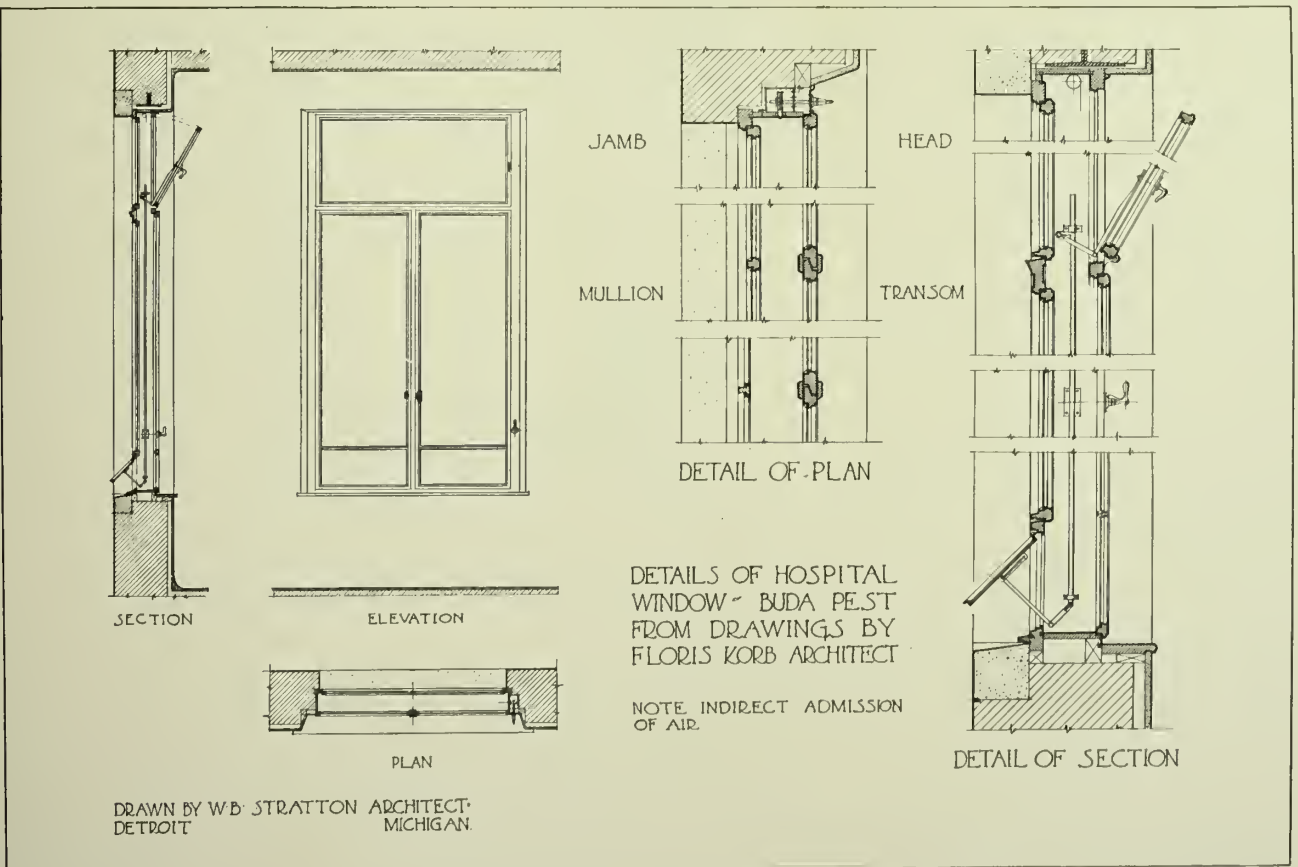




DETAILS OF EUROPEAN HOSPITAL CASEMENT WINDOWS

DRAWN BY W. B. STRATTON, ARCHITECT





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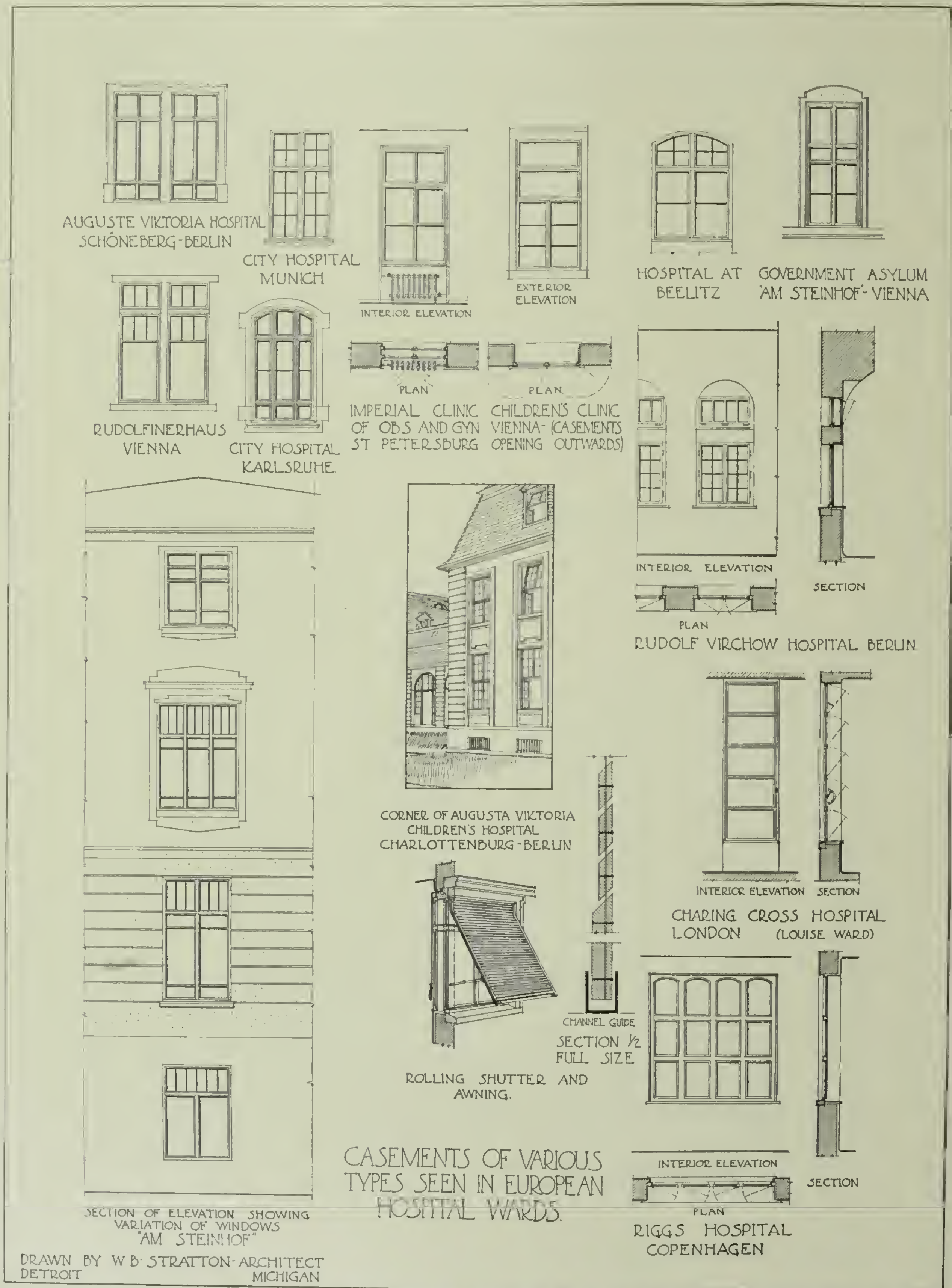

EUROPEAN HOSPITAL CASEMENT WINDOWS

DRAWN BY W. B. STRATTON, ARCHITECT

The Architect and Criminal Law.

By WM. L. BOWMAN, C.E., *of the New York Bar.*

A CRIME is defined as a violation or neglect of legal duty of so much public importance that the law, either common or statute, takes notice of and punishes it. A crime need not be morally wrong. For example, the architect who does business without complying with a state statute or with a city ordinance is guilty of a crime and can be punished as provided by the statute or ordinance. The tendency to restrict the practice of the professions by requiring proof of certain qualifications, and to supervise professional work, is bound to cause trouble for those who are not aware of this tendency and for those who do not keep track of the state and municipal laws governing their profession. Our familiar maxim, "Ignorance of the law is no defense," is the predominant factor in causing the annoyance and often serious criminal prosecution of professional men. Another principle of law which adds somewhat to the force of that maxim is the ruling that a person can be punished even though the statute making the act illegal is of so recent promulgation as to make it impossible to know of its existence. It is only fair in this connection to state that under such circumstances the punishment meted out would probably be the minimum provided. Generally speaking, most of the crimes that affect the architect in his professional capacity are set forth in statutes so that he can easily learn what they are and read them for himself.

In ordinary cases two elements are necessary in the commission of a crime, criminal intent and the act itself. However, in most of the statutes which interest us now the necessity of criminal intent has been eliminated by the legislative body passing the act. This is especially true in city by-laws or ordinances and police regulations. A specific example of this is shown by the punishment of an owner of a building for the infraction of the building laws of which he was ignorant and of which his architect did not inform him.

The crimes which might affect the architect professionally are felonies and misdemeanors; the first named is punishable by death or imprisonment in a state prison; the latter, by fine or imprisonment, or both. These names to-day mean little, since there are undoubtedly some misdemeanors which involve more turpitude than some felonies and for which the punishment may be much more severe, though not of the same kind. Prosecutions for crimes may be made by the national government, the state, or any of its subdivisions, such as cities, counties, boroughs, towns, villages, etc. What is a crime in Illinois, California, and New Jersey may not be a crime in any other state in the Union. This is true to-day as regards the licensing of architects. For this reason a paper of this sort cannot attempt to specify the criminal laws of any state nor cover the differences between the various states. However, we will call attention to most of the important crimes which may affect the architect in his professional work, so that knowing that such crimes exist he can then ascertain whether they are the law governing him.

Prior to Contracting. Several states now require that persons intending to follow the architectural profession prove their qualifications and secure a state license before practicing. A failure so to do is usually a misdemeanor and punishable with fine or imprisonment, or both. It might be pointed out here that failure to comply with such a statute not only involves the commission of a crime, but the would-be architect cannot get any pay for the work that he may have done. And generally, it will be found that the doing of a criminal act involves two punishments, that provided by the criminal law and some liability given the injured person by a civil action.

The state municipalities, such as cities, boroughs, towns, etc., often have local regulations limiting the practice of the architect by requiring a tax to be paid for the privilege of working within their boundaries. These are usually revenue-raising laws and hence the punishment is a fine.

While most architects carry on their work under their own names or under partnership titles, a caution must be given where this is not done. Statutes are now very common punishing as a misdemeanor the person who transacts business using the name as partner of one not interested with him as partner, or using the designation "and company" or "& Co." when no actual partner or partners are represented thereby. If business is carried on in the form of a corporation, then the many regulations, taxes, etc., now provided for that form of doing business must be obeyed, subject usually to heavy fines. Another popular regulation is the requirement that the wages of employees must be paid in cash at the time payment is due. With a minimum fine of $25 and a maximum of $50 for each offense, as is provided in one state, this is matter worth attention. The "Labor Laws" usually have requirements that are binding upon an architect in the conduct of his business. As a precaution, read over your state "Labor Law" and see if you are transgressing it in any respect. The law says you have knowledge, why not have it in fact?

Architectural Work. Most municipalities require that the plans and specifications for a proposed building be filed in a certain department. There are cases where architects have properly gotten possession of such filed plans and innocently made thereon changes which were minor or which seemed to them so immaterial as not to require notice to the department. One state statute would punish such action with imprisonment for not more than five years or by fine of not more than $500, or both. These statutes usually provide that a person is guilty who wilfully and unlawfully removes, mutilates, destroys, conceals, or obliterates a record, map, paper, or document, filed or deposited in a public office or with public officers, by authority of law.

In the drawing of plans and specifications the architect is required to exercise skill, and the failure to exert the needed skill from want of ability or from inattention may be considered gross negligence. Gross negligence which amounts to a reckless disregard for one's own or other's safety, and a wilful indifference to the consequences liable to follow, creates criminal negligence. The punishment depends upon the result. Thus, if improper plans are followed, and a building collapses and kills some workmen, under certain circumstances the architect would be guilty of manslaughter, which ordinarily carries a state prison term not exceeding fifteen years. In such instances honest mistakes in judgment will not excuse the crime if it resulted from negligence in observing and obeying any rule or precaution which it was the architect's duty to obey. In all of these cases the carelessness supplies the criminal intent, which is one of the elements of a crime.

In a very late case where a chimney had fallen, killing a man, the question before the court was whether the contractor was liable. The opinion was interesting, as it laid down a rule that there was *prima facie* evidence of the negligence of the architects; also, that the contractors could not be held except by showing that the plans were so obviously defective that a contractor of average skill and ordinary prudence would not have attemped the construction according to the plan.

Similarly, in his inspection work, the architect must know that he is giving the building the attention that it requires and which it is his duty to give. If there is gross negligence of the architect in directing a departure from the plans or specifications, or by the use of improper materials, or by knowingly suffering such departure or such wrongful use, or by failure to condemn improper work, he would doubtless be guilty of criminal negligence. Even though the architect may not actually be guilty of a crime, yet when a serious accident occurs on his work, he is more than likely to be arrested upon the charge of criminal negligence. This is serious from a business standpoint, even where the prosecution is dropped or where a jury declares him to be innocent. Just a few days ago the city papers contained an account of the failure and collapse of a retaining wall for a theater, resulting in the death of three workmen and the serious injury of another, where the architect and superintendent of construction were arrested on this charge and held in $5,000 bail for examination.

Doubtless there are many architects who have never imagined that their carelessness or lack of knowledge or of skill could involve such serious consequences. Those who have escaped punishment in the past because of laxity on the part of the prosecuting officials, or because of the failure of the deceased relatives to press their vengeance that far, cannot expect to continue such practices with the same result. To-day responsible parties are being called to account as never before, and it is not to be expected that architects will be any exception to the rule.

One of the most widespread statutes is that which is passed to prevent the corrupt influencing of agents, employees, or servants. In securing a contractor for the owner, it is a practice with some architects to allow bidding only by those with whom he has previously had some arrangement for personal advantage. Or to show another phase of this, after the architect knows who is the low bidder, he advises such contractor, and some secret arrangement of benefit to the architect is then made as a requirement to actually secure the contract. These statutes punish not only the architect who asks such personal gift, gratuity, or benefit, but the contractor who gives it. It also punishes both, in case the contractor is the offerer and the architect the acceptor. In one case the punishment is not less than $10 nor more than $500 fine, or one year's imprisonment, or both. This statute is so broad, and the knowledge of such a statute so necessary, that I quote the following part:

"or an agent, employee or servant who, being authorized to procure materials, supplies or other articles either by purchase or contract for his principal employer or master, receives directly or indirectly for himself or for another a commission, discount or bonus from the person who makes such sale or contract or furnishes such materials, supplies or other articles or from a person who renders such service or labor; and any person who gives or offers such an agent, employee or servant such commission, discount or bonus shall be guilty of a misdemeanor."

Since the architect is so often drawn into the legal controversies between the owner and the contractor, he should know some of the most important statutes governing evidence, witnesses, etc. Forged or fraudulently altered documents, records, etc., offered in evidence knowingly, make the person offering or procuring them to be offered guilty of a felony. One who bribes or influences or attempts to influence a witness is also guilty of a felony. Among the most common crimes held to be misdemeanors are the following: the destroying of evidence or of plans, documents, records, which it is known would be required as evidence; persuading a person to not act as a witness; inducing a person to commit perjury, etc. Perjury by witnesses has gone to such an extent that there seems, by the experienced, to be no limit to which they will not go. This is doubtless due to the fact that the statutes against that crime are not strictly enforced. The punishment for this crime is usually from ten to twenty years' imprisonment, a large fine, or both.

Public Work. Since there are so many architects holding offices of public trust, it is deemed wise to give a few of the most important statutes that affect such positions. Whether the architect is occupied with his public work all or but a small portion of the time, there is no difference as to the application of these laws. The corrupt use of a public office, or of the power of the same to secure votes by promises of any character, is a crime with a maximum punishment of probably two years and $3,000 fine. The taking of unlawful fees to do or not to do what the official duties require is a felony, which in one case provides for ten years or $4,000 fine, or both. What might not be considered serious in private work becomes a duty in public work. For example, in letting a public contract where the architect has the power to act, he is bound to take the most advantageous terms for the performance of the work, and for any corrupt or wilful dealing in the placing of the contract payable in public money, he is criminally liable. Where we have the requirement that no contract shall be let without previous advertisement, the letting of a contract without such preliminary step wilfully and with evil intent constitutes a criminal offense. In this connection it is specially called to attention that a person may be just as guilty of a crime by failure to do something as by doing something affirmatively.

Conclusions. Probably most, if not all, of the serious crimes which affect the professional work of the architect are statutory. Hence they are easily found and read. Knowledge of the law in one state is no safety in another. One must know the statutes in these regards where one resides and does business. Luck and the escaping of punishment in the past, whether merited or not, are no criterions for the future. Present legislative policy seems to be a combination of investigations, new laws, and punishment.

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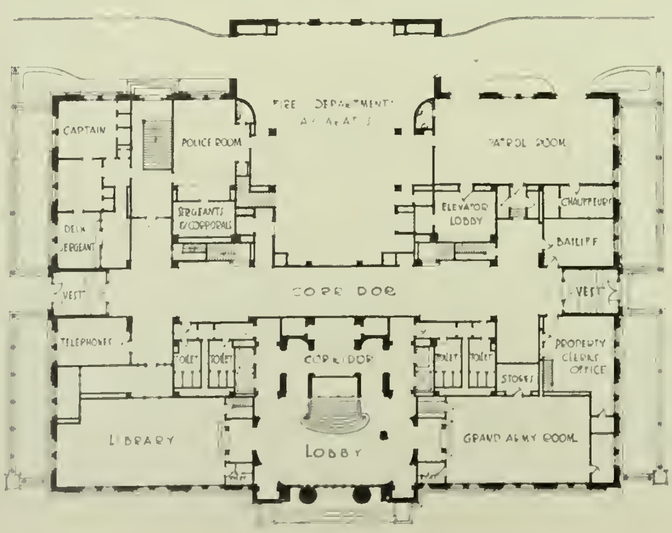
The Oakland City Hall Oakland, California

PALMER, HORNBOSTEL & JONES, ARCHITECTS

MESSRS. Palmer, Hornbostel & Jones have never been remarkable for doing the expected, and when one thinks over their schemes for the number of competitions which they have won, one seldom finds that they have succeeded through working out the problem in the obvious way, but almost always, that they have found a new, ingenious, and entirely reasonable solution. Perhaps the most conspicuous example of this was their scheme for the Carnegie Technical School, and the designs of all the other competitors looked crowded and cluttered by comparison with theirs! So to a minor extent is their scheme for the Oakland City Hall, unusual, unexpected, and logical.

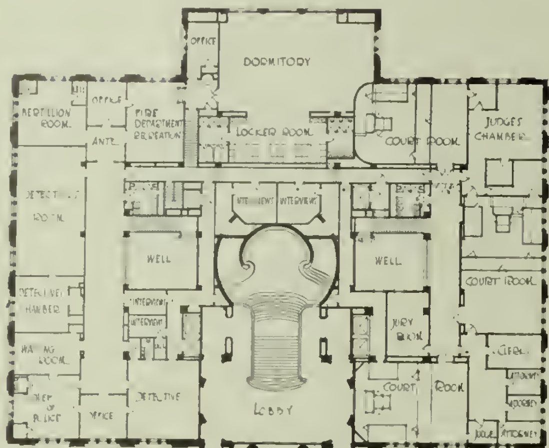
There is no reason except tradition why vertical circulation and vertical juxtaposition of departments whose functions are related, is not as good in these days of full and rapid elevator service as is horizontal, and there is no doubt but that the higher we can lift offices above the street, the more they gain in quiet and comfort; the proof of this is that the upper stories of an office building invariably rent the most readily, and much of the occupancy of a modern city hall is practically the same as that of an office building, since where the city is not too big, the legislative, administrative, and judicial functions can be combined with economy both of size and of money in running expense. Probably a single two-story building of great floor extent and with separate entrances to most of the departments would be the ideal city hall (although even this is open to question), but the lot on which the Oakland City Hall was to be placed was not large enough to permit a structure of this type, and a building covering the entire lot having the necessary courts for lighting and ventilating the interior would have run to six or seven stories. The proportion between height and width thus fixed would be difficult to treat architecturally with dignity and of no particular merit in plan, since the large chambers for the court rooms, council, etc., would necessarily have had to be placed below smaller units for the offices, and the logical treatment of the exterior would very likely have required the expression of the differences of the functions of the two parts of the building to be as inconspicuous as possible. Now in the Oakland City Hall the architects have deliberately separated the building into two portions, and have expressed this difference in elevation: they have built a low building of monumental character to house the judicial and legislative functions, and in the center of that have

Upper Part of Tower and Belfry

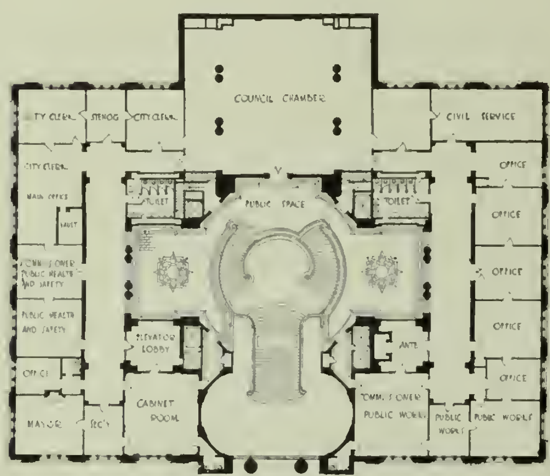


First Floor Plan

erected a rather tall office building for the administrative offices — a scheme so entirely natural and practical that after its utility is thus demonstrated one is rather surprised it has not been previously done.



Second Floor Plan

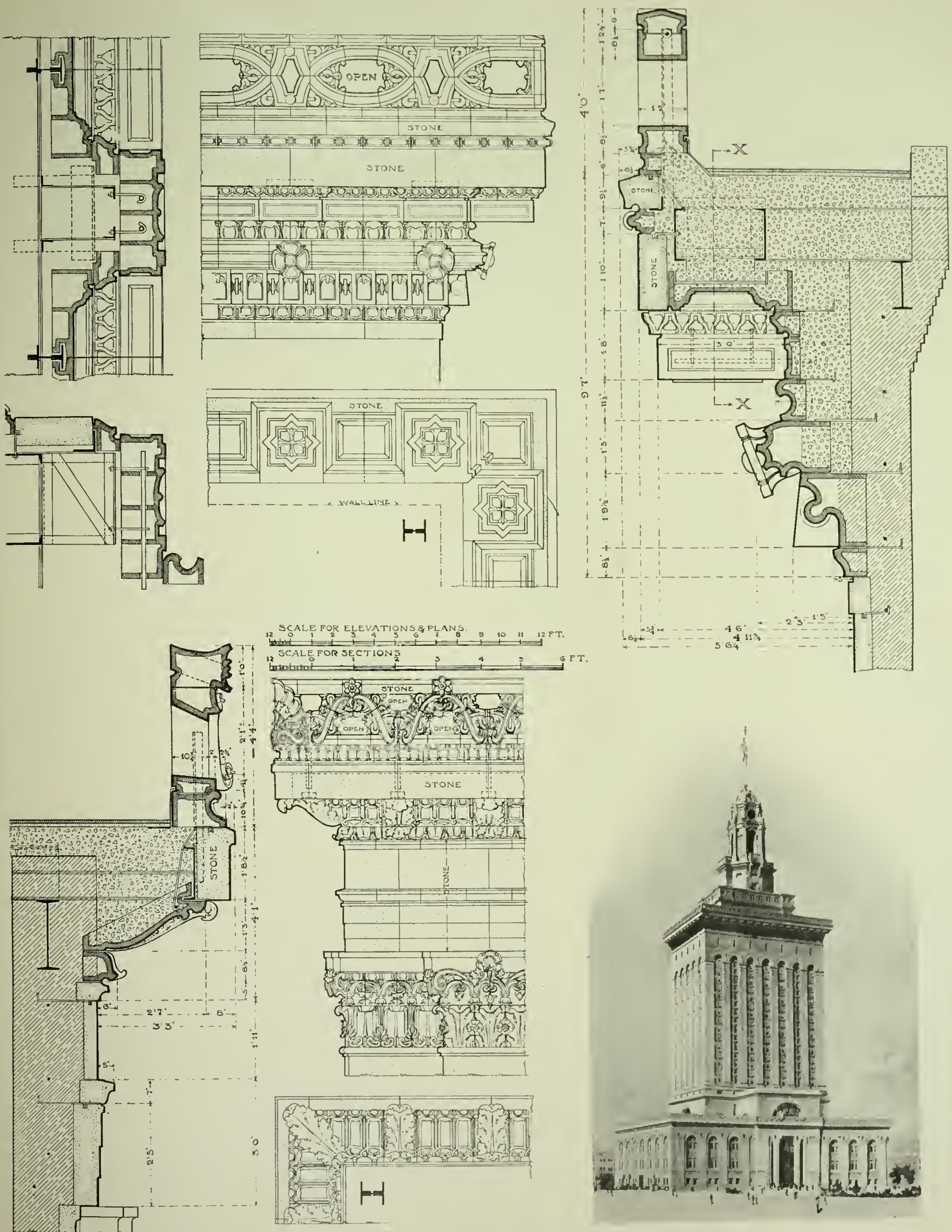


Third Floor Plan

Even from the purely traditional point of view, the scheme as executed does not appear extraordinary ; most city halls have a tower, and in this city hall the tower has only been developed and expanded — the principle of a low mass with a tall central emphasis has not been altered. The especial interest of the exterior arises then from the revisions of traditional motives necessary to convert the tower into an office building and to architecturally connect it in scale and in design with the more grandiose treatment of the base. This has been done in an exceedingly interesting and able fashion by treating the fenestration of the lower building with a series of arches between pilasters, opening it up as far as possible, and by making the base of the tower extremely solid and sturdy, so that one feels the tower is not supported on the roof of the lower building, but passes through it to the ground, making the lower building more or less of a decorative feature around the base.

Lower Stories of Principal Façade

The regional sentiment of California has been hinted at rather than permitted to dominate the design, which is derived as far as possible from well-known classic motives, treated in a very free way, with a suggestion of the exotic in the cornice of the tower, and in the cupola and belfry which surmounts it ; this belfry, by the way, being unusually picturesque in silhouette, as well as admirably adjusted to form a termination to the balance of the building. It is the study of the plans which gives us the most complete comprehension of the real simplicity of the apparently complicated design and of the logical treatment throughout. In the ground floor the main portion of the building is accessible from three sides, although the principal entrance is, of course, at the front, with a monumental staircase which leads easily and readily to the legislative chamber on the third floor. But the elevators leading to the office part of the building are close to the entrance, and are admirably placed for utility and appearance ; and particularly interesting is the manner in which the fire house is included in the design, entirely secluded from the balance of the building, and yet readily accessible from it. The ground floor, beside the fire house, includes a police station and special elevators to the detention cells, placed high up in the building, and communicating also with the police courts on the second floor. The second floor includes offices for the chief of police, the police courts, and a dormitory for the firemen and the police department. The court rooms are so arranged that they are readily accessible to those persons



DETAIL OF TERRA COTTA CORNICES AT FOURTH AND ELEVENTH FLOORS
OAKLAND CITY HALL, OAKLAND, CAL.
PALMER, HORNBOSTEL & JONES, ARCHITECTS

who have business there, and are yet shut off from observation by the general public.

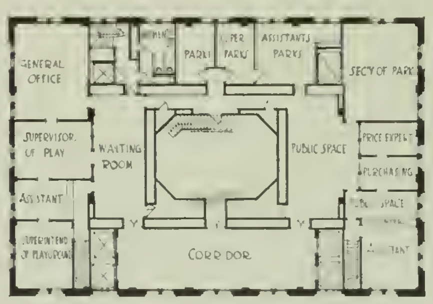
The third floor is the Legislative Department, and the general circulation in the center is admirably lighted through the base of the tower. Private corridors lead to the committee rooms and offices, accessible either from the main part of the building or from the council chamber, as may be required. The plan of this floor is of them all perhaps the most interesting, because of the excellent monumental character obtained without sacrifice of space, convenience, light, and accessibility. The fourth floor to the tenth floor, inclusive, are reserved for the different administrative functions, and it is interesting and well worth while to go through the plans to see how admirably the sequence of departments is arranged, as well as to see how good the plan of each department is, although each unit is closely related to one or two others to secure economical administration. Thus we find the assessor, the tax collector, the treasurer, and the auditor grouped on the fourth, fifth, and sixth floors; while above them on the seventh, eighth, and ninth floors are the Department of Street Cleaning, the City Engineer, Building Department, Park Department, and Board of Health, each of which is in most cities housed separately from the others at a great expense of time and lack of co-ordination in administration. The eleventh, twelfth, and thirteenth floors contain the prison and quarters for the keepers, warden, and janitor, completely removed from all outside activities and each a unit. There are, of course, many other buildings in which departments have been admirably related to one another, and equally as many buildings which are monumental city halls of good architectural characteristics, but this is one of the very few, if not the only one, where the quality of public building is so admirably retained without sacrificing any of the convenience of the usual office building.

Detail of Lamp Standard

It may be recalled that Palmer, Hornbostel & Jones some years ago developed a not dissimilar scheme for an extension of the court house at Pittsburgh, and it seems quite probable that the treatment which was in that case forced by existing conditions was so distinctly advantageous that it influenced them in developing the present one. But whether this be the fact or not, we do know that this is the first American structure of this character, and one which is bound to act as a precedent to a host of imitators.

The advantages of the scheme as to the natural lighting of its various parts are sufficiently obvious. The great windows in the lower part prevent the shadowing of the street floors by adjoining structures, and the freedom from light courts makes for quietness, since there is no reverberation. An ingenious scheme is the lighting of the upper row of cells, placed in a story behind the main cornice, from skylights; another is the lighting of the central monumental hall on the third story from great arched windows above the roof, — a system admirable in itself because of the thorough ventilation and the agreeable light.

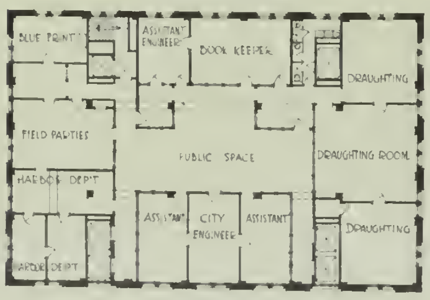
Mr. Hornbostel's ingenious mind revels in devices of this sort, but he has seldom thought out a scheme more useful, satisfactory, and beautiful than this one.



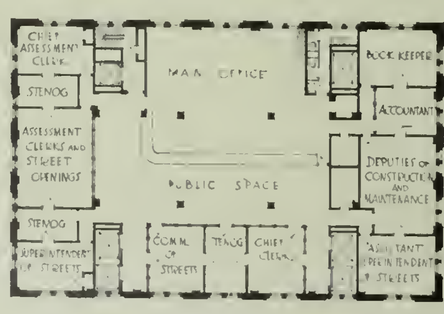
Fourth Floor Plan

Fifth Floor Plan

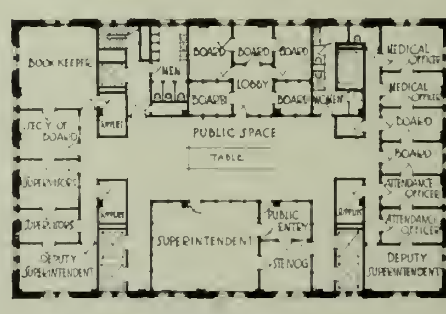
Sixth Floor Plan



Seventh Floor Plan



Ninth Floor Plan



Eleventh Floor Plan

Oakland City Hall, Oakland, Cal.

Palmer, Hornbostel & Jones, Architects

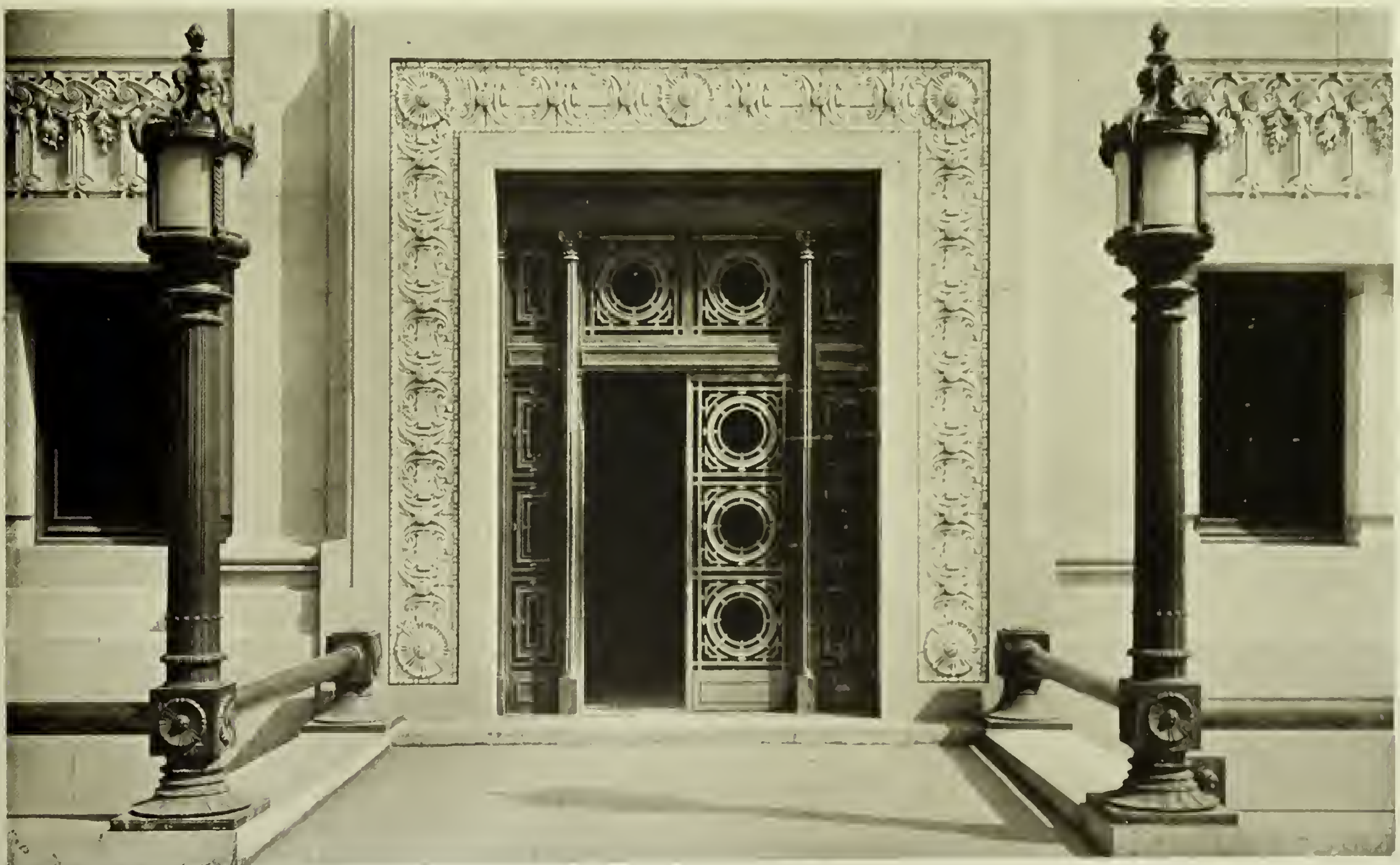
OAKLAND CITY HALL, OAKLAND, CAL.
PALMER, HORNBOSTEL & JONES, ARCHITECTS

DETAIL OF WASHINGTON STREET ENTRANCE

OAKLAND CITY HALL, OAKLAND, CAL.

PALMER, HORNBOSTEL & JONES, ARCHITECTS

FOURTEENTH STREET FACADE



DETAIL OF FOURTEENTH STREET ENTRANCE

OAKLAND CITY HALL, OAKLAND, CAL.

PALMER, HORNBOSTEL & JONES, ARCHITECTS.

ENTRANCE FOYER AND STAIRCASE

OAKLAND CITY HALL, OAKLAND, CAL.

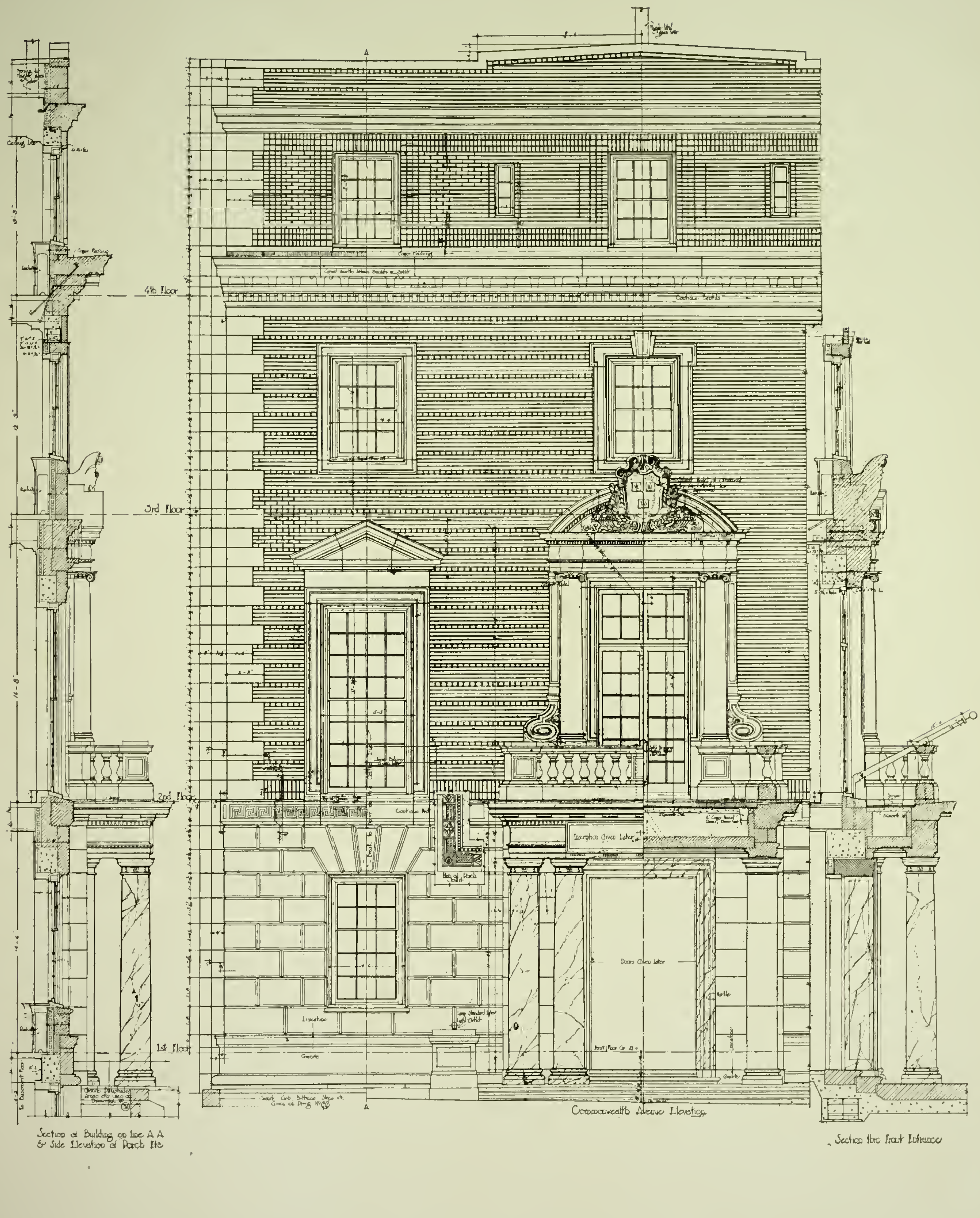
PALMER, HORNBOSTEL & JONES, ARCHITECTS

BUILDING OF THE HARVARD CLUB OF BOSTON, COMMONWEALTH AVENUE, BOSTON, MASS.
PARKER, THOMAS & RICE, ARCHITECTS

DETAIL OF ENTRANCE

BUILDING OF THE HARVARD CLUB OF BOSTON, COMMONWEALTH AVENUE, BOSTON, MASS.

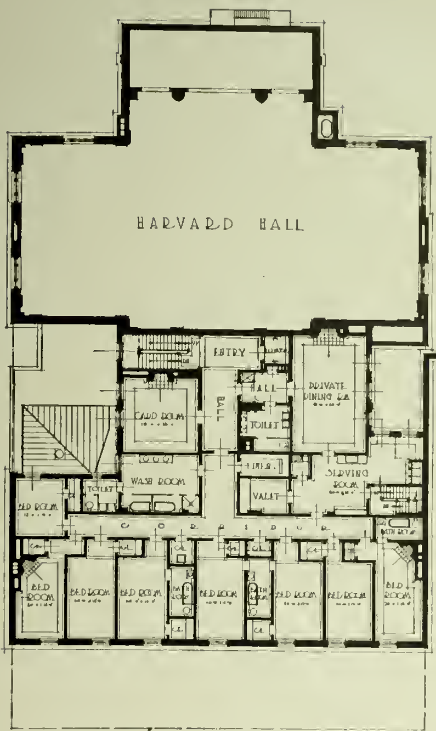
PARKER, THOMAS & RICE, ARCHITECTS



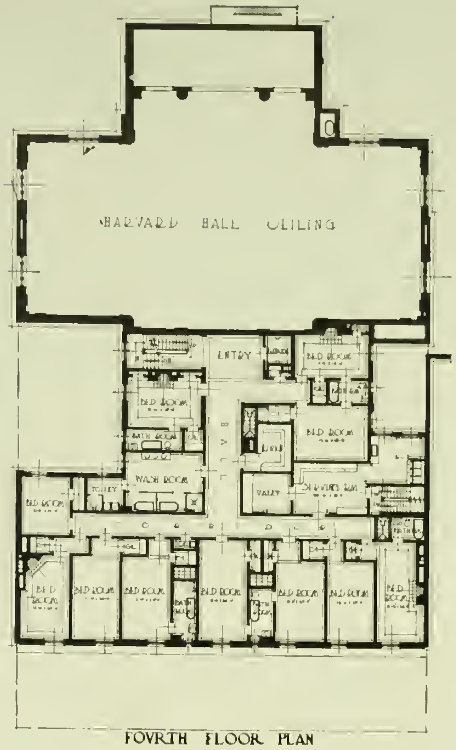
DETAIL OF FACADE

BUILDING OF THE HARVARD CLUB OF BOSTON, COMMONWEALTH AVENUE, BOSTON, MASS.

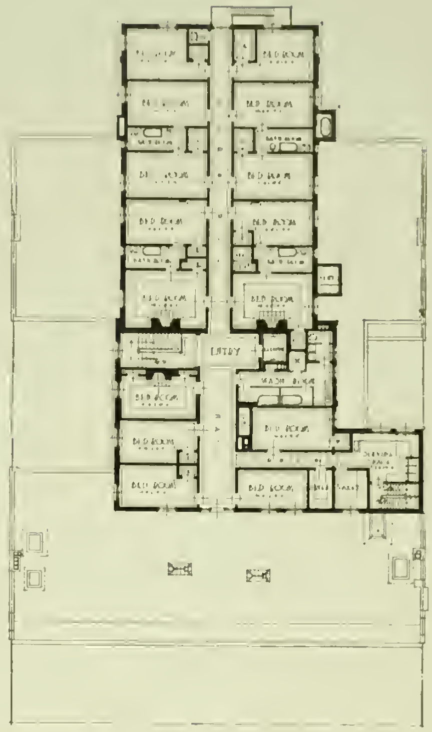
PARKER, THOMAS & RICE, ARCHITECTS



THIRD FLOOR PLAN

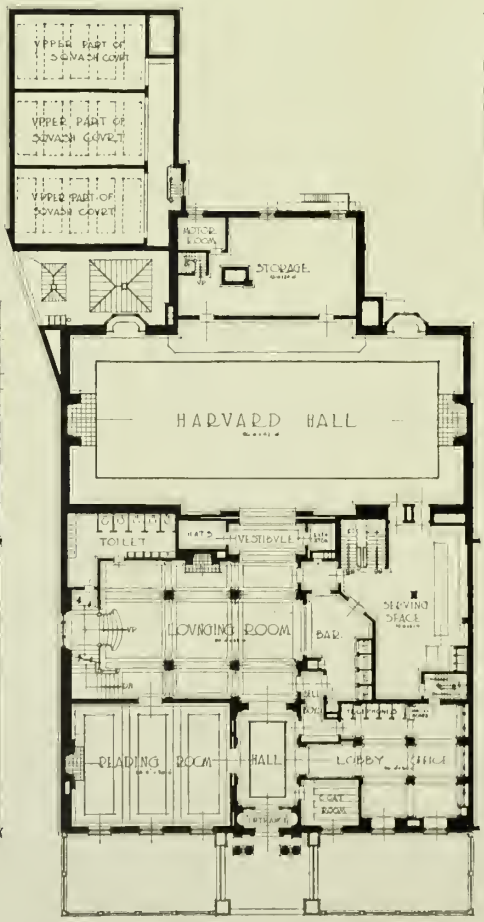


FOVRTH FLOOR PLAN

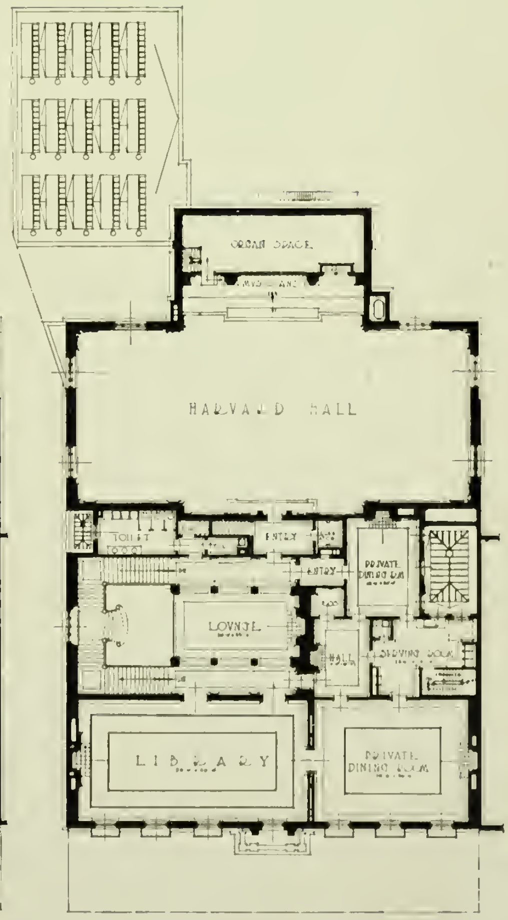


FIFTH FLOOR PLAN

BASEMENT PLAN



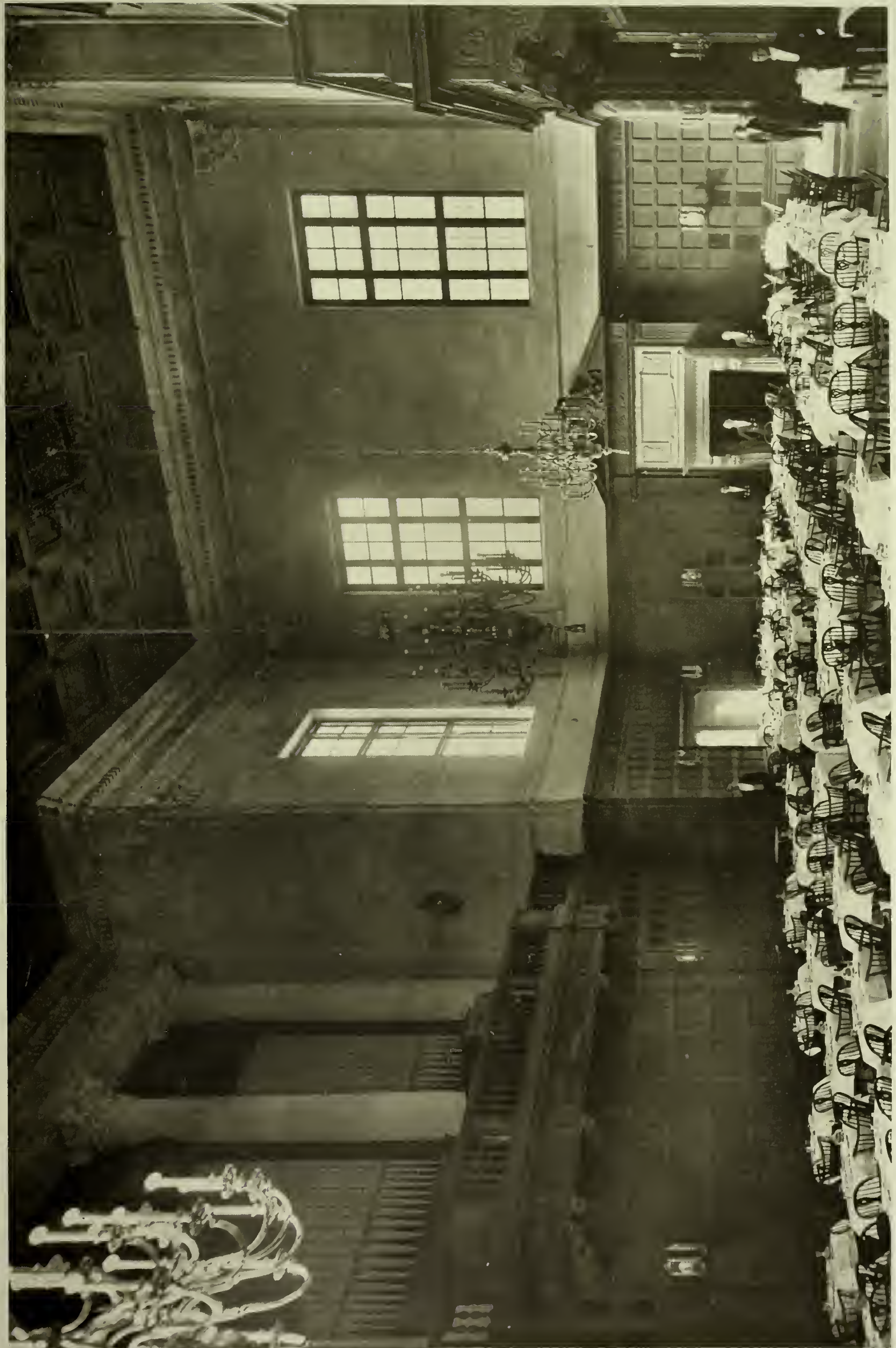
FIRST FLOOR PLAN



SECOND FLOOR PLAN

BUILDING OF THE HARVARD CLUB OF BOSTON, COMMONWEALTH AVENUE, BOSTON, MASS.

PARKER, THOMAS & RICE, ARCHITECTS

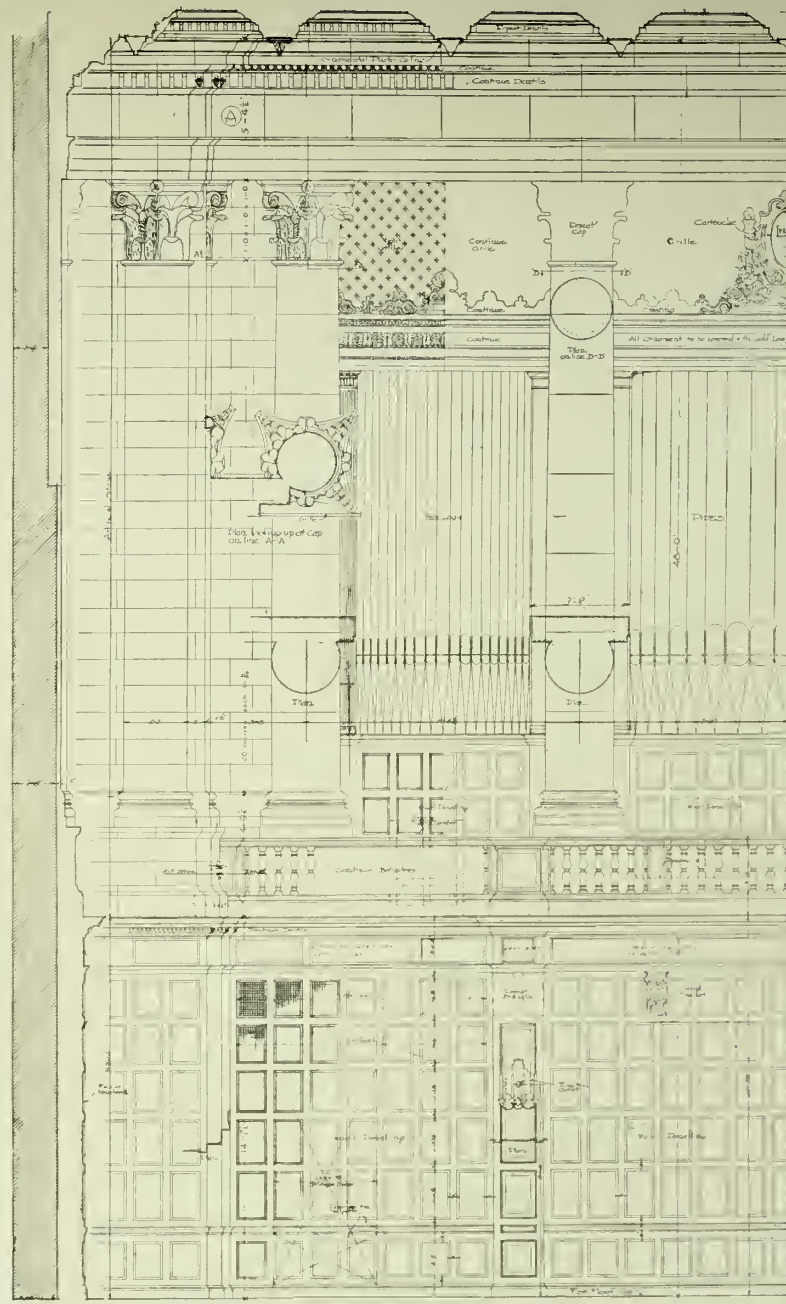


HARVARD HALL

BUILDING OF THE HARVARD CLUB OF BOSTON, COMMONWEALTH AVENUE, BOSTON, MASS.

PARKER, THOMAS & RICE, ARCHITECTS

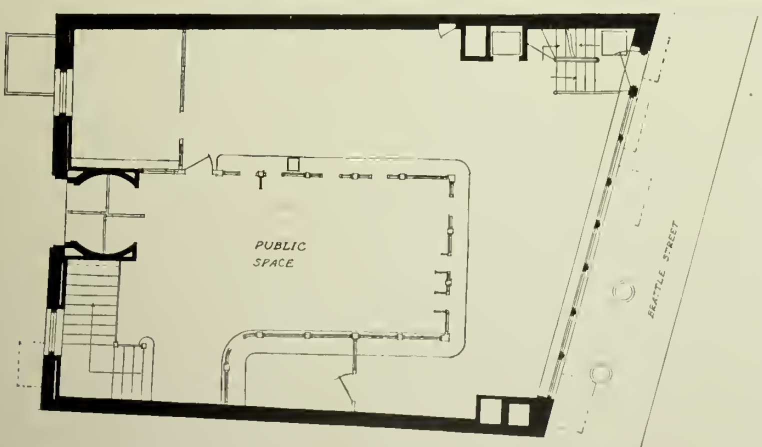
MANTEL IN HARVARD HALL



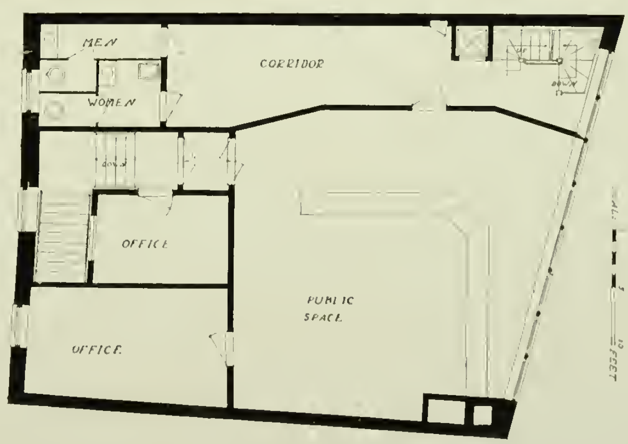
DETAIL OF HARVARD HALL

BUILDING OF THE HARVARD CLUB OF BOSTON, COMMONWEALTH AVENUE, BOSTON, MASS.

PARKER, THOMAS & RICE, ARCHITECTS



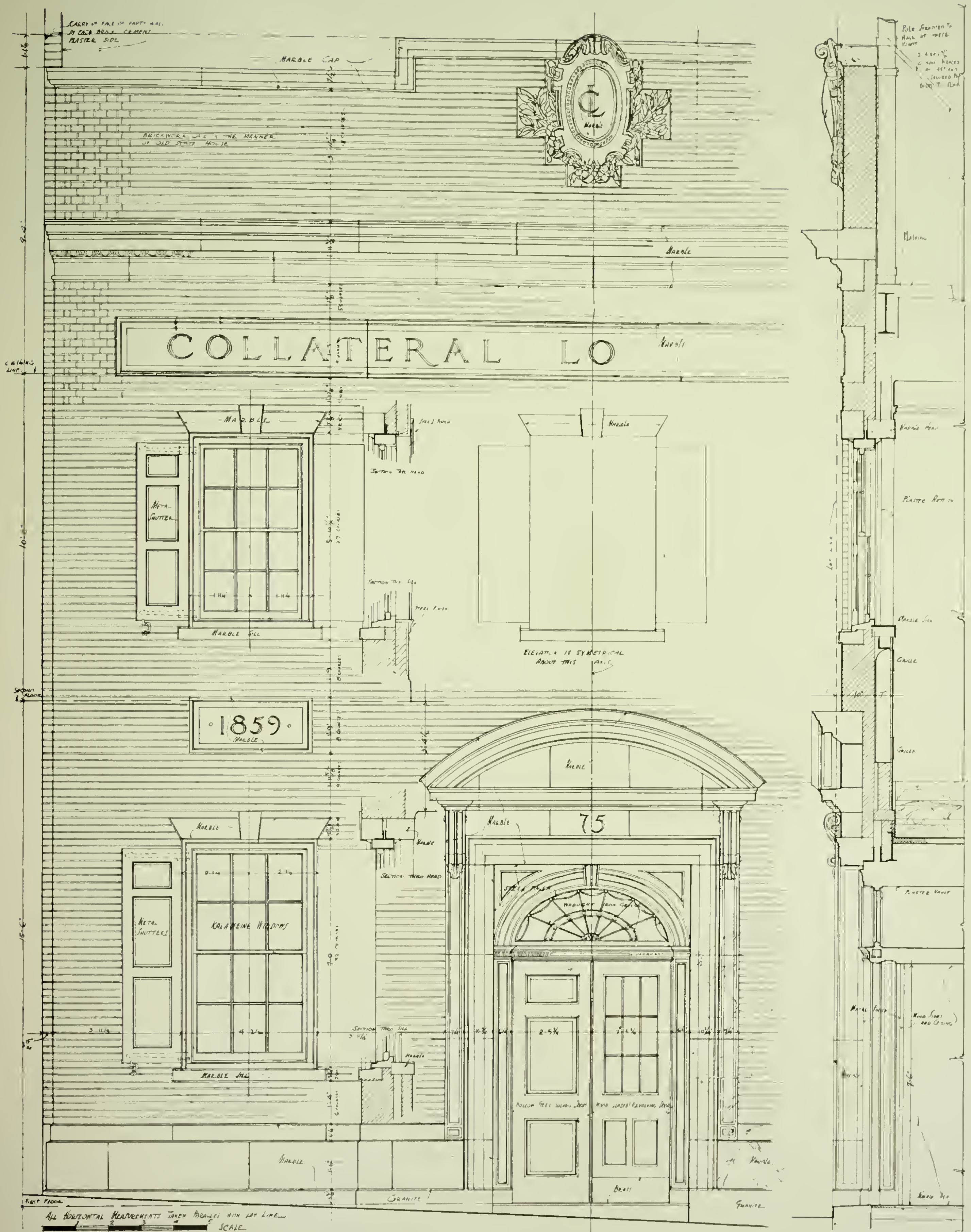
FIRST FLOOR PLAN



SECOND FLOOR PLAN

THE COLLATERAL LOAN COMPANY BUILDING, CORNHILL, BOSTON, MASS.

C. H. BLACKALL, ARCHITECT



DETAIL OF CORNHILL ELEVATION

THE COLLATERAL LOAN COMPANY BUILDING, CORNHILL, BOSTON, MASS.

C. H. BLACKALL, ARCHITECT

GARDEN FRONT

ENTRANCE FRONT

HOUSE OF MRS. LUCIE A. FISKE, AUBURNDALE, MASS.

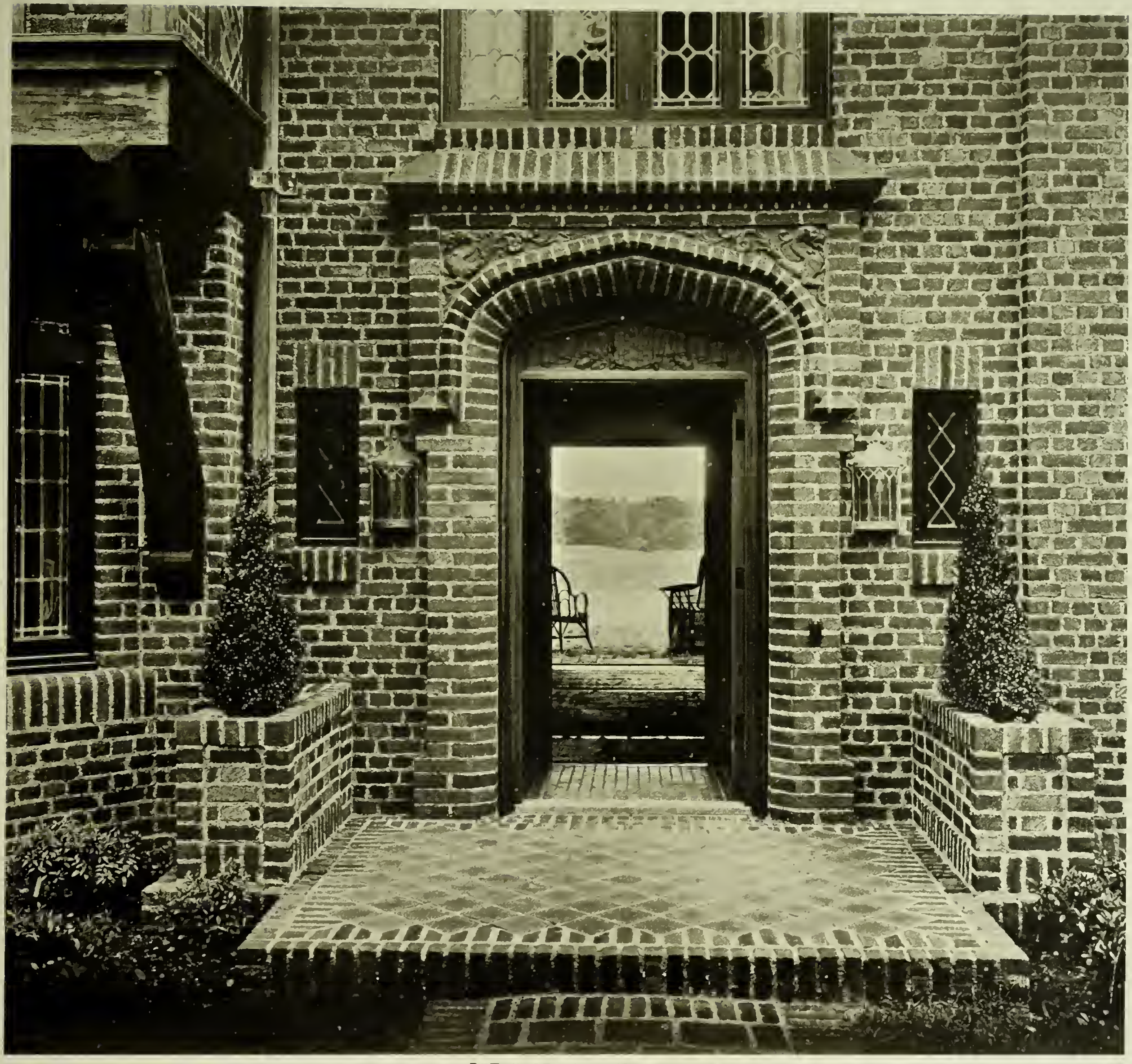
HENRY J. F. LUDEMAN AND C. V. SNEDEKER, JR., ASSOCIATE ARCHITECTS

GARDEN FRONT

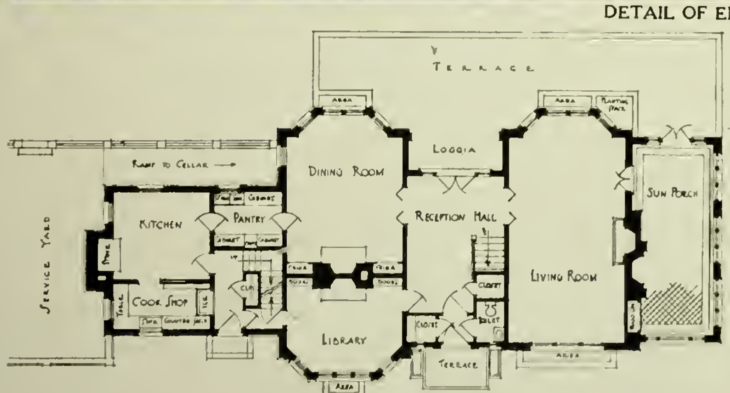
ENTRANCE FRONT

HOUSE OF MRS. LUCIE A. FISKE, AUBURNDALE, MASS.

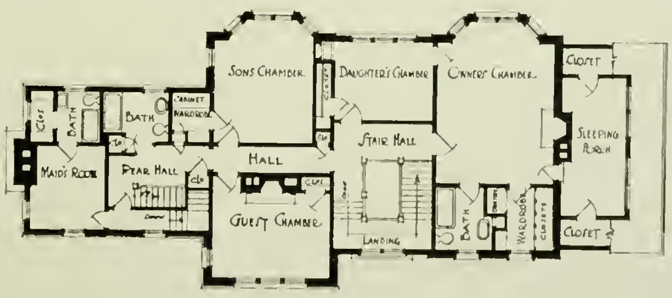
HENRY J. F. LUDEMAN AND C. V. SNEDEKER, JR., ASSOCIATE ARCHITECTS



DETAIL OF ENTRANCE

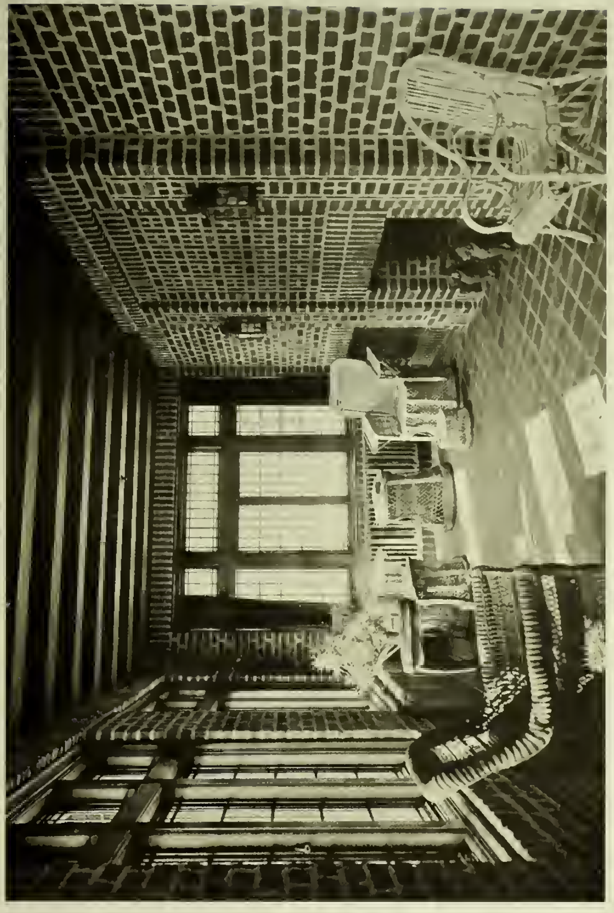


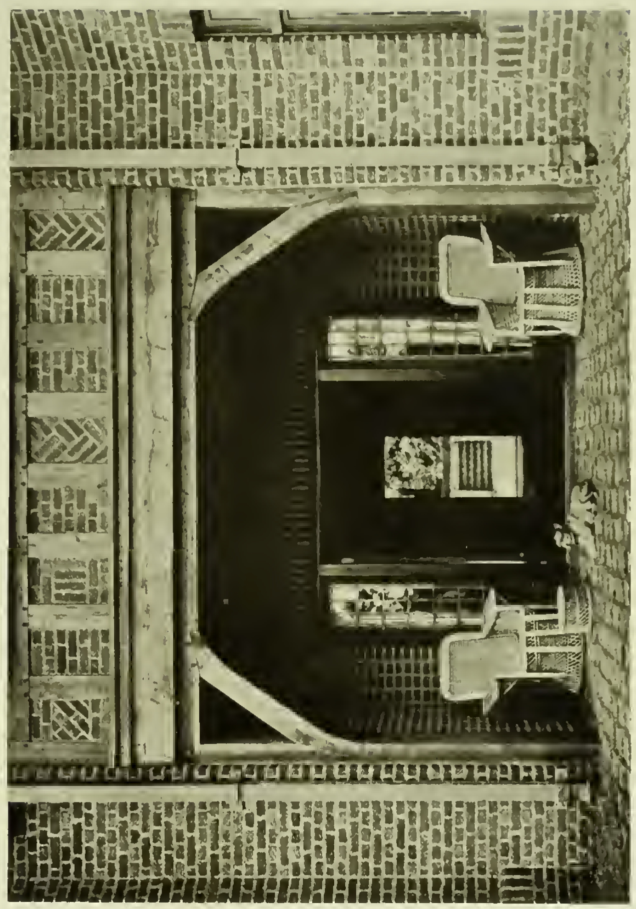
FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOUSE OF MRS. LUCIE A. FISKE, AUBURNDALE, MASS.
HENRY J. F. LUDEMAN AND C. V. SNEDEKER, JR., ASSOCIATE ARCHITECTS


ENCLOSED PORCH


GARDEN ENTRANCE


DETAIL OF SERVICE WING

HOUSE OF MRS. LUCIE A. FISKE, AUBURNDALE, MASS.

HENRY J. F. LUDEMAN AND C. V. SNEDEKER, JR., ASSOCIATE ARCHITECTS

LIVING ROOM

DINING ROOM

STAIR HALL

LIBRARY

HOUSE OF MRS. LUCIE A. FISKE, AUBURNDALE, MASS.

HENRY J. F. LUDEMAN AND C. V. SNEDEKER, JR., ASSOCIATE ARCHITECTS

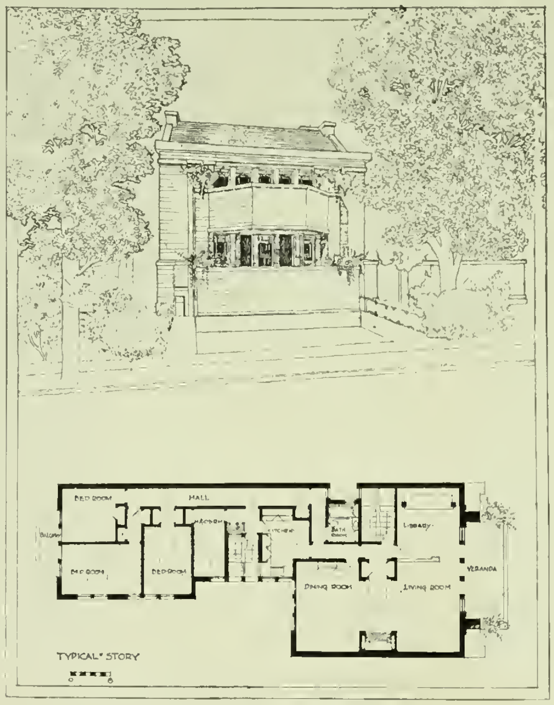
The Small Apartment Building.

ACCOMPANIED BY PLANS AND ILLUSTRATIONS OF SELECTED EXAMPLES IN CHICAGO, ILL.

By HUGO H. ZIMMERMAN.

WHO the inventor of the flat building was, history does not state. But two and three story houses, with apartments for not more than two or three families, have long been an important feature of life in Chicago. And when one compares the flat building of twenty-five years ago, built on a lot with a street frontage of twenty-five feet, with some of the really clever plans of to-day, we can see how far we have advanced in health, sanitation, and comfort. Of course the well-to-do have always been able to make themselves comfortable, but this article refers only to the average city man who is compelled to found a home on a small lot and make the best of it.

Until about ten years ago the average size city lot was twenty-five feet by one hundred and twenty-five feet, running to an alley sixteen feet wide. The increasing demands and restrictions of the health and building departments, however, have made this unit unsuitable for small flats, and subdivisions are now generally laid out with lots thirty to thirty-five feet wide and sold with restrictions as to cost of the future building and the distance it must be placed back from the street line. Another restriction often made where a promoter wishes to "enhance" the appearance of his subdivision is to require that all flat buildings shall be of a residential type; that is, a building with the conventional "flat" effect, disguised with pitched roofs, flower-boxes, etc. Such demands were an incentive for the "plan factory," and the designing of flat buildings early fell upon evil ways for stock plans were advertised for sale at $5.00 and up. However banal the effect of such buildings is, dollar plans reduce the cost of the building and enable the speculative builder to present an "attractive proposition" to the prospective buyer, and the proposition does appeal with special force to the wage earner, who, with his limited means,



Two-Apartment Building, Chicago, Ill.
Walter Burley Griffin, Architect

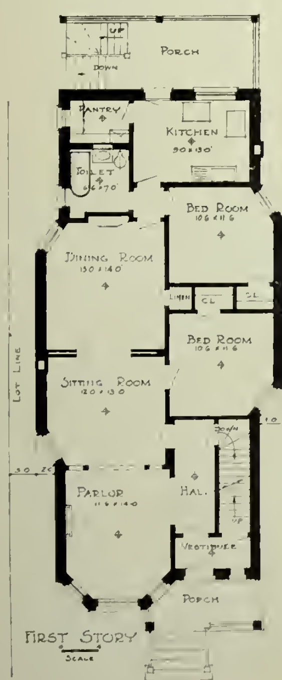


Fig. I

Two-Apartment Building, Chicago, Ill.
Huehl, Schmid & Holmes, Architects

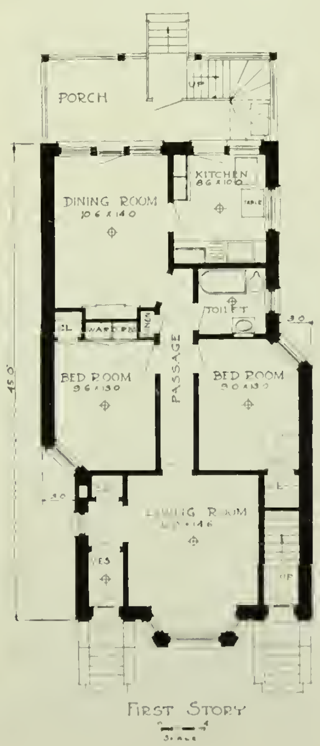
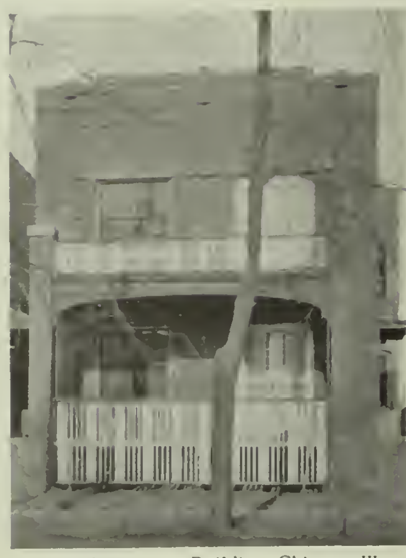


Fig. II

finds it within his power to finance it. The investor thus secures a home for himself and an income from the other flat, which helps him pay the taxes, up-keep, and interest on the inevitable mortgage.

With the advent of spring begins the quest of the "flat hunter," for May 1 is moving day. Then must the owner or agent be ready to dilate upon the features of his flat designed to meet the demands of the modern housewife. To enumerate some of the talking points — ice box in the pantry, iced from porch; fireplace in the living room flanked with built-in bookcases; beamed ceiling in the dining room; art-glass in the buffet; outlets for electric table lamps, vacuum cleaner, and washing machine. That the flat is heated with steam or hot water, has modern plumbing, electric light, and hot water for domestic use, is all taken for granted.



Two-Apartment Building, Chicago, Ill.
Hatzfeld & Knox, Architects

Aside from municipal restrictions, competition among builders is working a continual change in the appearance and plans of the small flat building. Figure I is the plan of a typical two-flat building erected about ten years ago and shows the regulation parlor, sitting room, and small front porch, the latter for the use of both tenants. The second story would have an additional bedroom above the vestibule. Figure II shows a variation of this plan, providing a separate entrance for each flat, thus securing greater privacy. But the ceaseless quest for something new has now produced a building with a side entrance and a large living room with private porch across the front.

All flat buildings in Chicago are not erected from plans at $5.00 per set, and there are many which show a real study of the problem, for fortunately there are still some people who are wise enough to commission reputable architects to design their buildings. Of such work there are four designs by Messrs. Hatzfeld & Knox, reproduced herewith, which represent the work that is being done. Figure III shows a building for a lot having a frontage of thirty feet with a bedroom in front which can be rented out to a "roomer" or converted into a library in connection with the living room. This plan shows the kitchen and dining room across the rear of the house. Figure IV shows a clever arrange-

First Floor Plan of Building Shown Below

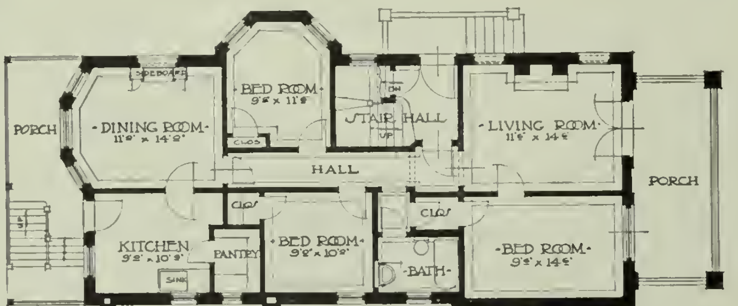


Fig. III. First Floor Plan of Apartment Building Shown Above

First Floor Plan of Building Shown Below

Brown & Walcott, Architects

Huehl & Schmid, Architects

Two-Apartment Buildings, Chicago, Ill.

Exterior View of Apartment Building Shown in Plan Below

Fig. VI
First Floor Plan of Apartment Building Shown Below

Exterior View of Apartment Building Shown in Plan Below

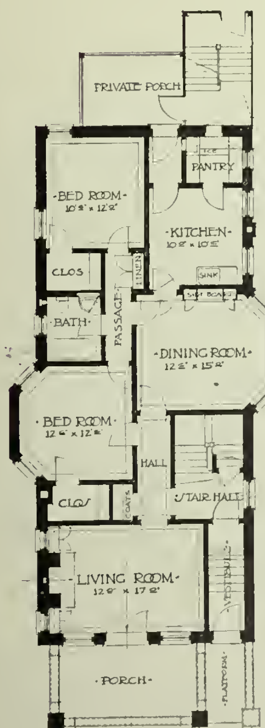


Fig. IV

Exterior View of Apartment Building Shown in Plan Above

Fig. V

THREE SMALL APARTMENT BUILDINGS, CHICAGO, ILL.
HATZFELD & KNOX, ARCHITECTS

ment of two bedrooms and bath, all connected with a private passage, ensuring a maximum of privacy, also rear stairs arranged so that first story porch is private. Figure V is an ingenious plan on a corner lot only twenty-four feet wide. Figure VI illustrates a more ambitious plan of a flat building designed for a lot thirty-six feet wide. This plan shows an additional porch or sun room opening from the dining room, and inside stairs for trades people, which also give access to two servants' bedrooms (one for each flat) located on third floor.

Because the appropriation for this type of building is always painfully limited, elaborately designed elevations are out of the question. The four designs of Hatzfeld & Knox show a direct presentation of the problem stated in plain brick, with the wall surfaces varied by panels and bands, and the galvanized iron confined strictly to gutters and downspouts.

Street Front

First Floor Plan

Two-Apartment Building, Chicago, Ill.
L. E. Stanhope, Architect

Although lots for flats are now laid out wider than they formerly were, the twenty-five-foot lot is still with us to plague the architect who attempts to plan a modern flat building for it. Messrs. Hyland & Green present a study of such a problem in Figure VII. They place the building on the one-lot line and light the rooms from the other side. By placing two buildings on adjoining lots, an open court is obtained eighteen feet wide, which could be made attractive with shrubs and grass plots. By running a hedge midway down the court, individual walks for each building would be secured. The scheme has much to commend it, but its one serious fault is the great depth of the building — seventy-five feet exclusive of the front porch.

What comforts and innovations the future flats will hold, remains to be seen. Kitchenettes, sun parlors, sleeping porches, disappearing beds, table beds, etc., are all words to juggle with ; but whatever changes occur, they will always be for additional comfort and an additional charge to the high cost of living.

The small apartment house is primarily a commercial building, for it must be so designed and equipped as to please the public and influence them to rent. With the increasing cost of building the plan will demand greater ingenuity from the architect, and to those interested in the problem the accompanying designs may be suggestive of further economies in the use of limited space.

Street Front

First Floor Plan

Two-Apartment Building, Chicago, Ill.
John A. Nyden, Architect

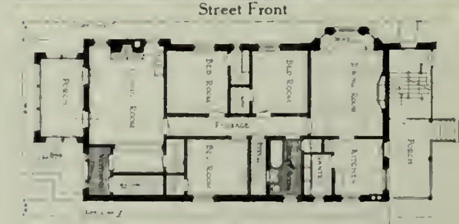
First Floor Plan

Fig. VII.

A Scheme for Two Small Apartment Buildings on Adjoining Lots, Each Having a Frontage of Twenty-Five Feet

Hyland & Green, Architects

Street Front



First Floor Plan

Two-Apartment Building, Chicago, Ill.
Hugo H. Zimmerman, Architect

Delano & Aldrich, Architects — Pencil Drawing of Connecticut College for Women — Rockwell Kent, Delineator

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

VII. THE WORK OF ROCKWELL KENT.

A NUMBER of the men whose work has been illustrated in this series have been painter-renderers; that is, men who have either been trained as painters, and who have turned to architectural rendering, or men who still occasionally paint, although architecture is their means of livelihood.

With Mr. Rockwell Kent the reverse process has taken place, since, while he has always been to some extent interested in painting, he began his life-work as an architect, and is turning more and more to the brush as his permanent and serious vocation. He studied architecture at Columbia University, and after graduating did some work on his own account; but has been usually associated with the offices of several of the New York architects, among whom should be mentioned Messrs. McKim, Mead & White and Messrs. Ewing & Chappell, the latter office being the one in which he has passed the greatest part of his time, and where he has made his headquarters, since he is always welcome there because of his attractive personality as well as his artistic ability.

His study of painting began almost simultaneously with his study of architecture, and during the summer vacations, while he was pursuing his college course, he worked in the Chase Summer School at Shinnecock, and he with Gifford Beal and Marshall Fry formed a trio of men whose great promise as fellow-students has been borne out by the brilliancy of their maturer work. Neither as an architectural renderer nor as a painter has he been accustomed to follow the accepted academic standards; and while, in rendering, his methods have been unique and even without imitators, as a painter he belongs to the group which includes Bellows, Luks, Davies, Glackens, and Shinn, and he has long been with these men a moving spirit in the Society of American Artists, the organization which was responsible for the extraordinary exhibition of modern art shown in the Sixty-ninth Regiment Armory in New York two winters ago, and afterwards exhibited in part all over the United States. The statement that he belongs to this school must be accepted in its loosest general significance, since the work of these men does not possess the similarity, either in technique or subject, that we are accustomed to regard as constituting a "school" of painting. Each of them has developed his own *metier*, without much more regard for the work of his associates than for the work of the Classicists who have preceded him, and it would be rather easy to demonstrate that paintings of, let us say, Glackens and Bellows possess no more points of similarity than do works by Bellows to those by one whom we are accustomed to regard as such a confirmed Classicist as Blashfield; but the fact remains that this group of men does evidently constitute a distinct school, since certain important characteristics of painting are remarkable in the work of all these men, either for their presence or absence. Pages, and indeed volumes, have been written in an endeavor to tell what this new movement in art is, and what it is trying to get at; but, without adding to this literature, it may be said briefly and with certainty that its aim is to reproduce movement rather than form, and that the contempt for actual and absolute natural colors has been carried to violent extremes.

As Mr. Birch Long, in his article on "Architectural Rendering," says, the success of a color scheme as representing natural conditions is dependent upon the relative rather than the positive colors employed, and this is apparently the dictum which the new school has set up for itself as being supreme in painting, and it is very interesting to see how Rockwell Kent in his renderings has been able to combine the rigid regard for architectural form with the freedom characteristic of the new school in treating natural objects, both in form and color. To the writer, at least, the whole Armory show did not afford us as lucid an explanation of what the men of the modern school were trying to do as do these water-colors of Mr. Kent's; for, while he paints trees of shapes which never were seen on sea or land, orange skies, red grass, and blue foliage, when these component parts have been assembled on one sheet of paper by him they appear plausible, credible, and even acceptable, and the untrained laymen and rigidly trained architect both find that somehow the whole scheme is a most faithful presentation of actual conditions reflected on probable future facts.

Water Color Drawing of House at Tarrytown, N. Y.

Delano & Aldrich, Architects — Rockwell Kent, Delineator

All this, in spite of the fact that Mr. Kent does not regard his architectural rendering very seriously, but rather as something which is an inexpensive and easy way of helping to make a living, since his work is done with incredible speed, and leaves him much time to devote to his more serious purposes.

His renderings are a demonstration, too, of the sincerity of much of this new work, a point about which there has been quite as much dispute as there has been about its artistic merit, many critics holding that the extraordinary color schemes and lack of detail were due to carelessness and conscious affectation searching for startling effects at a minimum of effect. In Mr. Kent's case, at least, his color schemes are by no means conscious, but accurate reproductions of the way he sees things; and he tells with much quiet amusement the story of an architect for whom he had made several renderings imploring him in the next one to make at least the skies blue and the grass green, and, says Mr. Kent, "I did it, and he was not satisfied then, but complained that the sky was green and the grass yellow." And yet there is no doubt in Mr. Kent's mind that he had accurately fulfilled the requirements of the architect for whom he was working. The extraordinary part of it all is that he can, and usually does, in the purely architectural parts of the drawings, produce something approximating the natural colors; his brick is red, his white shingles are painted with Chinese white, and his green shutters are exactly the color of the faded green of Colonial work. And yet with a reasonably faithful rendition of colors thus far, he combines the most extraordinary tones in the setting, with perfect congruity of result.

It is very unfortunate that no black and white reproduction of colored drawings will show this quality, and we can only get from them some idea of the tonal relations or values of the color scheme; and even these, because of the mechanical difficulties attendant upon photographing of color work, will not produce very desirable pictorial effects, since the element of form to which we have before alluded is so inextricably associated with color in his work, that forms either excellent or at least of negative quality in the original drawing become positively bad in the reproduction because of false reproduction of the colors of the painting.

Water Color Drawing of House at Greenwich, Conn.

Delano & Aldrich, Architects — Rockwell Kent, Delineator

Nor is Mr. Kent a colorist only, but is as completely a master of the hard and exacting processes of black and white as he is of color. He knows very fully his composition, and that form must be perfect and accurately drawn where there is no color to help it out; so in his black and white drawings reproduced in this article, we have evidently the same man that does the slashing color work, but a man who is self-controlled, restrained, and quiet. Timidity and dryness are just as absent from the black and white drawings as from the colored ones, and even in the black and whites we feel a strong and unusual color sense as dominant as in his painted work. Neither his black and white drawings nor his colored ones present quiet patterns of interwoven neutral tones; they are remarkable for strong accents liberally, sometimes too freely, applied, and while perhaps some of his work falls to pieces, because of too great an interest in the subordinate parts, the result is only that we have several smaller and not less interesting pictures on the same sheet, instead of a stupid and tiresome single rendering, and the deft and daring way with which we find these accents applied in most unexpected places, and yet in places which are evidently natural, will be a never failing source of interest and surprise to the student of his work.

Seasonal Card in Pen and Ink by Rockwell Kent

Like most other architectural renderers, Mr. Kent's design is not limited either to architecture or to painting; he has made many book plates, seasonal cards, headings, vignettes, and things of that kind, as well as designs for metal work, ornament, etc., and one of his cards illustrated above is worth studying with some care, since it has so many interesting and characteristic indications of its designer's bent of mind. In the first place, its shape is not only unusual, but one which we are accustomed to regard as wrong; it is neither a square, which is always good, nor a long rectangle, which is also always good; it is just a little longer than a square should be, a shape which is usually apt to worry us because we feel that it should be a square, and yet that is not the case with this card. Next, the disposition of the lettering will be found such that it cannot be continuously read, no matter where one starts, but it is perfectly obvious what the lettering says, which is the aim and purpose of lettering, but the ordinary mind would have strained the conventional way of lettering into some form which would never have been satisfactory. And one may notice here that the lettering itself is unusual and exquisite. The diagonal balance of the block rosettes in the corners is a curious thing, as are the forms of the rosettes themselves, and the thought behind the composition is as amusing as it is kindly. The whole thing has a pleasant sentiment that we like to associate with a Christmas card or a New Year's card, but without banality, timidity, or fuss.

Yes, there seems to be something in the new art movement as practised by men like Rockwell Kent, but if there had not been any new art movement, would not Mr. Kent have turned out just as brilliant work in a more academic way, work perhaps not so startling, but no less beautiful; or would perhaps his genius have been stifled under a load of conventions which he would have been trained to regard as essentials?


Pencil Drawing of Science Building, Connecticut College for Women

Delano & Aldrich, Architects — Rockwell Kent, Delineator

The Salem Fire from an Architect's Point of View.

By WALTER H. KILHAM.

TO the thousands of weary refugees who passed the night of the twenty-fifth of June under the stars a statement that anything remotely resembling "mitigating circumstances" had attended the events of the day would have seemed like the hollowest of mockeries. Most of them had failed to comprehend their danger until the stalking conflagration which roared down the narrow streets had in a few minutes wiped out home, furniture, employment, and in most cases the meager savings of a lifetime. In their case a truly stoical philosophy would be needed to contemplate the preservation of the homes of the aristocracy while their own belongings lay in ashes.

The architectural profession of America, however, will rejoice to know that as far as any great fire could ever be said to be "discriminating," that of Salem showed a rare discretion in the selection of its food. Starting just before two o'clock on a hot afternoon in one of the notorious conflagration breeders of "Blubber Hollow" on the west side of the city, it bore down, fanned by a strong wind, directly upon the splendid old mansions of Chestnut street. In the nick of time a slight shift of wind carried it around a curve into a crowded tenement district to the south, missing the old Colonial quarter by not over two hundred feet. After several hours, during which the destruction of South Salem was accomplished, another shift of the wind in the evening drove the flames back towards the Custom House and the old buildings in the east end of the city, but by a desperate stand they were again beaten off and old Salem was saved, though shorn of the homes of fifteen thousand of its people.

To the writer, who stood at the upper end of Chestnut street at three o'clock in the afternoon, a different ending seemed certain. A solid wall of flame was driving across the upper ends of Essex and Broad streets, half a block away, and the fire, which had already gone a mile to the south, seemed sure to close in also from that direction. The efforts of the engines, massed here and there at strategic points, seemed pathetically futile. Priceless old family mahogany was being hastily brought out from the white pillared porticoes and loaded into vans, and the sidewalk display of Colonial "pieces" would have excited the envy of any exhibition ever held.

There is something appalling about the oncoming of a great calamity which seems to dull the sensibilities of the population. Here was the summer sunlight playing through the elms and lindens of the fine, pleasant old streets, and the people quietly passing to and fro, intent on their individual affairs. The fire alarm caused no special comment, any more than did the sight of the apparatus dashing along as it had done hundreds of times before. Even the second alarm (Salem has the vociferous steam whistle kind) did no more than attract the idle from the business streets. But with the continuous blowing of fire whistles, rumors began to spread: "That is the signal for out of town help!" "They say there are fifty houses on fire in Blubber Hollow!" "There goes the militia call!" "They say there are three fires in South Salem and all the apparatus is busy!" Now the streets are alive with hurrying crowds, not excited, but dazed, wondering if it is really as bad as it appears. Motor trucks and express wagons piled high with furniture begin to appear; automobiles loaded with militia rush by; with great clanging of bells powerful motor engines dash in from near-by cities, and over all hangs that great cloud of smoke cutting off the brilliant sunshine with a sharp division line and hiding half the city under a menacing black shadow. Even in the path of such a disaster as this the irrepressible American civic pride comes to the front. "This is worse than Chelsea!" one citizen was heard to say about four o'clock. "Chelsea!" said his neighbor with fine contempt, "we've got Chelsea skun a mile!"

Speaking in terms of Colonial architecture the loss was small. Architects all over the country will be glad to know that the Custom House, the House of Seven Gables, the "Old Bakery," Washington Square, and the streets to the east, the picturesque market, and Federal, Chestnut, and Essex streets are intact except a few of the less important houses near Boston street. The retail business district, the City Hall, the Court Houses, and that medieval relic, the railway station, escaped. The "Tontine" block is gone, as are the old houses in Lafayette street.

Architects will not be able to draw many new lessons from the fire. The dangers of dry shingle roofs, unsprinkled conflagration-breeding wooden factories, and small water mains are but too familiar, and Salem was only a type of hundreds of American cities in this respect. Given a small nucleus of moderately fire-resisting buildings, surrounded by thousands of inflammable wooden structures, the result may be a long time coming, but its arrival is none the less certain when all the conditions are ready. As was the case in Chelsea, the worst fire hazards were on the west side, and west is the prevailing wind on the New England coast. A dry spell, a high wind, a none too careful watch on dangerous chemicals, and off it goes.

City planners might glean from this a suggestion to keep manufacturing sections to leeward rather than windward of model cities, but it is doubtful if trade would submit to such restrictions. As long as the insurance companies continue to compete for risky business, just so long will the annual American ash heap remain in evidence. The fact that brick construction costs not over five per cent more than wood seems to make no impression on builders. In fact, it is really pitiful to see how even wood will resist a fire if given half a chance. The writer watched the attack of the flames upon a four story wooden factory about two hundred feet long, flat-roofed and sheathed with slate and galvanized iron. It was exposed for its entire length to the blazing conflagration at close range, and protected by only two steamer streams. Even with this meager support it resisted the fire for over an hour, then caught in the upper story, and the two lower stories were finally saved by the firemen and the conflagration checked at that point. If wooden Salem had even enjoyed the poor protection of metal sheathing, it might have been saved.

Due to beneficent Providence and not much else, those shady old streets, swept by the salt breezes fresh from the harbor islands, may still tempt the footsteps of delighted architects. Hollyhocks and dahlias bloom undisturbed in the old gardens, and will continue to link the newly built industrial city to the stately life of the past. But Salem should take to itself a warning. More of her priceless heritage has been destroyed in the last ten years by a too enterprising commercialism than was threatened by the fire. Dozens of old mansions have been torn down to make way for shops, or "modernized" out of all semblance to their former beauty.

In France the best of the older buildings are "classed" by the Ministry of Fine Arts so that their demolition may be prevented, and in other European countries cities seem to feel that their ancient atmosphere is a real asset, to be jealously guarded. America has not yet arrived at the dignity of a Ministry of Fine Arts, and perhaps Colonial houses are not architecturally worth classifying anyhow, except by antiquarian societies; American citizens in general seem to enjoy the sight of a dapper business block, Rathskeller style, or a stucco apartment house, better than a dignified but slightly wistful old brick mansion that has seen better days. But distinction of any sort in America is scarce. Salem always had, and still has, distinction to an unusual degree, both architecturally and in the fine spirit of its people. In rebuilding, the Colonial tradition might well be followed, and a city more unique than ever would rise above the old harbor. As in Chester, Nuremburg, or Siena these quaint streets and ancient buildings, now doubly precious, are the property of the nation, and Salem citizens may well feel that their birthright having been spared by Providence from fire it behooves them to safeguard it against a greater danger.

Special Announcement.

AN exhibition is to be held in Salem of plans, drawings, photographs, and structural details of fireproof or semi-fireproof dwelling houses, especially such houses as can be rented at from $10 to $18 per month. All contributions will be gratefully received. Contributions should be sent to City Hall, Salem, Care of City Messenger, and marked "Salem Housing Exhibition."

THROUGH the generosity of a private citizen a prize of $500 has been offered for the best plan for a $2,500 house. Details of the competition can be obtained upon application to C. H. Blackall, Advisory Architect to the Salem Rebuilding Commission, 20 Beacon st., Boston, Mass.

Photo Copyrighted, 1914, by The Boston Journal

THE BURNED AREA OF THE CITY OF SALEM, MASS.

A remarkable photograph taken from a hydroplane on the day following the disaster, showing the greater portion of the city devastated by the conflagration of June 25, 1914

EDITORIAL COMMENT AND NOTES FOR THE MONTH

DISASTROUS fires have come to be so thoroughly a part of American civic economy that we hesitate to go very much into detail regarding the causes and results of the Salem fire. Measured by the importance of the buildings destroyed, it would not be ranked as a great conflagration. Most of the buildings were of wooden construction and the one conspicuous exception, the power house of the Electric Light Company, was notable in that standing directly in the path of the flames and surrounded on all sides by burning buildings it was not injured at all by the fire, simply because it was what is known as fireproof construction and there was nothing to burn. But although this building by itself offers so obvious a moral, we doubt if this fire will be taken to heart by the municipality or by the country at large. The insurance companies are so much more interested in placing new insurance than they are in any improvement in construction that it will take a far greater lesson than Salem to arouse the public conscience to something definite. We hear a great deal of talk about how Salem will be rebuilt, and how fireproof buildings will arise in the path of the conflagration, and how the new Salem will show that at least one municipality can profit by its experiences; but in the meantime all of our cities are in just the same fix, and what happened in Salem is but a circumstance to what might happen in many of our cities, and what surely will happen in time.

Indeed, the only tangible outcome of the Salem fire is an indirect one. The so-called Metropolitan Fire Hazard bill, which has been before the Massachusetts Legislature, intended to provide for a better prevention of fires in the metropolitan district, has just passed the Senate by an extremely narrow margin; but that it passed at all is undoubtedly due to the Salem fire. The time must come when the community, which in the last analysis pays all the bills, will be aroused to an appreciation that insurance does not and cannot wholly insure; that the insurance companies largely do not care whether our buildings burn up or not, and that the community itself must organize and demand laws which really mean something, which will oblige the individual to consider the public good rather than his own selfish desire to avoid the expenditure of money, and when as a question of pure economics the construction of tinder-box surroundings to our great cities will be abolished. The Boston Chamber of Commerce has been organizing a campaign for "safety first." We need just such a campaign in regard to fire prevention — a campaign that will arouse the better elements in our civilization and stop this wicked and terrible annual waste. Ways and means are perfectly clear, but so long as the law-making parties do not care, and so long as the insurance companies will put a premium on a cheap construction by insuring anything whatever, just so long will we be throwing millions into the annual ash pile. And this does not mean that fire prevention is wholly a matter of construction. A well built fireproof building will interpose an effectual barrier against some conflagrations, but the right place to apply preventive measures is at the very inception of a fire; and while the biggest conflagration that ever started could have been extinguished at the beginning by a bucket of water, no construction of any sort is proof against a great conflagration if it once gets sufficient headway. So while we have constantly urged for years the abolition of wood as a material for exterior construction in our cities and suburbs, we urge most strongly the preventive measures which are so well known to architects and engineers, and which, if properly applied, will mean real safeguarding of the community.

The prevention of fire ought to be the chief lesson to be derived from fires like this in Salem. By all means reconstruct fireproof, semi-fireproof, or at least with non-inflammable roofs; but carry further and let the body politic insist upon the installation of sprinklers, fire stops, and other perfectly well known, understandable, and easily applied methods of stopping the fire at its source, and let the campaign for the future be not for the lowest cost, not the quickest construction, but real *safety first.*

IT has been practically decided by the Rebuilding Commission of Salem that the wooden "three-decker" apartment house will not again be allowed to be built in that city.

In this indication of the intention on the part of the Rebuilding Commission to forbid the building of these structures, we now see the first material assurances that a better Salem will arise from the ashes of the old. The disaster is in no sense mitigated, but some of the errors, at least, which aggravated it, will not be repeated. It is hoped that Salem will, perforce, drive the entering wedge for saner building in all parts of the country.

It is indeed hard to understand that so great a conflagration as that in Salem is needed to effect reform. It would be pathetic if no lesson were learned. For the benefit gained, the new and greater Salem, as well as surrounding communities, which can profit by its example, may well be grateful.

RALPH ADAMS CRAM has been appointed senior professor of architecture at the Massachusetts Institute of Technology to succeed James Knox Taylor, resigned.

Mr. Cram will have practically the same faculty now employed, but he cannot fail to bring some new elements into the methods of teaching already established.

Mr. Cram, as chairman of the Committee on Education, A. I. A., has long and systematically studied educational conditions in America as these apply to architecture. Two facts of salient significance have resulted from the process: first, that while definite steps have been taken toward making the more strictly architectural training continue through a graduate course, many degrees in architecture still represent courses that embrace too little training in those branches of study that tend to broaden the development of the student. Second, that there is apparently a considerable lack of interest among architects as to the kind and quality of education that is or may be offered by the recognized schools.

The Institute of Technology will see to it that every architectural student is, first of all, an educated gentleman, in the old sense of the phrase; that he does not give all his time to designing problems or rendering exercises to the exclusion of history, both general and architectural, literature, and philosophy, or to structural engineering, without a compensating study of that civilization both past and present that should condition all he does. The five-year course will be strongly recommended.

Provision will be made in the curriculum for a regular, even if brief, course in architectural practice as this manifests itself through the relations of an architect to his employees, his clients, his fellow architects, the public, and the American Institute of Architects.

It will be urged by Mr. Cram that Technology should be in constant consultation with leading members of the architectural profession in Boston and the entire country, and particularly with the A. I. A. as to the essentials demanded by the practice of the day. Education, to be worthy of its purpose, must satisfy these essentials, and it should always be cognizant of the best tendencies of the architectural profession as expressed through the leaders in the various schools of design. Architecture, it is pointed out, is continually advancing, and any school should be kept mobile and in condition to adapt itself to the developments of architecture itself.

Mr. Cram's ideas as to the essentials of architecture and of architectural training are now thoroughly well known through his various books, as well as through the color he may be assumed to have given the reports of the Education Committee under his chairmanship. It is safe to assume, therefore, that his influence at Technology will be strongly exerted in favor of the determination of design in accordance with the materials employed, and also toward the conceiving of each piece of design in three dimensions rather than in two. He has made it quite clear that he has little sympathy with design that is not conditioned by the materials used, and that the true test of good work is its actual appearance when translated from the two dimensions of the sheet of drawing paper to the three dimensions of actual construction. In holding to these beliefs, the profession of architecture as a whole will support him, since they are both of the nature of self-evident propositions, though not always recognized, and, at all times, in the different schools of architecture. If we are right in this interpretation of the convictions of the new professor of architecture, it will be interesting to see just what methods are developed at Technology for the purpose of putting these two principles into practice.

A NEW edition of the "Catalogue of Books Relating to Architecture, Construction and Decoration in the Public Library of the City of Boston" has been prepared to supplement the one first published in 1894. The books relating to architecture have increased in such great number that the new edition became imperative. Work was begun in 1909 upon the present catalogue, the Boston Society of Architects and other friends of the Library contributing $500 toward the cost of the work. Miss Mary H. Rollins, who prepared the first issue, is also chiefly responsible for the present edition. The only specific enlargement of its scope is a section on City Planning, prepared by Mr. Frank A. Bourne.

The scheme of classification includes Bibliography, Biography, Dictionaries, History and Theory, Periodicals, Architecture of Countries, Illustrations of Architecture, Architectural Details, Technical Details, Decoration, Handbooks, Related Topics, City Planning, and a very complete Index according to Authors, Subjects, and Places.

To those familiar with recent archeological investigations it will be realized that it is almost impossible to draw, in such a catalogue, a distinct line between archeology and architecture. In the present work it was decided advisable to err, if at all, by expanding the first named subject.

The catalogue contains five hundred and thirty-five pages and weighs, ready for mailing, forty ounces. The price is $1, plus postage.

BUILDING operations throughout the country for the year are improving slowly month after month and now make favorable comparisons with a year ago. The official reports of building permits, issued during the month of June in 63 cities, as received by *The American Contractor*, New York, reach a total of $68,364,893, as compared with $65,938,930 for the corresponding month a year ago. This is a gain of four per cent, small but encouraging when compared with the less favorable statements for some months past. As shown in previous reports, the gains are not uniform. One interesting development is that some of the larger cities are doing better. Those cities making the relatively better returns include the following, with percentage of gains: Albany, 419; Bridgeport, 201; Springfield, Ill., 513; Wilkes-Barre, 365; Toledo, 117; Paterson, 121; Cleveland, 73; Duluth, 73; Harrisburg, 61; Hartford, 98; Kansas City, 80; Brooklyn, 73; Borough of Richmond, New York, 90; Oklahoma, 56; St. Paul, 91; South Bend, 87.

The statement of building operations for the half year must also be regarded as favorable in view of the present trend. The decrease, as compared with the first half of 1913, is less than one per cent, the more unfavorable showings earlier in the year being almost extinguished. The total cost of building permits issued in 63 cities for the first six months of 1914 was $364,276,795, compared with $363-848,792 for the first half of 1913.

THE plans for the circular building for the new Court House for New York County, submitted in competition by Guy Lowell, architect, have now been approved by the Board of Estimate and the Court House Board, and a contract given to proceed with the work. Mr. Lowell is granted six per cent of the total cost of the building, which is estimated to be $10,000,000. Out of his commission, however, he must bear the expense of retaining any experts the Court House Board may from time to time direct him to consult upon subjects requiring expert engineering advice.

Plate Description.

City Hall, The Oakland, Oakland, Cal.; Palmer, Hornbostel & Jones, Architects. Plates 97-100. See article "Distinctive American Architecture," pages 159 to 162.

Club, The Harvard, of Boston, Boston, Mass.; Parker, Thomas & Rice, Architects. Plates 101-106. In this new club house the alumni in Boston and its environs have a home which admirably fills all the requirements of a large and exacting membership.

Although the site of the new building is upon made land in the old Back Bay, it was decided not to build on wooden piles, but rather to carry the footings for the walls down to a level bed of firm gravel thirty-five feet below the grade of the street.

It was especially desired that the new club house should suggest to all Harvard men the echoes of the older halls in College Yard, and this was the problem solved. The materials of the exterior are brick with a spotted Milford granite for the base; gray limestone for the portico, the first story, the window heads, and the cornice.

Bank, The Collateral Loan Company, Boston, Mass.; C. H. Blackall, Architect. Plates 107, 108. It has always been the policy of Boston to erect moderately low buildings. This building is in a new phase of the Georgian style, which is familiar in our domestic architecture, but here is adapted to modern commercial uses and seems particularly appropriate on Cornhill, a curved street in one of the older sections of Boston.

The exterior walls are of red brick laid in the manner of the old State House, Boston. A granite base course was used with a water table of white marble. Marble was also employed for doorway, window lintels, cornices, date and name panels, ornamental cartouche, and cap. The window frames are kalameined and the heavy outside shutters are of metal.

The cartouche over the cornice suggests modern French rather than the chosen style, and the breaking of the roof line is much after the manner of the newer work. The door frame and sash are quite Colonial, but the semi-circular pediment and its supporting consoles are nearer the English. The lintels with the key blocks, however, are equally Colonial. It will be noticed also the name and date panels are raised in this building rather than sunk, as in the older work.

During the past two years the growth of this phase of the Georgian style has been turned to buildings of a business and semi-public character with marked success.

House for Mrs. Lucie A. Fiske, Auburndale, Mass. Plates 109-112. The house is built of red brick laid in Dutch Bond with special pattern work as shown in the illustrations. A one-half-inch cream gray mortar joint was used, rough cut flush. All half timber work is hand-hewn cypress, finished in light tobacco brown color. This is genuine timber construction, mortised, tenoned, and pinned — not batten work. The seven brickwork patterns are reproductions from Gifford Hall, England.

The roof is slate, of soft variegated colors in varying sizes laid irregularly, English fashion. All flashings, gutters, and conductors are of copper with leader heads bearing the initial of the owner. The windows throughout are of the outward opening casement type and all have leaded glass and a complete equipment of hardware for adjusting the window to any position.

The hall and library are paneled nearly to the ceiling, the living room and dining room being treated in pilaster and plaster panel effect with a heavy wooden cornice. Oak was the wood chosen for these four rooms. It was sand blasted and finished in soft, dark brown color. The plaster panels are painted in oil to blend. The bedrooms are finished in white paint with birch-mahogany doors. The rear halls on second floor and the entire third floor are in cypress of dark finish. The floors throughout are of oak.

The hardware is finished to harmonize with the color of the room in which it is located.

The house is well equipped with public and intercommunicating telephones with stations conveniently located. In the basement a vacuum cleaner machine has been installed with eight outlets in different parts of the house for attaching cleaner hose. A low pressure steam boiler furnishes the heat. The four main rooms on the first floor have the indirect system.

Reading Room
Building of The Harvard Club of Boston, Boston, Mass.
Parker, Thomas & Rice, Architects

THE BRICKBVILDER

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PLATE ILLUSTRATIONS

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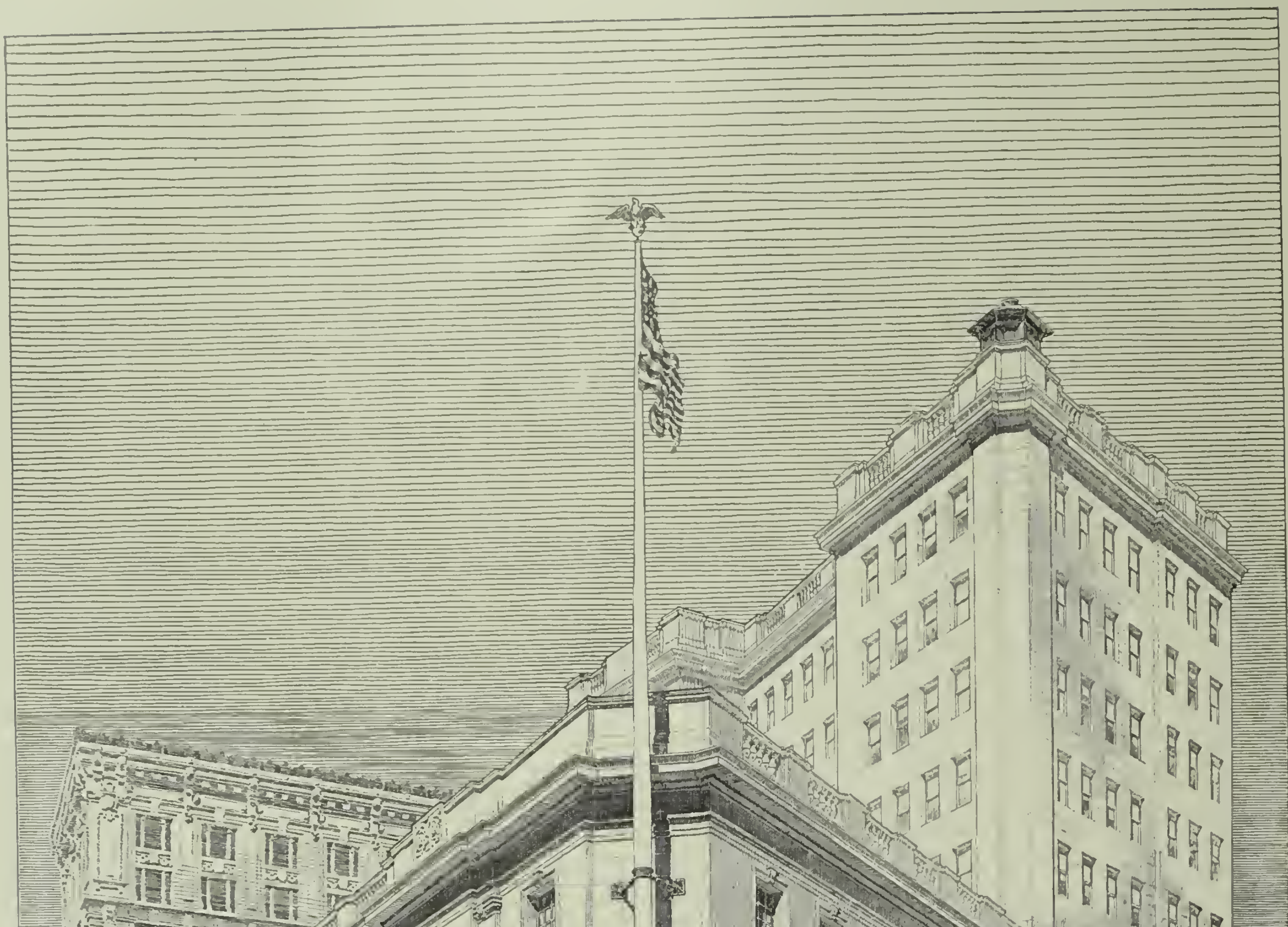

PEN AND INK DRAWING OF THE FIRST NATIONAL BANK BUILDING, BOSTON, MASS.

R. CLIPSTON STURGIS, ARCHITECT
A. B. LE BOUTILLIER, DELINEATOR

See article on page 185

THE BRICKBVILDER

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Store and Loft Buildings.

By JULIUS FRANKE.

THE modern so-called "loft building" is an American invention and is indigenous to a few of the large cities. Elsewhere, for what serves the same purpose or approximates its use, the term "store" or "warehouse" is used.

The term "loft" is, however, very ancient and signified originally the sky or the air; from thence its meaning was transferred, very naturally, to the upper part of a ship's rigging, or the top part of a barn, and then to what we now designate garret, where it was at the time of Chaucer when he wrote, —

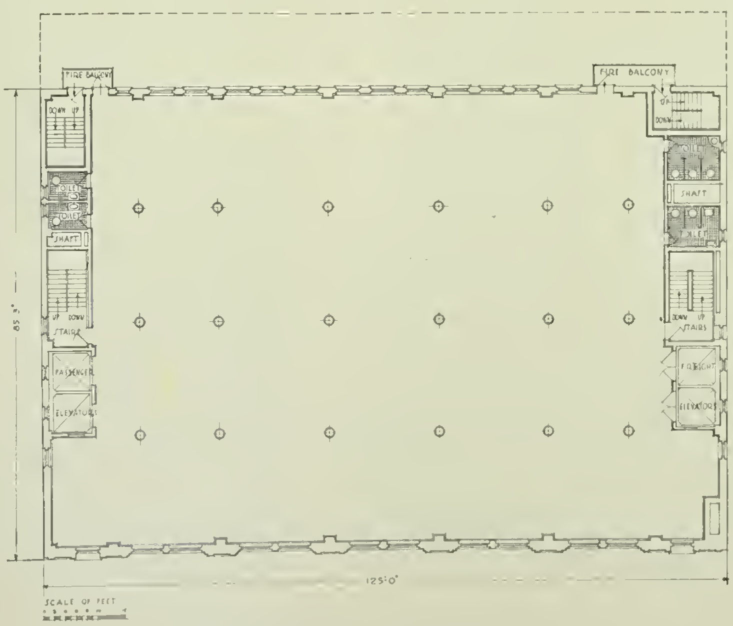
> "And hym she roggeth and awaketh softe
> and at the wyndow lep he fro the lofte."

The term "loft building" did not come into use until floors in what were then designated as stores or warehouses were rented to separate tenants, when the simple word "floor" apparently did not express enough, and the term for the top floor, namely, "loft," was used for all floors above the first.

Up to about twenty-five years ago the term "loft building," when used, brought to mind a four or five story non-fire-resistive building, extremely plain, with open rope hoists and open stairs and with exposed floor beams and unplastered walls.

With the advent of the elevator, the upper floors, which had heretofore been used mostly for manufacturing and storage, became available for show and sales purposes, and took on a better aspect and had plastered walls and ceilings; and in New York the cast-iron front was born, and though the façades became more ambitious they remained infantile, though simple, and did not, until the twelve story loft building came in, become gingerbready and shoddy, as many of them are.

During the last few years the term "loft building" has taken on an additional significance and now means any building, no matter how tall or how occupied, where the floors are "open," that is, without corridor partitions, and with enclosures around stairs and elevators only; but so arranged that tenants may continue down the stairs without entering any loft, or enter or leave an elevator by a door directly on the loft, so that upon leaving the elevator you find yourself in the tenant's premises. The entire building is so arranged that each floor may be rented separately.



Typical Plan of a Loft, New York City
Maynicke & Franke, Architects

If the modern loft building has a good façade, is well finished and equipped, there is no practical difference between it and an office building, except that the office building generally has subdivisions on the various floors for separate tenants, so that should a good modern loft building have tenants occupying entire floors, such as is common for large clerical forces, and there are no sales rooms, no space used for storage or manufacturing, the loft building would justly be called an office building, and this designation would apply without one single change or addition to the building.

That the dividing line between office and loft buildings, in some cases, is scarcely discernible, is evident in the case where the same building is used for both purposes, and where some floors are devoted to office use and other floors to loft use, where the space is fitted up for displaying goods, for sales rooms and sometimes for manufacturing.

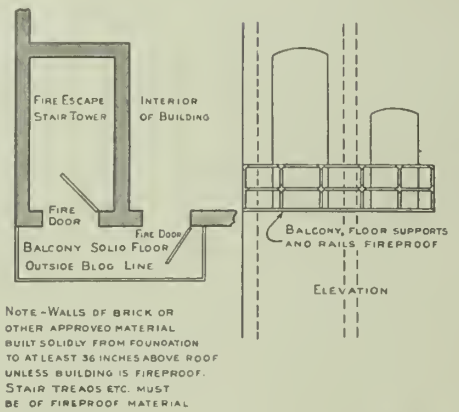
Since some recent disastrous fires in factories, new laws have been passed in the state of New York, and also in some other states, which would make a loft building where manufacturing is done slightly different, in point of law, from what is ordinarily considered a loft building.

These new laws require certain fire exits, known as inside enclosed stairs, outside enclosed stairs (sometimes known as smoke-proof towers), and horizontal exits, either through a wall to an adjoining building or adjoining space where refuge may be found from fire, or through bridges or balconies from one building to another, or from one space or area to another space for the same purpose.

There is also the extra precaution of sprinklers now deemed essential for such manufacturing loft buildings, which minimize materially the fire hazard.

The plan of a manufacturing loft building should be simple. Staircases should be as far apart as possible, and maximum window surface should be provided, and all staircases should be so arranged that there is an uninterrupted free passageway to the street from each staircase or fire tower.

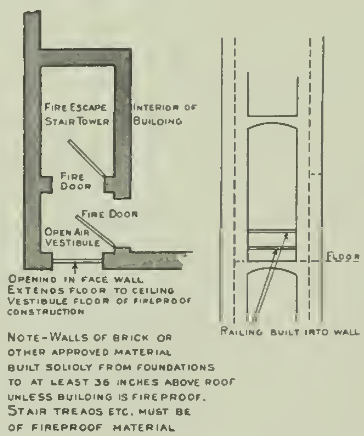
The location of the passenger elevators and freight elevators should be carefully considered, and should be as far apart as possible, so that customers entering the building at the passenger elevator are not obstructed by freight going to the freight elevators, and for the additional reason that the office is always located near the passenger elevator on the various floors, where it would obviously be wrong to handle freight.



The entrance and first story accommodations at the freight elevators should be commodious and direct.

Toilets for both men and women should be provided for the building on each floor, unless it can be decided in advance what the occupancy shall be.

Where railroad and water transportation for freight in conjunction with the manufacturing loft building is to be considered, both sides of the building on the first story should have ample platform facilities, one side being devoted to the railroad and the water front, if there is such, for the reception and discharge of freight, and the other should be devoted to trucking for city or town delivery.



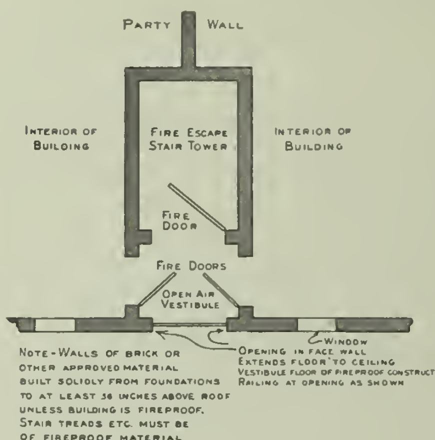
If possible, it is well to have the trucks enter the building so as to be under cover in bad weather, although this is not essential.

The planning of a manufacturing loft building for railroad and trucking traffic is apparently a very simple problem, but many serious mistakes have been made. The elevators in such buildings have been so located that either the traffic to the railroad cars or the trucks is handicapped. The staircases have been provided in such places as to obstruct the free handling of freight on the first story. The elevators have been located so that the aisles, which are not shown on plans, but which are necessary for manufacturing or for storage on the upper floors, could not be provided in direct lines, in order to have proper circulation.

Altogether, the planning of such a building requires an intimate knowledge of the economic handling of freight, both by rail and wagon or automobile, and demands a careful study of the process of manufacturing for each particular industry, in order to evolve a successful scheme and provide accommodations for the right number of employees, with proper allowance for expansion.

The plan should be simple and direct, and all ideas of "axis" and balance and appearance of the plan should be subordinated to the practical, even though the eye be offended at the "presentation" on paper. It is more important that there be proper circulation of freight and merchandise than that there be balance, also natural light for manufacturing purposes should be considered before the relation of voids and solids for the façade. If the intensely practical be allowed free sway in these matters, the building can be made an architectural success by certain refinements of line, color, and texture, and the result will be much more satisfactory from a truly artistic point of view, for the design will be more apt to express the use to which the building is to be put.

It is of more importance that the occupants of a building do not unnecessarily waste energy or time due to a plan which is injudicious, or that their health and comfort are not sacrificed when light and air are made subordinate to design.



There is, on the other hand, no excuse for the many repulsive and sordid looking factory buildings scattered over our land, and the ugly trestle, with sprinkler tanks extending over the roofs of so many, could be enclosed with towers that would be made a feature capable of artistic treatment, and have the advantage of keeping the water from freezing without extraordinary precautions, and also reduce repairs.

The safety of the occupants of lofts and factories, in case of fire, is now given considerable attention, and although modern factories are generally built "fire-resistive," they are also sprinkled, in addition to which enclosed staircases are now almost universal.

It might be advisable, in some cases, to go a step further and provide fire-walls subdividing all shops into two or more areas; but care should be taken not to overdo this, as fire-walls have a tendency to shut off natural light and ventilation, lack of which, every one admits, does not increase the health of the worker. It should be borne in mind that tens of thousands die of tuberculosis, due to insufficient light and air; certainly by many thousands more than die by fire.

When a "fire-resistive" building is sprinkled, the fire-

CORNER OF 18TH STREET AND FIFTH AVENUE

CORNER OF 32D STREET AND FIFTH AVENUE

11-19 WEST 19TH STREET

84-90 FIFTH AVENUE

GROUP OF STORE AND LOFT BUILDINGS, NEW YORK, N. Y.

MAYNICKE & FRANKE, ARCHITECTS

wall is not of such great importance, and unless the area is exceedingly large, it should not be introduced unless it does not shut off light and ventilation.

For an ordinary inside city lot it would be wrong to run the fire-wall parallel to the street, thus shutting off the front from the rear; it should rather be run perpendicular to the street so that the cross-ventilation be maintained.

I mention this point about fire protection, because too much reliance has been and is being placed on the character of fire-resistive building construction, kind and number of enclosed stairs, to save life from fire, and too little attention is given to fire prevention. It is readily conceivable that lives may be lost by fire in non-fire-resistive buildings when the building itself is not damaged, due to fire from the contents of the building, and, in fact, most lives are lost in fires before the building itself starts to burn, and then again, many lose their lives through panic.

To prevent this loss of life, fire prevention is more important than fire protection; and sprinklers and other means to extinguish a fire at its incipiency, together with cleanliness, sweeping up rubbish, careful storing of goods, prohibition of smoking or carrying matches, fire-resistive fittings and shelves, metal lockers, etc., are subjects which should be more seriously considered and regulated.

Store and Loft Building, Philadelphia, Pa.
Magaziner & Potter, Architects

There have been some well meaning critics who point to our enormous fire hazard as being due to defective construction. They make uncomplimentary comparison to the European records, but they forget, or are not familiar with the fact, that our modern construction is far superior, from a fire-restrictive standpoint, than the modern construction of Europe. They also forget that the laws are most stringent all over Europe against the incendiary; that fires are thoroughly and carefully investigated and there is very seldom a miscarriage of justice.

Too much confidence is placed in "fire-proof buildings"; many people imagine that because a building will not burn there is no danger to the lives or goods within; they do not realize that the contents of such buildings often burn out without materially affecting the building itself.

The term "fire-proof" is a mistake, as everything will burn if you get it hot enough; the term "fire-resistive" is better and has for that reason been adopted by the National Fire Protection Association at its last convention.

After the plan has been more or less established, a serious question for this class of building is that of insurance. This is a study in itself.

The requirements of the underwriters in the various sections of the country, although more or less uniform, should be studied for each building, to arrive at the most advantageous rate of insurance consistent with the cost of providing certain fire-resistive and preventive features.

Of course many things would naturally be provided in some buildings, even though the underwriters did not make the requirement, and also many clients will provide better construction than the underwriters require, because of their desire to have the best and most modern buildings, irrespective of insurance.

There are, however, cases where the owner or architect will advocate certain fire-resistive features which the underwriters would not approve of and which would be as costly as the underwriters do require. In such a case, it would be better to provide the underwriters' requirements than to follow the individual opinion of the owner or the architect.

The loft buildings of the future where manufacturing is done will be mostly on the water-front or along the railroad lines, where the handling of freight will be minimized; and as expense is a great factor in the construction of all commercial buildings, the loft buildings of the future will undoubtedly be mostly of structural concrete, which, in addition to cheapness, has the advantage over steel of rigidity for vibrating loads and allows of larger windows nearer the ceiling, in fact, up to the ceiling, thus giving better light and ventilation. The objectionable large diameters of reinforced concrete columns will be substituted by smaller steel columns covered with fire-proof material and by use of the flat slab construction, now so universally used in the West, the columns will be further apart. The concrete façades are being fast substituted by brick and architectural terra cotta, as the texture is more pleasing and less painting is required; besides, it is as cheap in most cases.

There will also be better washing facilities for employees, recreation rooms, lunch rooms, gymnasiums, and swimming pools, and, in general, the surroundings of the worker will be made cheerful.

Some of these items, which manufacturers now consider as superfluous, will be supplied with the deliberate intention of increasing the efficiency of the men, and the lunch room, with its coffee and tea, will be considered an asset, as tending to diminish the amount of alcohol consumed during working hours.

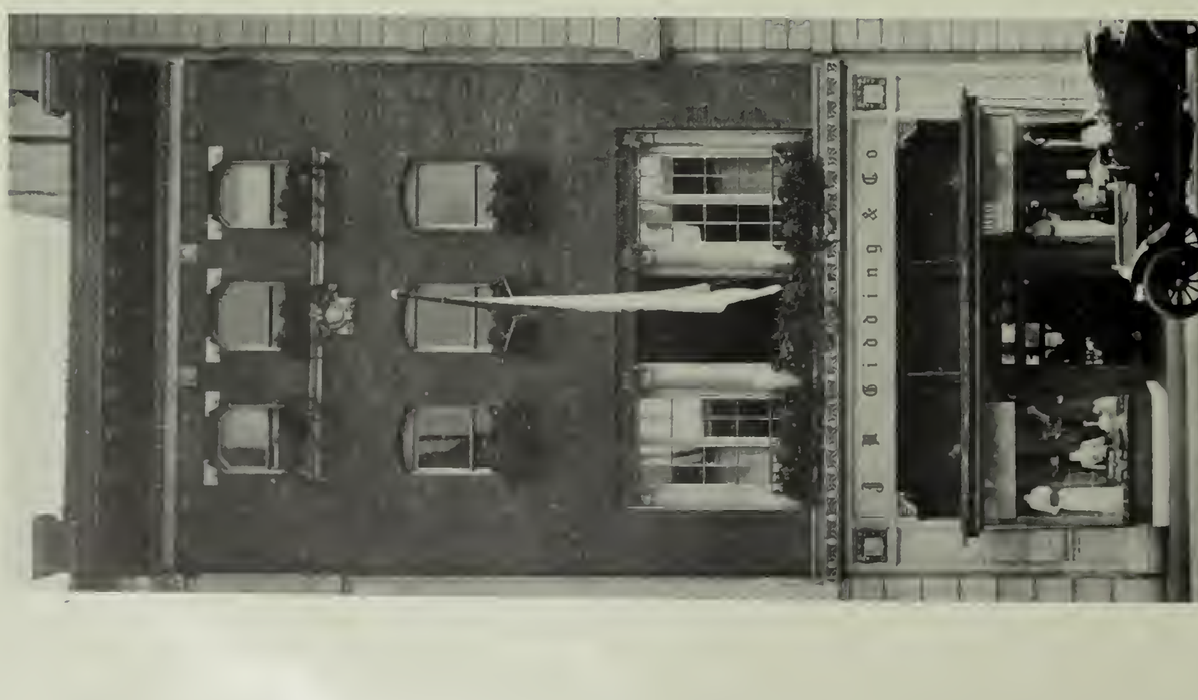
MASON BUILDING, KANSAS CITY, MO.
WILDER & WIGHT, ARCHITECTS

TOWNSEND BUILDING, BUFFALO, N. Y.
GREEN & WICKS, ARCHITECTS

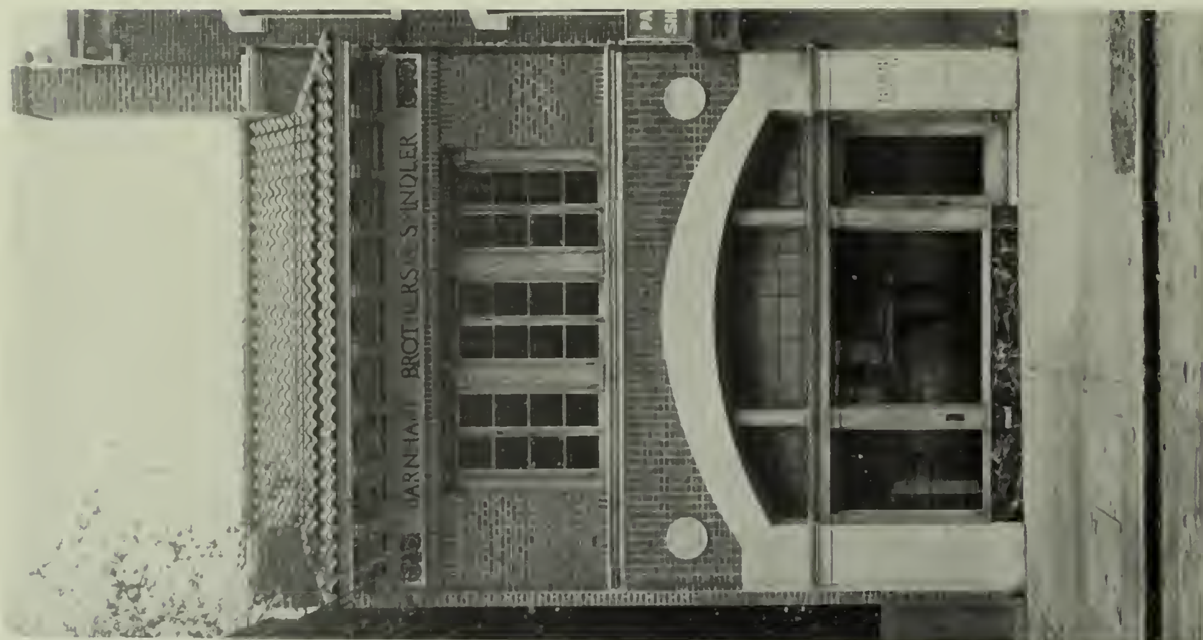
STORE AND LOFT BUILDING, BURLINGTON, VT.
W. R. B. WILCOX, ARCHITECT

McKNIGHT BUILDING, MINNEAPOLIS, MINN.
HEWITT & BROWN, ARCHITECTS

GROUP OF STORE AND LOFT BUILDINGS



ARTHUR B. HEATON, ARCHITECT



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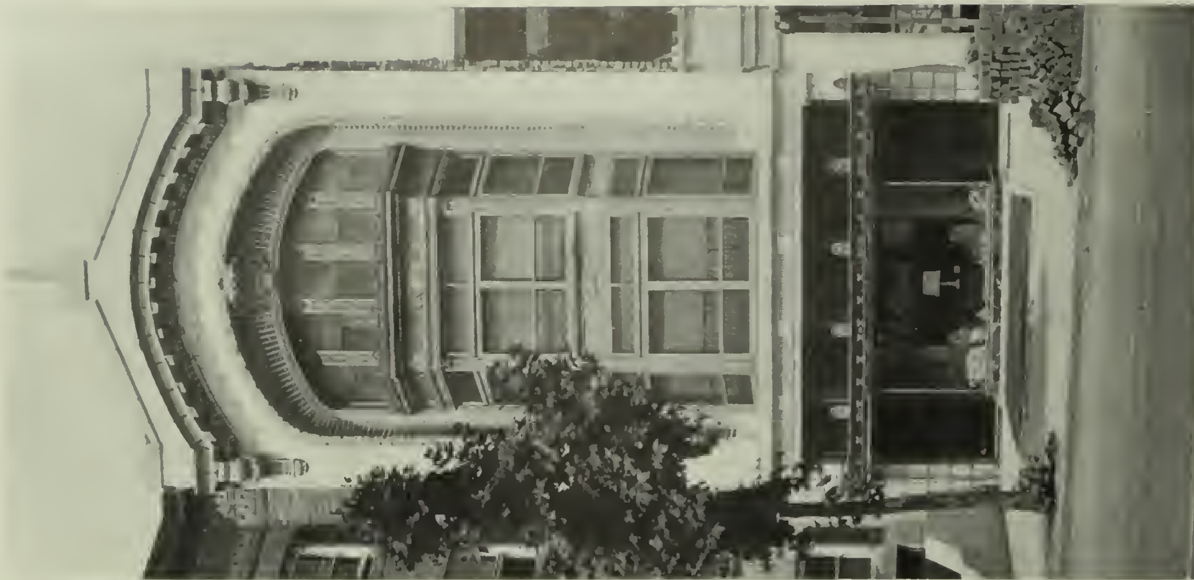


CLARKE WAGGAMAN, ARCHITECT

THREE SMALL STORE AND LOFT BUILDINGS IN WASHINGTON, D.C.

The Atelier System of Architectural Education in America.

By AUSTIN W. LORD.

THE first problem that confronts the young man of artistic inclination is to determine along what lines his energies shall be directed. In this country great opportunities are open to the well equipped man in art and in the wide field of the applied arts, but in none of them is the demand for thorough academic preparation so insistent as in the profession of architecture.

It is not my purpose to write a treatise on design, but rather to point the way one must travel to prepare himself for the study of architecture and to pursue the art from the broadest viewpoint. It is not too much to say that to make a true artistic success in architecture, one must be endowed with the art instinct. That endowment is of paramount importance, for, without it, the so-called architect becomes merely a constructor, and he must rely upon others for that inspiration and artistic quality which marks the work of the artist. At the outset, therefore, I would advise those students who have architectural aspirations to be quite sure of their tendencies in this direction, and not attempt to assume the rôle of the architect unless they are drawn strongly in the direction that a professional career must take them. It may be argued, however, that there is uncertainty in the minds of young men as to whether this artistic tendency is of sufficient strength to warrant the choice of this profession. At this point we should consider his practical side, whether his taste leads him to choose the scientific rather than the artistic side of his work, or whether the two be about equally balanced in his estimation. This uncertainty can, to a great extent, be removed by a study of the student's environment and his past accomplishments. If he has the artistic inclination, it will undoubtedly have shown itself in many ways; that is, in his observation of works of art, in his love of nature, in his tendency to read and study, and attempts actually to produce even, in the most elemental way, anything of an artistic nature. This tendency to combine units or motifs manifests itself at a very early age. Children are preeminently builders in their particularly free and untrammeled way.

This tendency is encouraged in our kindergartens and in the elementary schools, but, unfortunately, totally lost sight of in our high schools and colleges.

Our work is of too serious a nature to be trifled with by those who are ill prepared or who enter into the study of its mysteries without some realization of the tremendous problems that confront them. This, I grant, is rather difficult to impress on the mind of the average student desiring to take up the study of architecture. The conditions of admission to our architectural schools and academies and to our offices are based more upon scientific than upon artistic fitness. This is as it should be, for without the scientific equipment there is nothing to guide us in the course to be laid down for our students — and what is more important, our students have no foundation upon which to work. The impression generally prevails that there is a royal road to proficiency in architecture and that success lies within the grasp of him who has a certain artistic tendency unsupported by a very necessary academic equipment. To-day the profession is crowded with men of indifferent education, and the schools of the country are attempting each year to raise the standards and to secure assorted material rather than a conglomerate mass. The schools are criticized for this discrimination, on the ground that in this conglomerate mass may occasionally develop the brightest star of all. It can only be said that where the art inclination exists preëminently in the make-up of a student he will eventually come to the top, no matter what restrictions may be placed upon him; and we conclude, therefore, that standards should be raised and maintained, that general educational fitness combined with definite artistic temperament should be the ruling conditions under which men should undertake this work. This means long preparation prior to actual study of the art, study of languages, — French and German, in particular, — and a thorough equipment in mathematics, arithmetic, algebra, geometry, and the higher mathematics, if one has the opportunity and the ability. Above all, for those who are specializing in architectural work, descriptive geometry holds a very important place.

The educational requirements in architecture are perhaps broader than in any other art, owing directly to the broad demands that are made upon the architect in the practice of his profession. It is not to be expected that one can excel in all, but the architect's general equipment should be of such character as to enable him fully to understand the demands that will be made upon him, to have a working knowledge of the scientific, as well as the artistic, sides of his art. This general knowledge may in the beginning be enhanced by practice and observation, not only of architectural work, but of other allied arts.

The student having the general qualifications and tendencies outlined above, and who has a certain natural facility in drawing, is in a fair way to undertake successfully an artistic career. In Renaissance times it was not considered too much for an artist to undertake work in architecture, painting, and sculpture, and many of them produced beautiful work as silversmiths, bronze-workers, wood-carvers, etchers, and the like. We are taught in these times to believe that we must specialize in order to succeed; but I believe there is too much of specialization, with the result that we are content to do a very few things where, with a little exertion, we are capable of doing a great many. The tendency is to restrict and to interfere with the liberty of action which is so necessary to the artist. The artist should have the field of art opened to him, and he should be trained in a way to make him appreciate more and more its unlimited possibilities.

But it is not my purpose at this time to discuss the qualifications of students seeking an architectural education in our schools and colleges, but rather of those who have neither opportunity nor desire to enter a regular architectural school and who prefer to take their chances in the office of a regular practitioner. My observation is that most men in this class are but ill prepared to enter on professional training. There are exceptions to this rule, however, as many men who have been graduated from our high schools and colleges enter offices directly and become accomplished architects.

To meet the requirements of the large class of students who, from choice or otherwise, do not enter college, a system of teaching, based upon that followed in the École des Beaux Arts in Paris, has been in existence in this country since 1890. This work is conducted under the auspices of the Society of Beaux Arts Architects, with headquarters in New York City, and instruction is given through the medium of architectural ateliers, under the guidance of a patron, who is a graduate of the Paris School or has had a thorough training in architecture under that influence. These ateliers are designed to give instruction to men in offices, and the system which worked so successfully during the years subsequent to 1890 has now been extended to many of the technical schools, colleges, and universities throughout the country. The result is that the number of students seeking instruction under this method has increased to about fifteen hundred.

Under present condition the designs executed by the students are judged by an impartial jury, who have no knowledge of the authorship of drawings submitted for judgment. In fact, this series of ateliers partakes largely of the nature of a school of art, with its teaching force widely separated, yet all working on similar lines. The work of preparing programs and issuing them to the various colleges and ateliers, the selection of the jury and the judgment of the problems submitted, is all in the hands of an Education Committee of the Beaux Arts Society. The programs are issued upon definite dates, problems are studied and executed under the personal supervision of the patron or instructor and delivered in New York for judgment at stated periods. The advantage of the system as worked out to-day is that it brings a great number of young men into competition upon similar problems, and it is of great benefit to men in offices, schools, and colleges to participate in this work, as it gives each the opportunity of measuring his strength with the other, with the result that a more comprehensive system of instruction has been developed and a more concerted effort made looking to the solution of the same problem in different parts of the country. A broader view is thus obtained by the teaching staff of the general progress of architectural instruction than could be realized under any other system.

Prior to the introduction of the Beaux Arts system, we had our individual departments in the universities and colleges the same as we have to-day. There were also in the offices of the practising architects a vast number of draftsmen pursuing their art blindly and without encouragement. To-day the man in the office has been brought quite up to the standard of the man in the department of architecture in the university; in fact, the judgments show that the best work comes from the men who pursue, in a measure, the two courses together. The student having the point of view of the practitioner, as well as the point of view of the atelier, is apt to work out more rational and logical solutions than one who has only the theoretical instruction; and, to meet further the needs of students unable to enter regularly upon a university course, and who have to maintain themselves through the medium of office work, extension courses have been established in the various cities of the country which, in point of opportunity, offer quite as much as the regular college course. These extension courses are generally presided over by instructors regularly employed in the Departments of Architecture, and the work of the extension courses is understood generally to be a part of the regular college departmental work and is judged under the same conditions by the jury of the Beaux Arts Society. Thus the atelier system is made to reach a very large and diversified class of students, various divisions executing similar projects, all criticized on the same general principles, and, finally, all of them judged from practically the same standpoint.

Under present conditions there are no special qualifications demanded of students entering an atelier conducted upon the Beaux Arts system. Nevertheless, the student desiring to enter these ateliers should seek to perfect himself in the subjects above enumerated, with a view to entering the various competitions for prizes and scholarships which are now conducted by the Beaux Arts Society. A student's capabilities in design may enable him under present conditions to compete for a scholarship; but if he is deficient in the scientific courses, he would be unable to qualify. It is, therefore, of great advantage to all students contemplating work under the atelier system to perfect themselves as far as possible in regular academic work.

The work of the ateliers is based on development of the principles of classic architecture, but in a much broader sense than the term "classic" is generally applied. When I speak of classic principles, I mean such principles founded upon acknowledged excellence and authority as may apply in the production of a great national monument in any school in any country. The term "classic" may refer to works of art, music, or painting, to Roman or Greek architecture, Gothic or Byzantine. While the methods of teaching in an atelier are those of the École des Beaux Arts in Paris, the varied conditions in this country help us to produce a different architecture from that of any other country following the same line of instruction. The aim of the system is not, as has been claimed, to develop paper draftsmen, but to train men to design in a logical way. This means that one so trained will take conditions as he finds them, and will so compose his structure as to make it adaptable to the uses for which it is intended and to have the appearance, both inside and out, of fulfilling these requirements.

We may, perhaps, rightly criticize the taste at times exhibited in French architecture, but such criticism is, in a measure, superficial. The unintelligent critic does not realize the truth existing in many of the great problems which French architects have in the past solved and, while it is not my purpose to discuss French architecture, it is important to know that there is a system of instruction which has been thoroughly tried out and found to produce good results.

The instruction in the ateliers is not necessarily confined to the five orders and developments therefrom. Students are given great liberty in the choice of style, methods of rendering, and general presentation of their problems, but the main idea of logical development, adaptation to the uses for which the building is intended, are always preëminent in the mind of the instructor and critic.

The next paper will discuss more particularly the general equipment necessary to beginners in the actual work of the atelier, — instruments, drawing-paper, methods of rendering, and character of elementary work.

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

VIII. THE WORK OF ADDISON B. LE BOUTILLIER.

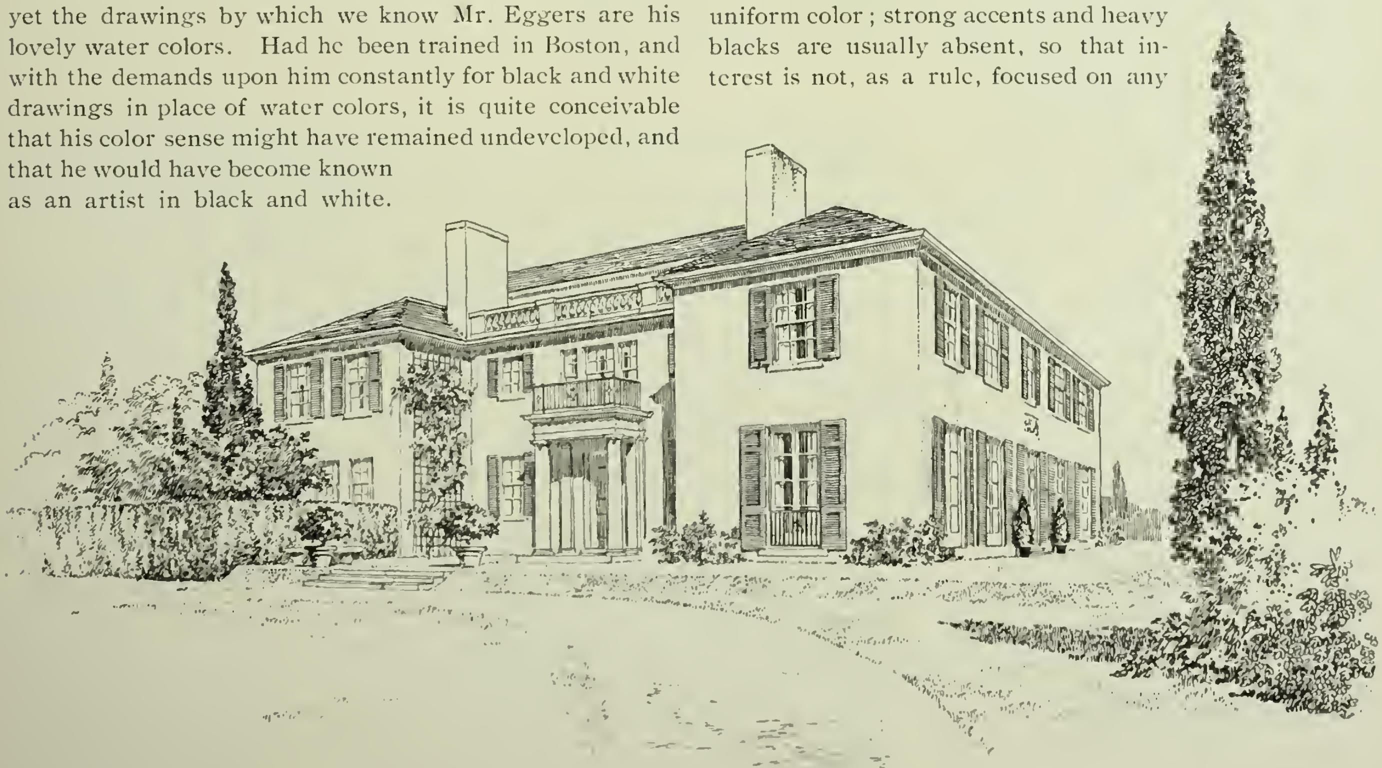
SINCE Mr. Le Boutillier, some ten years ago, won the first prize, the Church Competition, the second of the series of THE BRICKBVILDER competitions, his work has been constantly prominent in the American architectural world, and his lovely drawings have been favorably received through this entire time. Unlike most of the men whose reputation has been made as renderers, his black and white drawings are the things which have attracted most attention ; not that he lacks ability in color, but that the natural bend of his mind seems rather toward black and white. The fact that he is a resident of the city of Boston may, to some extent, account for his predilection toward black and white, since one of the most prominent of American renderers has always been Mr. D. A. Gregg, whose loveliest work was invariably done without color, and the influence of Mr. Gregg has been potent in shaping the line of development of all the Boston men, just as that of Hughson Hawley has tended to turn the methods of rendering in New York toward color. Such a development in either city is only natural, since it is always easier to follow along the path of one successful man than to blaze out new roads to success ; and while many of the New York renderers are as able with the pen as with the brush, the work asked of them is, as a rule, water color, while in Boston we find a comparatively larger amount of pen and ink drawings.

There is probably no one in the country who can make a more exquisite black and white drawing than Otto Eggers, yet the drawings by which we know Mr. Eggers are his lovely water colors. Had he been trained in Boston, and with the demands upon him constantly for black and white drawings in place of water colors, it is quite conceivable that his color sense might have remained undeveloped, and that he would have become known as an artist in black and white.

So with Mr. Le Boutillier, the bulk of his work has been in black and white, although such of his color drawings as have been exhibited do not indicate any less potential skill in that line.

A brief note, published some time since in *The Architectural Review*, speaks of two pen renderings of his in the following terms : "These drawings should be studied by the architectural designer for the technical perfection with which they have been rendered. With the exception of the shadows in the foreground, intentionally handled in a freer manner, every line is used with extreme care to express architectural detail or texture and to suggest the atmospheric effect that might easily have been lost in so minute and painstaking a rendering. The dry and 'brittle' pen-line employed is exactly suited to best express the structure — and its surroundings. The work of Daniel Vierge is considered a model of architectural pen draftsmanship ; but these drawings are equally worthy of being so considered. They show all of Vierge's ingenuity in the uses of parallel lines, with the rare resort to cross-hatching, for which that master of the pen is justly famous." These remarks seem to the writer extraordinarily apt from a technical point of view, and indicate the chief distinction between his work and that of most of the other pen renderers,—his adherence, wherever possible, to shading by parallel lines and not by cross-hatching, unless to indicate a particular texture.

It will be found also that his drawings form patterns of uniform color ; strong accents and heavy blacks are usually absent, so that interest is not, as a rule, focused on any

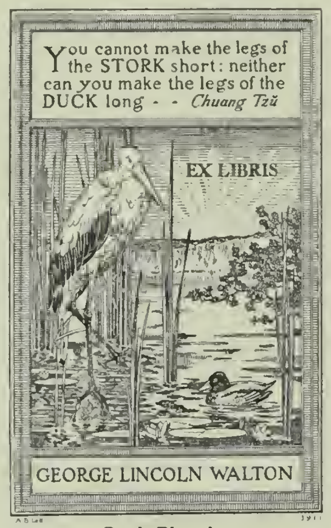


Pen and Ink Drawing of a Country House
Addison B. Le Boutillier, Architect and Delineator

Water Color Drawing of an Interior
Addison B. Le Boutillier, Architect and Delineator

one particular part of the composition, but is distributed uniformly over the whole surface of the paper covered. Such a way of working is, of course, unusual, and is apt to be flat and stupid; and it requires very much more precise and delicate treatment to insure a drawing which shall be interesting when every portion of it is worked up pretty nearly equally far, than it does when the eye is permitted to dwell on one strong focal point, with the background subordinated. The writer does not believe that the method which Mr. Le Boutillier uses can be made responsible for this result; with any other method he would have accomplished the same thing, although at an expense of clarity and distinction. His work is all of it intelligent, intellectual, rather than sympathetic, and is austere rather than warm. One feels that each of his drawings has been very carefully thought out in advance, and that the scheme has not been permitted to develop itself, but has been kept under complete control, with a definite end in view from the moment the drawing was begun.

Comparing his drawings with those of Rockwell Kent is like comparing Woodrow Wilson with Theodore Roosevelt; there really is not any comparison, because doing the same things, they do them so differently, and while the slap-dash, devil-may-care methods of Rockwell Kent get delightful results, because the man is so thoroughly an artist, one often finds in them a carelessness in composition and a looseness of accent which one never sees in Mr.



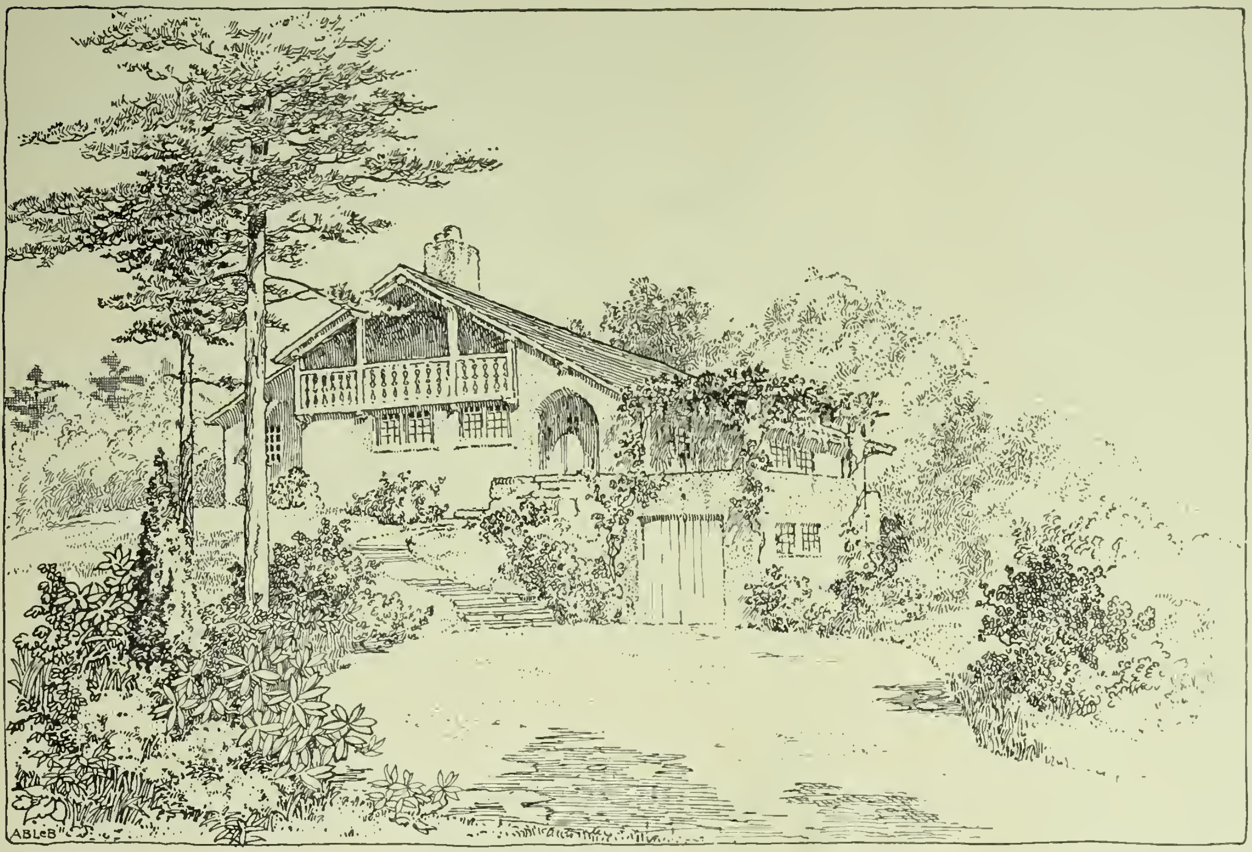
Book-Plate by
Addison B. Le Boutillier

Le Boutillier's work. Nor does Mr. Le Boutillier lose by being careful; his exquisite delicacy is not frailty, and his low tones do not impress us as weak — they are rather restrained than impotent.

The drawings which have been chosen to illustrate this issue are two water color renderings of interiors, four pen and ink renderings of his own country houses,— one of which is done on tracing cloth and the others on oil paper,— a rendering of the First National Bank, designed by Mr. R. Clipston Sturgis, and a book plate. These cover a fairly wide range of subjects, and demonstrate how thoroughly he is at home in all of them. We often find that men who can render a picturesque country house, with trees standing about it in a very picturesque way, fail utterly when confronted with the problem of making a drawing of a city building with no trees, no foliage, and surroundings which are at best uninteresting, often positively bad.

The rendering of the First National Bank is quite as interesting, if not more so in itself than those of the country houses, and, when one considers the comparative difficulties of the scheme, is the best of them all. The bank is a quiet, decent piece of English Renaissance architecture, comparatively low and set in an angle between two tall buildings. It would have been very easy to have made this a rendering of two tall buildings, with the bank in a completely subordinated position, and especially one would have thought it difficult to accent the lower building enough to make it evidently the subject of the picture, without rendering

Water Color Drawing of an Interior
Addison B. Le Boutillier, Architect and Delineator



PEN AND INK DRAWING OF A COUNTRY COTTAGE

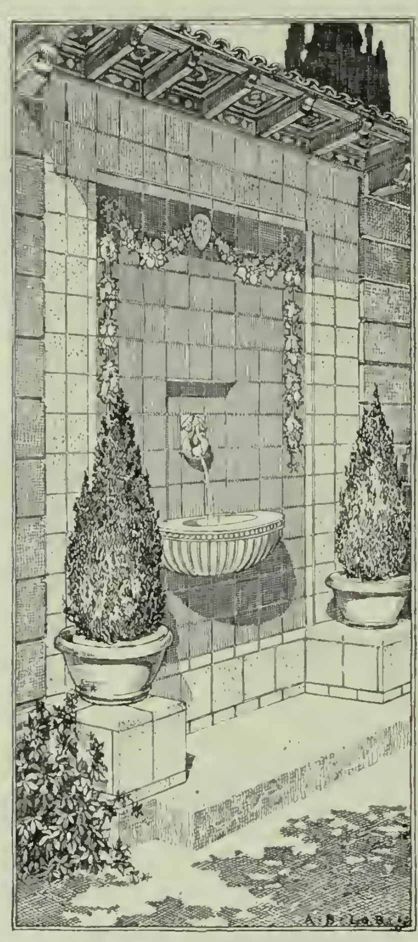
PEN AND INK DRAWING OF A BRICK COUNTRY HOUSE

ADDISON B. LE BOUTILLIER, ARCHITECT AND DELINEATOR

the buildings in the background insufficiently; and although, as before stated, Mr. Le Boutillier's method treats all parts of the paper as if the subjects of them were equally worthy of attention, one recognizes instantly the dominance of the low building over its higher neighbors. Of the beautiful line which Mr. Le Boutillier has used, it is unnecessary to speak further, but he has done one very daring thing in so successful a way that one hardly thinks of it as daring at all. This is the heavy shadow of the flag pole on the short corner of the building. To deliberately cut a drawing in two with a thin line of white, accented by the blackest shadow used anywhere, might be expected to destroy all unity and harmony, but Mr. Le Boutillier has so successfully indicated the solidity of the building that the shadow does not even begin to disturb one.

Of the country houses, that of Renaissance architecture is the more agreeably rendered; it is architecture of distinction, presented in a tranquil and simple way, and not less beautiful on that account. There is no indication of sky at all, the grass is only hinted at, yet we know the shape of the ground on which the house sets, and can clearly understand the texture of both the wall surfaces and the roof. It is a triumph of omission of the irrelevant and unnecessary details, and of suppression of the relevant and necessary.

It is impossible to conceive in black and white a more lively impression of material and color than he has realized in the fountain drawing. The wall is evidently of stone with low rustications, while the immediate setting of the fountain is of tile, light colored in the border, darker colored in the panel, with a brilliant floral pattern. This pattern is so wonderfully drawn that we know that it is flat, and impossible to be confused with the natural shrubbery about it. The cornice is of painted wood, supporting a tile roof, and the indication of color, showing it in a difficult condition of reflected light, is really extraordinary.



Pen and Ink Drawing of Tile Wall Fountain
Addison B. Le Boutillier, Delineator

The renderings of the interiors are not so unusual as the others; they are rather excellent renderings of conventional type than expressions of originality in method, but in the white paneled room slight variations in the surfaces are so excellently modeled, and the accessories are so beautifully treated, as to bring it up far beyond the usual decorator's interior rendering. The girandole, specially, is remarkable for its indication. The other interior, the room paneled in dark oak, with a marble mantel and blue and white facings, is both amusing and exquisite, and the portrait above the fireplace, with its pictured light shown under the assumed light of the rendering, is something which the average man would either not have attempted, or would have completely failed to realize.

The book-plate displays a certain sly humor unsuspected from his other drawings; they are so admirably serious, that we would hardly have believed this to have been the work of the same man, were it not for the sureness of execution and the same beautiful line. The one thing about the book-plate to which the writer desires to call most attention is the lettering. Of all our architects there is none known to the writer who can surpass Mr. Le Boutillier in this specially difficult art; many of us can letter well in strictly architectural fashion, either on working drawings or in the sort of lettering which is incised over the doorway of a bank, but that is not the lettering which will make admirable type; this lettering has personality without being forced or archaic, and the talent to design it is a most rare and precious gift.

Pen and Ink Drawing of a Country House
Addison B. Le Boutillier, Architect and Designer

The Circular Prison and Jail Plan.

A DISCUSSION OF ITS MERITS AS EXEMPLIFIED IN THE NEW ILLINOIS STATE PENITENTIARY.

By W. CARBYS ZIMMERMAN.

"*In proportion as men delight in battles, bull-fights, and combats of gladiators, will they punish by hanging, burning, and the rack.*" — HERBERT SPENCER.

FROM the beginning of history, society's method of dealing with lawbreakers has been based, primarily, upon revenge. "An eye for an eye and a tooth for a tooth," runs the law in the Old Testament, and throughout the ages man's ingenuity has been taxed to the utmost in the invention of barbarous and revolting punishment for evil-doers. From the crucifixions and the more horrible punishment of the ancients have evolved the more subtle tortures of the later day. The Romans condemned outlaws to slavery or to the circus, where their deaths furnished amusement to the multitude, as a lesson to society. In the Middle Ages, society began in other respects its march toward higher ideals, but the old ideas of punishment for prisoners remained. Cruelties became more ingenious; the rack and the stake were introduced, while public executions replaced the cross and the lions.

Then, gradually, societies developed along humanitarian lines. The grosser forms of torture disappeared first; then the world abolished slavery. When it was discovered that the death sentence did not deter others bent on committing crime, an enlightened public demanded that capital punishment be limited and that the public execution cease.

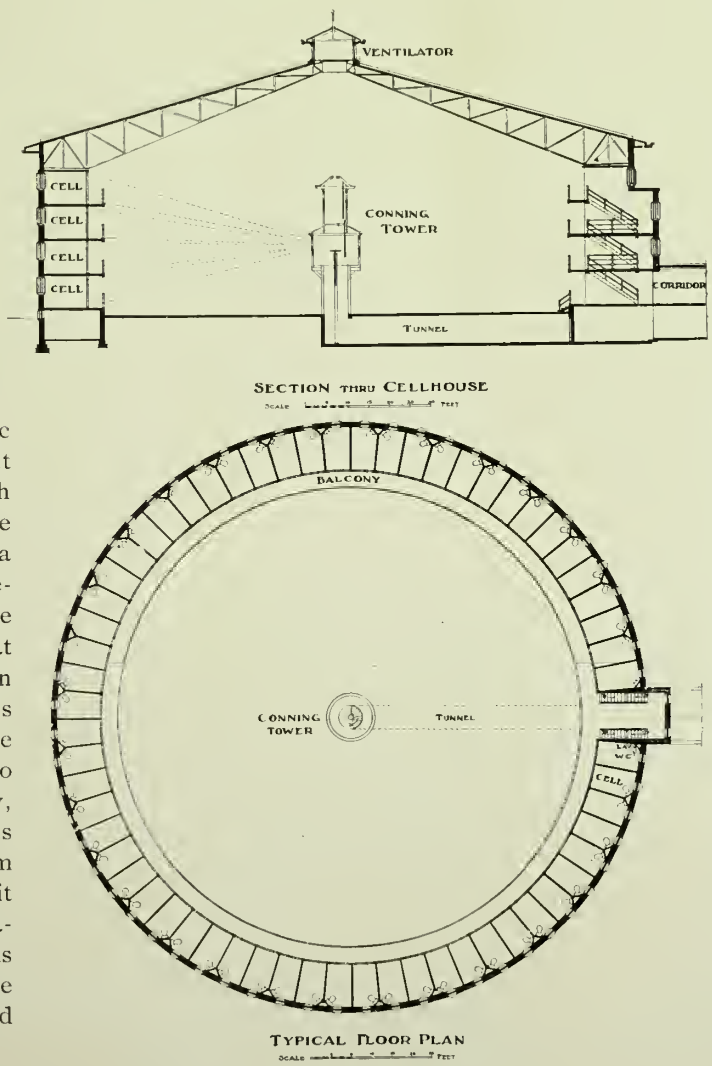
To-day, apparently all forms of brutality have been discarded. The death sentence is very seldom administered, and the model prison is intended as a place of confinement to prevent further aggression and teach the criminal to respect the rights of others rather than a place for punishment or a medium for revenge. As the average sentence is such that the culprit will in time again mingle with society, it is recognized that he should be given every advantage to improve himself mentally, morally, and physically, so as not to work further harm when released. Though it seems, on cursory investigation, that the old time systems have been completely done away with, many of the old methods still continue.

Condemned to live in poorly lighted cells, often reeking with filth and vermin, swarming with germs of deadly diseases, with no privacy from the moral and physical foulness of his fellow-prisoner, any one serving a sentence in such a place has little chance of improvement and is in constant danger of his life through disease, as the death records of penal institutions show. Even in our modern prisons of to-day the most sanitary plan had to be discarded to secure more certain confinement of the inmates, and, although evey effort has been made to insure healthful quarters, our newest prisons will soon be in the same condition as those they have replaced. In fact, the prison system of to-day is but little better than that of a hundred years ago. The horrors endured by the erring unfortunates are overlooked because they are hidden, but nevertheless they still exist.

The world, however, is coming to realize that the cellhouse is not built for punishment but for restraint. Society has a right to protect itself against the evil-doer, but further than this, it cannot ethically go. Penologists universally agree that society has the moral right to restrain the criminal from working further injury to law-abiding citizens, but that is all. If his incarceration is for the purpose of curing the diseased brain, which inspired his criminal acts, and making him fit to return to society, it is certainly an obvious truth that society has not the right to inflict subtler tortures upon him, such as undermining his body so that it is an easy victim to contagious diseases.

The prisoner has well defined rights which must be respected by his jailers. Granted the right to live, he has a right to his health, and in order to maintain his health he must have healthful quarters with sunlight and air and exercise. It is to these truths that penologists are working, and it is agreed that a convict, though deprived of his liberty, has a right to life, to health, and to as much happiness as he can secure under the circumstances.

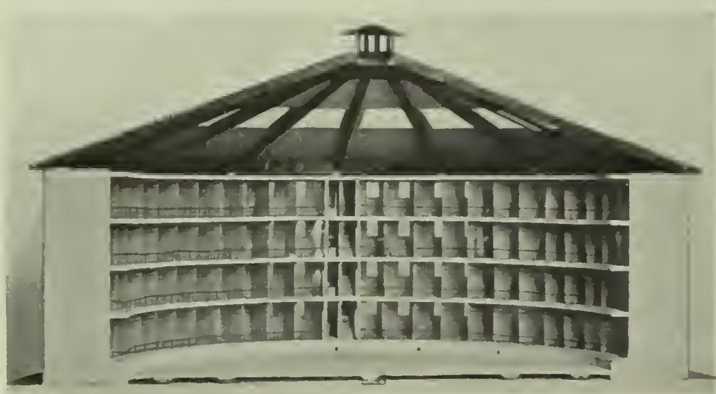
Notwithstanding these



Plan and Section of a Circular Jail
W. Carbys Zimmerman, Architect

commonly accepted truths, the modern prison, though efforts have been made previously to better conditions, is a breeding-place for vice, vermin, and disease. Architects have striven toward new ideals and have tried to adopt the theories of the penologists, but, hampered by old ideas in prison construction and the necessity of absolutely safe confinement, have fallen short of the mark. The fault for the horrible conditions which sicken the heart of the visitor to the penitentiary of to-day lies not in the detailed construction, but in the planning or arrangement of the buildings thought to be requisite.

Prison construction, now standard over the world, is of two types. The first, an European scheme commonly known as the outside cell block, consists of long, rectangular buildings, with cells built along the walls, with windows opening directly into the cells from the outside air, and a deep court, or well, in the center of the building. By this arrangement the prisoner has a certain amount of outside light and air. However, these necessities are limited, because economy of space requires the buildings to be joined, and in the angles and corners thus formed air does not circulate nor can light readily enter the windows.



Model Showing Half Interior Elevation of Circular Jail
W. Carbys Zimmerman, Architect

The objections found to this plan by American wardens is that escape is comparatively easy. A determined man can work at the window until the guard approaches and then later, when the guard has passed, can return to his work at the bars until the guard again makes his rounds, as the guard can only see a prisoner as he passes or is immediately opposite his cell.

For this reason the European system has been practically discarded in America. In this country the inside cell block is more popular, the same type of narrow, oblong buildings being used, but with the cells in the center of the buildings and away from the walls. With these cages placed back to back, with a service corridor between, the possibility of escape is materially lessened, for the man who breaks from his cage has still to cross the light court surrounding the cell block, and to get away must break through a steel barred window. However, prisoners can hear the guard as he makes his rounds and consequently, if up to mischief, have due warning of his approach, and again the prisoner is only visible at the time his keeper is directly opposite the cell.

Now, although the American system of inside cell block is far safer than the European system, it is condemned because of the conditions which make proper sanitation impossible. The only light that reaches the cells comes from windows across the light court and about 18 feet from the cell front. Consequently very little, if any, direct sunlight and air enters a cell. This system, acknowledged to be wrong by wardens and criminologists, is used, nevertheless, on account of its one good feature, viz., safe confinement.

The European system is superior in many ways to the American scheme, which has safety as its first and only excuse for adoption, but both systems are at fault. While architects have persistently tried to break away from these faults, which all admit exist, changes for the better, when attempted, have not been in the general planning but detailed construction. Modern ventilating schemes, toilet devices, and new lighting systems are all that make the modern prison of to-day different from prisons of one hundred years ago.

It is obvious, then, that these evils can only be overcome by some radical change in the form of the buildings used for detention purposes. The acceptable plan must permit an abundance of light and air, and perfect supervision must at all times be maintained. It would seem, therefore, that these conditions would be met if the cell-houses were made circular.

If the cells are arranged in a circular form, as shown by Fig. I, each cell has a window admitting direct sunlight and air. Even the north cells get direct sunlight through skylights in the roof of the wide light court in the center. By combining the space generally used in front of and at each end of the rectangular cell block, a very wide, airy light court is obtained in the center of the building without adding to the size or cost.

The side walls of the individual cells radiate toward the center of the light court, where an observation tower is located, from which point it is possible to see the entire interior of every cell, including a full view of the window, so that the inmates are under constant observation and escape is practically impossible. The lights and doors to the cells are controlled from this guard's station. The danger of signaling or communication is entirely done away with, as all of the inmates are in full view of the guard at all times, while the guard is in a position where he cannot be seen by the inmates.

The circular plan is also readily adapted to city and county jails and prisons where only a small cell block is desired, but where the objections of the present types are just as great. By using a segment of the circular plan as a bay on the building, any size cell block may be had without changing the fundamental principles of the scheme.

HOUSE OF MRS. GABRIELLE E. GAMBRILL, UNIVERSITY PARKWAY, ROLAND PARK, BALTIMORE, MD.
EDWARD L. PALMER, JR., ARCHITECT

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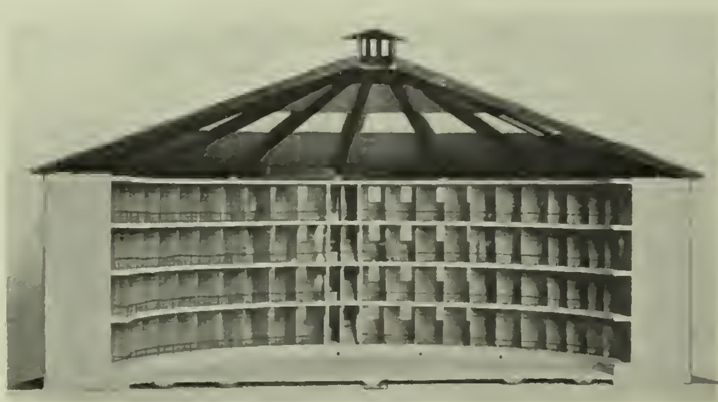

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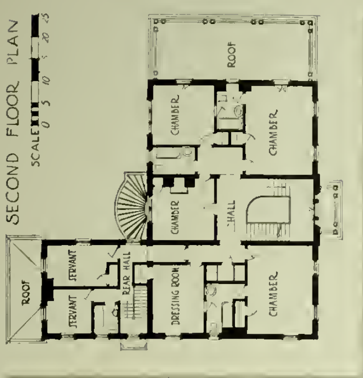
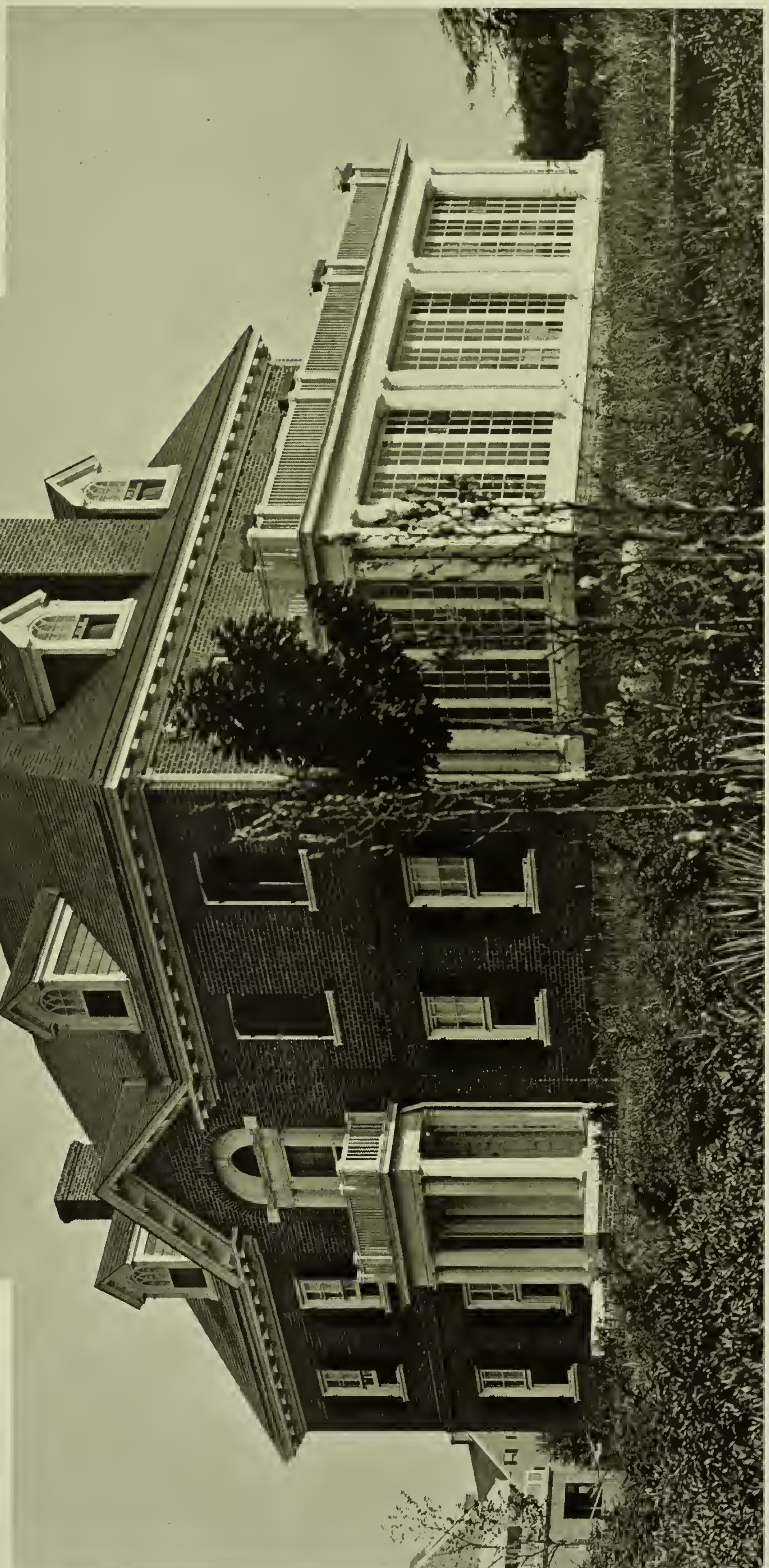
EDWARD L. PALMER, JR., ARCHITECT





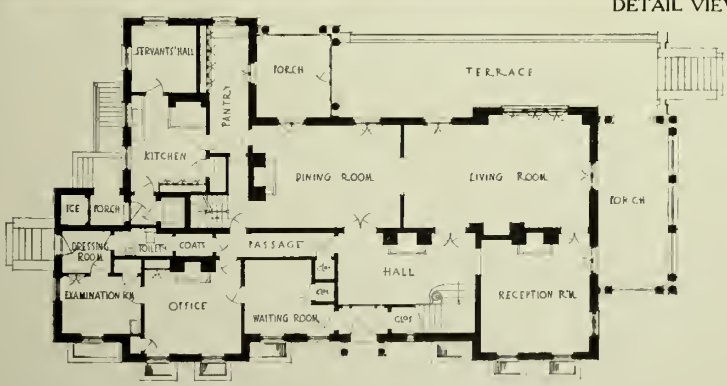
HOUSE OF JAMES R. HAGERTY, ESQ., OVERHILL ROAD, ROLAND PARK, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT

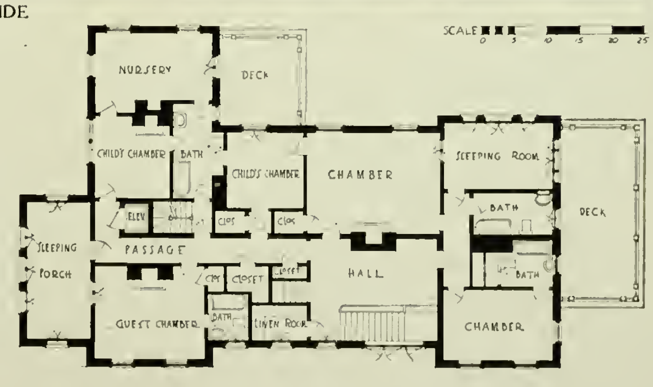
HOUSE OF DR. J. H. MASON KNOX, GUILFORD, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT

DETAIL VIEW OF SIDE



FIRST FLOOR PLAN



SECOND FLOOR PLAN

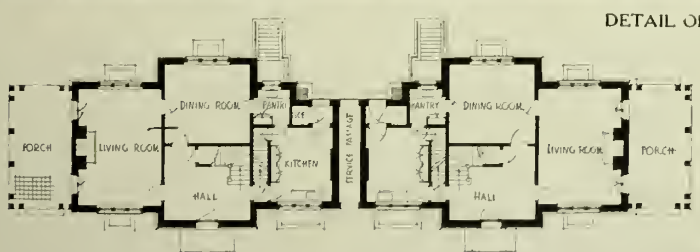
HOUSE OF DR J. H. MASON KNOX, GUILFORD, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT

HOUSE OF HENRY F. BAKER, ESQ., CHARLCOTTE ROAD, GUILFORD, BALTIMORE, MD.
EDWARD L. PALMER, JR., ARCHITECT

SEMI-DETACHED HOUSE ON CHANCERY SQUARE, GUILFORD, BALTIMORE, MD.
EDWARD L. PALMER, JR., ARCHITECT

DETAIL OF STREET FRONT



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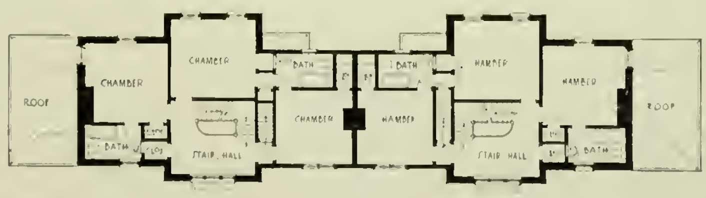
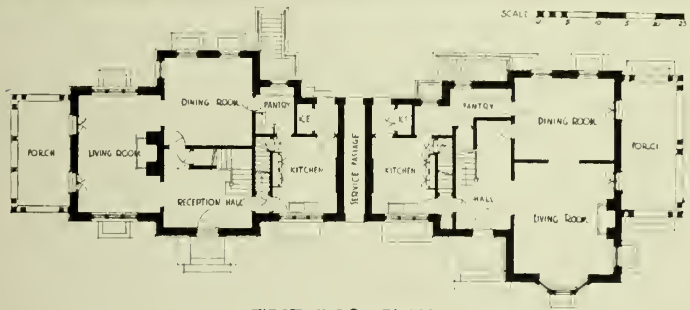
SCALE



SECOND FLOOR PLAN

SEMI-DETACHED HOUSE ON CHANCERY SQUARE, GUILFORD, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT



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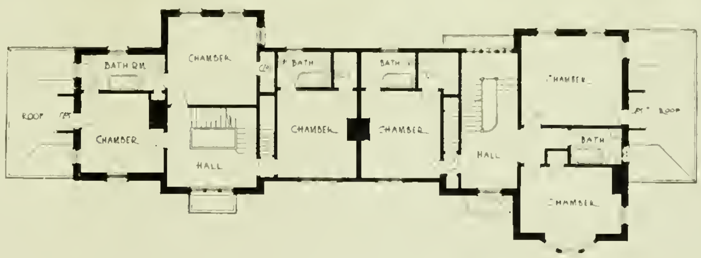

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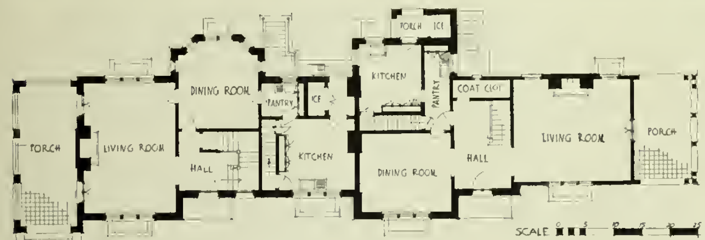

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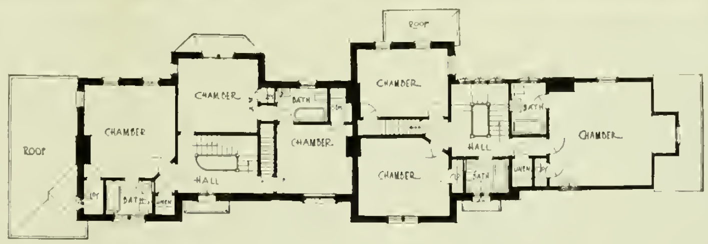

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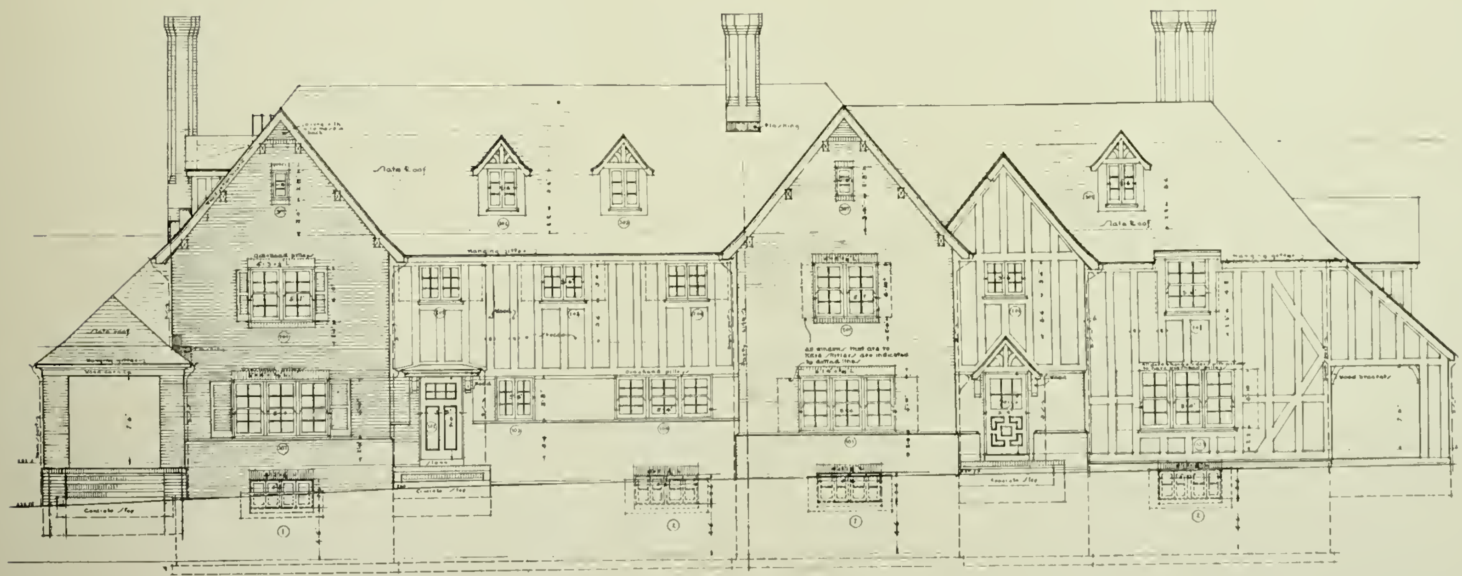

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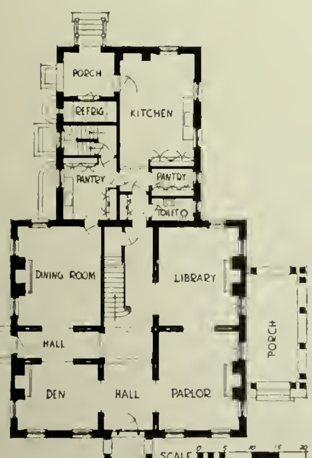

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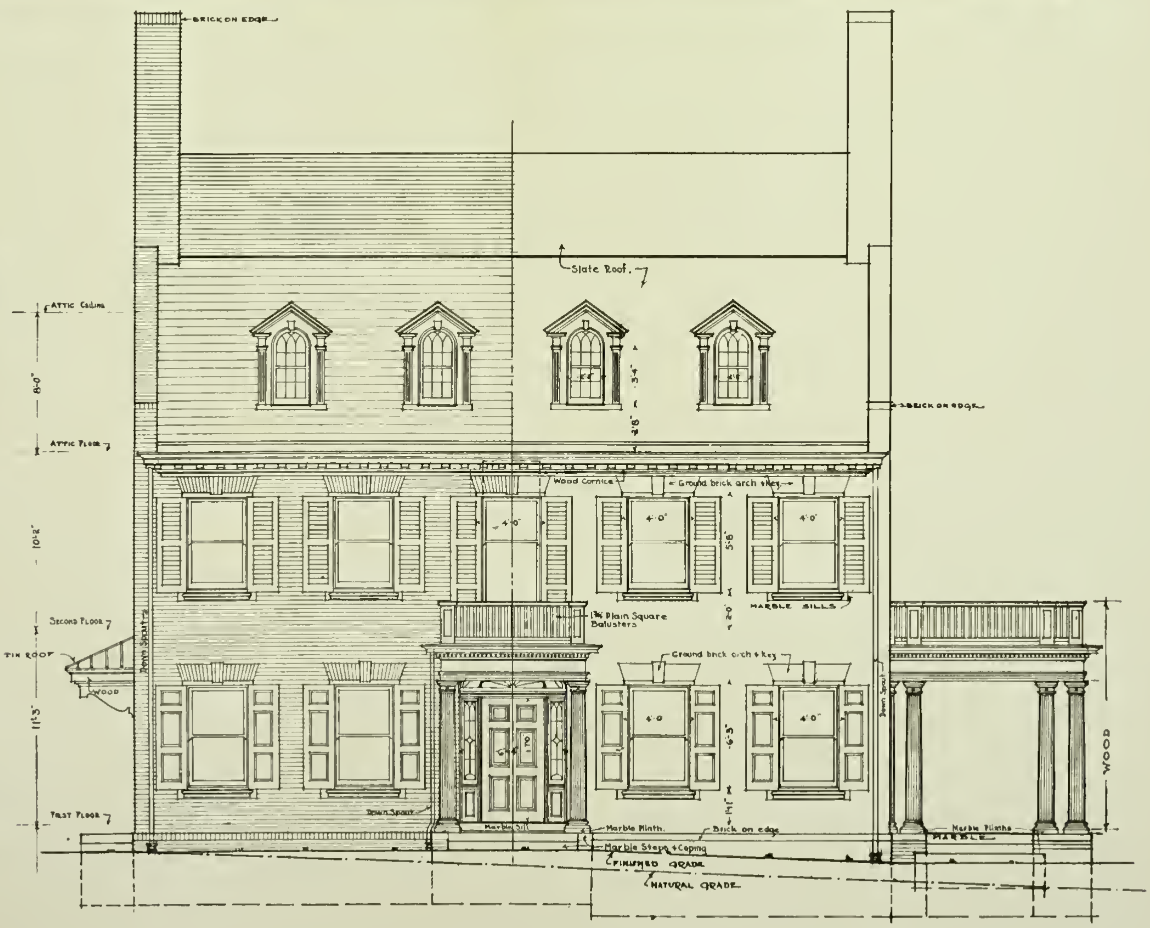
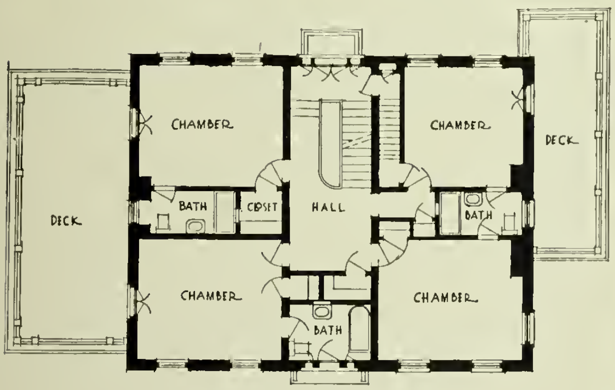


FRONT ELEVATION

HOUSE OF JOHN S. BRIDGES, ESQ., CHARLES STREET, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT

VIEW FROM STREET



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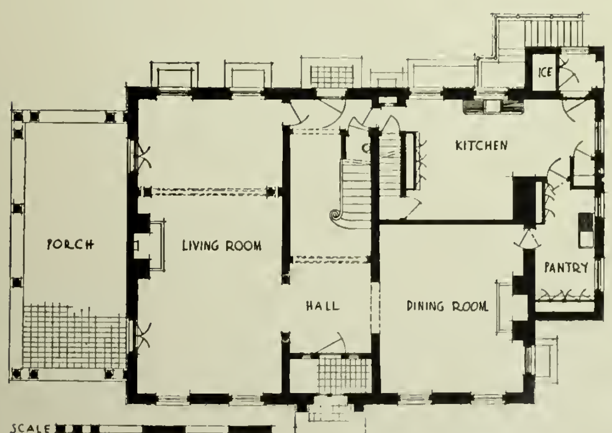


FIRST FLOOR PLAN

END AND REAR VIEW

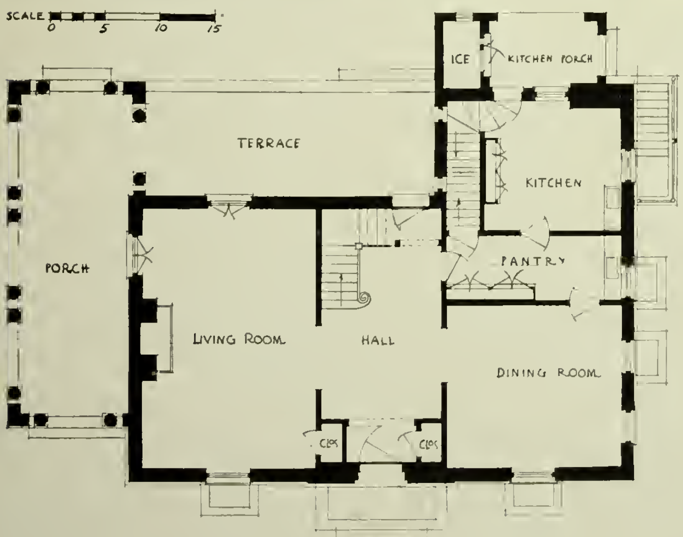
HOUSE OF H. ROWLAND CLAPP, ESQ., GREENWAY, GUILFORD, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT

VIEW FROM REAR

VIEW FROM STREET

HOUSE OF G. EMORY MORGAN, ESQ., KENWOOD ROAD, ROLAND PARK, BALTIMORE, MD.
EDWARD L. PALMER, JR., ARCHITECT



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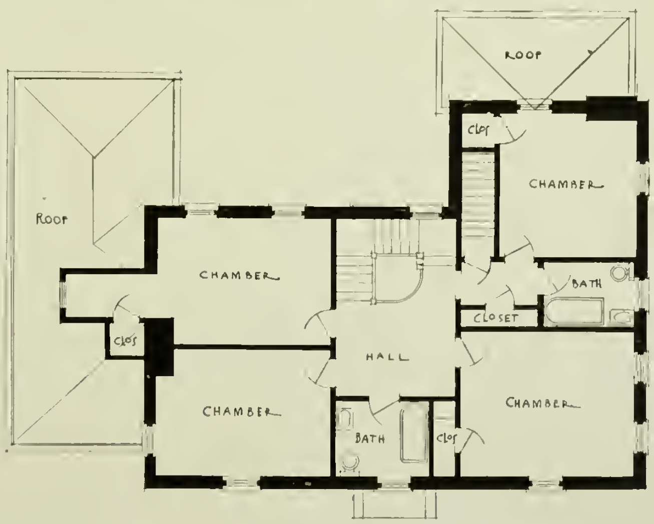

SECOND FLOOR PLAN

HOUSE ON UNIVERSITY PARKWAY, ROLAND PARK, BALTIMORE, MD.

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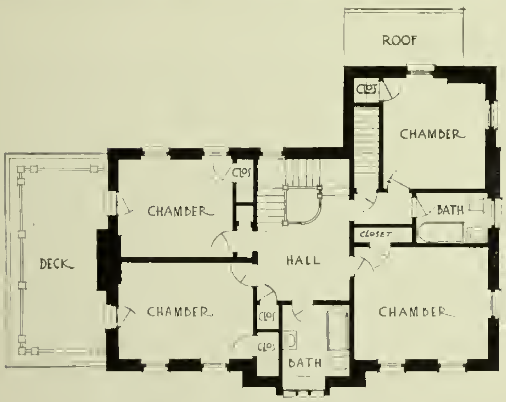

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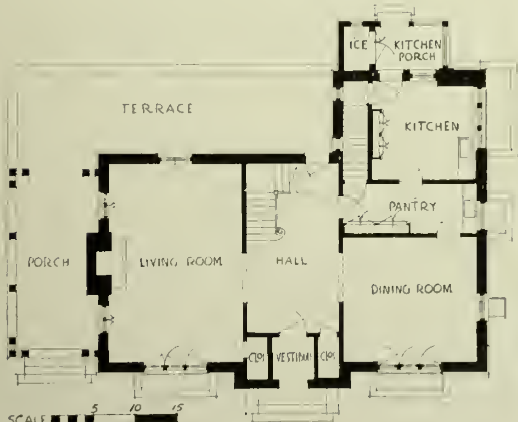


FIRST FLOOR PLAN

HOUSE ON UNIVERSITY PARKWAY, ROLAND PARK, BALTIMORE, MD.

EDWARD L. PALMER, JR., ARCHITECT

FIRST FLOOR PLAN

HOUSE OF THOMAS L. JONES, ESQ., OVERHILL ROAD, ROLAND PARK, BALTIMORE, MD.
WALTER M. GIESKE, ARCHITECT

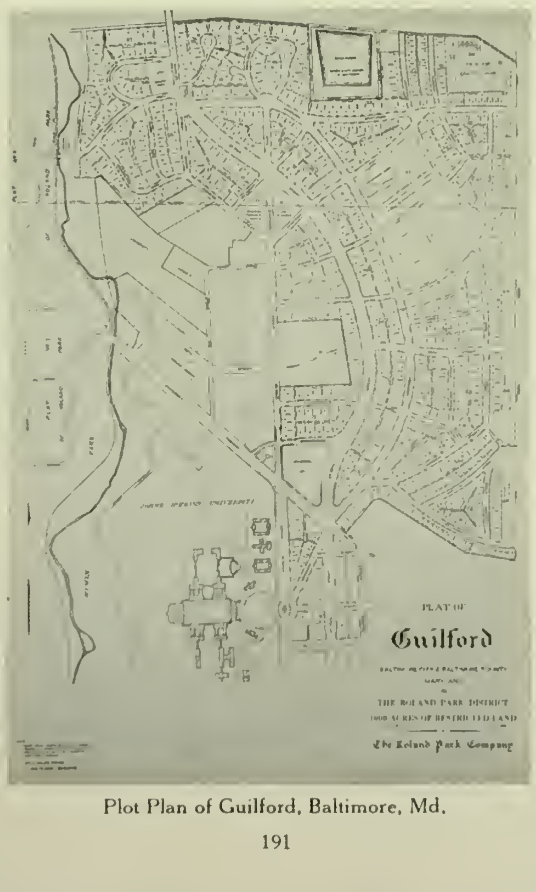
A Suburb Conforming to Architectural Standards.

ROLAND PARK, BALTIMORE, MARYLAND.

By ARTHUR B. CRANFORD.

REAL estate developments, which in recent years have come to exert a large influence on the appearance and character of many suburban districts lying close to the larger cities, afford an opportunity to note the trend of domestic architecture in different and widely separated sections of our country. Roland Park was one of the earliest of these developments to be conceived on broad lines, and where the architectural character of individual houses was to be carefully considered. Its development has been carried on consistently from its founding, and its architectural achievements show that, where there has been a sympathetic understanding of architectural ideals and of good construction, the resulting community will be one in which it will be satisfying to live, and which will be a real asset to the neighboring city by constantly improving and maintaining values in its vicinity.

Roland Park is situated on high ground, lying about three and one half miles to the north of Baltimore, and is the principal residence suburb of the city. It was developed by the Roland Park Company and also includes "The Roland Park-Guilford District," — another development under the same management, — and comprises nearly a thousand acres of land devoted to residential purposes.



Plot Plan of Guilford, Baltimore, Md.

When Roland Park was started, in 1891, the purpose was to build a residential suburb not differing in any radical way from other high class residence-suburbs, and the portion of Roland Park which was built during the first few years is of a character not dissimilar to many other developments. By careful inspection of this earlier work, however, one may detect the beginning of the application of principles which later led to radical differences from the usual type.

From the beginning, however, there were departures made in Roland Park which serve to distinguish it from other developments, notably, certain provisions in the deeds of sale providing for a restricted use of the land. Such beneficial restrictions have become, to a certain degree, commonplace in these latter days of suburban developments; in 1891, however, they were looked upon as an innovation, and there were many who felt that they would not be accepted by purchasers.

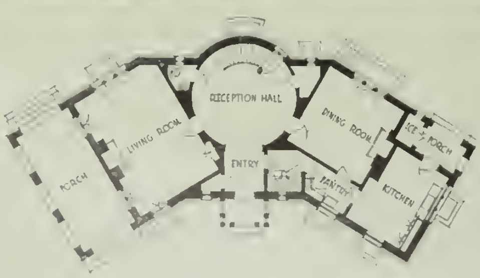
It is to be noted, however, in the latest of the developments of the company, that, as new tracts of land have been acquired and developed, the demand of the community has not been for fewer restrictions, but for more detailed, comprehensive ones. Another unusual feature was a provision in the deed for the care of the public streets. This is effected by laying a maintenance tax, which is collected by the company and expended for various purposes of public service, — such as the care of roads and road side lawns, the lighting of streets, removal of snow from public sidewalks, employment of special police, and similar purposes. This tax is a purely local affair and has no connection with the state and county taxes. In the deeds there is a provision that the tax shall not exceed, in any one year, a certain amount per one hundred square feet of lot area. As new subdivisions were added to the development, certain minor changes have been made as to the amount, method of collection, and the purposes for which the maintenance tax is expended, but the principle of the tax remains the same.

After the first three plats of Roland Park had been developed and largely sold out, the company felt that the time had come when the functions reserved to it in its deeds, relating to the approval of plans, the care of the streets and sewerage system, and the collection and disbursement of the Maintenance Fund, should be placed in the hands of the property owners. It, therefore, invited the owners of lots in Roland Park to form an association for the purpose of assuming these functions. As a result of this movement, the Roland Park Roads and Maintenance Corporation was formed. This corporation is controlled by the Roland Park Civic League, an association of residents and lot owners in Roland Park. It is interesting to note that, although, when the proposal was first made by the Roland Park Company to turn over the streets and the above public functions to the property owners, there was considerable objection to the proposal, time has shown that the plan was a wise one. There has been a continual increase in the efficiency with which the work has been done, and what is felt is more important, a pronounced growth among the citizens of interest in the public affairs of the community.

These two items of beneficial restrictions and the maintenance tax constitute the principal departures from the common custom of suburban real estate companies. The effect has been to give stability to the value of the property, by affording protection from the undesirable use of adjoining lots and providing for the up-keep of the property as a whole, so that a feeling of permanence and reliability has been given to the whole enterprise.

In the development of the first subdivision, the company designed and constructed a lay-out of roads, which, at that time, was rather unusual; more particularly in the careful adaptation of the roads to the topography of the land, with a resulting interest and charm not often encountered in suburban districts. In laying out the streets, ample space was allowed for sidewalks and sidewalk lawns, and much attention was given to the planting of shade trees. The plots of land devoted to each house were considerably larger than those commonly seen.

The original plot of about one hundred and fifty acres having been developed and largely disposed of, the company decided to subdivide an adjoining tract of about three hundred acres. The land in this new subdivision presented difficulties in engineering and landscape design which were not present in the original tract. To help in the solution of the problem, the services of Messrs. Olmsted Brothers were retained, who laid out the general scheme of roads for the whole tract, and this firm has been employed by the company in all of its subsequent developments. The detailed construction of the roads was worked out by the company's resident engineer, under the supervision of the landscape architect, the highest and most substantial type of road construction being adhered to. The roads in the latest de-



First Floor Plan

Second Floor Plan

House on University Parkway, Roland Park, Baltimore, Md.
Edward L. Palmer, Jr., Architect

velopment, *i.e.*, "Guilford," are solid concrete with a topping of bituminous macadam.

Two of the problems presenting themselves to the company, upon the successful solution of which the success of the development depended, were the matter of pure water supply and the disposal of sewage. The water supply was obtained from deep artesian wells, the water company being organized and operated by the Roland Park Company. The sewerage plant was designed by the late Colonel Warring of New York, and from the beginning there has been a system of sanitary sewers throughout the development, entirely separate from the very elaborate system of storm water drains. As new land has been acquired, and the size of the development consequently increased, new units for sewage disposal have been installed.

House on University Parkway
Edward L. Palmer, Jr., Architect

It is interesting to note, in the growth of this suburb, governed by the ideas set down above, a progressive improvement in the details of construction and a more detailed supervision of the design and character of improvements. The deed of sale, from the beginning, had a provision by which the company reserved the right to approve the plans for the dwellings to be erected, and the effect of the supervision of the company in this matter is very plainly indicated in the architectural aspect of the whole development, the artistic character of improvements receiving closer and closer scrutiny as time went on. The company itself built a number of houses which they offered for sale, with the aim that they might serve as examples of good practice, and in this work they employed the most capable architects at their disposal. There have been houses designed for the company by such men from other cities as Charles A. Platt, Wilson Eyre, and W. L. Price, and by many of the well known local firms.

Group of Houses on University Parkway
Edward L. Palmer, Jr., Architect

About ten years ago, in order to more efficiently carry forward this architectural supervision, and to enlarge its own architectural activities, the company organized an architectural department, under the care of Mr. Edward L. Palmer, as resident architect. This department has designed the majority of the houses for the company since its organization, but the architectural

Edward L. Palmer, Jr., Architect

Edward L. Palmer, Jr., Architect

Ellicott & Emmart, Architects

Entrance Doorways to Three Houses in Roland Park, Baltimore, Md.

services required by the company have not been confined to its own architectural department, as in various cases and for certain purposes, other architects are still employed. The architectural department, in turn, has extended its work to include a general architectural practice, designing and supervising the construction of houses for the purchasers of lots, as well as for the company in its own work. To it is entrusted the general architectural supervision of the development, in connection with the approval of plans.

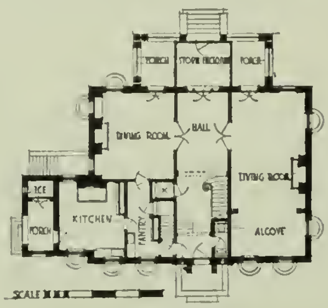
It has been the policy of the Roland Park Company to employ in every branch of its work experts who are familiar with the best standards of practice in their respective professions, there being a sympathetic attitude with the best ideals of each profession and a willingness on the part of the company to adhere to the recommendations of the man it has employed. The effect of this policy is shown in the character of the road construction, and in the general feeling of unity and good taste in architectural expression of the development as a whole.

It should be said that in the exercise of its right to approve plans, the company has endeavored to allow the utmost freedom to each lot owner in the selection of the design and in the construction of his house : its chief care being that, whatever kind of house it might be, it should be reasonably in accordance with the canons of good taste. The effect of such supervision, carefully exercised, would be hard to over-estimate in the production of a general atmosphere of orderliness and dignity.

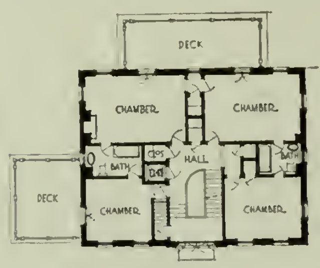
In order to indicate the extent of operations under way, it may be of interest to say that, within fourteen months from May 1, 1913, the time that building was begun in Guilford, there had been 38 houses completed, at an approximate cost of $439,000. At the end of that period there were under construction 53 houses, which will cost approximately $764,350, making a total of 91 houses, costing approximately $1,203,350, which sum does not include the value of the land. The cost of individual houses varies from $7,500 to $50,000, the cost of the average house being about $16,000. The illustrations will serve to give an idea of the exterior aspects of the buildings.

During the past three or four years the company has built several groups of houses in which the problems of group-planning and collective design and construction have been carefully studied. From an artistic point of view, these groups constitute, probably, the most interesting work of the company along architectural lines, and with one or two exceptions this sort of design and construction has been carried farther by this company than elsewhere in America.

To the writer, the most interesting point in the development of Roland Park is that these high standards have been adhered to by a development company that is purely commercial: that is to say, it is concerned with the business of buying, developing, and selling for profit.



First Floor Plan



Second Floor Plan

House of Mrs. J. C. Jones, Somerset Road, Roland Park, Baltimore, Md.
Edward L. Palmer, Jr., Architect

Competition for a Suburban House and Garage.

REPORT OF THE JURY OF AWARD AND PRESENTATION OF PRIZE AND MENTION DESIGNS.

THE BRICKBVILDER Competition for a Suburban House and Garage, on a lot having a frontage of 50 feet and a depth of 100 feet, to be built of hollow tile, brought out designs of average excellence, equaling some previous competitions having to do with similar problems. From about three hundred drawings submitted, it became comparatively easy for the judges to agree upon some sixty or seventy designs, from among which it was their problem to select the four prize and the mention drawings. This selection proved more difficult. It was, nevertheless, possible to eliminate from consideration designs that, for one reason or another, failed of uniform excellence, the plan perhaps being weak, or sometimes the competitor fundamentally failing to regard his house as *fronting* upon the street; thus many of the competitors endeavored to avoid the problem presented by the narrow street front, and preferably dwelt upon the more attractive side elevation which, in final analysis, the judges were compelled to consider of minor importance. This was, if anything, the prevailing defect, of which many competitors were guilty. Again, too many designs were distinctly of the country house type, and would be severely injured by the close building up of adjoining property, in exterior aspect as well as interior liveableness and arrangement of plan. A number of drawings also failed sufficiently to indicate the garage as a part of the problem; while surprisingly few among the contestants undertook to relate the garage structurally with the dwelling, — a possibility evidently in mind when the program was written, but which was an added difficulty on a lot of the narrow width allowed. A certain number of other schemes, even one or two of those admitted to mention, were obviously too pretentious for the size of the lot — especially when the lots adjoining were already built upon, as was one requirement stated in the program — and could only have gone upon the site with an appearance of crowding — or, actually, would have required to be "scaled down" in proportion. Despite this fact a large majority of the contestants took their perspective either from a point which required that the next two or three lots at least be vacant, for the dwelling to be seen from the situation chosen; or, if shown viewed from the street, they disregarded adjoining property lines, widened the frontage by including adjoining lots, and indicated surroundings of more rural a type than strictly belonged to the problem. In several cases the garage was ignored in the perspective; but where the competitor recognized it as part of his problem in plan and evinced a sufficient mastery of handling of the exterior of his house to indicate that the garage where placed could easily become a harmonious part of the lot development, this omission was not allowed to prevent the design being considered for mention or place.

Such was, indeed, the case with the drawing given the First Prize; but, despite the rather careless detail of the entrance, and what the judges felt to be somewhat a crowding of features across the first story, the house was in plan so excellently adapted to the limitations of program and site; the designer had so frankly accepted the narrow frontage, and yet treated his logically resulting design so quietly, simply, and attractively, that this drawing was accepted as easily the best all-around solution of the problem received, in spite of the gutter construction behind the parapet, where difficulties might result in northern localities in protecting exterior and interior plaster from leakage of roof water. Of all the plans attempting two living rooms and an entrance hall across the front of the building, this competitor alone was felt to have condensed his vestibule and doorway to the point where such a scheme was possible within the narrow dimensions provided. The perspective, outside of a somewhat awkward layout of the curving bay roofs, is gracefully and charmingly rendered.

The winner of the Second Prize assumed — as he fairly might under the program — his house fronting nearly north upon the street, thus determining his arrangement of the plan and location of kitchen and entry. The garage, while limiting the size of the garden at the rear, is yet placed in convenient relation to the house, making it possible for the owner to reach it easily, — a convenience ignored in many of the designs. The second story is rather crowded, particularly the bath, but the less desirable rooms are again placed at the north; and the exterior — simple, direct, and while somewhat evidently influenced by the work of a leading architect — is yet free from plagiarism in composition and a perfectly rational and successful treatment of the assumed problem.

The Third Prize has a simple yet convenient plan, although more suited to a closely built suburb if high casement windows had been used each side of the living-room chimney, in place of the long windows proposed, thus possibly requiring a larger light opening toward the street, which the simple fenestration on the front of the house makes easily possible. A minor criticism is that the rendering of the roof suggested either the use of slate too large for the scale of the building, or one of the cheaper paper roofs hardly susceptible to artistic treatment. The designer was thoughtful enough to indicate a turntable in front of his garage, a convenience, for a small car, that was not thought of by many other contestants when placing their garage on the rear lot line. The exterior detail on this house is direct and well considered.

The Fourth Prize was one of the best of those grouping the garage as a part of the house composition. The plan is interesting, although depending somewhat too much for comfort on adjoining property, being unimproved on both sides. The designer obviously considered the end to the street as less important than the side he has chosen to render, whereas, in reality, it should require more careful consideration. His plan is weak also along the rear line, where insufficient space is provided in the pantry for shelving; and in making so much use of light at the sides of both first and second floor. The exterior treatment is simple, convenient, and the roof promises nearly as inexpensive a type of handling as the Third Prize design.

On account of the general excellence of the designs that remained for consideration, the judges finally provided for ten Mentions, and are further willing to acknowledge that some half-dozen other drawings were nearly as good as those given that honor!

Drawing No. 258, another scheme where the garage was combined with the house (and even more completely than in the fourth prize design), shows a clever and open plan-arrangement, despite the garage on the north and street front of the property, leaving — as in the last considered design — the entire rear of the lot free and open for garden treatment. This house failed of winning a prize largely because of the several features, crowded upon the street front, having just failed of successful and harmonious interrelation.

In Drawing No. 64, too much dependence was placed upon the adjoining lot being unoccupied, — a manifest violation of the program conditions, — and little, if any, consideration was given to the end upon the street, except to place living room and owner's bedroom upon that side of the building. The kitchen and bedroom above would be dark when the adjoining property was built upon; and while the garage was nicely combined with the building, it would obviously be better to have separated it from the house by the passageway which the fourth prize contestant provided. The dining room is also darkened by the garage; and the dining room chimney would better have been placed upon the garage wall, when the entire rear of the room could have been utilized for lighting.

Drawing No. 157 was given a Mention largely because of the importance frankly recognized as belonging to the street end of the building, besides producing a house simple, attractive, and thoroughly and distinctively American and refined in type, with a living porch that could be secluded by shrubbery, and a comfortable vista from the porch across the living room to the dining room fireplace. The plan is, in other ways, not so successful, the dining room and bedroom over it depending upon light from the side of the lot, and the front door having hardly sufficient importance to suit many clients. The garage is well related to the house, allowing the owner to reach it through front entry and side yard, if he so desires, and the attractive rendering gives it an exceptionally charming presentation.

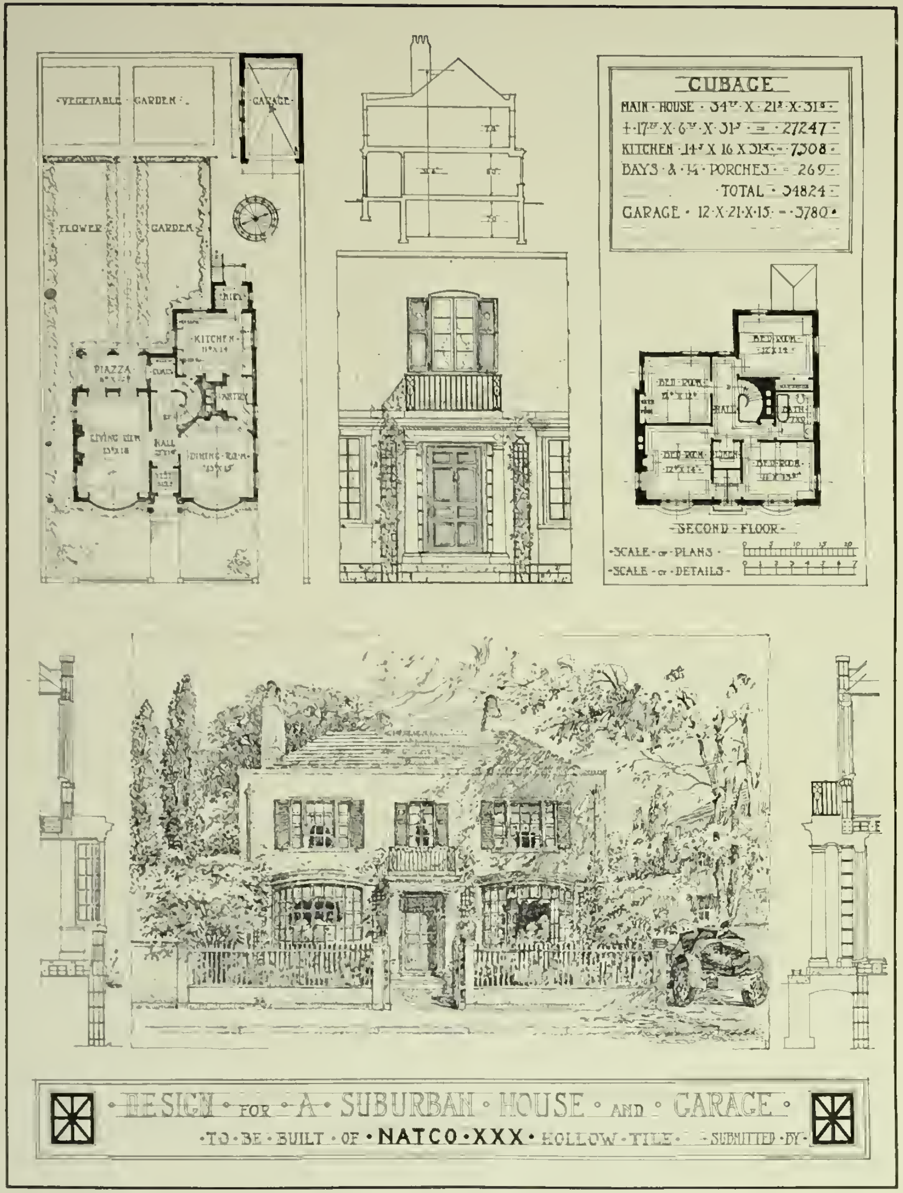
Drawing No. 136 is an exceptionally interesting and individual design; that, also, nearly won its place in the prize group. The axis corridor established across the plan, with the attractive foot entrance on one side and from the driveway on the other, displayed a refreshing and novel point of view; and while the designer frankly accepted being limited by adjoining property on both sides, he, nevertheless, assumes a pretentiousness of type which would seem better at ease on a lot of 100 rather than 50 feet width. His dining room would also be somewhat injured by the wide gravel turn coming so near the windows; which, however, could easily be treated differently, if the owner desired. An open plan, of some sparseness and naïveté, but, nevertheless, actually well considered and developed. Note, for instance, how one plumbing stack does for both floors — an economy not attempted by most of the contestants. The perspective is well arranged and excellently presents an exterior treatment of unhackneyed style and individuality of aspect.

Drawing No. 81 has a simple, carefully worked-out plan, coming logically under its roof ridge, and one that would be economical of construction. Somewhat too large a proportion of the cellar is left unused; while the compact arrangement of plumbing and chimney is to be commended. The presentation of the exterior is not altogether successful; and the central chimney, as designed, is a bit obtrusive and out of keeping with the remainder of the design. It is also a question if the house would not have been still better adapted to the material if the front windows had been placed closer together, with wooden mullions, instead of requiring terra cotta piers to separate them—an obvious lack of economy that, in a house otherwise so compact, seems slightly out of character.

Drawing No. 135, while presenting two harmonious elements in the type of house and garage that it displays, would, nevertheless, have better been taken from a point where the house front would have been more in evidence, particularly as the plan recognizes, with considerable success, the importance of front and back outlooks and the near relation of the side lot lines, in which it somewhat resembles the second prize plan. From the point of view shown, the front of the house appears crowded with window openings, probably because the designer attacks the problem of locating four openings on the second story over three on the floor below, without convincingly showing that he has done so with success.

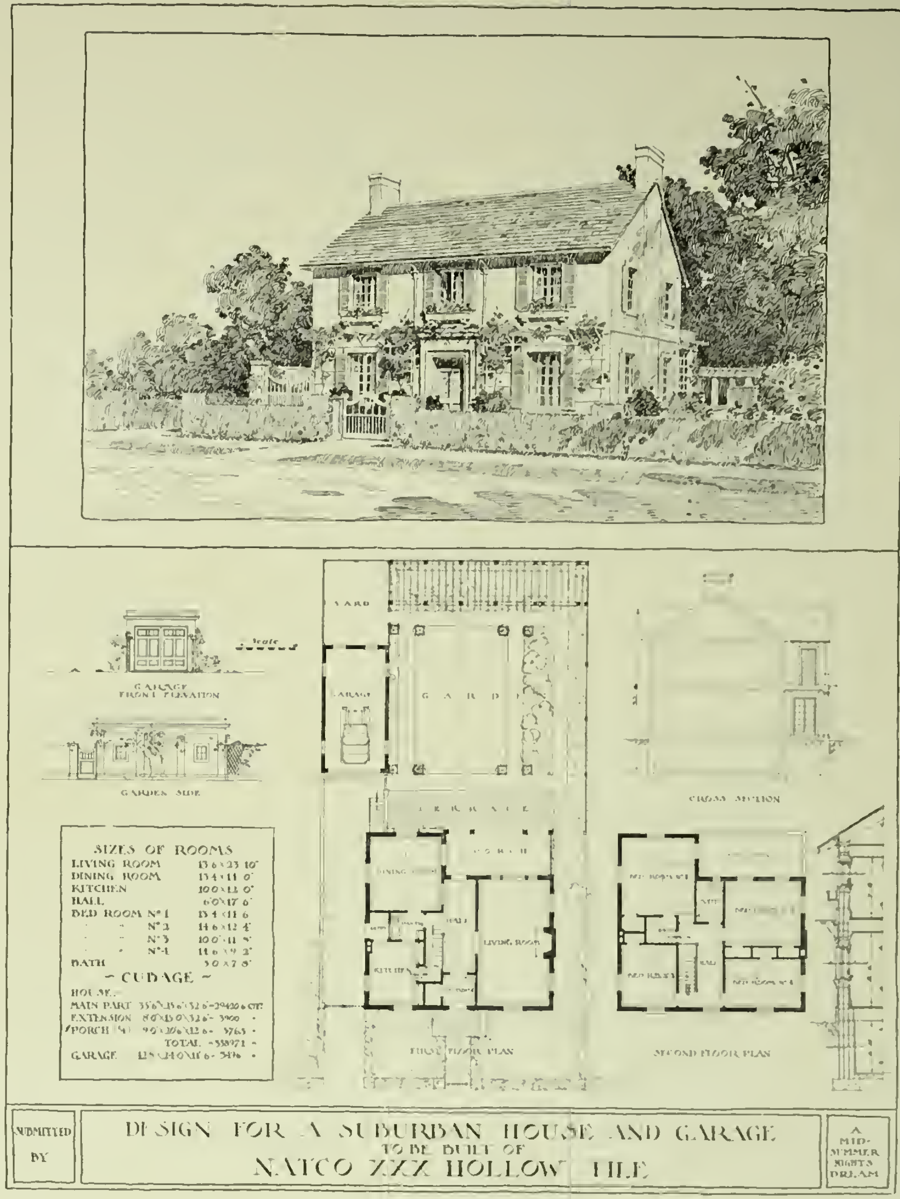
Drawing No. 260 belongs transparently — even in the mind of its author — to the group where the front has been assumed as facing upon the side line of the lot. Although the end toward the street is gracefully treated, yet a part of this available outlook is sacrificed (on the second floor) to the staircase, and, while, indulging in prevailing structural eccentricities in the treatment of the roof covering, the designer could not maintain this point of view with sufficient consistency to continue it over the dining room bay, of which he provides a separate and differently treated detail. If the right side of the house is also to be considered the front, it is obviously not desirable to have the kitchen entrance given an equal, if not rather a superior, amount of importance on that façade. The sheet is otherwise composed so as attractively to present the solution, although the plans would also better have been arranged with the street front parallel with the bottom of the sheet, and then lettered correspondingly.

Drawings Nos. 134 and 248 are both similar in plan, toward the street, to the first prize drawing, but the three rooms located across the front require more space in both cases than would be allowable on so narrow a lot. In No. 134 there exists some further doubt as to the treatment of the roof at the rear. In all probability it would require a considerable deck, but a flat hip roof running into the main roof might be employed to advantage. The plans present fairly compact developments of two well defined types, but in the carrying out both would be much bettered by a wider frontage, as has been acknowledged by the



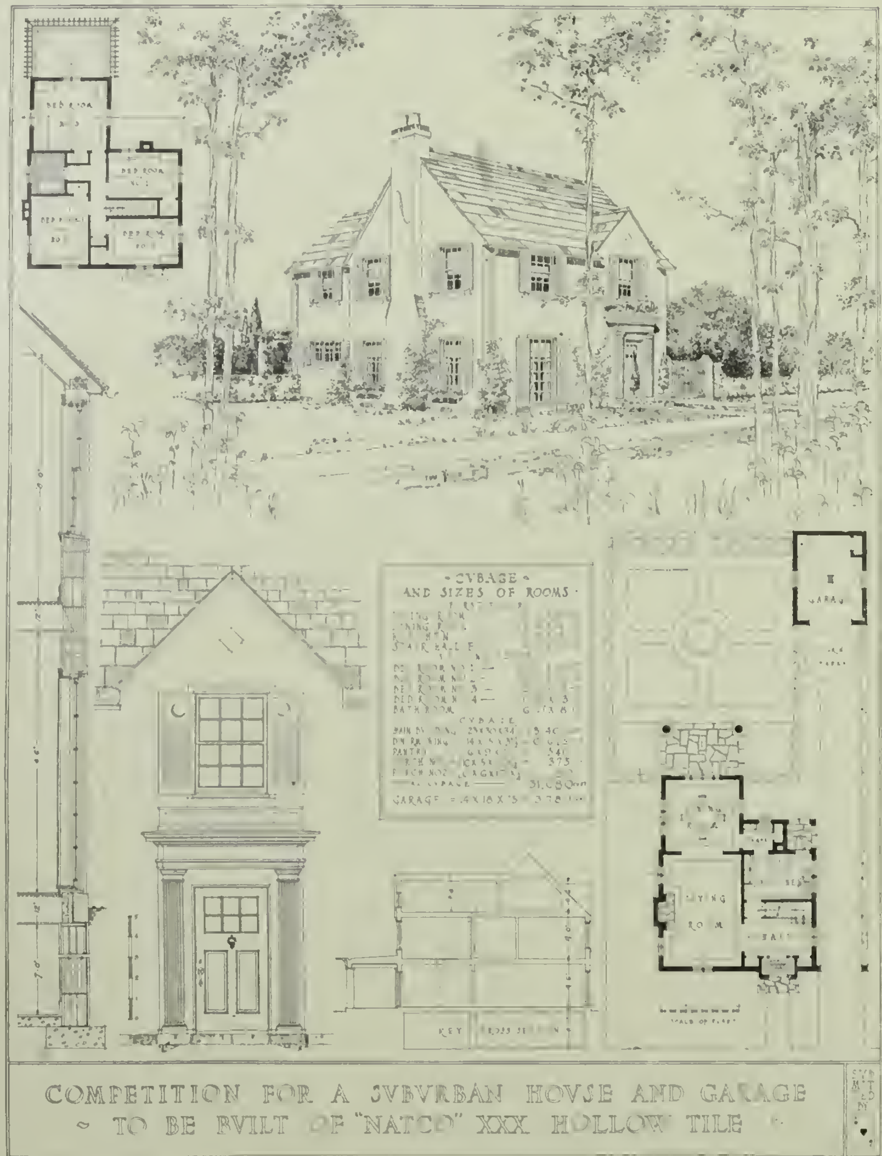
FIRST PRIZE DESIGN

SUBMITTED BY WILLIAM G. RANTOUL, BOSTON, MASS.



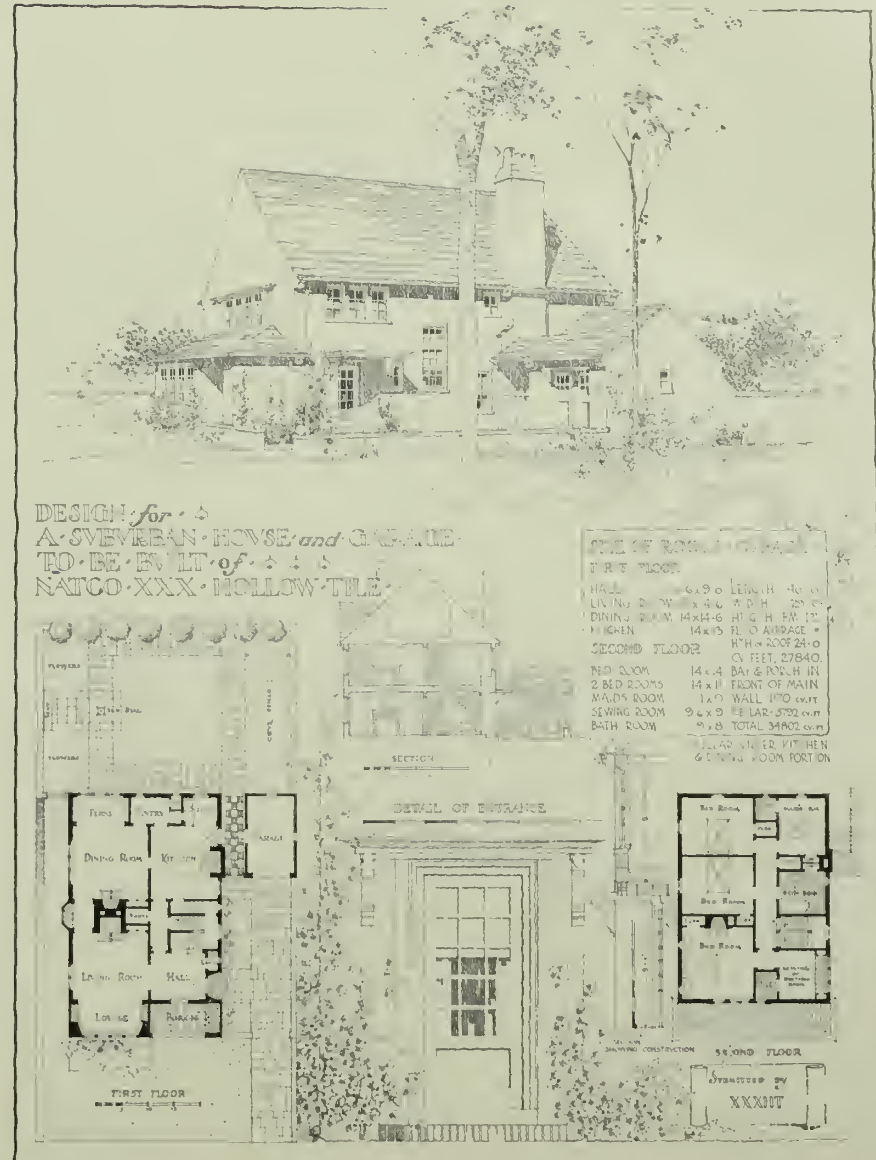
SECOND PRIZE DESIGN

SUBMITTED BY JERAULD DAHLER, NEW YORK, N. Y.



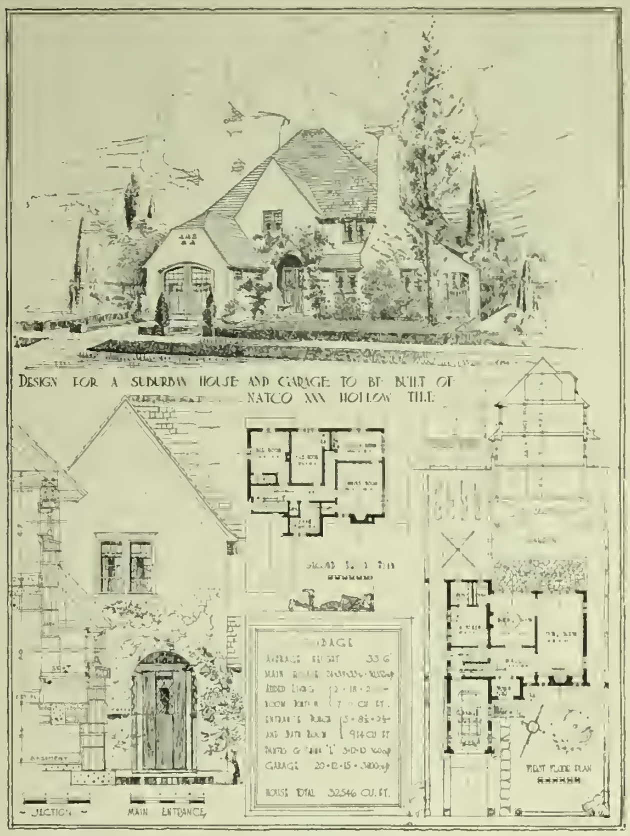
THIRD PRIZE DESIGN

SUBMITTED BY J. IVAN DISE, NEW YORK, N. Y.



FOURTH PRIZE DESIGN

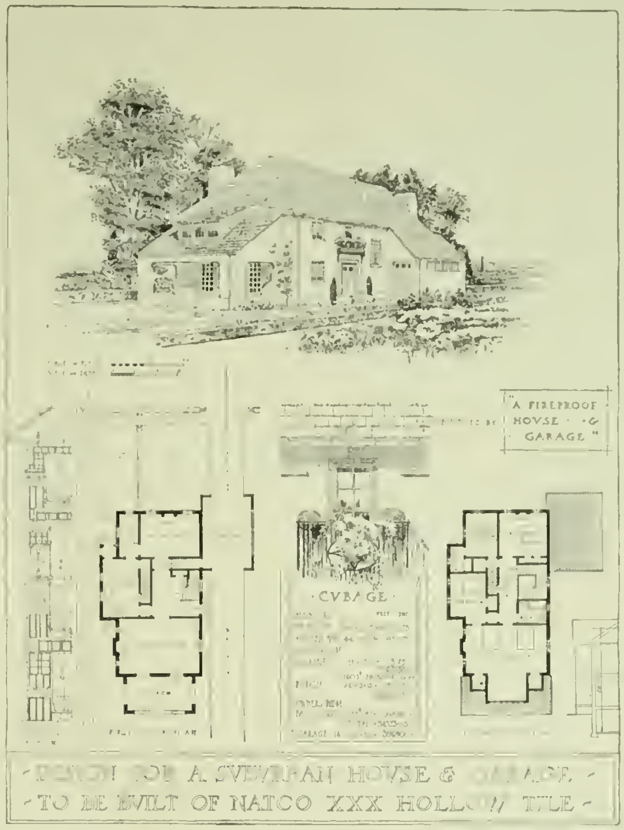
SUBMITTED BY RICHARD M. POWERS, BELMONT, MASS.



Drawing No. 258

MENTION DESIGN

SUBMITTED BY ERNEST HAYWARD AND SIGMUND NESSELROTH
BOSTON, MASS.



Drawing No. 64

MENTION DESIGN

SUBMITTED BY W. P. HUTCHINS AND J. P. MORGAN
PITTSBURGH, PA.

Drawing No. 157

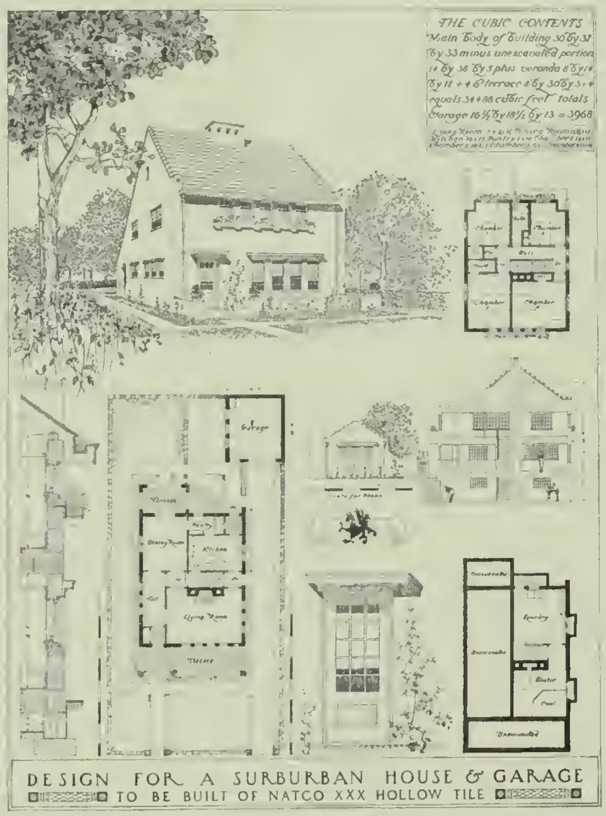
MENTION DESIGN

SUBMITTED BY CHARLES C. GRANT, NEW YORK, N. Y.

Drawing No. 136

MENTION DESIGN

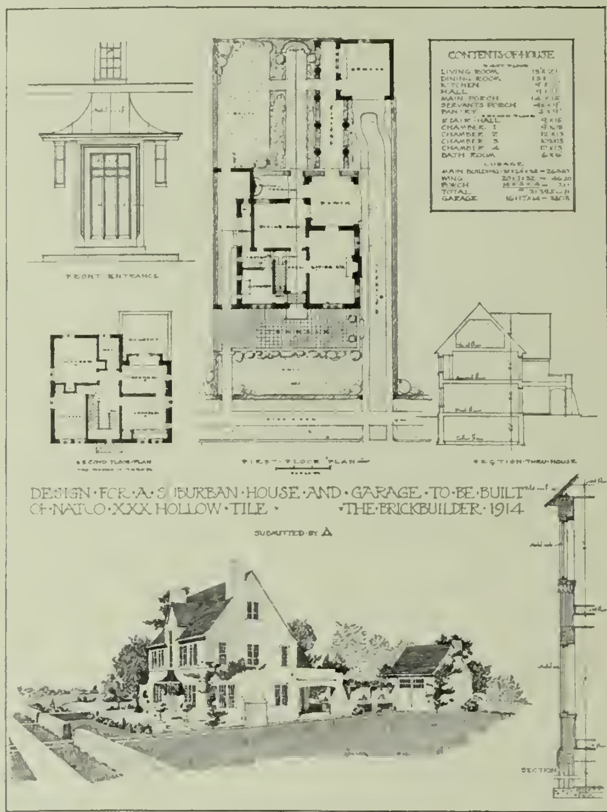
SUBMITTED BY T. H. ELLETT, NEW YORK, N. Y.



Drawing No. 81

MENTION DESIGN

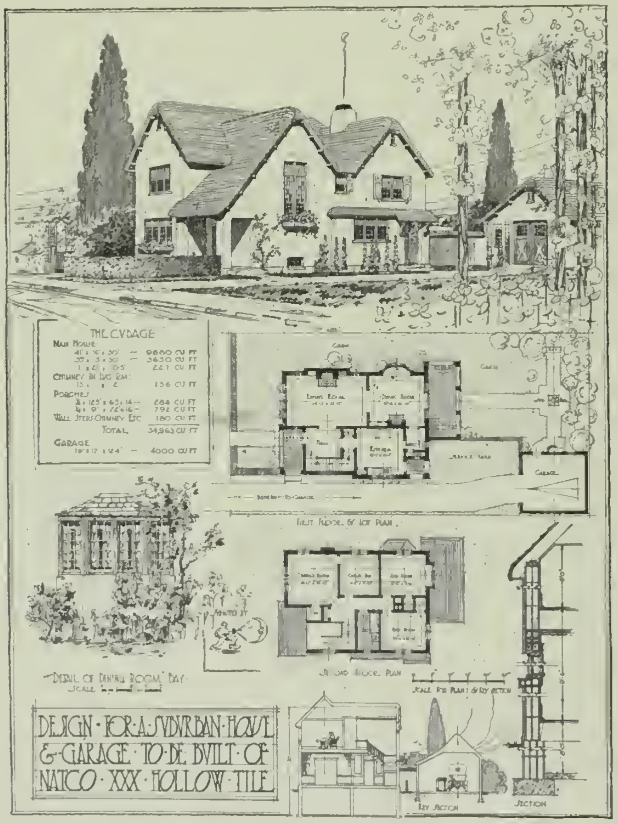
SUBMITTED BY WARNER A. EBBETS, PHILADELPHIA, PA.



Drawing No. 135

MENTION DESIGN

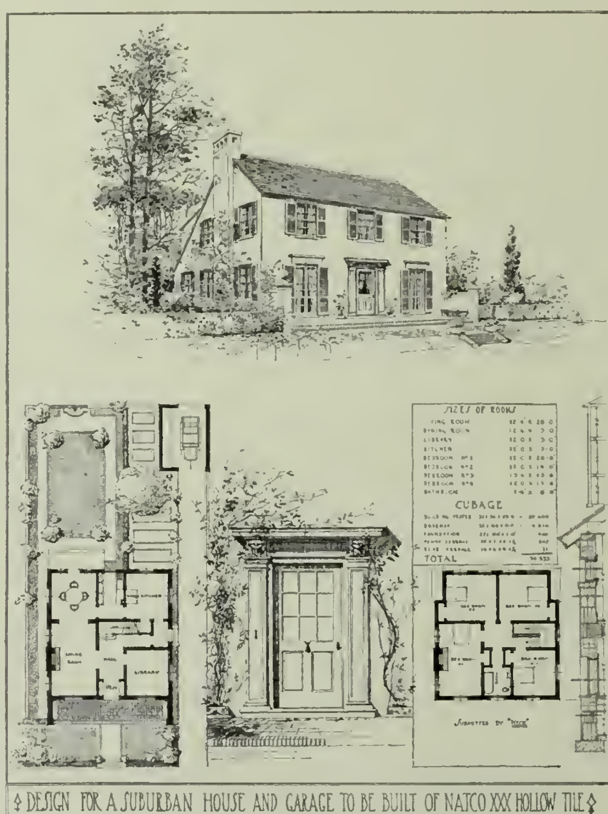
SUBMITTED BY ROBERT A. TAYLOR, PHILADELPHIA, PA.



Drawing No. 260

MENTION DESIGN

SUBMITTED BY WILLIAM J. MOONEY AND GORDON H. ROBB
BOSTON, MASS.



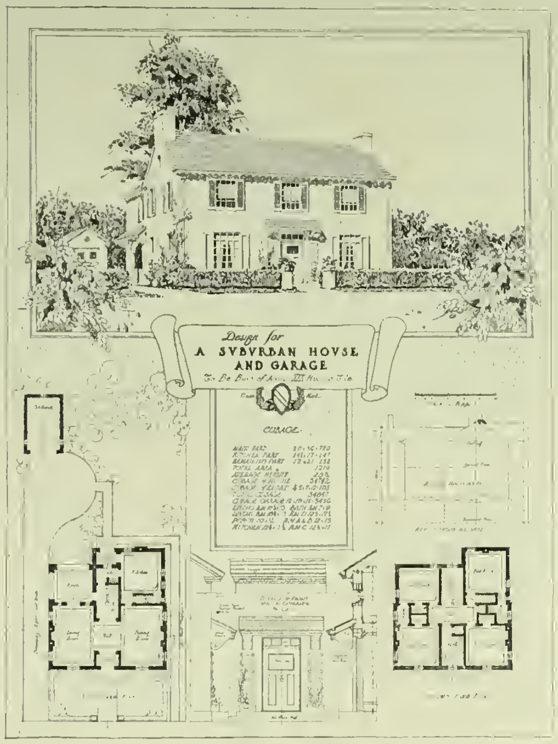
Drawing No. 248

MENTION DESIGN

SUBMITTED BY ANTONIO DI NARDO AND WILLIAM GEHRON
NEW YORK, N. Y.

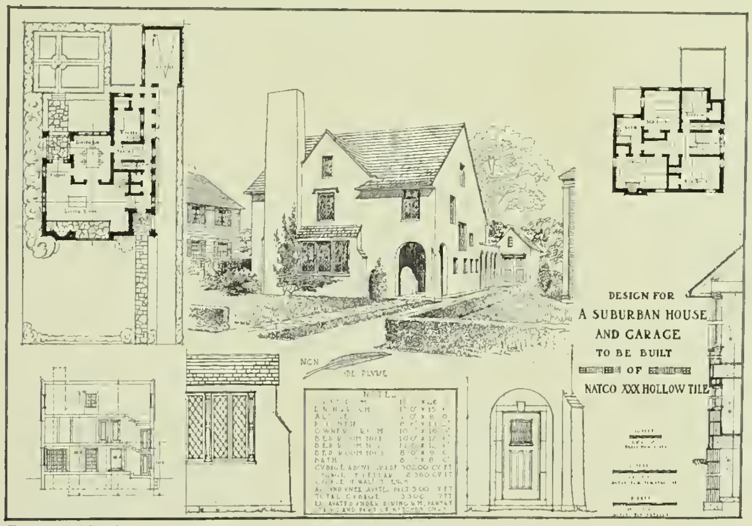
contestants in their treatment of the perspectives, — obviously rendered as country rather than suburban houses.

Drawing No. 147 was a successful design that nearly won a place among the prize winners because of the skill with which the competitor had met many requirements of the problem. He had accepted all the limitations imposed, and obtained an attractive and distinctive house, somewhat more English than American in type, to be sure, but with an unusual arrangement of principal rooms upon the first floor. Too much was sacrificed, however, to give what was, after all, an over-long connection between house and garage, shutting out direct light to kitchen, pantry, lavatory, and service stairs, combined — with unusual compactness — with the front stairs, and a bath conveniently located between two bedrooms. The perspective is crisply and well presented, with little waste of unnecessary rendering.



Drawing No. 134

Mention Design
Submitted by Lawrence L. Wolf, Pittsburgh, Pa.



Drawing No. 147

Mention Design
Submitted by Robert North, Buffalo, N. Y.

The ten mention drawings are presented as of equal merit, and all the designs given mention or place are regarded by the judges as being sufficiently adapted to construction in the specified material, no drawing where this essential qualification has been even partially ignored reaching even the groups retained for final consideration.

The program of the Competition being as liberal as it was, — undoubtedly with the intention of giving all possible variety in scope and treatment of plans, — made it difficult to consider all the various plan solutions on an exact parity, because of their many different relations to grades and points of the compass, which it was fair to allow the contestants the right to assume for themselves, as they had not been otherwise definitely specified in the program. Outside, therefore, of somewhat rigidly applying the very important essential of depending principally for light and outlook on the front and rear of the house, because of the stipulated close placing of adjoining buildings, the judges endeavored to be lenient in their consideration of all possible and allowable variations attempted by the contestants. It would seem that some future competition might produce an added interest by restricting the contestants still more exactly to one problem in the arrangement of rooms by stipulating at least the points of the compass and the contour conditions existing on the hypothetical site, although the result would obviously then develop less variety than the method this time adopted.

The judges feel sure that all the contestants in this Competition cannot but personally benefit by the care and time they gave to the consideration of the problem and the material, which they can now complete by carefully studying the prize and mention drawings reproduced, especially for experience and profit in contrasting their own solutions in detail with those that have been selected for mention or place.

Frank Chouteau Brown, Boston, Mass.,
F. Ellis Jackson, Providence, R. I.,
Calvin Kiessling, New York, N. Y.,
Linn Kinne, Utica, N. Y.,
F. R. Walker, Cleveland, Ohio.

Jury of Award.

Note: In order to present the criticism of the Jury of Award of the different Mention designs in as clear a manner as possible, they have been referred to above by the number given to the drawing, at the time of its receipt at the office of The Brickbvilder, *for identification.*

EDITORIAL COMMENT AND NOTES FOR THE MONTH

THE last chapter of Viollet-le-Duc's "Annals of a Fortress" is devoted to a eulogy of war, as tending to develop patriotism and stimulate courage. This chapter was written before his house was attacked during the Commune, and the treasures within its walls, jeopardized and at the mercy of an ignorant mob, were saved by the efforts of his pupils. Viollet-le-Duc, an idealist, an optimist, found underlying virtues in the worst of national crimes, but failed to recognize the fact that these virtues belonged to the few, and that the masses, like the men of the Commune, were swayed by the lust of combat and the power to destroy.

To-day, in the great cities of France, Germany, Austria, and Belgium, and in a multitude of towns and villages of Europe, are masterpieces of art, — cathedrals, museums, painting, sculpture, and architecture, all of which are at the mercy of mere military machines. These are works which are the heritage of the past, any of which can never be replaced. They are the work of creators, not of destroyers; of the men who have brought delight to thousands, not of those who sow misery.

Among the many outrages of war it is not the least that the works that men have thought precious and have cherished, that have been considered priceless, may vanish from the earth. No doubt there will be an attempt by the nations to respect historic monuments and museums, but the exact control of projectiles at the distance of several miles is a somewhat difficult matter.

But a still greater danger lies in the ignorance and disregard for art amongst the militant world. Militarism focuses its attention upon scientific measures for offense and defense and the details which are pertinent to such subjects. The higher achievements of man are often unsympathetic to many of the officers of an army, and it is to these officers that the world must look for the protection of its museums and monuments.

Already there are rumors of the destruction of the roof of the Cathedral of Liege and of other important buildings, and also that the altitude of the cathedrals of Cologne and of Strassburg has been utilized as "strategic points," by the conversion of their towers into locations for machine guns, which would naturally cause a concentration of the enemies' fire upon these towers.

Mankind has for centuries deplored the loss of the Library of Alexandria, and to-day as great losses are imminent. There is little use in an appeal to the nations. Madness seldom listens to reason. We can only hope that by some fortunate chance but little of the art of Europe may perish in this unnecessary war.

MONTGOMERY SCHUYLER, widely known and appreciated for his published works and studies in architecture, died on June 16, after a short illness. As an editorial writer he belonged to the school of Raymond, Marble, and Hurlbert, imparting to the discussion of subjects relating to architecture literary graces of an uncommon sort and the charm of a cultivated and genial mind. Since the death of Russell Sturgis, Mr. Schuyler was acknowledged to be the leading critic of architecture in the United States, his contributions being numerous and constant, and confined in late years to the pages of *The Architectural Record* and THE BRICKBUILDER.

THE buildings shown by the interesting series of drawings by Mr. Rockwell Kent, which comprised the illustrations in an article treating of his renderings (July issue of THE BRICKBUILDER), were credited through error to Messrs. Delano & Aldrich. The subjects shown were designed by Ewing & Chappell, architects, and included the tower of St. Mary's Church, New London, Conn., Connecticut College for Women, and country houses at Greenwich, Conn., and Tarrytown, N. Y.

THE growing tendency on the part of the modern architect to consider his work first and his self-advertisement last, is pointed out by *The Builder*, London, in an article which takes us back to Michelangelo, and traces the attribute of modesty from his day to the present. "Modesty, we all know, was never the characteristic of Michelangelo, who would refuse to work for a Pope or represent a cardinal in hell with equal alacrity, and build fortifications, design a tomb, or produce a painting 120 feet long with the same fiery zeal. His successor, Vignola, the architect of Caprarola and of the Escurial, worked on an even greater scale in his single trade of architecture, and his treatises on perspective and on the Five Orders were, and remain, masterpieces; but modesty was not to be expected from a man who, at Caprarola, was encouraged to rival the mountains and precipices which surround his palace, and took with him to the Escurial two-and-twenty architects, the most celebrated of their day, as his assistants in his work. Fontana, Carlo Maderna, and Palladio had similar successes: so had Scamozzi, who illustrated his own principles by perhaps the greatest of his works, the Strozzi Palace at Florence. Inigo Jones seems to have been a modest man. Wren certainly was so, in spite of the proud boast as to his true monument in St. Paul's Cathedral.

"As the eighteenth century advanced, self-advertisement on the part of a professional architect became rarer. The Brothers Adam, for instance, had too high a sense of the greatness of the antique to let self intrude into works which professed to deal with general principles or particular monuments, while during the Neo-Classical revival architects were too many for any individual to have the opportunities of laying down the law to others. Competition has its evils, and the lot of the modern architect its thorns; but if modern conditions are against the creation of fantastic masterpieces, the Caprarola and great monuments on the scale of the Piazza of St. Peter's, architecture as a whole has gained by the change."

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VOLUME XXIII NUMBER 9

CONTENTS *for* SEPTEMBER 1914

PLATE ILLUSTRATIONS

LETTERPRESS

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WATER COLOR DRAWING OF HOLDER TOWER
DORMITORY GROUP, PRINCETON UNIVERSITY, PRINCETON, N. J.
DAY & KLAUDER, ARCHITECTS
CHARLES Z. KLAUDER, DELINEATOR

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THE BRICKBVILDER

VOLUME XXIII SEPTEMBER, 1914 NUMBER 9

The Architecture of the Modern German Department Store.

By WILLIAM L. MOWLL.

Accompanied by Illustrations Reprinted from "Moderne Bauformen."

IN Germany, as in this country, there has been a great development of the department store business. The architects of Germany have seized upon this problem which presents many points of difference from problems of the past and characteristics which differentiate it from other commercial buildings of the present; and all the more eagerly as there has developed in Germany a national school of architecture, not less typical or less patriotically regarded than many of their other institutions, for which this problem gives an especially good opportunity.

The large retail merchants of Germany evidently believe in the value of fine commercial buildings. The larger stores are carefully designed and built of good materials. Space is given to features which are crowded out of our stores by the pressure of land value, and money is lavished upon features that are regarded as extravagance in all but the most exclusive of our stores.

Central Light Court, Wertheim Store, Leipziger Strasse, Berlin
Prof. Alfred Messel, Architect

German architecture might be expected to be logical, as the achievements of this nation are rather in science than in art. As a basis for judgment, the requirements of the American department store may be used, as in general the conduct of this business is not widely different on the continent from the methods in use in this country. Selling space, display space, light, and circulation are primary considerations. To gain the first, the American architect builds to the lot line everywhere, as far down as engineering can reasonably do, and as high as the building law will permit. Entrance features are made of marquises which cover the sidewalks, and side streets are boldly preempted for shipping facilities. The show window is exaggerated to the extinction of piers, until the building apparently rests on glass. To gain light, the basement is carried out under the sidewalks, and the piers above the show windows are made as thin as possible in steel and terra cotta. The passage of customers through the plan is facilitated by the aisle systems and by many elevators. On the other hand, that clearness of planning which guides the visitor to the various parts of the composition by the greater and less emphasis placed upon parts of varying importance is mostly omitted, and the stranger left to the guidance of the floor walker; and that distinction of design that attracts every good instinct is generally passed over as unnecessary expense.

In American stores, great halls, extending through several or all of the stories, have sometimes been made features of the plan; but this idea, borrowed from the continent, has not come into general use. In Germany it is evidently an essential. It may exist to centralize the plan or to illuminate it. In the first case, it serves, in the vast maze of people and goods, as a point of orientation, which not only opens up a general view of a very considerable portion of the departments in the store, but also reveals the stairs and elevators by which they may be reached. This is a decidedly practical function. The large and attractive space is not sacrificed, but serves as a guide, and brings about free and rapid movement of customers. As a means of lighting, it is apparently considered equally indispensable.

That these courts are in general use in Germany, points to a number of conditions which are different from those in this country. Even in the larger cities the ceiling lights of these halls are not more than five stories above the floor, although roofs may rise around them to the height of two or three stories more. Concentration of business is less, for not only are the buildings low, but the building owners are willing to take space for out-of-door courts, as well as for these light courts, both within the building and also facing back streets for service purposes. Given the American conditions of greater business congestion, not only does a light court in a ten-story building take twice as much space as in a five-story building, but the possible angle at which the light may enter becomes such that the lower stories are little benefited; and further, where a hall five stories high presents a comprehensible number of divisions, in ten stories a view of the whole would only add to its incomprehensibility. Apparently in German conditions these halls, in general, answer every requirement of good design. In detail, however, they seem not to be quite as reasonable. Either for view or light, the piers surrounding them should either be narrow or should, at all events, present their narrower faces toward the light. This would be logical, but it is not done.

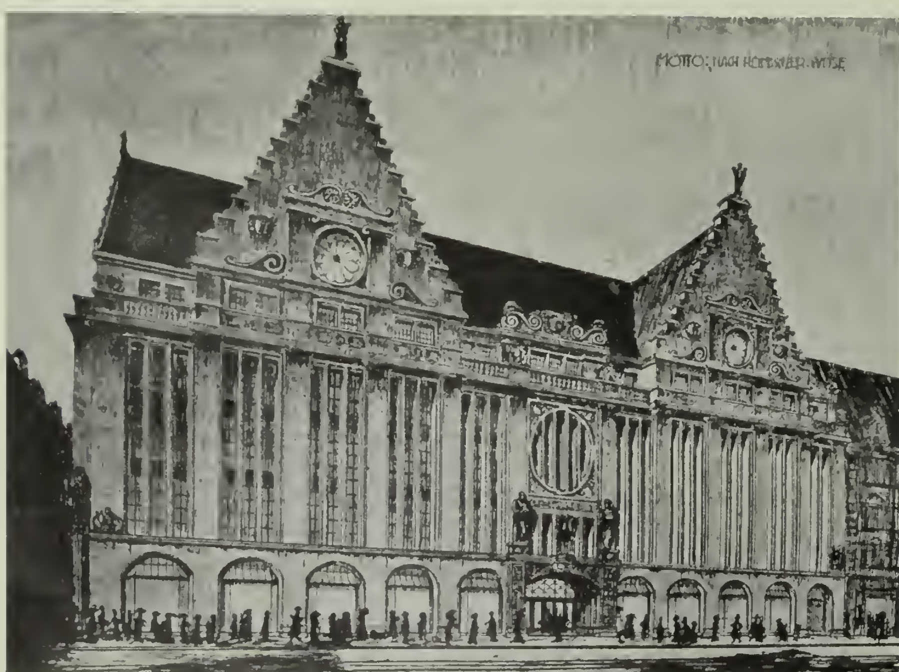
The façade has for possible motives either the singleness of the whole enterprise, or the existence of the great halls inside. Both are large, simple ideas and neither contains any suggestion of variety or of lack of continuity. If the motive of the hall is light let into the plan, then the façade must express the same thing; many and large openings are to be expected. In general, there is as much necessity for light on one story as another, with the possible exception of the first, where the whole area of glass is never considered by the owner to be too much.

Singularly, this is not what actually happens. In no case is the façade treated as a unit. Arbitrary divisions occur at most unexpected levels, and the divisions are most unrhythmical. These façades seem to stop as they do chiefly because they continue no further. The façades of classical antiquity started with a strong, vertical movement at the base, and by a subtle arrangement of details came to rest above on horizontal lines; Gothic architecture starts with moderate movement at the base and accelerates constantly to a climax, and many façades of the Renaissance, through stories of graded and alternated height and interest, follow this latter scheme, apparently to satisfy a fundamental craving of the eye. Some such rhythmical scheme must underlie the arrangement of the vertical order of every architectural design. Rhythm is replaced by abruptness in much German general design and detail.

Every department store façade is crowned with a roof, never less than two stories in height, sometimes much more, commonly not well enough lighted to permit of the use of the space within. although provided with dormers of all types, gables, and turrets. A roof that shows is one of the most unnecessary features of any building from the point of view of structure. When it shows, it takes a part in the general movement of the structure, generally a very important one. The steep roofs of Gothic architecture were not necessary for any climatic reasons; the aisles of Notre Dame are flat roofed. Then, since any but a flat roof exists only to be seen, if it cannot usually be seen, it is architecturally unreasonable. On a city street, we consider it entirely impracticable on account of ice and snow. A great difficulty of these designs is the total lack of transition between the scheme of the walls and that of the roof. These general considerations are illustrated by the buildings illustrated herewith.

The "Agrippinahaus," Cologne
Georg Falck, Architect

In the "Agrippinahaus," Cologne, by Georg Falck, the show windows are well separated by piers. It would appear that the best opinion on the part of window dressers as well as architects is that each show window exhibit should be a unit, and that no sacrifice is made of the continuity or, consequently, of the horizontal unity of the façade by frankly carrying the piers down. In part with the picturesque influence felt in all of these buildings is the projection of the third story of this



Design for a Department Store Building at Nuremberg
Prof. Ludwig Ruff, Architect

Rug Department in the Althoff Store, Dusseldorf
Wilhelm Kreis, Architect

façade and the iron balcony at the fourth floor. The piers in the windows are too wide and too deep for adequate lighting. Such carving as the building has is modeled in a manner somewhat more than merely vigorous. Contrasted with the delicate elliptical sections of Greek sculpture, it has sections which are not only fuller and rounder, as in Roman or Romanesque work, but this effect is exaggerated by starting the section out perpendicular to the plan of the back surface and flattening the highest parts; this is dwelt upon in this connection because it is typical.

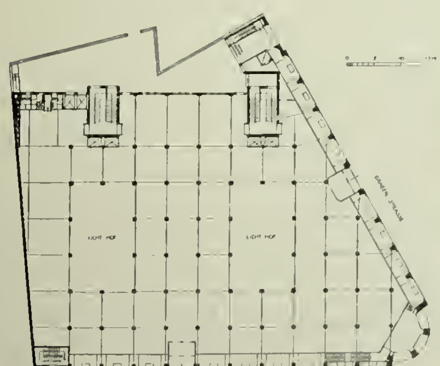
In this building the scheme of the first two stories is fine; the next story and its balcony fairly complete the movement of the whole, which then continues. Another view of this same building shows the roof brought down to the top of the fourth story, with gables. As a picturesque arrangement, this is more successful than the front.

A sketch for a store in Nuremberg shows a building about six stories high, with a tremendous development of roof, equal to more than three stories of the building, with stepped fantastic gables pierced with great circular windows.

The Althoff store in Dusseldorf is not in the sort of location that would be chosen by the American department store manager, who seeks the most crowded districts without open spaces to interrupt the streams of traffic. Its five stories are crowned by the inevitable heavy roof, which should justify itself by being attractive. The alternation and balance of the varied bays of this front are vigorous enough to determine the symmetry of a façade of three times its length. The Ionic cap above the openings is amusing. An Ionic cap is only a bait to the eye to lead it up the flutes of the column and so produce a sense of vertical movement. Wishing to produce a sense of vertical movement in a wall with openings, this feature may be used over the window openings as well as over the piers; and just to show that the Ionic cap form has nothing special to do with it, it is alternated with another device in the bays of the side elevation. There is no harmony in the movement of the various parts of these façades. The walls rise and crash into the cornice, and the clumsy device over the central door threatens to fall. The large room of the rug department in this store is high and well proportioned, simply paneled, and admirably free from cash railways, sprinklers, wires, drain pipes, heating pipes, signs, water pipes, and so on.

The plan is an arrangement of structural bays about $17\frac{1}{2}$ feet each way. The light courts occupy nearly one-fifth of the plan. One of these courts is, curiously, only one bay back from the street.

The plan of the Wertheim store on Konig Strasse, by Ernst Rentsch, is the truest to type of those at hand.



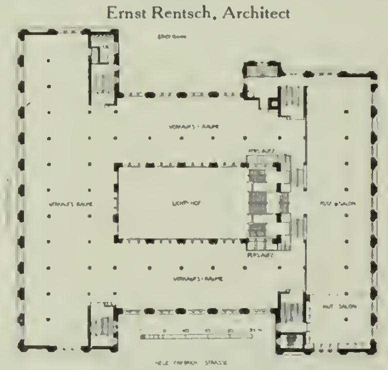
Ground Floor Plan
Althoff Department Store, Dusseldorf

Althoff Department Store Building, Dusseldorf
Wilhelm Kreis, Architect

The entrance is on the axis of the court, the court leads to the principal communications. The heavy piers and other architectural features of Renaissance suggestion are not better than if more closely stylistic. A set back from the lot line is hardly explainable as for purposes of obtaining more light, as two projecting pavilions have blank walls. The design of main cornice and attic is worthy of some study. The vertical movement due to these attractions is taken up, and a conclusion provided at the top by the multiplicity of parts made up of the breaks in the cornice, the consoles, and the breaks in the cap of the attic. A considerable portion of this store — the grocery and dairy products departments — is very carefully done in glazed terra cotta.

Central Light Court, Wertheim Store Building, König Strasse, Berlin
Ernst Rentsch, Architect

The store of the Tietz concern, in Dusseldorf, is a very ambitious design in rough pointed stone. The interesting pier design demands no less space than the engaged column scheme. It must be fully five feet from the outside of the piers at the base to the inside of the wall at the top. The windows are reduced to slits, and the spandrels darkened to get an effect of verticality. It is interesting to see the use here of the dark railings above as arrests to the vertical movement of the piers. The garland feature of this cornice is typical of the introduction of ornament without harmonizing features on broad, flat, and frequently rough surfaces. The sculpture spotted on this façade is as queer as *Art Nouveau*, and further proves that the rhythm of previous forms of art can as successfully be produced in forms entirely different.



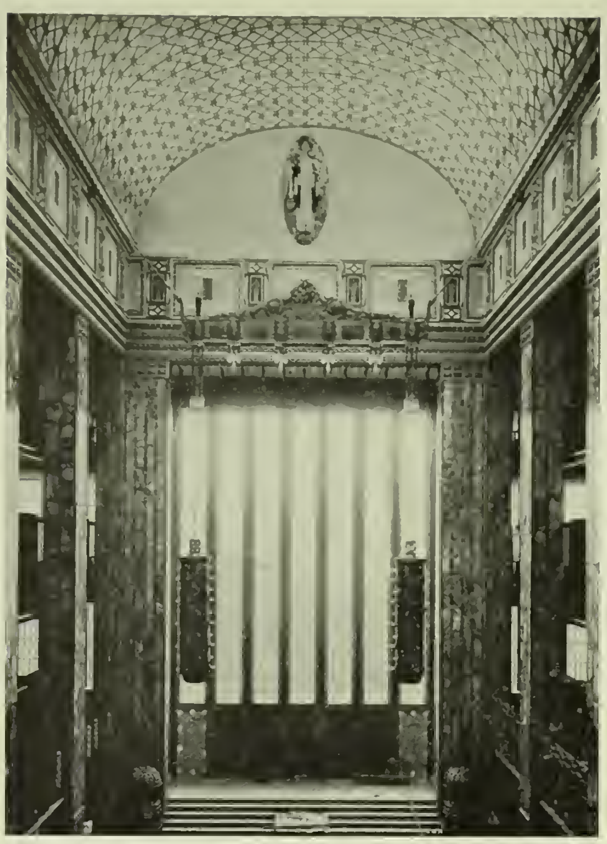
Ground Floor Plan
Wertheim Store, König Strasse, Berlin

The light court has extremely interesting marble cased piers and a fine great window and glass ceiling. It seems rather curious that a light court should have a window; or is the difficulty that it is so hard to realize that there should be a department store owner altruistic enough to want a fine, great room in his store just because it is fine?

The very most interesting example is another Wertheim store in Berlin. Although the plan covers an immense area, the total height is only six stories. There are an amazing number of light courts, some glazed over and some open. The general arrangement suggests that the building is, like so many of our store buildings, a growth, one building after another having been added. Stairs and elevators are grouped near the light courts where they are conspicuous from many points in the plan. The largest of these light courts is surrounded by great piers five stories in height, connected by arches at the top, the whole surmounted by a tremendous ceiling light. At the level of the ceiling of the fifth floor two great elliptical arches or bridges cross the room, the whole illuminated at night by festoons of incandescent lamps, and by other large and elaborately designed lighting fixtures. A great recessed vestibule at the corner of Leipziger Strasse and Leipziger Platz, with a very large hall above it, serves as an announcement of the whole establishment on this side toward the more important approach. It should be noted that even in this location a considerable space has been set off at the back on Voss Strasse, evidently as a shipping space, so that the traffic of this store does not interfere with that on the street. The building, as seen from Leipziger Platz, is a very wonderful conception. It cannot be said to be in any style from an archeological point of view, but it certainly has style. The varying treatment of space above the arches, the fine sculpture, free in treatment and very finely placed, the wonderfully assumed *naivete* of the smaller carving, and the rough blocks which are distributed about above on the piers, are all worthy of careful study. If it is possible to reproduce the charms of Lombard Romanesque work, it has certainly been done here, although without in the least closely following that style. The very narrow windows above the arches, with small elliptical features at the tops, which open into a great hall, together with the treatment of the piers, supports for the figures at the imposts of the arches — all work up an astonishing vertical movement which is, however, very rudely terminated by the roof, which hardly avoids the appearance of being temporary.

In architectural criticism, the points which are first seen by an observer are those least likely to be indicative of fundamental quality. Criticism is usually prejudiced because the critic cannot escape from tradition, whether it be that of yesterday or of some more remote time. It is much more difficult to pass upon the scheme of a design than upon the forms in which it is clothed. It is useful here to insist upon the principles which have entered into the criticisms preceding.

With respect to plan, all plans are roughly divisible into two general classes which may, for convenience, be termed private and public. The latter of these two types is usually termed monumental. The first type of plan is that which is from the nature of the program destined for the use of those familiar with its use or for those who will use it under guidance. Such plans will always be found to contain vestibules and reception rooms to detain the stranger. They are deficient in symmetry. Symmetry in architectural composition is only necessary, in groups of features, as a guide to what lies beyond them. The axis of the symmetry, in large composition, is the line along which it is desired that the greater number of visitors to the plan shall proceed, and lesser axes in like proportion. As there is little motive for symmetry in plans of the familiar type, those are most successful which are arranged on free lines. Further, the most important spaces in an intimate plan are precisely those which must be reached last; and the route to them is no less good if it is devious, if it remains convenient to those who use it. The dominant features of such plans are usually placed with reference to exposure and lighting rather than from considerations of exterior appearance. In the public type of plan, on the other hand, exposure and lighting become entirely secondary to the first consideration of communication. The principal features of the scheme must announce themselves from the principal view points on the exterior, and from as many others as possible. In the plan, it is essential to introduce features not to be formed at all in the private plan. Conspicuous centers or foci must be established in number equal to the groups of parts of principal importance. The purpose of these is, first, to attract those entering the plan, and then to present clearly, and in the order of their importance, the parts accessible from this focus or the avenues by which they may be reached. This arrangement is indispensable in any building intended for use by large numbers of people; and the use of foci is still advantageous when the parts to be reached are merely subdivisions of the surrounding space, as in the case of the departments of a big store.



Central Light Court, Tietz Department Store Building, Dusseldorf
Prof. Josef Olbrich, Architect

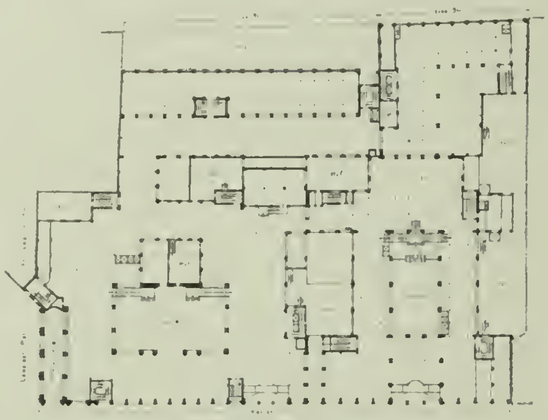
The plan of a department store does not help the designer of the façade very much. The designer of the Wertheim store was fortunate in having a great hall to put on the most conspicuous corner, or else he was genius enough to induce the owners to permit him to create it for that purpose. In general, however, architects who have sought novelty in these façades have resisted the frank solution of the problem in the same way as have most other modern architects. The building is a unit from the ground to the roof, divided into nearly equal vertical spaces. The designers of classical antiquity got along very nicely with a single vertical division of building. The architects of the Renaissance were obliged to admit horizontal divisions, and invented rhythmical arrangements to join them all together. Besides these precedents the German designer is affected by the varied and picturesque arrangements of his own more immediately traditional types. Few designers can escape from traditional forms. It is a delightful academic exercise to theorize about the relationships of the forms of this art; but the conditions under which it is practised call for expedition, and invention is slow and uncertain. Still, when a group of designers commit themselves to a

Tietz Department Store Building, Dusseldorf
Prof. Josef Olbrich, Architect

movement to create something new, why is it that they refuse to see that the new creation already exists when their plan and construction are complete? They not only do not see this, but cloak the new grouping of forms in a badly fitting old garment. If the main lines were new, and the detail remained classic, or what you please, the result would be new, as witness the difference between Classic and Renaissance architecture. The best parts of these store buildings are those isolated sections where the piling of one story on another, supported by equal piers, equally shaped, is frankly recognized.

In the detail, some of the designers have caught the meaning of traditional forms. This is shown by their accurate placing and spacing of ornament, especially sculpture.

Although the general tone of the foregoing criticisms seems unfavorable, it is certainly not their intention to withhold cordial approval from the results of all this work. In the first place, the attitude of the owners is fine. They have made great material sacrifices in order to secure well planned and otherwise architectural buildings for the conduct of their business. There is a unity in treatment which is, on the whole, superior to the defects of their detailed composition. There is here seen another undoubted manifestation of German nationalism. In the use of materials and the treatment of each, in the scale of these buildings, in their adherence, even on the most crowded of city property, to picturesque traditions, the architects have shown a new independence and an enterprise in art that is worthy of much praise. Architecture of this sort, in which the effort of the designer is still visible, is a much more fruitful field for study than more perfect architecture in which the effort is concealed in the perfection of the result.



Ground Floor Plan, Wertheim Store, Berlin

Wertheim Department Store Building, Leipsic Street, Berlin

Prof. Alfred Messel, Architect

The Survival of the Unfit.

By LOUIS LA BEAUME.

AS one long inured to the sin of plagiarism and not only hardened to the innate viciousness of its practice, but even influenced by many distinguished examples to regard it as a virtue, it is easy to appropriate as a subject for these notes a phrase already coined. Had it not been natural to follow the line of least resistance, it might have been possible to have invented a title somewhat more obviously expressive of the subject.

At a time when sociologists are discussing the duty of society toward the unfit who do survive in large numbers and the means by which those numbers may be reduced, when physical and political scientists are discarding old formulas, when the discoveries in every field of endeavor to-day are tending to repudiate the theories of yesterday, when the note of modernism is being sounded by leaders in the arts of literature, sculpture, painting, and drama, it is difficult to understand the acknowledged stagnation in the practice of architecture. Architecture as a living art has not kept pace in its development with the march of civilization, and the reproach under which it is fallen is distinctly traceable both to the attitude of the public and of the profession. Formerly the living and vital expression of customs, manners, and necessities, it has now become as a dead language in the mouth of pedantry. There are evidences in literature, music, play-writing, and sculpture that the trammels of tradition may be thrown off, and we have in these arts many achievements which reflect truly the aspects and impulses of contemporaneous life. However, with the rise of the comparatively modern science of archeology, the art of architecture has undoubtedly declined. It is pretty generally conceded to be a dead art and, strange as it may seem, its chief mourners resent violently while deploring its decease any effort to galvanize it back to life. This paradoxical phenomenon has manifested itself in the realm of other arts, sciences, and professions, but never with more stifling persistence and obstinacy. Its most respectable alias is Conservatism, and its most vaunted deity is Precedent. In the modern art of music, pioneers like Wagner have broken through the bonds of tradition, under protest it is true but with such success that the bizarre iconoclast of yesterday has become the commonplace fogie of to-day. Other men like Richard Strauss have taken up the threads where he laid them down and gone on with the result that music to-day occupies the place once held by architecture as the art most expressive of the emotions and aspirations of modern life. Similar progress has been made in the field of literature, and Ibsen has evolved a form of drama distinctly modern in both its theme and treatment.

In sculpture, men like Rodin have revolutionized the standards of taste so that the generation which came to scoff has stayed to pay him his due meed of praise as a master of modern thought expressing itself in modern technical methods. No longer is it popular in literature to imitate the models of the past nor to write after the manner of Homer, Dante, Chaucer, Milton, or Wordsworth. Likewise it would be considered an anachronism to paint in the style of Giotto or Botticelli as it would be to imitate the musical forms of the seventeenth and eighteenth centuries. It is just as great an anachronism to set up in our American parks imitations of the Parthenon or to transplant stone for stone, Venetian palaces, or François Premier chateaux to our busy metropolitan thoroughfares.

Historical investigation has revealed to us the antiquity of the art of building, and while it has instilled in us a veneration for the high water achievements of the past, its scientific method has also shown us that these achievements were no less the result of evolution than of inspiration. The Greek masterpieces of the time of Pericles were the culmination of centuries of tortuous and painstaking experience, labor, and struggle. Parthenons less perfect and temples cruder and yet more crude were fruits of the same strong branch which had its roots far back in the soil of Assyria, and finally blossomed with such glory on the Acropolis. The Romans came, saw, but were not quite conquered by the dazzling beauty of the art of Athens. They realized its perfection, but at the same time felt that that perfection was no less the result of its fitness in expressing the Greek civilization than of its inherent grace and simplicity. The principle of the column and lintel, the fundamental principle of Greek architecture, could be put to use at Rome; but the chaste austerity of their treatment would be out of harmony in a civilization whose keynote was exuberant splendor and the pomp which vigorous conquest made possible. So the Greek orders — the Doric, Ionic, and Corinthian — were appropriated by the Romans, but they were translated into the language of their new users. The Tuscan order was invented and then the Composite, to satisfy the Roman desire for ornate floridity. In this process the original Greek *motifs* lost much of their refinement, but gained in vigor, and were used in an infinite variety of ways without regard to precedent, and in combination with the arch and vault of Roman invention. The result was the living, vital architecture now become, along with that of the Greeks, what we call classic.

During the Dark Ages in which the Romanesque and Gothic styles flourished, all recollection of the classic architecture of Greece and Rome seems to have been lost. About the beginning of the fifteenth century the humanists of Italy began to turn their attention to the study of antiquity, to scan the models of Greek and Latin literature, to explore the recesses of the past, and to remould the arts of poetry, drama, sculpture, and architecture on the masterpieces of the ancients. This awakening of interest in older civilizations, this drawing of inspiration from them, became a mighty movement sweeping over all Europe, creating new enthusiasm in all the arts and sciences and revolutionizing thought and action so vehemently that it amounted practically to a rebirth of civilization, and as such it is known to this day, namely, the Renaissance. Interest in the past became a passion, and architects traveled to Rome to study the fragments of antiquity. The classic column and capital, the round arch, mouldings, and ornaments were incorporated into buildings as Latin and Greek phrases were incorporated into the language. Buildings were not built in frank imitation of older ones, but older *motifs* were grafted on to current forms in such a way as to produce a new and distinguishable type. This style, hybrid though it was, had a myriad variations in Italy, France, Germany, Spain, and England, and survives after a fashion to this day.

Now men have said looking back on these periods of activity and invention that the gamut has been run. No further variety of design or composition is possible, and every conceivable combination of architectural forms has been accomplished. They have expressed greater or less admiration as their temperament, taste, or fashion impelled for the examples of particular styles, but the consensus of judgment seems to award the palm of perfection to the architecture of Greece, to maintain it as a standard of beauty, and to declare the Parthenon the noblest example of architecture in the world. The Gothic style has its partisans also, but they do not seem to be at the moment in the ascendency, although by dint of skilful practice it is unsafe to prophesy that they will not be to-morrow the heralds of the chosen style. Three decades ago the Romanesque party (in this country, at least) claimed all the honors, but with the death of its chief apostle Richardson, his rivals spread out a full line of samples in the correct cut of the Italian Renaissance.

For a century we have been helpless as the devotees of fashion awaiting the *pronunciamento* of some Redfern or Worth of architecture, and we have received their dictum with unprotesting docility. Here and there a heretic has risen up and proclaimed his conception of the truth only to be howled down as a dangerous innovator. The safe and sane are in the lead. We cannot presume to compete with the masters of the past. We must venerate them and, since imitation is the sincerest form of flattery, we must imitate them. In a democracy of taste it does not matter much which respectable cadaver we imitate, but he must be really dead. Since we cannot invent, we must plagiarize. It is after all but a conventional offense and harms no one. If a building is beautiful, why not repeat it, reproduce it instead of risking the perpetration of something for which there is not precedent and for which no past civilization stands sponsor?

This, then, is the condition of architecture to-day in this country, — a chaos in which whim, fancy, or the fashion of the hour dictates what model to follow, what master or school to plagiarize. As a result there is scarcely a building of note in the world of which several versions more or less grammatical do not exist. In New York alone, for instance, almost every Italian *palazzo* of importance, from the massive rusticated semi-fortress type of the Ricardi with its heavily barred windows, the stronghold of the Medici, to the light and fantastic Gothic and late Renaissance fabrics that front the Grand Canal, may be seen in duplicate. Buccaneers of the business world boast possession of faithful reproductions of the *chateaux* and castles of royalty. Marie Antoinette's Petit Trianon may be found literally scattered over the country; and Chenonceau, once the cause of so much bitterness between the neglected Catherine de Medicis and the pampered Diane de Poitiers, now stands on Riverside Drive. The examples might be multiplied *ad infinitum* of these architectural snares for archeologists to ponder in future years.

As a matter of fact, this catholicity of tastes is not strictly confined to our own cities, but of all peoples the French seem least open to criticism on this score. From the hour when France first began to feel the influence of the Renaissance, French architects have been alert to develop and freely use classic forms bequeathed to them, with the result that the social and political history of France may be clearly traced in her architectural monuments, one epoch succeeding another in natural sequence, and each bearing the distinct imprint of its time. Realizing that conditions change with the change of customs, and the introduction of new materials and methods of construction, the French architect seeks to meet these new conditions fairly.

The charge that all the changes have been rung is being continually disproved in France, and buildings are being erected every year, modern in their very essence and as original in their way as the Parthenon was in its way. Some of them may be said to be as perfect also. For it is not true to say that the Parthenon is the most perfect building in the world. There are a thousand most perfect buildings judged by the only standard it is possible to judge by, namely, their fitness for the functions they are designed to serve and their logical and truthful expression of those functions. There can be no abstract standard of beauty. No man can say that a Gothic cathedral or Chinese pagoda is more or less beautiful than a Greek temple.

The province and the aim of the architect of to-day should be to take the conditions as he finds them and create an architecture to fit them; not to distort and cramp them to fit the architecture of another day. Where new problems present themselves as in some of our commercial work, no precedent existing, we are forced to this procedure with the result that critics see in this sort about the only thing they can commend. With the introduction and larger use of burnt clay, concrete, iron, and glass, we shall be thrown more on our own resources, forced to invent more as it becomes less possible to plagiarize.

Meantime tentative efforts are being made in Europe and in this country to break away from the outworn traditions of the past, to invent new forms and new details. The effort known as *Art Nouveau* is not always crowned with success, but underneath it lies a healthy impulse which should tend to mitigate much of the scorn it meets. It indicates a promising reaction against the banalities of repetition, especially the repetition of classic *motifs*, and if it does not point the only path to a real and living architecture, it will at least incite us to a fresher point of view. Moreover, it has preëmpted a name which it should be the aim of all contemporaneous art to deserve. The first question which the layman is apt to ask on being confronted by a newly erected building is, "Of what style is it?" The question is in itself a condemnation of our architectural condition. Not until the answer, "It is *Art Nouveau*," be possible will architecture have reached a development which will entitle it to stand with the other arts as an expression of the spirit of the times.

Do not understand me to imply that all precedent should be thrown to the winds. That would be like attempting to invent a new language. Rather let us sift the languages which we have inherited of such phrases and *motifs* as have outlived their usefulness and infuse into them such new terms as new conditions demand for their expression.

Miniatures and Their Value in Architectural Practice.

By BERTHOLD AUDSLEY.

MINIATURES of all styles of buildings and monuments in which ornamentation and figure-subjects are largely introduced, have been, and are being prepared to enable persons interested in their erection to properly judge of their appearance when executed. The everyday value of miniatures, built either in a temporary or a permanent nature, is not perhaps properly realized by the architectural profession. This lack of appreciation is much to be regretted, for if miniatures were more frequently made, there would be fewer mistakes made in proportions and grouping, and in the character and compiling of details. Perspectives may be more or less correct, but as a rule are misleading, especially when beautifully colored and enhanced by the addition of affected surroundings, which only exist in the artist's brain, and never can exist in the locality of the building when erected. Also other artistic properties, such as automobiles, street cars, and crowds of men and women, are introduced to make a taking picture. Such a picture is sometimes made to secure the approval of the design by the client, who is generally little versed in matters architectural, and who is, accordingly, unable to divest his eye of the glamour of the artist's cunning and come down to the proper criticism of the architect's design, even should the architect have been careful to show sufficient detail to enable any one to form a correct idea of what the building will look like. Then again a perspective shows a building from only one, usually the most favorable, point of view, and under such a condition displays two of its sides only. It is at the most an insufficient exponent, even if it is a fairly truthful one, of the architect's conception.

A miniature, on the other hand, if properly made to scale (scales ranging from 1 inch to the foot down to the minute scale of 32 feet to the inch) and carefully detailed in strict accordance with the architect's design, would make an honest statement of facts which cannot mislead any one, although he may be quite unskilled in architectural treatment. I mean when I say "carefully detailed" that all details such as all mouldings be shown in relief, windows pierced and glazed and sashes shown, doors built and paneled, chimneys carefully built and accurately placed, as well as all other details called for in the design, great care being taken to have all angles clean and sharp. From such a miniature the client can get a perfect idea of the building, whatever it is, which the architect proposes to erect for him, and approve or disapprove with perfect assurance and so avoid any ultimate disappointment. Another important factor is perhaps that it may show the architect, before it is too late to remedy it, any weakness which may show in the design, either in comparative proportions or in the grouping of parts when seen from all points of view. Should everything appear right, both the client and the architect can be absolutely sure the building will be a success so far as its external treatment is concerned. No such assurance can ever be positively arrived at from the inspection of a perspective or geometrical drawings.

There are different classes of miniatures which can be made to meet certain requirements, and which vary considerably in the labor necessary for their constructions, and also in the materials for the same. The most important of the classes can only be alluded to in this article with advantage, and that briefly, and cannot begin to give one any idea of the beauty of such miniatures executed as stated, whether it is an important interior built to the scale of 1 inch to the foot or a complete miniature of a village built to the minute scale of 32 feet to 1 inch.

The simplest class of work may be properly called "block miniatures," —scales 4 and 8 feet to 1 inch, — for this term conveys a correct idea of their simple treatment. In this case very little detail is shown,— only the main proportions of the building in correct proportion and position with respect to each other, dispensing with most of the details except the principal mouldings and cornices, etc. These are modeled correctly so as to get the proper projections,

Fig. I

Fig. II

Fig. III

Three Views of a Model of an English Country House and Tower

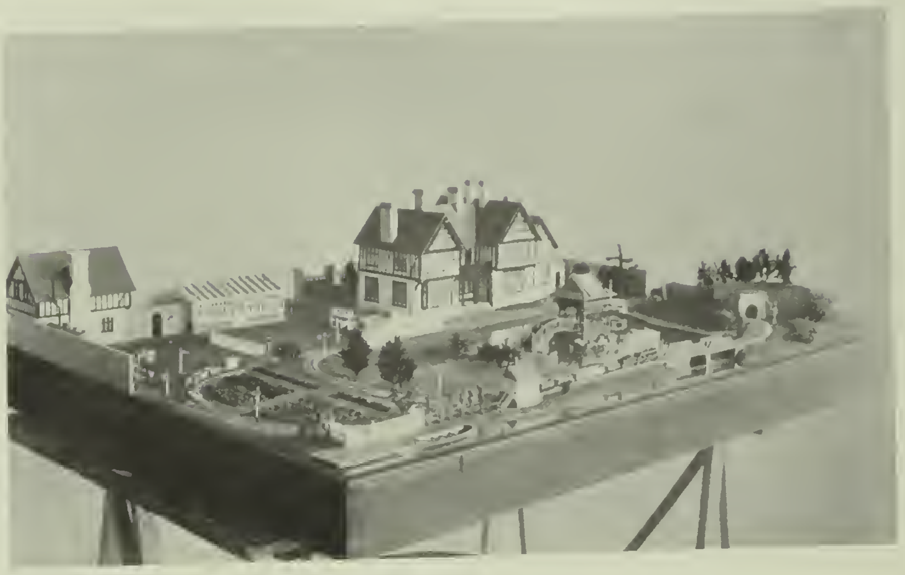


Fig. IV. Model of an English Country House and Estate

drawn and cut, and put together with a thick solution of gum arabic and painted in one color or several to represent the different materials to be used. It is very desirable that all students in the architectural schools all over the country should be taught architectural miniature work in its elementary stages at least, leaving them, should further tuition be impossible and having the inclination to carry the art of miniature making into its more advanced form, to work out the problems themselves, as it becomes a most fascinating and profitable hobby. Speaking from an experience of eighteen years in this direction, it would be impossible for a young architect to have a more instructive hobby, or one that would be better calculated to foster his interest in his profession.

also having the walls pierced for all windows and doors to get the correct recessing, etc. A miniature constructed on these lines, bald though it may seem, is extremely valuable in enabling the architect to judge correctly how his design is going to work out; how the different elements will group, whether artistically or otherwise when viewed from all sides. Every experienced architect knows how very different such a feature as a tower, constructed with stages of varied forms, appears when drawn on paper and when built and seen from different points of view, and it can be safely surmised that numerous towers and spires would have assumed more artistic and pleasing proportions and treatment had they been tested by correctly made miniatures prior to construction. These miniatures are also valuable for other purposes, such as developing and critically examining complex and unusual roofing problems, whether architectural or engineering. The best and indeed the only materials necessary for the construction of this class is stout cardboard, accurately

It is necessary to enlarge somewhat on the great advantages of using cardboard as the chief material in the construction of architectural miniatures. It is superior to every other material when properly handled. It is more durable and trustworthy than either plaster or wood. It becomes impervious to moisture and changes of climate, impossible in wood for any length of time, even if you could work wood to such small detail. On the other hand, cardboard can be more accurately and sharply shaped to all the usual architectural details, which include complex mouldings and pierced tracery work, than either plaster or wood. The construction of cardboard miniatures involves no objectionable mess, such as is found in using plaster or wood. It requires no very complicated tools or instruments, outside the usual drawing instruments, a knife, a few punches, a cutting edge, a simple circular cutter, a few perfectly true lead weights of different sizes, several sheets of plate glass to use as pressure frames and

Fig. V. Model of a Manufacturing Plant at Birmingham, England also to cut on — no other tools are necessary for any kind of miniature work ; but the chief tools will always be found to be the knife, cutting edge, and a sheet of plate glass. The cardboard must always be cut on plate glass, as this is the only material that will not turn the edge of the knife, if of good steel, of course. All the largest flat pieces, even the smaller ones, in fact, when gummed together, are best pressed between plate glass so as to give a uniform pressure all over. Of course the lead weights or even pieces of flat marble can be brought into play.

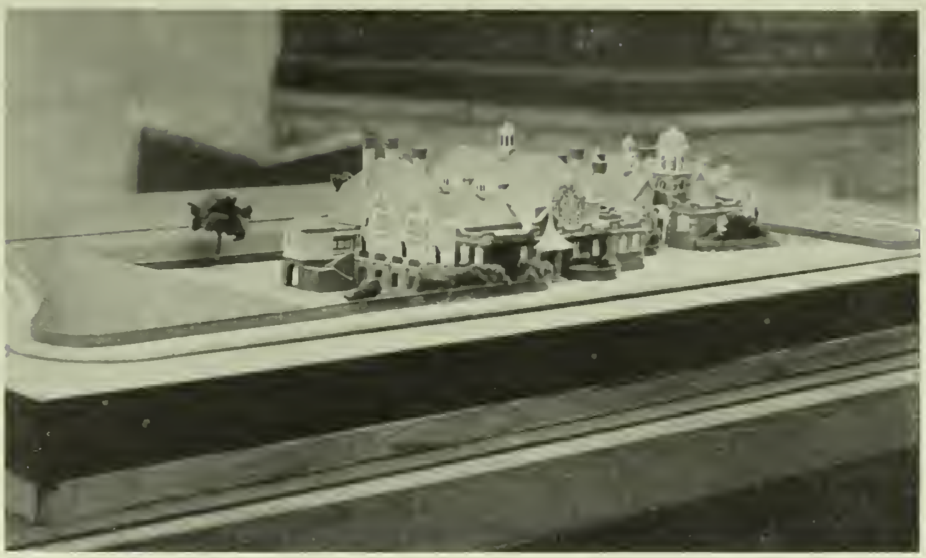


Fig. VI. Model of School at Port Sunlight, Cheshire, England

In many cases no other material but cardboard is used in any of the constructional work. Figures I, II, and III show examples of a half timbered house with prospect tower. Figures I and III show the tower from two views. This complete miniature was executed throughout of cardboard, with the exception of the glazing of the windows, which is transparent celluloid, and the two small shafts in the entrance archway. This piece of miniature work clearly demonstrates the great possibilities of this humble and little recognized material when skilfully and artistically handled. Even the richly carved and ornamented work in the gables, in the panels above the entrance, and on the beam ends is carved in thick cardboard.

The second class of architectural miniatures includes all those that are made on purely suggestive lines and are only sufficiently detailed and otherwise treated to convey a general idea of the dimensions and architectural features of the buildings represented. Miniatures of this class are useful for the purpose of showing, in an effective manner, arrangements of buildings and other features in town planning schemes and local improvements, and for conveying correct ideas of the grouping of detached buildings, such as are found in large institutions, colleges, and hospitals. Miniatures for the purpose just alluded to can, as a rule, be made almost entirely of cardboard, wood being used only for such details as columns, vases, etc., or any other details which can be formed on a lathe. Great elaboration is unnecessary, and ornamentation of any kind need only be represented in a very simple manner. It is a very common thing to see in miniatures, now frequently made by hands understood to be skilled in this work, most of the details merely drawn or painted on the perfectly flat surfaces ; but there is no necessity for this method to be followed by the artist endowed with moderate skill, who, instead of drawing or painting the doors, windows, and other details, can render all such details with their proper recessing and projections, by the aid of his knife, and other simple tools. It is as easy for a skilled artist to cut out a door or a window opening and

Fig. VII. Model of Cycle Works at Coventry, England finish it in an expressive manner, as to carefully draw or color it on a flat surface, so as to convey the idea of depths and projection.

Miniatures of the class described above are sufficiently expressive for all ordinary purposes, while they are not necessarily expensive. There is little doubt that two conditions have largely interfered with the more frequent use of miniatures in the profession: first, the difficulty commonly obtained in procuring them of a satisfactory character; second, the cost when they are constructed in any way approaching a truthful and artistic manner. The last condition must always be reckoned with, as all miniatures, if they are at all perfect, will take time to construct: but such a miniature so built will always be worth the time and money expended.

So-called "high art miniatures" are constructed as absolutely perfect as skill and materials can attain, taking into consideration the scale being used and with the view of permanent interest, or for museum or exhibition purposes. The miniatures shown in Figs. IV, V, VI, and VII demanded the greatest care and attention to detail throughout their formation, from the planning to the final touch, and the proper use of the numerous materials, which are not only beyond the power of cardboard and paint to successfully imitate, however cunningly manipulated, but are desirable in themselves, such as certain forms of iron work, marbles and granite, stained glass, choice woods, ornamentally worked or turned, or inlaid to represent parquetry (to proper scale). Notwithstanding the introduction of these adjuncts, cardboard must remain the dominant material if the miniature is to be lasting and in every way satisfactory in its character. The writer has already spoken of the disadvantages and the limitations attending the use of plaster and wood in miniature constructions and need not enlarge upon them here. It is enough to add that none of the miniatures illustrated could be made of plaster or wood in any way approaching their accuracy and delicacy, even if the question of their durability were not considered.

The miniatures illustrated in Figs. IV, V, VI, and VII are perfect reproductions of their prototypes, having every detail shown to scale. No one has any idea of the fascination of such a miniature, especially when the group of buildings is artistically built and colored in flat oils and surrounded by such accessories as roads with miniature trees — not merely pieces of sponge stained, or a lot of grasses or moss stuck around, but little trees beautifully constructed and treated for their foliage; also little scale automobiles, street cars, etc.; pretty rivers with boats, etc.; railroads with perfectly ballasted tracks and perfectly scaled trains (see Figs. IV, V, and VII). Figure IV represents a miniature — scale ¼ foot to 1 inch — built for a model engineering firm in London, England, showing a beautifully laid out private estate, with a miniature railroad running around the grounds, such as is seen in many of the large estates abroad. This miniature shows a fine English house, with its surrounding lawns, garage, greenhouse, tennis lawn, lake, river, and with a very beautiful little Japanese tea house in the center of the lake, with a little bridge joining it to the garden. This miniature was built to illustrate more fully the different accessories needed for such a miniature railway, which would be one-quarter full size, or 15-inch gauge, and, as they were perfect reproductions, the miniature was used to order from instead of keeping the different parts in stock.

The next miniature is that built of the Austin Motor Works, Birmingham, England (Fig. V), built to the scale of 16 feet to 1 inch and covering an area of 16 square feet. This shows a fine group of one-story buildings, surrounded by a layout of roads, grounds, and railroads, with all the fine details necessary. There is nothing out of scale, not even the automobiles, which are correct and yet are only ¾ inch long. Note how artistically the road which crosses the tracks is treated with its English hedges and old trees. This model was specially constructed for a lighting scheme, having all the windows and roofs pierced and glazed, so the miniature can be shown as if lighted at night by diffused light reflected through the buildings from lamps in the deep base seen in the illustration. The miniature was shown at several exhibitions abroad.

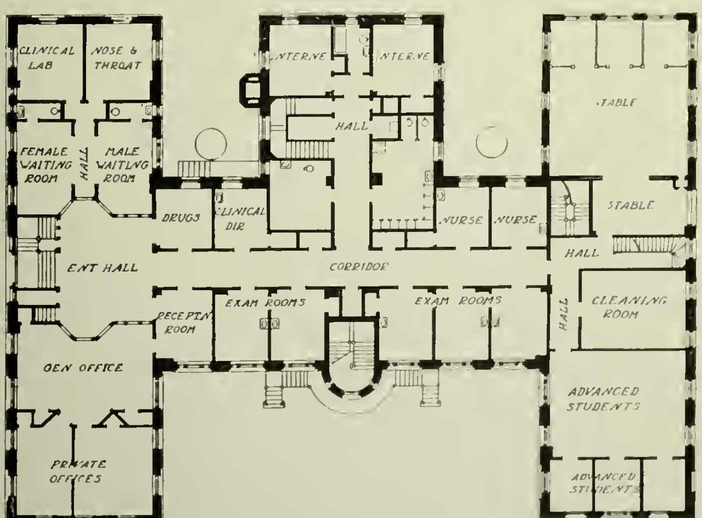
Figure VI is a view of one of the several hundred buildings used in the wonderful model of the village of Port Sunlight, Cheshire, England, and was constructed to the minute scale of 32 feet to 1 inch; every building being built to allow the passage of reflected light, having all the tiny windows glazed. The tiny building under consideration is a copy of one of the schools at that place. Every detail was shown in this little building, even to the ivy on the walls, which was not painted on but made of a special material. It will be noted that there is a sunken playground, entered by two sloping ways from terraces at the main level. The playground shown in this view is for the girls, the boys' is at the back. This little building is not 7 inches long, and to the top of the bell tower is only about 1¼ inches high. The reader can quite understand the experience needed, other things not considered, of fabricating such a miniature, first in laying out the different sides of the building, then cutting out and constructing same — some pieces not being more than 1/16 inch long — then the painting, needing the greatest care, as that branch of the work could ruin a fine piece of work very easily.

Figure VII is a miniature of the large Rudge-Whitworth Cycle Works, Coventry, England, also built to the scale of 16 feet to 1 inch, and was exhibited all over England by the said firm. It is a very interesting piece of work and shows some very fine and unique construction. In the miniature is shown a complete private telephone system, with poles and wires, perfect outside staircases, and in the foreground will be seen two double decked street cars, while the two directors' private automobiles are seen standing in front of the offices. This was also constructed for a lighting scheme.

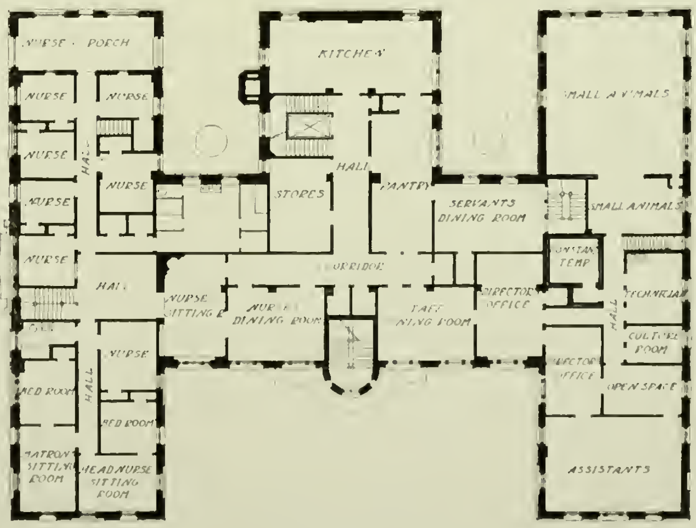
DETAIL OF ENTRANCE

THE HENRY PHIPPS INSTITUTE FOR THE TREATMENT OF TUBERCULOSIS, PHILADELPHIA, PA.

GROSVENOR ATTERBURY, ARCHITECT



FIRST FLOOR PLAN

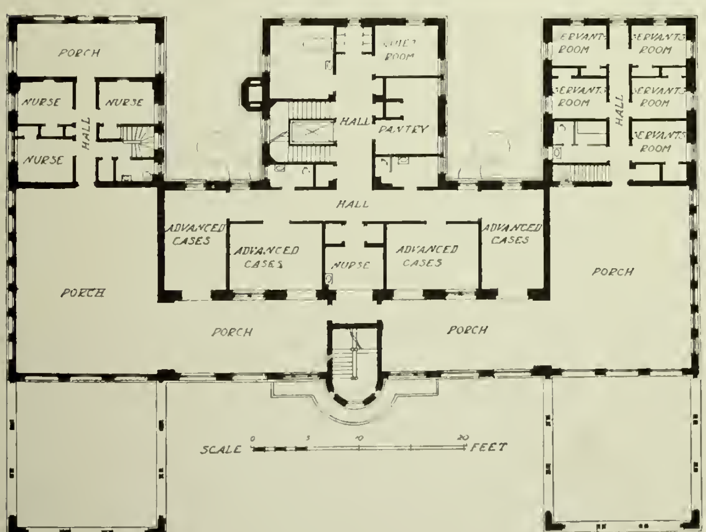


SECOND FLOOR PLAN

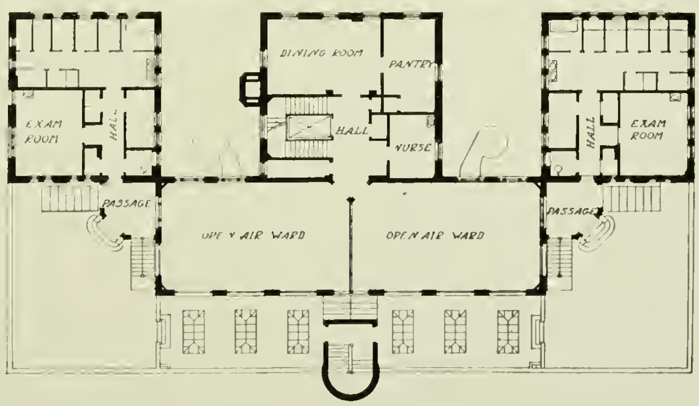
THE HENRY PHIPPS INSTITUTE FOR THE TREATMENT OF TUBERCULOSIS, PHILADELPHIA, PA.

GROSVENOR ATTERBURY, ARCHITECT

DETAIL OF COURT



THIRD FLOOR PLAN



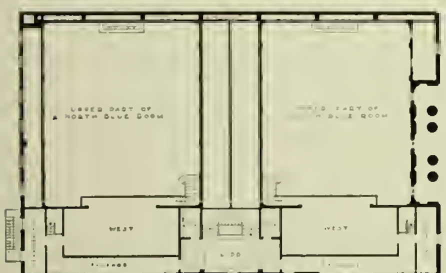
FOURTH FLOOR PLAN

THE HENRY PHIPPS INSTITUTE FOR THE TREATMENT OF TUBERCULOSIS, PHILADELPHIA, PA.

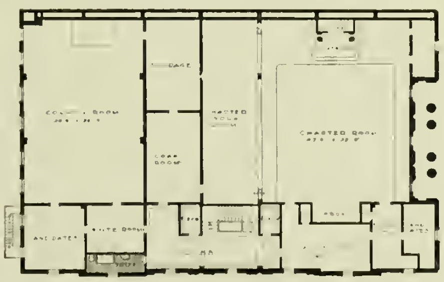
GROSVENOR ATTERBURY, ARCHITECT

MASONIC TEMPLE BUILDING, MEMPHIS, TENN.
JONES & FURBRINGER, ARCHITECTS

DETAIL OF ENTRANCE



SECOND MEZZANINE FLOOR PLAN



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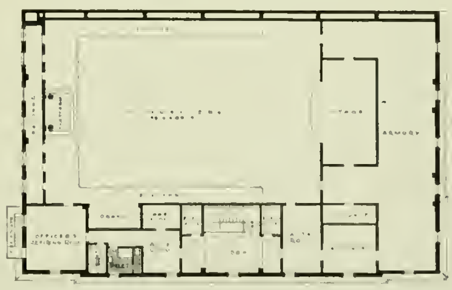

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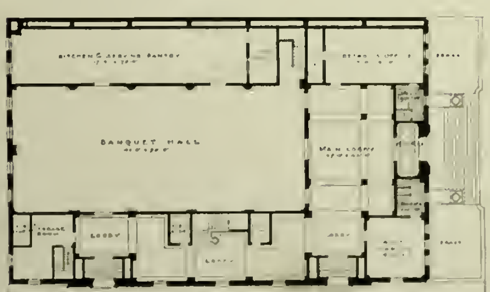

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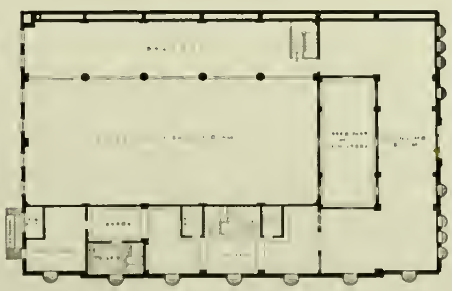

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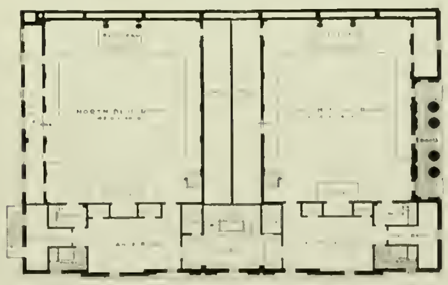
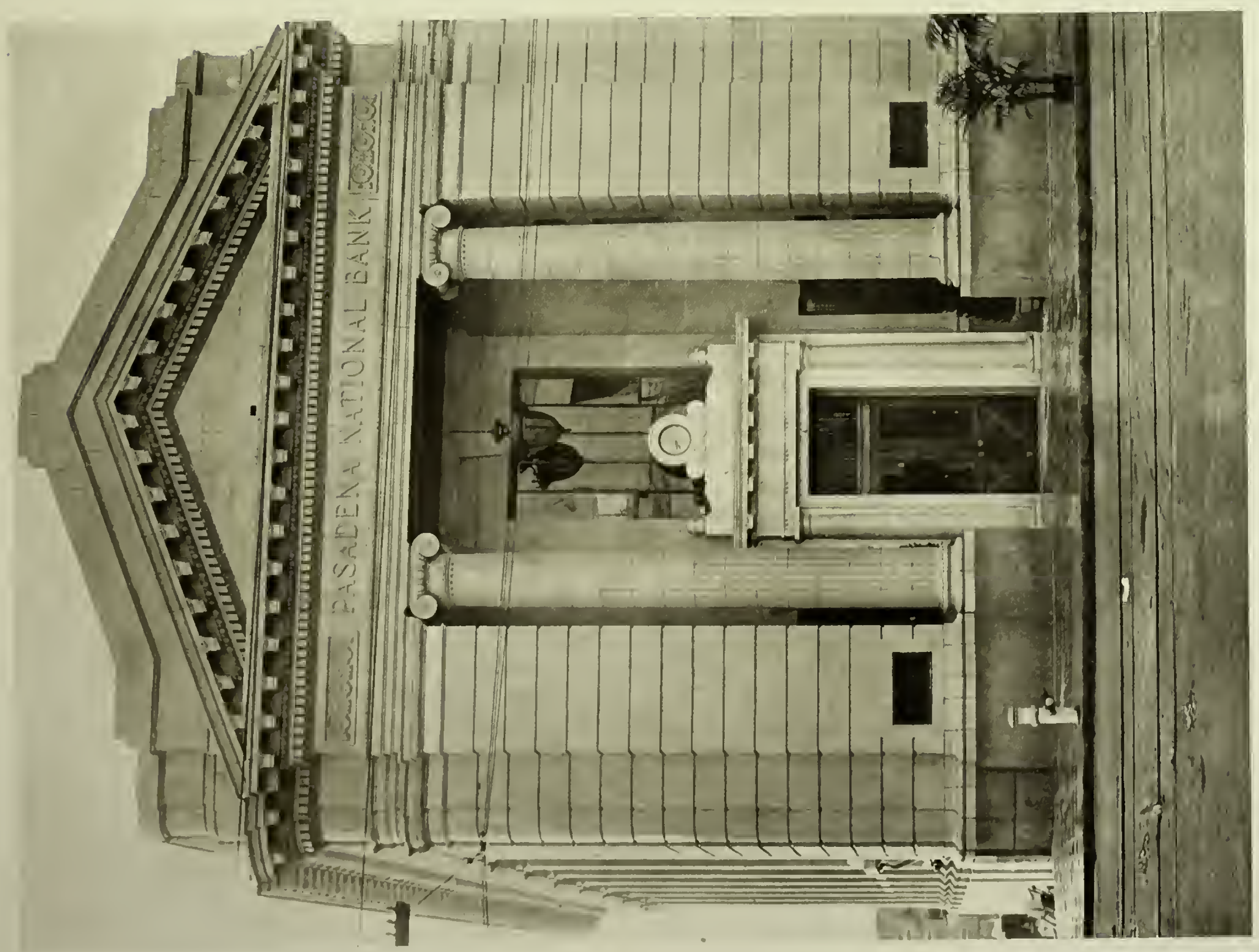


SECOND FLOOR PLAN

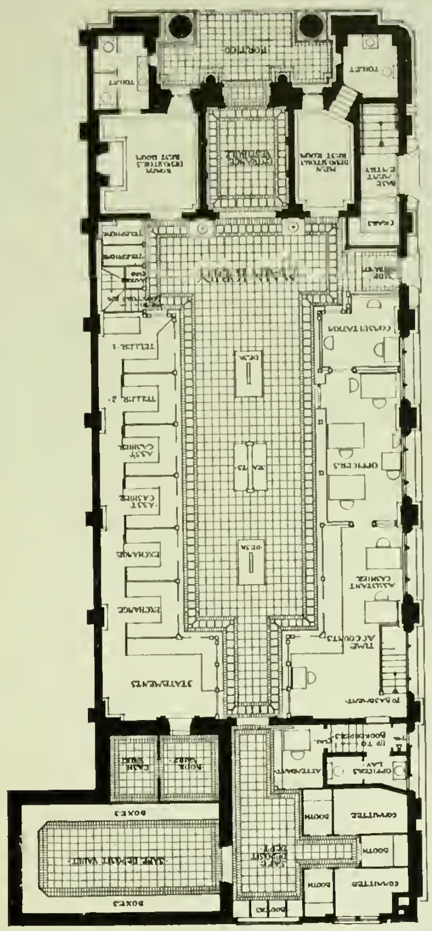
MASONIC TEMPLE BUILDING, MEMPHIS, TENN.

JONES & FURBRINGER, ARCHITECTS



ENTRANCE FRONT

GENERAL VIEW



FIRST FLOOR PLAN

PASADENA NATIONAL BANK BUILDING, PASADENA, CAL.

SYLVANUS B. MARSTON, ARCHITECT

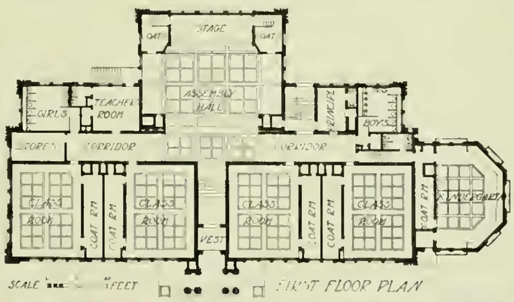
DETAIL OF ENTRANCE

INTERIOR LOOKING FROM ENTRANCE

PASADENA NATIONAL BANK BUILDING, PASADENA, CAL.

SYLVANUS B. MARSTON, ARCHITECT

ENTRANCE FRONT



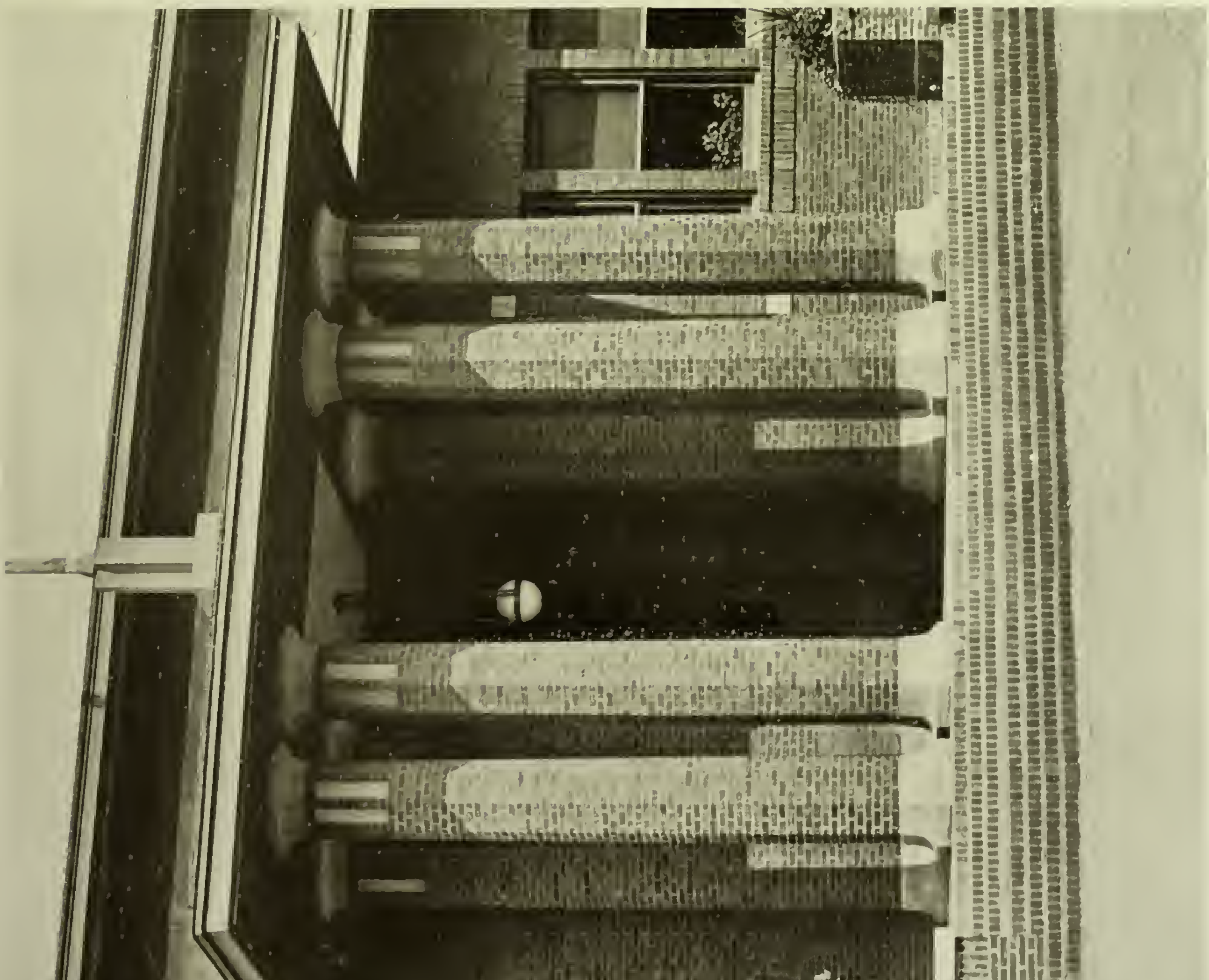
FIRST FLOOR PLAN

VIEW FROM REAR

JOSEPH SEARS PUBLIC SCHOOL, KENILWORTH, ILL.
GEORGE W. MAHER, ARCHITECT

ASSEMBLY HALL

CLASS ROOM

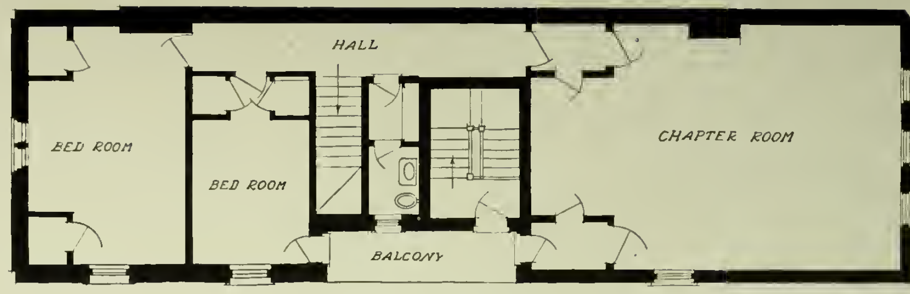


DETAIL OF ENTRANCE

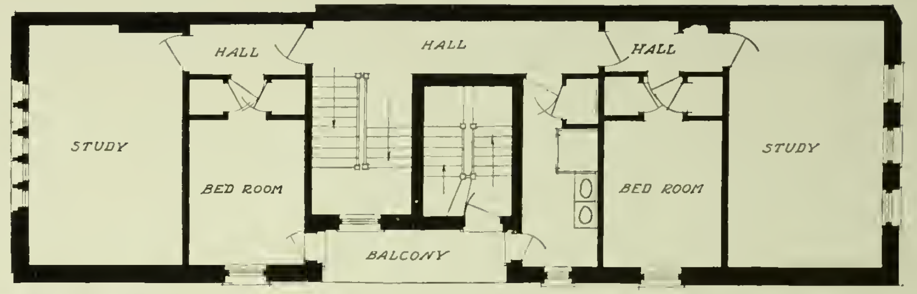
JOSEPH SEARS PUBLIC SCHOOL, KENILWORTH, ILL.

GEORGE W. MAHER, ARCHITECT

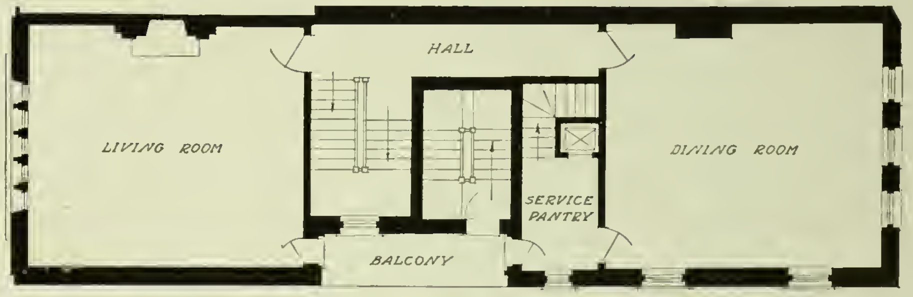
STREET FACADE



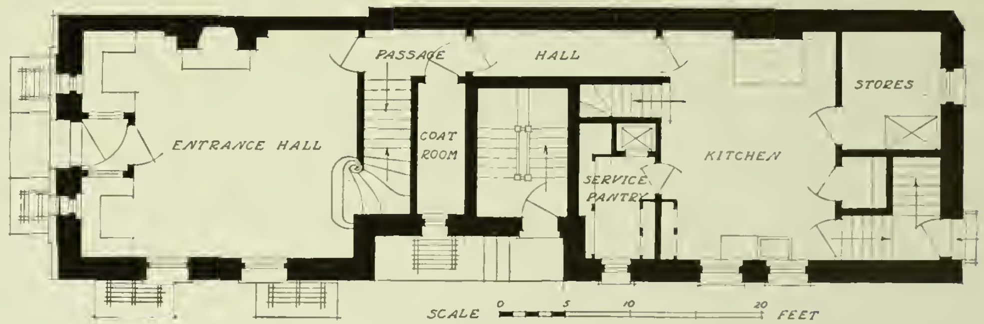
FIFTH FLOOR PLAN



THIRD FLOOR PLAN



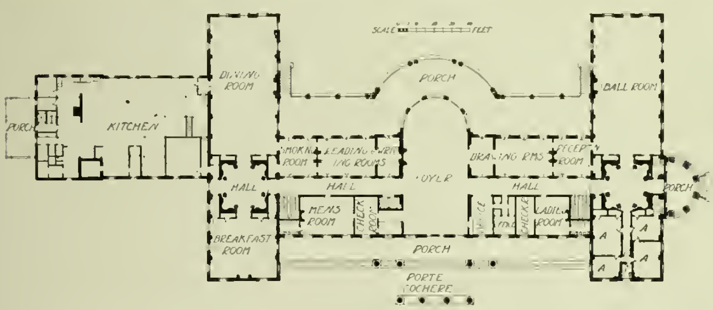
SECOND FLOOR PLAN



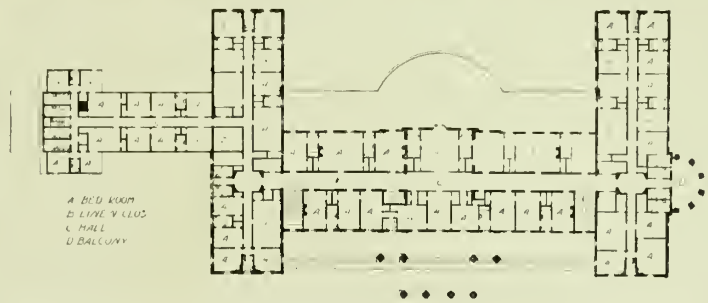
FIRST FLOOR PLAN

DELTA UPSILON CHAPTER HOUSE, PHILADELPHIA, PA.
LESTER KINTZING, ARCHITECT

ENTRANCE FRONT



MAIN FLOOR PLAN



TYPICAL FLOOR PLAN

VIEW FROM REAR LAWN

HOTEL O-TE-SA-GA, COOPERSTOWN, N. Y.

PERCY GRIFFIN, ARCHITECT

EAST FRONT

HOUSE OF JOHN W. GARY, ESQ., GLENCOE, ILL.
FREDERICK W. PERKINS, ARCHITECT

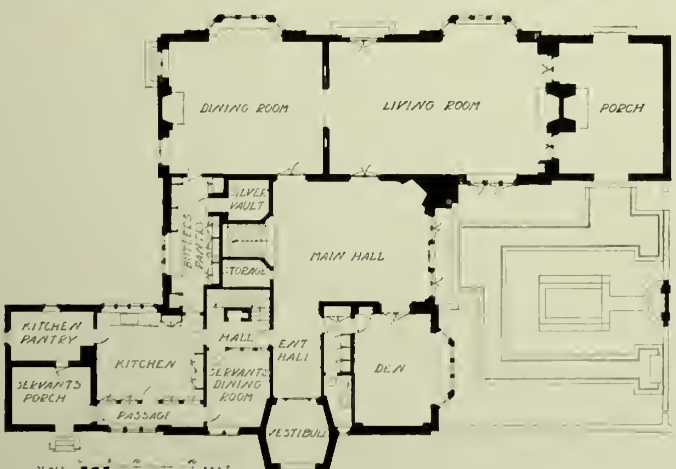
VIEW FROM APPROACH

DETAIL OF ENTRANCE FRONT

HOUSE OF JOHN W. GARY, ESQ., GLENCOE, ILL.

FREDERICK W. PERKINS, ARCHITECT

VIEW OF COURT



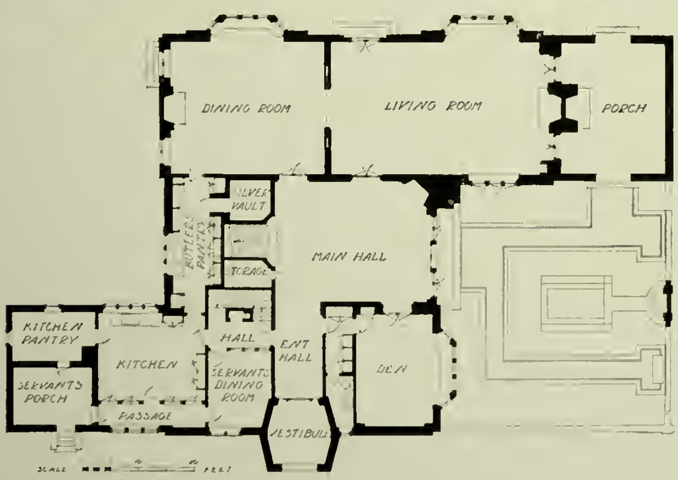
FIRST FLOOR PLAN

SECOND FLOOR PLAN

HOUSE OF JOHN W. GARY, ESQ., GLENCOE, ILL.

FREDERICK W. PERKINS, ARCHITECT

VIEW OF COURT



FIRST FLOOR PLAN

SECOND FLOOR PLAN

HOUSE OF JOHN W. GARY, ESQ., GLENCOE, ILL.

FREDERICK W. PERKINS, ARCHITECT

FOUNTAIN AND POOL IN GARDEN

VIEW FROM GARDEN

HOUSE OF JOHN W. GARY, ESQ., GLENCOE, ILL.

FREDERICK W. PERKINS, ARCHITECT

DINING ROOM

LIVING ROOM

HOUSE OF JOHN W. GARY, ESQ., GLENCOE, ILL.
FREDERICK W. PERKINS, ARCHITECT

The Atelier System of Architectural Education in America.

By AUSTIN W. LORD.

IN a previous paper emphasis was laid upon the absolute necessity of thorough qualification on the part of students before entering upon an architectural career, and let it be remembered that one should be fully satisfied of a real interest in and taste for things artistic; for without this inherent desire inspiration is lacking and only an indifferent pursuit of the art will result. Further, let the student be well equipped mentally and physically, and with the culture that a good academic training gives, he is in a fair way to secure recognition.

Coincident with architectural study there should be some definite and practical pursuit of the study of painting, more particularly, perhaps, as it applies to architectural embellishment. This would include general observation and study of work in the museums, and, if one has the opportunity of foreign travel, the study could be extended to the great mural decorations found in important buildings in foreign cities. This study and observation should include sculpture, as in the strict sense we cannot have a perfect piece of architecture without certain painted and sculptured accessories. Naturally, an interest in the arts of painting and sculpture will lead one to a study of the applied arts,—the art of the silversmith, the mosaic-worker, the wood-carver, the stone-cutter, to the design and composition of fabrics, furniture, stained glass, etc. It is almost impossible to name any art that does not, in one way or another, enter into the general composition and realization of an architectural undertaking, and, while it is, perhaps, impossible for a student to acquire knowledge through the medium of schools, academies, or offices in these various branches of his work, he can, as pointed out above, acquire a general knowledge through observation and study of work always in evidence in the museums, in the street, in monuments, in exhibitions devoted to the various productions in the applied arts, in the shops, etc.

The student having the general qualifications and tendencies outlined above, and who has a certain natural facility in drawing, is in a fair way to undertake successfully an artistic career. In Renaissance times it was not considered too much for an artist to undertake work in architecture, painting, and sculpture, and many of them produced beautiful work as silversmiths, bronze-workers, wood-carvers, etchers, and the like. We are taught in these times to believe that we must specialize in order to succeed, but I believe there is too much of specialization, with the result that we are content to do a very few things where, with a little exertion, we are capable of doing a great many. The tendency is to restrict and to interfere with the liberty of action which is so necessary to the artist. The artist should have the field of art opened to him, and he should be trained in a way to make him appreciate more and more its unlimited possibilities.

But with all of this preparation talent and opportunity, nothing avails without hard work and there is perhaps no other profession, certainly in the arts, that calls for such unremitting toil both day and night as the profession of architecture. This is particularly true in times of great competitions for important buildings and monuments, when every resource of the architect and his staff is called into play. It is generally under these conditions that the most successful work is put forth, and one must have that equipment born of natural ability and thorough training to be at all in the running. Therefore, let no man attempt this work on the supposition that he is to become great through merely receiving impressions and through exercising his faculties without effort and without direction, for in such case his brother practitioner of more solid training and more rational point of view will in the end outstrip him.

Assuming that the student has actually made up his mind, it is important that he should be properly equipped with the simple tools of his profession.

Instruments. There are various makes of instruments in the market, those of French, Swiss, and German manufacture being of high quality. An application to THE BRICKBVILDER, or to any architect whom the student knows, will suffice to inform him where they can be procured, and the catalogues which these firms will gladly furnish will enable him to choose intelligently. A box of instruments may cost from $10 to $15 or $20 and upwards. I would not recommend the purchase of cheap instruments for this work. As one progresses the value of good equipment of this character is always in evidence. The same is true of T-squares, triangles, curves, and special instruments. Of inks, the best results are usually secured by the use of stick India ink ground in a saucer made for the purpose and carefully protected from dust. However, the bottled waterproof ink which can be bought all prepared is more convenient to use and gives excellent results.

There are many makes of drawing papers on the market, and the kind to be used depends in a great measure upon the character of the problem and the method of rendering. A trial of a few grades of good paper on different problems will enable the student to find one which will give uniform satisfaction. The usual paper comes in sheets of various sizes and weights, and where extra large sizes are required two or more sheets may be pasted together.

In addition to the above, students of the atelier should provide themselves with ink or color slabs, water-color boxes and sketch book or sketch block, scrap book for clippings and other architectural notes, portfolio for drawings, pencil rubbers and ink erasers, sponge or kneaded rubber, pencil holders, lettering pens, oil stone and oil, liquid gum, paste or mucilage, agate stylus, good quality of tracing paper in rolls, cross section paper, and an adequate supply of manila or ordinary detail paper used in architects' offices.

For the mounting of drawings there should be provided stretchers of various sizes, various grades of colored paper for borders (preferably gray in tone), paste pot, paste brushes, etc.

Of drawing boards little need be said — they should be of pine reinforced at the ends, and when above twenty-four inches in width should have an added reinforcement of cleats on one side. For small drawings, preliminary sketches, and exercises, special boards may be obtained. A convenient style of small board much used in the ateliers consists of an outer frame and a flush panel, over which the paper may be stretched and the edges forced into grooves and secured by small strips of wood without the aid of glue. Drawing tables may be purchased from firms who make a specialty of their manufacture. Table tops should be adjustable in a way to give a slight pitch to the drawing board, thus obviating the necessity of the draftsman bending too far over his work.

Students may provide themselves with brushes and water color, but no elaborate equipment of this kind is necessary. In the beginning two or three brushes for rendering are all that is required, and a water-color box containing five or six tubes of color is sufficient. In fact, the organization of the atelier would necessarily be under the direction of the Patron, who would advise his students in all matters pertaining to materials, equipment, etc.

To go more particularly into the organization of the atelier, we will assume that in a certain thriving town are a number of progressive young men who have received their education in the city schools, with perhaps some special training in certain branches. These young men are employed in architects' offices and have been encouraged to study architecture independently of their office practice. They have neither the time nor the means to attend a school of architecture in this country, much less abroad. At this juncture some one of the practising architects in the city offers his services, generally free of charge, as Patron of the proposed atelier. The atelier is formed with a *massier* and *sous massier* as the authorized officers, who look after the details of administration, etc., and maintain the general organization.

These ateliers are organized on the most economical basis possible. Owing to the fact that young men engaging in this work are generally of limited means and cannot afford any unnecessary expense, a cheap loft in the commercial part of the city can be secured at a low rental. Elevator and janitor service is generally not available. Heat and light often add a maintenance charge, but with a reasonable number of students, say twenty to thirty, the entire individual expense per month ought not to exceed $8 to $10. This expense is quite within the means of the average draftsman, and when this expenditure is compared with the expenditure of a college course, it will be seen that the student working under the atelier system is placed in a very advantageous position. He does not, of course, have the same advantages regarding academic instruction as the college man, but he makes up for it in a measure through his experience in office work at a certain remuneration.

With a view of supplying this scientific instruction, many of the colleges have organized courses in extension teaching in various cities and towns throughout the country. If students in the ateliers will avail themselves of the extension teaching courses, they place themselves quite on a par with the advantages of the average college student. It has been pointed out that men giving their days to office work and their evenings to atelier work and extension courses develop into quite as competent architectural draftsmen as those from our colleges, and they have the added advantage of practical experience in an office which to most young men eager to enter into business for themselves is a valuable asset. There are, of course, advantages both on the side of the courses given in our schools and the courses given in ateliers. In the schools young men cannot, under the requirements of a full curriculum, have time for practical office work. On the other hand, the men working under the atelier system have little time for the broad instruction to be secured in a thorough college course. Experience only will make up for this deficiency in either case; that is, experience in an office for the college man, and a longer term of study for the man studying under the atelier and office system. In other words, it becomes a matter of time as to when both classes of men will have arrived practically at the same proficiency by different roads. There are, however, many decided advantages in favor of the atelier-office system as it is thus far developed in this country. The men under the atelier-office system are perhaps a little more serious and a little more helpful to each other. The latter tendency is of vital importance in the success of any atelier. Without it the spirit of comradeship is lost, and any lack of co-operation and assistance between the various classes of men that make up an atelier generally results in failure. The whole success of the atelier depends upon the assistance one student may be able to render another, either in the way of advice, consultation, or in actual work upon the designs in hand.

The ateliers in the large cities and in the small towns as well are of necessity made up of a class of men of varied attainments. Some may have received their education in a grammar or high school, some in small colleges, others will have had only the advantages of a district school. They will have had varying degrees of office experience or no office experience at all. Some will have had instruction in free-hand or mechanical drawing, and others will be totally ignorant as to the most elementary requirements in connection with this work. This lot of students in a properly organized atelier can soon be moulded into a perfect working machine. The competitive side of the atelier work is ever an incentive to extraordinary exertion on the part of the student, and the fact that the student is put in a position where he has to depend upon himself, and where he gets proper credit for work performed naturally, tends to cultivate that enthusiasm which is the basis of successful work in any art. As before stated, the purpose of the foundation of the atelier system was to provide instruction for draftsmen in offices and for all those who desire to study architecture, but are unable to avail themselves of the advantages of a college course. The atelier system is quite fully recognized by the colleges, and at present about one-third of the total enrolment of the ateliers is from various colleges and technical schools in the country. From this it will be seen that the men competing under the atelier system cannot be classed under regular academic standards and that, therefore, scientific instruction should be given either in the atelier or through the medium of extension courses above referred to. Notwithstanding this lack of qualification, the general results shown have been so universally satisfactory that the atelier system is growing in strength and favor throughout the country. Under present conditions the only requirement for admission to the atelier is that a man shall have studied and drawn out the orders of architecture. The student can generally accomplish this in an architect's office, the night school, or the correspondence school, or the work could be done under the guidance of the Patron of the proposed atelier. The competitions extend over a period of ten to eleven months, from August to July, and are carried on through the medium of a series of programs issued by the Society of Beaux-Arts Architects in New York in consultation with representatives of the college and other ateliers. Programs are issued from time to time and the students work out their solutions in the form of a sketch *(esquisse)*, without the aid of any data in the way of photographs or books or other information given directly or indirectly. A certain number of hours are allowed for the preparation of this sketch, which must be the basis for future development of the problem. The credit award to the student by the jury in the final judgment is based not only upon his performance in the preparation of the sketch, but upon its subsequent development from the standpoint of composition, draftsmanship, and general presentation.

The "preliminary sketch" must not in any way be an elaborate production. It should be simple and straightforward in what we call indication; that is, it should be simple and direct in character and drawing. No detail is to be indicated. In other words, a broad suggestion of the idea in mind must be so simply indicated in the draftsmanship as to be capable of many different interpretations in the final development of the problem. A copy of this sketch is retained by the student, and the original is left with the officer or attendant in charge during the preparation of the sketch. A certain period, depending upon the character of the problem, ranging from four to seven weeks, is allowed for its development under the advice of the Patron. The aim in the development of the sketch is to carry out the ideas embodied without fundamental changes from the original scheme or *parti*, which might mean the elimination of his drawings from the judgment *(hors de concours)*, thus depriving him of any mentions or values. Experience has shown that this system encourages the student in the work of extensive study and observation both of books and of executed work with a view to acquainting himself with the various solutions of a single problem, and having once made a sketch and thereby formulated his impressions, to compel him to develop these impressions along systematic lines and in a certain fixed direction, instead of wasting his time in fruitless search after other solutions of the problem.

The final drawing *(rendu)* is generally forwarded to New York and judged by a jury of architects selected by the members of the Committee on Education, and composed of representatives from the various colleges and ateliers interested. All drawings bear the names of their authors and the school or atelier from which they come, but the names are covered as soon as the drawings are received for judgment, so that the jury has no knowledge of their authorship. Each drawing receives careful attention and its status is determined by a vote of the jury. To make these judgments of the jury as thorough as possible, the custom of having a preliminary jury inspect the drawings and group them according to merit into two, three, four or more classes, according to the number of drawings, has been found of great advantage. When the regular jury comes to give its judgment a much more comprehensive comparison can be made of the quality of the various drawings submitted. The double jury has the advantage of bringing competitive work under the scrutiny of at least certain members of the jury a second time and thereby gives opportunity for more thorough study of the respective presentations. It will be seen that in cases where four to five hundred drawings are submitted for a single judgment that a great deal of time and care is required. There are, of course, certain drawings that can be judged quickly and proper marks attached. There are other drawings that are difficult of judgment and consequently require more time and even two or three votes and intervening discussions to arrive at a decision. I refer to this to show with what care this work is conducted by the Committee on Education. The committee tries not only to give proper judgment, but to aid Patrons and teachers in the various ateliers and schools by writing criticisms directly upon the drawings to make more clear the point of view of the jury. This kind of criticism is almost universally demanded by the students of the ateliers; but up to the present time no system has been devised by the Committee on Education whereby full criticism can be given to each drawing. It would entail a great deal of time and expense which the committee is not at present organized to meet, but the aim is gradually to develop the judgments to the extent that they will more strongly supplement the work of the Patron and instructor and at the same time give needed encouragement to the student. It has been pointed out that the least qualification required of students entering the atelier is that they shall know something of the orders of architecture. This does not mean that they will be allowed to go on with advanced work without first having demonstrated their ability to do the orders as required in the regular program of competition. Even students of advanced standing profit by taking up the work in its early stages and carrying it through in a systematic way, and generally the only proof that the Committee on Education has in regard to a man's ability must be based upon the work he produces under the regular competition system. His work can then be compared with that of other students and the student himself has a chance to compare his work with others, and thus the status of each individual student can easily be determined. The students are grouped into classes and can be taught to better advantage in this manner than if allowed to pursue the course in a hap-hazard way. It is pointed out by the Committee on Education that the most elementary divisions of the society's work is known as "order problems" or "*analytiques*." It goes on to say, "success in problems of this class depends primarily upon a correct understanding and knowledge of the orders, — such a knowledge as would enable a student to design a doorway, a gateway, an entrance pavilion or similar problem with ease and accuracy, presenting some detail at a large scale, casting the shadows correctly, and arranging his drawings effectively on the sheet. It should not be concluded from the above that a design is considered poor and incomplete that does not in some way involve the use of one of the classic orders; quite the reverse is true, but the society holds that a careful study of these columns and entablatures insures invaluable training to the eye and memory of the beginner."

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Day & Klauder, Architects

Water Color Drawing of Dining Halls, Dormitory Group, Princeton University, Princeton, N. J.

Charles Z. Klauder, Delineator

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

IX. THE WORK OF CHARLES Z. KLAUDER.

MORE purely an architect than most architectural renderers, Mr. Charles Z. Klauder constitutes with Mr. Frank Miles Day the firm of Day & Klauder, of Philadelphia. For several years before Mr. Klauder's entrance into the firm he was a draftsman in Mr. Day's office, and practically all the renderings he has made have been of the work of that firm; and as most of the work which Day & Klauder have done has been in the Gothic style, his renderings cover a less varied field than has been the case with most of the other men whose work has been discussed and illustrated in these articles.

The present-day tendency, emphasized in this firm's work, to design college buildings in the so-called traditional Collegiate style, is constantly becoming more notable, not only because the number of buildings thus designed is increasing, but also because the standard of design is with each successful building gradually being raised, and it is, curiously enough, to some of the Philadelphia architects that much of this improvement is due.

The General Theological Seminary in New York, which was designed by Mr. Charles C. Haight, is perhaps the earliest and still one of the best of these Gothic college buildings; but the real rise of the modern use of this style began when Mr. William A. Potter designed the library at Princeton and Cope & Stewardson showed how wonderfully this style could be used in their buildings at Princeton, Bryn Mawr, Washington University at St. Louis, and in the University of Pennsylvania. To the influence of their most excellent example we can attribute the vogue which this style is enjoying, not only with our architects, but with our college authorities, so that one by one our great universities, with few exceptions, have planned their new buildings in this style. Columbia and the College of the City of New York, distinctly city colleges, have not followed it; Harvard, with strong classic traditions, has adhered to them; the new buildings of the Massachusetts Institute of Technology will likewise be executed in the classic school; but Yale, after experimenting with the modified French of the dining halls and Woolsey Hall, and the modified Georgian of Woodbridge Hall, has come back to the English Gothic, and Messrs. C. C.

Crayon Sketch of Detail of Dining Halls, Princeton University
Charles Z. Klauder, Delineator

Water Color Drawing of End of Hamilton Hall, Dormitory Group, Princeton University
Day Bros. & Klauder, Architects Charles Z. Klauder, Delineator

Haight and Githens have designed practically all the later work at Yale in that style.

At Princeton Mr. Cram was appointed supervising architect, and under his direction various firms of architects, including Day & Klauder, have been working, if not with equally excellent results, at least with more or less uniformity. The United States Military Academy at West Point has been largely reconstructed by Cram, Goodhue & Ferguson in a very interesting and free Gothic manner; the Union Theological Seminary has been built entirely *de novo* by Allen & Collens in the same fashion, and Cornell, after many unsuccessful buildings in various styles, has finally turned to Day & Klauder for Gothic work.

The buildings thus enumerated constitute a formidable list, and yet by no means include all the work, or even all the notably good work which has been executed during recent years. If the finest buildings of the whole list were picked out, we would find that a very considerable portion of them were executed by Day & Klauder, so that in considering the renderings of Charles Z. Klauder we must bear always in mind that his work is not that of the consummate draftsman rendering the work of other men, but is rather a method by which the designer feels his way toward his ends. His methods of rendering are far more architectural than is usually the case: there is less *entourage*, less pictorial quality than is exhibited in most drawings; the architecture is preëminently the thing, and while the texture of the surface is sought after, the thing which he mainly tries to find is the appearance of the mass in perspective with the shadows indicated and the blacks of the openings accurately located.

Since practically all of his subjects are of uniform character and his method almost a fixed habit, it is surprising that his work is not monotonous. The fact that each of his drawings presents some new point of interest regardless of the similarity of the subjects and the uniformity in the way of treating them, is probably caused by his happy choice of viewpoint rather than by the intrinsic interest of the subjects indicated.

Now while his handling of line varies from such a rough approximation as he has used in the sketch of the detail of the dining halls, to the extremely formal and mechanical draftsmanship of the gymnasium for the University of Pennsylvania, there is little difference in the way in which he regards the subject: he accepts no adventitious aids by way of foliage, trees, and flowers, or fortuitous shadows, but permits his architecture to stand forth naked and unashamed, even with the interest produced by the sunlight firmly reduced to a mimimum. He depends almost entirely upon the comparison of the various masses in the different parts of the building with the interesting patterns produced by the mullioned windows indicated as strong accents against a monotone ground. Such a method might not be successful in indicating classic forms unless in a building of an unusually rich and varied character; but for the picturesque and complicated mass essential to produce a high degree of interest in Gothic forms, it is perhaps the best that we have seen, as well as being the most honest.

The drawing of the gymnasium the writer finds especially interesting because of the extreme simplicity of the way in which it is rendered, and the satisfactory result thus produced. One could hardly believe that a simple perspective with no *entourage* except the most conventional

Pencil Drawing of Gymnasium, University of Pennsylvania, Philadelphia, Pa.
Frank Miles Day & Brother, Architects Charles Z. Klauder, Delineator

possible indication of terraces and streets, and the suggestion of vines, and with practically no indication of texture or materials, could nevertheless convey so accurate an impression of the completed building. In looking at this rendering we are aware, although we know not how, that the building is of brick with stone coigns and belt courses; we know that there is a skylight extending along the entire length of the roof, and we realize the projections and reveals of the windows, although no attempt has been made to differentiate between surfaces on which the light would strike obliquely from those which would be exposed to its direct action. It would hardly be possible to reduce rendering to simpler elements; it would seem as if any office boy with a high school knowledge of perspective could accomplish the same result; but those of us who have tried to indicate our work in this very formal and inexpensive way, know that there is as much knowledge and skill behind this parade of simplicity as there is behind the most finished drawing of Otto Eggers. But such a sketch as that of the dining halls looks much more difficult, although it is in fact somewhat simpler, since a soft line easily passes for being "more artistic" than a rigid one, and dark shadows across a court will invariably add a sense of reality whether they are indicated accurately or not.

Crayon Sketch of Rear Entrance to Independence Hall, Philadelphia, Pa.
By Charles Z. Klauder

Between these two drawings lies the middle ground which Mr. Klauder habitually frequents. This is represented by the drawings of the Holder Tower, the detail of Hamilton Hall, and the drawing of the dining halls which compose a large dormitory group, part of which has been completed for some years, part of which is under erection, and part of which is still only contemplated.

The drawing of the dining halls is of them all perhaps the most interesting, probably because the design is itself as fascinating a piece of Gothic architecture as it has ever been the writer's good fortune to behold; and if this dining hall when it is erected so far transcends the drawings in beauty, as the parts of the group by Day & Klauder already completed surpass the drawings made of them, the writer believes that this will constitute the finest group of college buildings in the world, not even excepting the best that Oxford and Cambridge can exhibit.

To return to the drawing, the architecture has been left for the most part to tell its own story; the texture of the stone work is suggested rather than insisted upon. The slate roof is not specially well expressed, but vivid accents define the windows and their tracery, and Holder Hall at the left and Hamilton Hall at the right of the dining halls are indicated fully enough to show their relation to the dining halls, without being carried so far as to distract attention from the building which the picture represents. Yet even in miniature the drawing of the tower exhibits the quality of its design almost as well as the larger drawing; one feels that it is an accurate representation, and not a mere indication of mass and form. In the larger drawing of the tower (see Frontispiece) we are enabled to see some of the processes by which Mr. Klauder attains his ends: it is made on very rough paper, but with a surprising firmness of line; the textures of the surfaces are to some extent indicated by the surface of the paper alone, and atmospheric quality has been given to the sky by a pale but perceptible graded wash. In this drawing there is no indication of the divisions in the windows, which are colored in a solid tint, but the use of heavy graduated slate for roofing is admirably although simply shown. This, like all the other drawings, is characterized by a reduction of effort to a minimum, all unnecessary indication is omitted, and indeed the mechanical part of the drawing, although careful and precise, is apparently effortless.

The drawing of the end of Hamilton Hall is of not dissimilar character; the hedge, the walk, and the street are indicated in most conventional manner, yet completely; there is a simple indication of vines, sufficient perhaps for their purpose, although somewhat more attention might have been paid to them without losing the general effect. It is almost the sole criticism which might be made, but it seems as if simplicity had here been carried too far.

It may be interesting also to compare the dates at which these drawings were made: that of the gymnasium was made in 1903, the Holder Tower in 1908, the end of Hamilton Hall in 1911, the dining halls in 1913, the detail of the dining halls in 1914. This would indicate that Mr. Klauder's work had developed slowly and gradually from a very mechanical style to one quite as accurate but far less rigid. Yet we find that the sketch of the rear entrance of Independence Hall was made in 1897, and there is perhaps no one of his drawings which exhibits greater facility and freedom from mechanical perspective than this; and from this we can know that it was not necessary for him to develop indication or freedom of line, but that this and his sense of composition were his birthright.

The Architect in Cost Plus Contracts.

By WILLIAM L. BOWMAN, C.E., *of the New York Bar.*

THE most common and familiar form of cost plus contracts is termed the percentage contract where the contractor is paid a certain defined cost of the construction work with a specified percentage thereon as compensation for his overhead expenses, personal services, and profit. Another form of these contracts is the cost plus a fixed sum contract where a specified fixed sum is added to the defined cost to cover the items just mentioned. As this sum is usually calculated upon a certain percentage of the estimated cost, it ordinarily amounts to the same sum as the percentage. This is especially true since such contracts usually provide that if the magnitude of the undertaking is increased, the fixed sum to be paid the contractor shall be increased in the same proportion that the fixed sum to be paid bears to the cost of the original undertaking. There is still another form of contract which properly comes under this appellation, namely, where the owner agrees to pay for all labor and materials and give a building superintendent a fixed weekly or monthly compensation for ordering materials, hiring men, and generally taking complete charge of the construction work. Is the legal position of the architect any different in such cases than in the ordinary lump sum contract? Are his duties and responsibilities any different?

Generally speaking, both of these questions can be answered in the negative. However, since the architect must act as the owner's adviser in the matter as to what form of contract is most advantageous and economical under all circumstances, there are several points regarding these cost plus contracts and the relations, rights, and liabilities created by them that are worthy of some attention. In his rôle as the protector of the owner's pocketbook, a knowledge of the good and bad features of such contracts is essential.

The ethics of the architectural profession call for the payment of services in certain percentages of a defined cost. Thus the architect works under the form of a percentage contract. Why does he as a rule discourage this familiar form of contract for the contractor? The predominant reason as given by the contractors is that since they favor it, the architects must necessarily disapprove. To-day the two real reasons for the architect's position on this subject are: first, the distrust of the contractors due to their reputation in the past; and, secondly, the fact that the architect has much more detail work in his superintendence under the cost plus contracts than in the usual uniform contract. He must keep more assistants on the work to properly check the costs of materials, labor, etc. This also requires more time of the architect himself, since he must keep closely in touch with his assistants and with the work so that he may know that they are not being misled or deceived. Are there not advantages to the owner which should ordinarily make him glad to pay for the architect's extra help and somewhat more, if required, for the extra personal service?

Under the lump sum contract, when the contractor finds that he has a losing job, he naturally does everything to save himself. He is especially keen on trying to get the architect or the owner in a position where he can stop the work and claim a breach of the contract. If his losses are going to be large, the work is stopped and he takes his chance in a lawsuit with the owner. There are always constant quarrels between the architect and contractor as to what the specifications mean or specify and as to whether certain work is, or is not, proper under the contract. The owner is necessarily drawn into the differences and the unhappiness caused can hardly be measured in financial terms. It would seem that the use of the percentage contract with a maximum limit of liability for the owner would assure the latter more nearly what he wants and what he is paying for, provided the architect gives the work the proper supervision for that kind of a contract. It should eliminate the trials and tribulations above enumerated for both the architect and owner, and in addition save the owner from the burdensome and costly completion after defaults with the inevitable lawsuits and their attendant expense and delay. It should cause the architect and contractor to vie with each other to see that the owner gets exactly what he wants instead of making them the enemies they are ordinarily. It should be noted that this form of contract increases the competition between the large corporations with heavy overhead, expenses and the little contractor whose office is in his house, since the percentage paid has to cover these items in both cases. Until some more accurate determination of contract work becomes fashionable, such as the widely suggested quantity-surveying plan, there is no question but that under ordinary circumstances a properly drawn cost plus contract is the most advantageous for all concerned. The owner's special plea for economy and cheapness must be governed by the definition of "cost," by the percentage or fixed sum paid, and by a maximum liability under all contingencies.

Cost of Work. As the architect has found in his own contracts for services, there is one point that cannot be too carefully stated and understood, namely, what elements are to be considered in the "cost" upon which the percentage is based. Those specially interested in this matter from the architect's standpoint are referred to the April, 1913, issue of THE BRICKBUILDER. A case just decided covering this question involved the following facts: An architect had the usual contract for a fixed percentage based, however, on the "cost of the contracts." A contract was given for the entire work at $7,500. When the work was within three weeks of completion the owner was unable to make a payment then due the contractor. This failure of the owner, due to some difference with the loan company, gave the contractor the chance he was looking for, and he immediately declared that the owner had broken the contract and therefore he was stopping the work and would claim the value of the work done to the time of stopping. The fact was, that the contractor had known for some time that he could not complete the work for his contract price, and that if he had to continue it would cost him from $1,000 to $1,500 more than he was to receive. As the owner was in a hurry, he finally promised to pay for the unpaid materials and labor, and pay for the necessary material and labor to complete, and also a weekly salary to the contractor to act as superintendent for the completion, limiting it to three weeks. After the house was completed, believing he had a grievance against the architect, the owner refused to pay him a balance due, which resulted in the filing of a lien and an action to foreclose the same. At the trial the owner admitted that he understood that the architect was to get his percentage on the cost of the house. It was proved that the cost, with the troubles above mentioned, was $9,000, and the court held that the architect could charge his percentage on this actual cost, and that he was not restricted to what it should have cost, or $7,500, had the contractor done as he agreed to do. This case is also important in that it shows that "cost" means what it says, irrespective of the causes for its amount.

Just lately, in a very important building case, the question as to what was a reasonable percentage was raised. The experts who were called upon to give opinions upon that matter seemed to agree fairly well that 10 per cent was fair and 15 per cent a maximum, without taking into consideration that the percentage must depend upon the basis or definition of "cost." Let us see if they were correct in their general opinion.

Ordinarily "cost" to the average person means only money spent at or near the construction work for foremen, mechanics, laborers, etc., and for materials actually incorporated in the construction or wasted in its construction. Such a person usually fails to remember that this does not include such actual costs to the contractor as official, engineering and clerical salaries in large firms or corporations, rent, etc., of spacious general offices, interest on money invested in office, plant, equipment, depreciation, etc. It has been found that these items for a big corporation doing large work vary from 5 per cent to 20 per cent of the "cost" of labor and material on the job. For this reason the ordinary 10 per cent upon such "cost" often represents little or no profit for the contractor, although the owner usually considers it all profit. What percentage might be fair under certain circumstances is well illustrated by a rather late case in the West.

The laws of a certain western state provide that the state shall pay for excavation of waterways and filling in of tide lands at cost plus 15 per cent. A state contractor for this work sublet his filling work to a subcontractor at 15 cents per cubic yard. The contractor's supervision, engineering, etc., cost him 1 cent per cubic yard, so that this basis of 16 cents was certified as the cost to which the 15 per cent was added. When the assessments were attempted to be collected, they were resisted and in the resulting lawsuit it was proven that the actual cost to the subcontractor to do the work was but 12 cents, giving them a 3-cent profit. The first court held that the cost heretofore certified should be reduced by this 3-cent profit; but the Supreme Court held that the cost was 16 cents to the contractor, and there being no proof of any fraud, he was entitled to use that as the basis for the calculation of his percentage of profit. Thus instead of paying what was supposed to be 15 per cent of cost, the failure to stipulate that there should be no subcontracting unless the subcontractor's cost should be considered the contractor's cost, caused the state to pay 38 per cent upon the "actual cost," or 53 per cent upon the "cost" as that term is ordinarily considered. Yet, as was well said in that case, there was no showing but what this was a fair charge for the state to pay for the work.

This failure to prevent subcontracting is even more strongly shown in a New York case where a contractor on a cost plus 10 per cent contract was held to be entitled to charge his 10 per cent on various subcontracts which he had given to the subcontractors at their cost plus 10 per cent. In other words, he actually collected 21 per cent on the "cost" to the subcontractor. In still another case an interesting conclusion was reached. A railroad grading contract provided that the contractor was to receive payment of wages for actual labor, payments for powder and fuses plus 10 per cent of said amounts which were to be in full for all advances, shanties, pay of foremen above ordinary labor, general supervision, clerk hire, agents, personal care, etc. Upon receiving the contract, part was sublet and the contractor charged his 10 per cent upon the subcontractors' charges to him. The court held that since there was no specification against subletting, and as "wages" might be paid either for time or piece work, hence payment made to subcontractors were "wages" for actual labor upon which he could properly charge his 10 per cent.

These are but a few of the cases which show that as a matter of fact 10 per cent upon the usual basis of "cost" is really a very small percentage, which ordinarily would give the contractor little or no real profit. These cases also show that an owner may pay from 20 per cent to even 50 per cent on the usual "cost," and yet only pay what the work is reasonably worth. In this connection the owner eliminates the extra charge which a contractor always adds to his bid to take care of unknown contingencies. As a matter of policy, it is naturally much preferable to make the defined "cost" include all possible expenses of every nature and keep the percentage down, although for purposes of giving a greater range to competitive bids it may at times be deemed otherwise.

These cases thus show that the protection of the owner depends largely upon the contract provisions regarding subletting. Of course a general contractor must be permitted to subcontract his plumbing work, since that class of work is in many cities restricted to registered and licensed plumbers. Again, a general contractor who makes a specialty of foundations and mason work should be permitted to subcontract his steel work, since he could not possibly do that character of work as cheaply as the others making that a specialty. Hence this is where the architect should be given some discretion to approve or disprove of subcontracts and their amounts, since the cost to the owner depends so largely upon such subcontracts.

The care with which the definition of "cost" must be scrutinized is well shown by a very late case in which the "cost" was fully defined, but unfortunately for the owner contained the phrase "cost of accidents." During the work an employee of the contractor's was badly hurt and recovered a judgment against them of $27,000. As this award was affirmed upon appeal the company had to pay, and they then asked the owner to reimburse them as it was part of the defined cost. The owner refused on the ground that it was not reasonable to charge him with such a judgment under the wording mentioned. However, the court ruled against him and held that the interpretation of the phrase by the company was correct and the owner must pay.

While these suggestions and cases show that the cost plus contract has its pitfalls for the owner, yet there are really very few of serious import, and the advantages suggested are so great that there are times when it would undoubtedly be of advantage to the architect to use this form of contract.

Architect's Duties. As has been previously stated, there is practically no difference between the architect's duties under the cost plus form as differentiated from the lump sum form. This is well illustrated in a late case where the owner refused to pay a contractor because the sidewalls were not watertight and because the same condition existed in the roof and around the windows. The contract was a percentage contract and the proof showed that the contractor had carefully followed the plans and specifications of the architect, which were very detailed. The court held that as far as the contractor was concerned the owner warranted the sufficiency of the plans, and hence there was no liability against the contractor on these scores. That opinion also meant that the owner could probably recover against the architect for the insufficiency of his professional work.

Hence we can take it as our general rule that the architect has the same liabilities and duties under these forms of contract as under the lump sum contract.

Relation of Owner and Contractor. There are times when it is essential that the architect should know whether the party doing the construction work is a so-called independent contractor or merely the agent of the owner. That question has been the subject of probably as much litigation as any other one matter, especially where questions of liability for accidents have been involved.

Clearly in our third form of cost plus contract suggested at the commencement of this article, where the owner hires a building superintendent only, the relation created would be master and servant. In such a relationship the owner becomes responsible for accidents and also for the result of the work. Some illustrations will show the differences in the relations. Where an owner made a contract with two partners to furnish teams and men for certain work, one of the partners to be always present as foreman under the direction of the owner's foreman; where the partners received pay as foremen at a certain sum per day and the men, materials, and expenses were paid for at cost and bills rendered therefore with a certain percentage added for profit, the court held that the partners were the servants of the owner. On the other hand, where a contractor enters into an agreement with the owner whereby he engages to purchase the material, employ the labor, and superintend and erect a building pursuant to plans in hand; where the contractor is to render a true account of purchases and payrolls, to use his best endeavors to secure material and labor at the lowest prices and guarantees that the workmanship shall be first class; where the owner is to pay the estimated net cost of materials and labor and a fixed sum called a commission, the court held that such a contractor was an independent contractor and hence he alone could sue a third person for the damages resulting from the negligent construction of a portion of the building under a contract made with him.

The test has been said to be, "Who has the general control of the work? Who has the right to direct what shall be done and how to do it?" Yet it has been held time and again that the right reserved to an owner to discharge any workman does not make the contractor a servant, and the same is true of the privilege of inspecting and supervising the work. It is only when the owner can and does attend to the details that the relation of master and servant is created. The mere fact that there is no contract and no plans, and that the person employed to do the work is paid by the day, does not create the relation of master and servant where the person is employed to accomplish a certain object, the mode, manner, and means being left entirely to the person's skill and judgment.

Thus we see that generally there is no more chance of the owner becoming a master and hence responsible for accidents, etc., in cost plus contracts than in the usual lump sum form. As this fear often causes the owner to refuse to use the cost plus form where it should be used, it is hoped that this may allay such suspicions and doubts.

Conclusions. Our considerations would seem to show that the cost plus contracts have advantages which some architects and owners have failed to take into account. Especially where it is used in connection with a maximum limit of cost it should give the best satisfaction to all concerned unless some means of accurate quantity surveying with a suitable contract is used, or unless the contractor or architect is dishonest. The owner may be safeguarded by the architect's careful attention to the following items: the contract definition of cost; the contract provisions regarding the percentage or fixed sum to be paid, subcontracts, maximum limit of owner's liability, and constant supervision with honest and accurate checking of all costs. If the owner were assured of the saving both in money and annoyance which is possible with this form of contract, he should be willing to pay the architect a greater compensation for his increased services, and also the additional expenses necessary for the proper checking of the contractor's figures.

DETAIL OF ENTRANCE
ESCUELAS MENORES, SALAMANCA, SPAIN

Some Old and Unfamiliar Spanish Buildings.

PART III. THE UNIVERSITY OF SALAMANCA AND THE PALACIO POLENTINOS, AVILA.

By ARTHUR G. BYNE.

Illustrated from Photographs Specially Taken by the Author.

THE "Catholic kings" (Ferdinand and Isabella) lavished much attention on Salamanca. First they built its Gothic cathedral; then, finding its celebrated university buildings too mean and unassuming for an institution which stood on a par with Bologna, Paris, and Oxford, they gave orders for its embellishment in 1480. Who were the architects who carried out this order has never been discovered.

The work proceeded little farther than the entrance to the Escuelas Moyores (the university proper), the entrance to the Escuelas Menores (the preparatory school), and the grand staircase of the university. By this time Charles V had ascended the throne, as is shown by the introduction of his German eagle. Whether this foreign-born king was too little interested in matters at home, or whether funds were not forthcoming, certain it is that the work was abandoned and the building remained, for the most part, what it had always been — little more than barracks in appearance.

The adornment ordered by the kings was carried out in the soft Salamantine sandstone, which, while very durable, is also easily worked, thus lending itself happily to the infinity of delicate *motifs* that make up Spanish Plateresque. Of the three features actually achieved, the first mentioned — the university portal — is the most renowned Plateresque example in existence, too well known to need illustrating here. The second and third, while less important, are still extremely interesting and full of character.

A first glance at the entrance to the Escuelas Menores, and one would say it had been executed in terra cotta; the same type of ornament in Italy *would* be terra cotta, and one's temptation is always to compare Spanish Plateresque with its Italian inspiration. But in Spain the style was much more decorative, much less hampered by thorough structural knowledge — the very reason why it succeeds in being distinctive. No one, in this instance, was worried by violating the accepted canon that a column should not stand in the middle of an entrance, and the result is certainly pleasing, wonderfully helped out by the three divisions above to hold the arms of Charles V. Indeed, one of the best things this foreign monarch did for Spain was to bring to it an extraordinarily decorative escutcheon. The inscription on the reveal of the arches is not a prank of students, but very carefully studied lettering, beautifully painted in dark red, and adds much to the general effect. One sees a great deal of it in Spain.

The staircase illustrated leads from a corner of the patio to the grand gallery above. It shows that association of highly concentrated ornamentation with severely plain walls, so characteristic of Spanish architecture, the walls, in happier days, having been hung with tapestries.

Spain was slow to relinquish its Gothic balustrades. Even long after other Renaissance forms had been accepted, the spindle baluster had not yet banished the more solid Gothic ramp, although, as in this case, Gothic was accompanied by mouldings and relief in the new style.

The theme of the carving is a fifteenth century bull fight quaintly conventionalized. The knights and ladies depicted are very Gothic; but this is offset by frequent use of the classic acanthus. Nowhere were the familiar scenes of everyday life so deftly and so constantly converted into ornament as in Spain. There are seventy-five feet of this particular relief (for the staircase is carved on both sides), and each episode of the national sport is more charmingly wrought than the last. When it comes to the turn, the place most difficult to handle any balustrade and newel, this unknown Salamanca architect has managed admirably by introducing a corner post, that hardly seems to interrupt the continuous band of relief.

Such a staircase carved to-day in stone would cost a prodigious figure; but it might be successfully worked out in terra cotta in combination with rough plaster walls.

This portal and the more celebrated one to the university proper open on to a charming little plaza. A statue of the great poet and professor, Fray Luis de León, stands here; and the surrounding walls — beautifully carved stone of gorgeous color, the stone that has caused the whole city to be known as Golden Salamanca — make the plaza and, indeed, the entire university precincts, a highly poetic spot.

Palacio Polentinos, Avila. Certainly the Spanish were but little influenced in their architecture by the material at hand. The city of Avila is cut from solid granite; and despite the density and hardness of this stone the carver never hesitated at either the abundance or intricacy of ornament favored in other provinces where the material was more amenable. What he produced, naturally, never arrived at delicacy; yet neither is it coarse and without feeling, but is instead wholly unique in quality.

Here, again, we see the typical patio column with stone brackets inspired by Moorish wooden ones; while farther Moorish flavor is imparted by the tiled wainscoting. The construction of this patio illustrates the illimitable confidence placed in stone by old builders, no weight being too great to rest on slender columns.

The Polentinos palace probably dates from the end of the sixteenth century. It is now used as a government military school.

DETAIL OF GRAND STAIRCASE
UNIVERSITY OF SALAMANCA, SALAMANCA, SPAIN

DETAIL OF PATIO
PALACIO POLENTINOS, AVILA, SPAIN

EDITORIAL COMMENT AND NOTES FOR THE MONTH

SINCE the publication of our editorial in regard to the imminent danger to works of architecture during the war in Europe, events have proved that these dire expectations have been more than realized, and that monuments which have survived the wars of centuries have succumbed to modern high explosives and to the punitive measures of a military autocrat. Making all allowances for the exaggerations of rumor, the destruction which has already occurred and has been acknowledged is irreparable, unjustifiable, and unnecessary. The Town Hall at Louvain, which was at first reported destroyed, has apparently been respected; but the Church of St. Pierre and the Library have been wantonly burned after any belligerents their walls may have harbored had been driven out. It seems a poor exemplification of the principles of intellectual advance that 150,000 volumes, which were open to the scholars of the world, should be destroyed to punish a local community who were probably mad with rage.

Church towers are apparently being used as targets, — repeated statements being made that range has been established by firing at the towers, — a convenient but unnecessary method. In many cases the deliberate jeopardizing of these towers by the defenders is quite as culpable as their attack by the invaders, but seems to have been considered essential in combating dirigibles and aeroplanes. That church towers, because of their elevation, should be made points of observation, is natural; but that they should be converted into platforms for machine guns, and thus deliberately draw the enemies' fire, seems an expedient which could be neglected. It is rumored that the fine tower of Senlis, used as a base from which to fire upon air craft, has been bombarded, fortunately with little disastrous result. The district through which the Germans have been forcing their masses to turn the allies' left flank is one full of the incomparable French Gothic of the thirteenth century. Soissons, Senlis, Noyons, Rheims, Amiens, Beauvais, have great architectural monuments which should be respected. Rumor again states that bombs dropped from dirigibles in most cases are falling near the cathedrals and churches, as they are conspicuous marks. Up to the present time bomb throwing appears to be effective for purposes of terrorizing non-combatants and doing malicious mischief. It has been inaccurate and ignorantly served. The Hague Tribunal wished to control its action, but the principal powers declined to assent. And, therefore, the cumulative efforts of genius and labor — the highest visual expression of the aspirations and beliefs of mankind, which if even slightly marred by individual vandalism are considered outraged thereby — are now subject to mutilation and demolition and are giving mute testimony of the brutality of war. Because these are shining marks, therefore are they attacked, regardless of the fact that they are the world's assets — not merely local monuments. Protests are being made, not only by neutral nations, but by bodies of artists and by civic officials — appeals that in the bombardment of towns certain areas shall be immune from attack and that no belligerents shall be quartered within those areas.

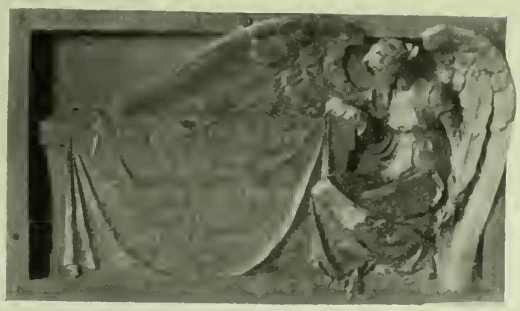
There has even been a rumor that if Paris were besieged, it should be surrendered rather than that its monuments should be destroyed by bombardment. Despite such self-abnegation as this would indicate, there seems to be no protection from the overhead attacks of the air-craft in the hands of men who have shown no regard for persons or things other than the desire to destroy. Here seems to lie the chief danger to the accumulated achievements of man.

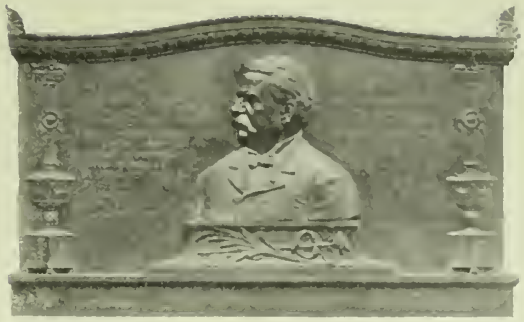
Imagine the results of a dirigible attack made in the enshrouding, overlying fog of a November day in London. Bombs with a radius of absolute destruction — not mere demolition — of from two hundred to three hundred feet, falling promiscuously, not with the intention of hitting definite marks. In the district of Westminster alone the Abbey, the Parliament Houses, White Hall, the National Gallery and its priceless collections, are among a few of the buildings which could not fail to suffer, even by the accidental fall of these explosives, and for what purpose? Almost entirely that of wanton destruction. The persons killed would be few and non-combatants. No munitions of war would be affected. The blow to the efficiency of the nation would be negligible, and the burning rage for reprisal and vengeance would only increase the world's loss.

It is one of the axioms of war that efforts should be directed where they will have the greatest effect in crippling the opponent. The destruction of the great buildings and collections of the world cripples none of the sinews of war. War has served as the subject of art, music, literature, and science. The portrayal of emotions and the knowledge fearfully obtained by the opportunities of the hospital are amongst the few glories which war can claim, and it seems an imbecile return for the recognition of war by the arts to destroy these records of the patriotism of the past.

AS the world grows older and the ages recede, the richer, the more precious, the more fragile become the ancient heirlooms of humanity. They constitute the final symbols of human glory; they cannot be too carefully guarded, too highly valued. But all the other dangers that threaten their integrity and safety, if put together, do not equal war. * * *

A nation's art products and its scientific activities are not mere national property; they are international possessions, for the joy and service of the whole world. The nations hold them in trust for humanity. The international force which will inspire respect for that truth it is our business to create. — *Havelock Ellis*, in the *Boston Herald*.





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THE BRICKBUILDER

VOLUME XXIII NUMBER 10

CONTENTS *for* OCTOBER 1914

PLATE ILLUSTRATIONS

LETTERPRESS

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CHURCH AT PERUGIA, ITALY
PHOTOGRAPHED BY PHILIP SAWYER

THE BRICKBVILDER

VOLUME XXIII OCTOBER, 1914 NUMBER 10

The Small Church

E. Donald Robb

WITHOUT a thorough understanding and a sincere love of the work of the church-builders of the Middle Ages, it is difficult to solve successfully the problem of the church as we find it to-day. Some knowledge of the methods and conditions under which these churches were built may lead us to a fuller appreciation of their charm.

The professional architect of the Middle Ages was a person unknown. In those days he was the "master of the works" or simply "master mason." He drew the plans, usually a crude draft of his idea, laid out the work, bought the materials, hired the workmen, and worked on the building in person. In the earlier Middle Ages workmen were sometimes members of some monastic order. Later on this work fell entirely into lay hands, but the method of procedure remained the same. The master mason or "cementarius" was, of course, trained in the knowledge of his craft, but in addition to this he was by instinct what the modern architect becomes after years of college training and European study. The works he produced were wholesome and natural expressions of himself and of his devotion to his church – qualities hard to get in these days of much learning. While there is doubtless much that we who are better trained in matters of proportion and practical planning can criticize, yet the buildings large and small, of the Middle Ages, have remained for six hundred years the object of our deepest admiration. Yes, there is much of the old work which we might say is downright ugly in proportion and crude in execution; and there is much modern work in which these two points are beyond criticism, and yet — we still love the old and are apt soon to tire of the new.

How pleasant it must have been for the master mason of those days to be able to work out his ideas in a sympathetic atmosphere, helped rather than hampered at every turn, and to have at his beck and call workmen not such as we are afflicted with to-day, speaking different languages and ready at a moment's notice to lay down tools and go on strike; but craftsmen whose every thought was to help in the production of a worthy building, where they and their families could worship for the rest of their lives and finally be laid to rest in the adjoining churchyard.

It is interesting to compare the conditions which produced the faultless little churches of the Middle Ages in England and the simple methods by which they were built, with the state of affairs in this day and generation, and the elaborate and unnatural processes which our "designs" pass through before the final certificate is issued. A comparison of these conditions and methods will fully answer the question, "Why is our church architecture so inferior to that of five hundred years ago?"

It is very true that the commercialism of to-day has rather forced the church into a position of less importance, and this, of course, is the fundamental reason; but along with this commercialism has come that intricate system of contracts and subcontracts, building laws, sanitary codes, specifications, approvals, and disapprovals, and all such routine work. It is small wonder that our churches lack that human quality which is the soul of the monuments of the Middle Ages.

While the desire to-day to do a building deeply religious in feeling — and even the feeling itself may be strong in the designer — this feeling does not always appear as conspicuously in the finished work as one could desire. This is not at all strange when we stop to consider the circumstances under which the building is brought to light, and the many things calculated to smother that highly elusive quality which is so important in a building dedicated to worship.

First the competition, where every one tries in a most worldly way to beat the other fellow and secure the commission; then the judgment of the designs, which, unless there happens to be a professional jury, and this seldom does happen with the small church, is left to an assortment of men whose knowledge of ecclesiastical art is limited to a few technical terms such as "nave," "flying buttress," etc. These gentlemen are presided over by a clergyman who is usually a cultivated man and has oftentimes made a more or less thorough study of the subject; but the sad point is that he is an employee, more or less, of the others, and has actually very little real authority.

If, however, the design successfully passes both intelligent and unintelligent criticism, the commission is given its author; then comes the preparation of contracts with the church authorities for professional services. After that, the preparation of the working drawings, with frequent misunderstandings with the heating engineer, who insists that the only place for the chancel radiators is directly in front of the altar, or with the organ builder who imagines that the architect is building the church for the sole purpose of providing a home for his instrument. Then the building code and the plumbing code must be thoroughly digested. By this time our faint, religious feeling begins to show signs of fatigue. Then the specifications with the sixty-three articles of approved "general conditions," enough in themselves to frighten away the last vestige of the above desirable quality, until at last our design is ready for estimating the cost. Then the bids are opened and the design which, by all the time-honored methods of cubing, should have cost $75,000, is found to cost $100,000. The architect is instructed to cut out $25,000 without altering the size or seating capacity. Perhaps the drawings will have to be entirely retraced, and then he sadly watches the heart and soul of the design slowly disappear in company with his profits. The final, but by no means the least, ordeal that one has to pass through is at the hands of that creature of modern conditions, the general contractor, working with an iron-bound contract, trying to keep his expenses within his estimate, about which he has had misgivings ever since he was awarded the work.

Is it any wonder that we cannot rival the builders of the Middle Ages when we have to carry our precious spark of religious spirit, which is to become the soul of our building, safely through this succession of unsympathetic and sordid experiences? And yet, in spite of all this, our church architecture has improved wonderfully in the last generation; it has kept good pace with the improvement in secular work.

Ecclesiastical architecture has always occupied a prominent place in the great art movements in history, quite as conspicuous at the low water mark as at the high. We are all too familiar with the cheap and tawdry structures that masqueraded as churches during the period of artistic depression through which we have just passed, with their foolish wooden buttresses and pinnacles, galvanized iron cornices and crockets, and contemptible ornamentation of all kinds. These fraudulent imitations that we have on every hand are rapidly being relegated to the scrap heap, or are being transformed, without much difficulty, into moving picture theaters.

Compare these flimsy makeshifts with those matchless little buildings scattered so plentifully throughout the length and breadth of England; with their very intimate and human qualities which command so much of our wonder and admiration, and the result is certainly a sad commentary on the religious sincerity of the years just behind us.

It was during this age, however, that the first stirrings of a revival of good church building commenced, in a very small way at first, the study of the old models rarely going deeper than the section of mouldings, or the patterns of the window tracery. But gradually the movement gained headway with the result that the last generation saw great changes in the art of the church.

Parish Church at Fairfield, England

Under the leadership of the Pugins this movement began in England and was continued by Scott the Elder, Bodley, Pearson, Sedding, and Paley; and in our own day by the younger Scott, Moore, and Nicholson. In this country the work was taken up by Upjohn and Renwick and continued by Vaughan and Messrs. Cram, Goodhue & Ferguson. In the hands of these men and their followers, there is hope that the churches of the coming generation will compare favorably with those of the Middle Ages. But, as art is a reflection of social conditions, we cannot hope to permanently establish a system of religious art without first producing those conditions which nourish it and encourage its growth. On the other hand, art is one of the most potent factors at the command of the church and, did she but know it, one of the strongest agencies in freeing the people from that spirit of commercialism and materialism which is her worst enemy at the present time. We can, therefore, by a sincere and painstaking effort to produce noble church architecture, assist in establishing a condition of affairs which will make it possible to progress still further towards artistic perfection.

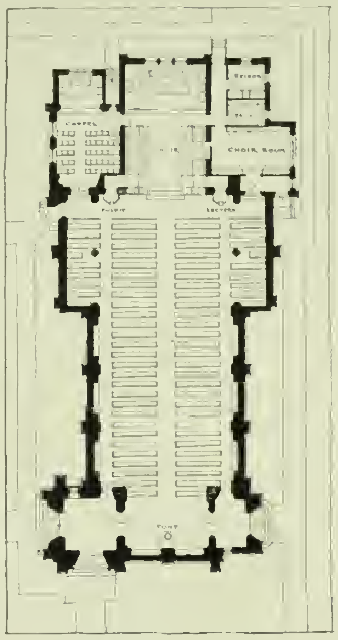
The Gothic style, elastic and pliable, and unfettered by the multitude of rules and restrictions that beset the student of the Five Orders, is capable of being moulded into forms which may in time become associated with the non-liturgical church. A good example of this may be seen in the Christian Science Church in Victoria Park, Manchester, England, illustrated herewith. While it is somewhat difficult to pigeon-hole this church in any historic style, it is undoubtedly Gothic if it is anything, and will serve to illustrate the extent to which the style may be stretched in the hands of one familiar with it.

Whatever the form of worship for which the church is to be built, from the simplest to the most elaborate, it must be dignified inside and out. It must bespeak the purpose for which it is erected — the worship of God — and should be characterized by a solemn reserve and dignity.

Dignity does not necessarily call for symmetry, although a certain balance is desirable, but restraint is absolutely indispensable. Anything forced or overdone will ruin it, and, above all, any attempts at "picturesqueness" should be avoided. Nothing should be allowed to spoil that influence which we like to think a properly designed building of any kind has on the community. On the other hand, a too apparent striving after dignity sometimes produces quite the opposite effect, and the designer spoils his work by disclosing his tricks.

And this brings us to the much mooted

question of honesty in design — not that this should apply to church building the least bit more than to any other structure; but in the same manner that we sometimes excuse an action in a hard-headed man of business that we would instantly condemn in the so-called church member, so we can tolerate an occasional sham in secular buildings that would seem like hypocrisy in the church. This may not be the ideal condition of affairs, but the fact remains that we must look to the church in all its parts as a model of honesty and genuineness.



Plan of a Small Church
Brazer & Robb, Architects

The question of what is, and what is not, honest architecture has been much discussed, and the tendency of some theorists to stretch the dogma to the breaking point has resulted in much scoffing on the part of others. But to state it simply, it seems to me that honesty is merely the absence of deception, or, in other words, the absence of such frauds in a building as plaster decorated to imitate marble, furred plaster arches with or without painted joints, false chimneys built for the sake of balance, windows with shades pulled down permanently to hide solid masonry behind, grained metal doors and trim, and the like. Such things should be avoided by any self-respecting architect, whether in a church or any other building.

As the church in its broadest sense is undeniably a permanent institution, its outward and visible form, as embodied in its architecture, should be as enduring as it is possible to make it, and only those materials which have stood the test of time should be used in its construction. We can surely learn much from the builders of the Middle Ages; for while their masonry was not always the best, at least they built solidly; and their work, which has been now standing five centuries and more as a memorial of their sincere devotion to their church, will still be in active service long after our flimsy structures, built to the minimum allowed by building laws, will have been forgotten.

Church of Christ, Scientist, Manchester, England
Edgar Wood, Architect

One requirement of the modern church which the medieval builders did not have to contend with is the provision of an unobstructed view of at least the pulpit from the majority, if not all the seats. In the days when the service of the church was a vital part of the religious life of the people, when the direst calamity that could overtake an individual was to be cut off from the privileges of its sacraments, the attitude of the individual towards the accommodations provided for him by the church was quite different from that of to-day. Consequently such minor matters as interrupted views, insufficient illumination, or lack of an adequate heating system were not deemed worthy of consideration.

But to-day the situation is different. We must be comfortable in our pew; our prayer book and hymnal must be well lighted; the temperature must be seventy and uniform, and we must see and hear as well from our pew as we do from our chair at the opera. This last condition is not always easy to meet.

The effort to obtain an arrangement giving a clear view of the altar, pulpit, and lectern first resulted in the theatrical plan still so common but slowly disappearing. While this may have been comfortable enough, we soon began to realize that it did not furnish us with the necessary religious stimulus that a more dignified and churchly type of architecture does, and so the best architects returned to the old arrangement that has stood the test of time, and began to search for the solution among the churches of the medieval period.

This return to first principles resulted at first in interior arcades supported by very slender columns often of iron.

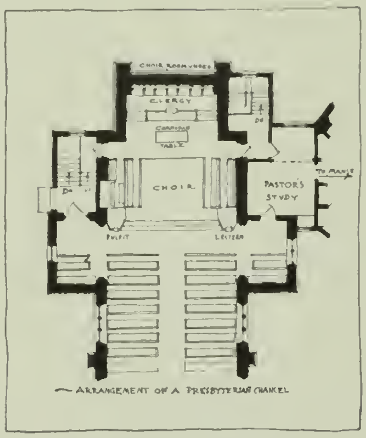
These were an improvement, perhaps, though a mere begging of the question without being a serious effort to solve it.

By far the most satisfactory scheme which will provide an arcade which does not obstruct the precious view is the familiar one of using the aisles merely for passageways (sometimes called "alleys") and not for seating; or by making these aisles wide enough so that chairs can be placed therein on special occasions and additional seats provided, the seats in the body of the church being used entirely by the regular members of the congregation.

As the majority of small churches with which we have to deal usually demand the maximum seating with the minimum cost or space, it is sometimes a problem to combine these two factors in a good design. The Gothic style is one that lends itself to inexpensive building, for it is content to appear in humble clothing, and, in fact, is much more attractive in common sandstone, brick, or limestone, with perhaps a simple plastered interior, free from pretense or false pride, than it is when bedecked with expensive marbles, imported woods, and costly but tawdry decorations.

Rules of proportion are seldom met with in Gothic architecture, but the following is the nearest approach to one that I have chanced to encounter, namely, the clear width of the nave should be as nearly as possible twice the length of the bay. Assuming that the bay spans five pews at 2 feet 8 inches each, we have a spacing of 13 feet 4 inches. The more nearly we come to 26 feet 8 inches for the clear width of the nave, the better will be the proportions.

The student of Gothic architecture is singularly free to determine the proportions of his design to suit his own fancy. The spirit of Gothic seems to take flight at the merest thought of being harnessed and handcuffed by rule and formula. In fact, the charm of many of the old churches is largely due to the absence of even a completely predetermined scheme. They grew in much the same way as a man develops, each problem being settled as it arose, each one leaving its imprint on the building. Is it strange that these little English churches should be so intensely human, that they should be so much a part of the countryside as the people and trees themselves?



Brazer & Robb, Architects

It is in this way only that we can create architecture that will have the freedom and humanness that characterizes the work of the Middle Ages. A man created full grown, with character fully developed, might be a work of art, but he could not be human.

Under the usual conditions prevailing to-day, it is next to impossible to work in any but the customary way, so we have to win our freedom by little pleasing irregularities of plan and elevation, by a door or a window off axis, if it comes naturally that way, and by a certain amount of variety in window tracery, pier sections, or arch mouldings. Carried past a certain point this is, of course, apt to produce restlessness.

It is usually well to secure as much interior height as the conditions will allow, and on this point we can learn from the English who seldom elevate their floors more than a step or two above grade, thereby gaining an additional height without extra cost.

In the church building where every economy has to be practised it is usually advantageous to make the spacing of the bays of the nave equal to the combined widths of five or six pews. In this way all nave piers will bear the same relation to the pews and occupy the space of one sitting only. Pews may be spaced as close as 2 feet 8 inches back to back, although 3 feet is an ideal which is seldom possible to attain in the small church. In designing the pew ends, a clear space of at least 1 foot 3 inches should be left for entrance, and care should be taken to avoid any braces or book racks under the seats which might interfere with kneeling. The minimum width of sittings is 1 foot 6½ inches, and the middle aisle should not be less than 5 feet to allow for processionals, weddings, and funerals. Side passageways may be as narrow as 2 feet to 3 feet, depending upon the number of sittings served by them.

There is a growing preference for chairs over pews which should be encouraged in every possible way by the church architect. The arguments in favor of them should be committed to memory. Perhaps the most important is the fact that they can be spaced to accommodate a large or small congregation. On special occasions an additional hundred or more can be worked in without any apparent inconvenience to any one; while in the summer months, when the congregations are small, they can be spaced as far apart as desired with a corresponding increase in comfort. They should be, of course, connected in blocks of four or five by a strip running under the seats to preserve the alignment. They can be easily moved about when the church is cleaned. They add greatly to the interest and beauty of the interior, the vertical lines of legs and backs adding to the effect of height, whereas the strong, horizontal lines of the old fashioned pews emphasize the width of the church. In selecting or designing chairs, it is important to preserve the same clear space underneath for kneeling as in pews.

Galleries sometimes have to be resorted to, but are seldom satisfactory unless they happen in the end opposite the chancel, where they can be successfully worked in above the main vestibule. Other galleries are altogether useless for seating purposes and invariably detract from the effect of the interior.

Transepts are usually of value both externally, where they may be useful in providing a foil for the long line of the main ridge, and internally where they afford variety, open up vistas, and give a feeling of extensiveness to the interior. They give space for overflow sittings which can be used during special services. On ordinary occasions these may be left unoccupied and the congregation grouped in the nave, where it will not seem to be so scattered.

Transept seats are not the most desirable — they usually have to face at right angles to the others, which is at once ugly and uncomfortable. The altar is usually hidden from view by the chancel furniture or the transept wall, and the acoustics are seldom good. However, they are sometimes a necessity, although they need not be either wide or deep, and they should never be as high as the main roof, unless the church be vaulted, for the cross trusses resulting from the intersections of nave and transept are an abomination.

The locations usually prescribed for the choir are various and depend somewhat upon the form of service. In liturgical churches they are either seated on each side of the chancel or in a gallery at the "west" end. The latter is quite common in Roman Catholic churches, although incorrect according to the Rubrics and has this serious objection, — the choir is forced to sing the processional and recessional hymns while climbing up or down a not-too-comfortable staircase.

If in a Roman Catholic or Episcopal church the choir is to be located in its proper place in the chancel, all effect of crowding should be avoided. The choristers should be seated in one or at most two rows of seats on each side with ample space between. The inner row need not be elevated above the chancel floor, as it is important to keep the choristers and choir benches from obstructing the view of the altar.

In non-liturgical churches, having no processionals, there are several places where the choir can be satisfactorily located. Perhaps the best from all points of view is to arrange the organ and choir in a gallery directly over and back of the platform, the overhang of the gallery and the woodwork below this forming a sounding board for the minister. The organ, which is at least the largest feature in the interior, will then be on the main axis and can be made interesting and beautiful with gold and color decoration. The instrument itself then has plenty of room in all directions and the organ builder cannot complain, as he often does, of some other location. The choir, in singing, face the congregation and when not singing can retire from view (be careful that their hats do not show above the parapet). Mr. Goodhue has produced a fine effect in the First Baptist Church of Pittsburgh by allowing the light from a window behind the organ to filter through the screenwork and delicate tracery of the case. The glass of the window is a greenish blue and a striking though somewhat theatrical impression is obtained.

Another possible position for the choir is in a gallery at the side of the chancel, with arches opening into both chancel and transept. The organ may then occupy the corresponding space opposite. Some organists prefer to have the instrument at some little distance from the console. The effect of the music may then be more accurately judged than is possible at close range. This, of course, adds somewhat to the cost of the mechanism, and if the distance is more than 20 feet, electric action will be necessary. In placing the choir, however, it is well to remember that it is an important part of the problem and is deserving of some architectural feature to mark it. It should, therefore, never be placed in a corner of the platform, nor be made to occupy the first few rows in the transept, but should be recognized as a legitimate feature in the composition.

Many of the suggestions given in connection with the position of the choir apply to the organ ; for while the organ is not the most important feature in the church, it does demand a position where its efficiency will be at the maximum. It is never well to have choir and organ at opposite ends of the church, or even at a distance of 50 feet apart, for to a person sitting near the organ the effect will be disturbing, as singers and organ will not keep exactly together.

A common place for the organ in old churches and cathedrals was on the rood screen. Possibly the reason for this was that the organ came into fashion with the early Renaissance at the time when Calvaries were regarded as a specialty of the devil. As the early organ was of a most simple type compared with the complex instrument of to-day, and as organ chambers were often lacking, it was natural that it should have replaced the rapidly disappearing rood.

This location is still popular in England, as may be seen in the modern churches of Chapelallerton and Dane Hill, by Bodley, and in the cathedrals of Exeter, York, Wells, and Gloucester, and in King's College Chapel. We, however, seem to demand much more powerful instruments than would satisfy the English. This, together with the fact that the rood screen, unless fairly open, is unpopular, makes it hardly likely that we will fall in line with this custom for some time to come.

Several things should be considered in selecting the position of the organ. It should not be too near the heating apparatus or chimney, or the mechanism will shrink and cause leakages. Neither should it stand directly on a floor with no ventilating space between it and a damp cellar. It should never be placed between two rooms which are ever likely to be at different temperatures, as it is important to have the air which is fed to the instrument of the same temperature as the auditorium.

It is, of course, impossible to give any fixed dimensions to which the organ chamber must be built, as the size of this will depend upon the organ to be installed. It is well to provide as large an opening as possible into the auditorium, and this opening should extend to the top of the organ loft. A clear height of 21 feet is usually required in the loft, and easy access should be provided for the tuner.

It might be well to mention in passing some of the other necessary adjuncts to the church proper, such as the morning chapel. This is usually required in all but the very small Episcopal churches, and may be conveniently placed near a minor entrance to the church, or it may have a separate entrance of its own. It is usual for it to adjoin the chancel and parallel to it, of course, connected separately with the sacristies. This chapel need not be large, chairs for twenty or thirty are usually enough, but it should be possible to heat it independently of the nave and chancel.

Connected with the chancel should be arranged a choir vestry large enough to accommodate the lockers for the choristers' vestments, besides giving space for a piano and enough room for choir practice. The lockers may or may not be individual. It is, of course, preferable to have them so. The organist (often the choir master) also requires a closet for music.

The rector should have a private vestry with closets for his vestments, a piscina draining into the earth, and sometimes a *prie-dieu*. His room should connect with that of the choir, in order that he may join in the procession.

A sacristy is also needed directly off the chancel with more closets for altar vestments and a sink with running water, at which the altar vessels and ornaments can be cleansed.

The size and design of vestment cases will vary with each church, those with elaborate ritual will require much more space than those having a more simple service. It is always, however, well to be as generous as the funds will permit.

In the very small church these rooms are often condensed into one or two, the rector often sharing the choir vestry, and all the work of the altar guild being done in the same room.

Churches of other denominations usually have in connection with the chancel a pastor's study or office, and a meeting room for the trustees.

The question of cost in church building is one which is always before us, and the problem of making the most of a small sum of money is an ever present one. There are many ways to practise economy, some of which have been tried by the past generation, and the wreckage of their theories on every hand is proof of their folly. One way of saving money is to keep the lines of the building simple; omit buttresses, making the walls a little thicker if necessary, straighten out the breaks in masonry, forget about pinnacles and battlemented parapets, and even window tracery if the church cannot afford to have it in stone. Tracery is, after all, not essential, except for wide windows. In the small church the clerestory is by no means a necessary feature, and it is certainly a costly one. Leave it out if you have to and continue the nave arcade a little higher for good proportion. It will give added dignity to the interior and will prevent the exterior of the little church from looking like a big one executed in miniature.

A few suggestions for keeping down the cost of the church without compromising either its structure or its churchly quality will possibly be of some value, for one of the conditions which the church architect has to face in nine cases out of every ten is, how to build a church that should properly cost $X.00, where the appropriation will permit of an expenditure approximating $X/2.

Do not excavate under the nave, but lay your concrete floor directly on the ground and avoid even the fill, possibly, by establishing the nave floor one step above grade. The trenches along the side walls in which the heating pipes run will prevent the floor from being cold.

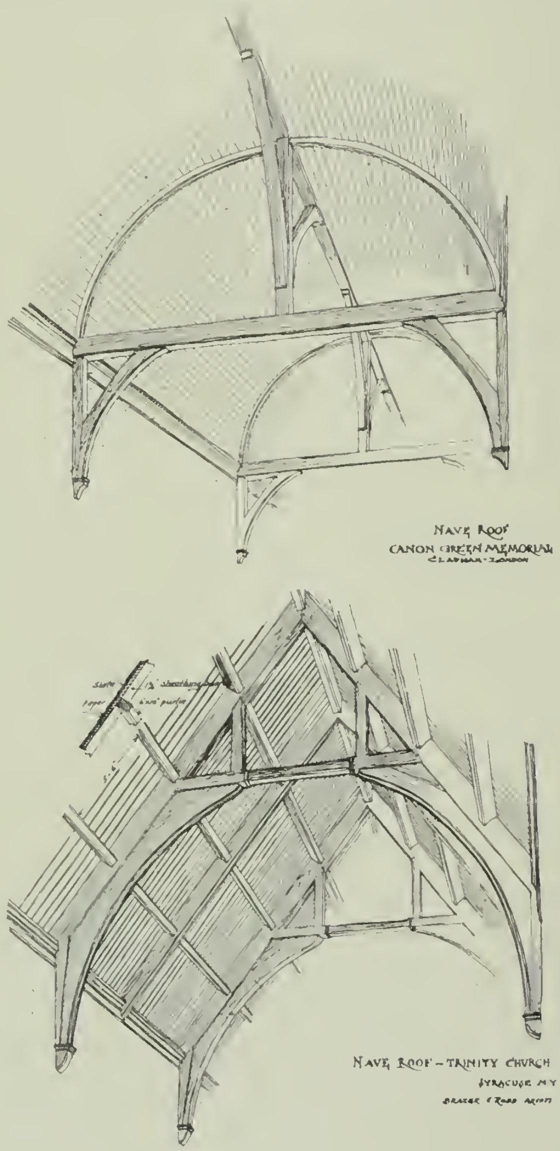


Fig. I

If there are stone columns, cylindrical ones with turned caps are cheaper than octagonal or moulded ones and quite as effective. They can be turned out on the lathe and either sawed up into drums or built as monoliths. Of course, a less expensive method still is to build piers and arches of brick, plastered or unplastered, beveled or square.

Omit the chancel arch and build nave and chancel without the usual breaks, for breaks cost money.

Hanging gutters will save a great deal of money over moulded ones and are quite as good.

Graduated slates are expensive where graduated both in thickness and exposure, but considerably cheaper when varied in exposure only.

Roof trusses and ceilings are costly things, but not when they are reduced to their simplest terms. It is hard for the average draftsman to resist the temptation to case all his beams and cover all his joints. We have done it so long that the real thing in its naked simplicity is sometimes a shock to us. Not only does the material that goes into these casings and cover moulds cost money, but the labor of putting them together, of mitering at the hundreds of angles, and of staining and finishing it all is considerable. The roof shown in perspective and section in Fig. I is straightforward, effective, and cheap. There are no iron tie rods concealed behind the wood. The structural timbers show, and all useless mouldings are omitted, and the whole roof is given but one coat of stain.

Churches in this country invariably have too much glass area, and as windows are costly compared with plain wall, we can well afford to reduce the area of glass to a minimum. It is surprising what a quantity of light will come through a small opening and be reflected to all corners. We are used to large windows in our houses, but I have noticed that most windows have shades which are usually kept at the meeting rails and with one or more sets of curtains in addition. The effect in the church will be much better and at the same time the place will be more comfortable if the light is kept subdued. The "dim, religious light" is much more easily obtained in the small, inexpensive church than in the large one, whose "storied windows richly dight" cost money to build, and, unless the architect has control of the glass, they may not shed that religious glow of which the poet sings.

This is the first of a series of articles on the design and plan of the Small Church, by Mr. Robb. The second paper will appear in a subsequent issue.—The Editors.

Ecclesiastical Tiles.

By J. H. DULLES ALLEN.

Illustrated by Samuel M. Palmer and the Author.

THE Egyptians ascribe the introduction or invention of pottery to the gods, and their story of the creation narrates that the God Num formed man on the potter's wheel of the black clay of the Nile and afterward breathed into him the breath of life. Twelve hundred years before the Christian era elaborate ornament in glazed tiles was used in their temples,* and the Babylonians and Assyrians carried on the work and improved the quality of the materials.

In the Bible, clay working and brick and tile are interestingly mentioned: "And they said one to another, Go to, let us make brick, and burn them throughly. And they had brick for stone, and slime had they for mortar. "Thou also, son of man, take thee a tile, and lay it before thee, and portray upon it the city, even Jerusalem," illustrates either that it was the custom to draw on wet clay slabs in those days, as was the practice at a much later date, or, as some assert, with a brush and black ink, as the Egyptians, Assyrians, and Chinese are said to have done.

In the decorations of the ancient temples tiles were at times embedded in the stucco or cement in patterns, or fastened with metal pins or wire, or even by means of a tenon projecting from the reverse side which was pierced for a pin or other fastening (as around the inner doorway of a pyramid at Saquarah). A conical form was also used, its circular face colored and the tapering end placed in the mortar. This same tile shape is also found in the earlier decorations of Spain, besides a wealth of elaborate and intricate design tiles. In Mexico the Spanish seed was sown and flowered in most decorative treatments of exteriors and interiors, particularly in the tiles with designs hand painted on tin enamels, as in the product of Puebla.†

Chinese, Persian, and Byzantine tile work is replete with examples of rare skill, but in the buildings of Italy, France, England, and Germany have been found the most interesting specimens of tile work from the viewpoint of modern ecclesiastical architecture.

In France noteworthy designs have been discovered in the Cathedral of St. Omer ‡ and at Rheims and St. Denis incised slabs or stone tiles into which the design was cut and subsequently filled with marbles and colored cement. Similar tiles were found in St. Nicaise with lead inlays and in Canterbury Cathedral before the shrine of Thomas à Becket and still others at Siena. In England, besides Canterbury, examples of interest were found in the ruins of Whitland Abbey, Carmarthenshire, and in Chertsey Abbey, and the list of ecclesiastical buildings in which the modern tile maker has sought designs embraces practically all the well known English monuments. The greater part of these relics rescued from the vandals' wreckage or unearthed in the dust and débris of forgotten gardens were made by depressing certain portions of the design. This was at times considered sufficient for the decorative purpose and the tile was covered with a lead glaze.

More often, however, before the yellowish transparent glaze was applied the depressions were either filled with clay (inlaid) or with a thin slip (as in the usual underglaze decoration), in either case clays were used of a different color from that area of the tile which was not depressed. Green and blue occur in some of the tiles, but the colors chiefly employed were red or brown, buff, white to a fair yellow (produced by the yellowish lead glaze superimposed on a white or buff burning clay), and brown black.

From a study of the old ecclesiastical tiles it is evident that both the impulse of the work and the designs of the individual tiles may be traced to varied sources. However, as the religion of those days spread and inspired the education, culture and art-idea of Rome, color is given to the theory that in the incised stone slabs suggestions for the designs were obtained from the mosaics and marbles of Italy. Again it has been held the maker of clay tiles found in the incised stone slabs a hint for cutting out or depressing certain portions of the tile and forming a design in this manner. From the same origin probably came the thought of inlaying clays of another color, either in the plastic state or as in the floor tiles of Prior Crauden's Chapel, Ely Cathedral, where the background was cut out to admit of roses and quatrefoils, etc., being inserted. In the individual clay tiles there is evidence that the designs were obtained from many different models. Mosaics were probably used and also the stone slabs. But then, as now, the possibilities of the plastic material prompted the craftsman to seek for many varied designs, and he would seem to have drawn upon the great fund at his disposal in paintings and carvings of stone and wood, as well as textiles. Ecclesiastical embroideries — the orphrey-work of chasubles and copes and other vestments— lend themselves to interesting interpretation, nor did this fact escape the craftsman of the time.

It is not surprising that in the revival of the artistic and architectural in recent years in this country, that the decorative possibilities of tiles should have appealed to the imaginations of men. It has been shown how the museums and monuments of the old world have been ransacked to make reproductions of intrinsic worth, in the same manner as the old tile makers reproduced designs.

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* The brick temple erected by Rameses III, B.C. 1228, is referred to as a notable example.

† Information of great value is contained in two illustrated works on this subject: "The Majolica of Mexico," Edwin Atlee Barber, Art Handbook of the Pennsylvania Museum and School of Industrial Art, Philadelphia, and "Spanish Colonial Architecture in Mexico," by Sylvester Baxter.

‡ From a paper by Mr. William Burges, Architect, printed in *The Builder* (England), 1855, we quote in this connection: "It is not a little singular that in even those few dalles which have reached our time — the sole wrecks of this once magnificent pavement — we can almost trace the same thing that M. Didron fancies he has discovered in the sculpture at Chartres Cathedral, viz. the Speculum of Vincent de Beauvais, written in stone. Vincent de Beauvais divides his Speculum into four parts; — the Miroir Doctrinal, which teaches the seven liberal arts; the Miroir Historique, the history of the world; the Miroir Naturel, the study of nature; and the Miroir Moral, the different duties to fulfil and vices to avoid."

To-day the craftsman is also working in the spirit of the architect who seeks the old monuments for inspiration and designs not a slavish reproduction, but in the spirit of the great builders of the past, a monument to which future generations may look for their inspiration.

Then, as now, tiles were usually employed in the floors, but examples exist which, from their design and general character, were probably set in the altar or the screen or reredos. From the color we can learn but little; but the designs of the individual tiles and the composition of the schemes of arrangement are fertile in suggestion. The pictures on the tiles follow the general trend of mediæval ecclesiastical ornament, portraying saints honored and sinners damned to torment and suffering, and apparently the patrons and those who had helped the "building fund" were given credit as well, the virtues and vices were contrasted, and signs of the seasons introduced, and heraldic devices and grotesque animal forms alone or interwoven with foliage of conventional arrangement. Silly as many of them appear to our tired eyes, one cannot study them collectively without being convinced that these old tiles were an integral part of the building which they emblazoned. Crude, and what might be expressed by the Gothic "kaurids," as these designs seem to us, yet when assembled in the areas for which they were especially made there can be no doubt the result was complementary to the architecture in a way that little of our own tile work is to-day. In the half-light which filtered through the Cathedral's leaded windows it is probable that simply a pattern of an inoffensive character was visible, but if a child or the man of mediæval times approached nearer, what a wonder book lay open here! The parables and incidents of the Bible, a patron saint of the hallowed church, and the escutcheons of the great men of the place or race. What an inspiration to the mind of these simpler times! Here was depicted life: famous encounters of the wars of the past, renowned deeds of heroes and their triumphs — all portrayed in a manner to appeal to the people of this particular parish or diocese.

But it might be objected, what bearing has all this upon modern work? What have we to offer to-day? Our people are not of this simple type, heraldry is obsolete, and the great men and popular national or diocesan heroes do not lend themselves in their modern triumphs to portraiture in tile. This is a half truth, and although there is no intention of advancing arguments for the extreme or the obtrusive, yet while employing a restrained general scheme there is an opportunity of introducing detail that will be apropos. We have no college of heralds, but ecclesiastical heraldry still obtains and has its place to-day. There is usually a saint whose symbol may be introduced with propriety, as well as the lives and legends of the saints, and what a rich fund of graphic truth the parables and incidents of the Testaments display! Have they not their appeal to the modern! The flowers which hold or have held a religious significance are fertile in decorative motifs. A local interest may be suggested in many ways, and the progress of the church or the parish indicated.

The Christian religion holds for us an undiminished opportunity for decorative interest. To-day the wide range of textures and finishes and the extensive palette of colors offered in tiles surpasses in scope and architectural possibilities any medium which the old builders knew. Tiles may be made to blend with the soft textures of the hangings in harmony with the general color scheme, and yet display a richness and jewel-like lustre befitting the high altar and the holy of holies.

THE CHURCH FLOOR.

There is, perhaps, no part of the edifice to which, during the period of the decadence of church architecture, so little attention was given as to the floor.

The areas which man has trodden under foot have always held an humble place, and in the history of buildings or of cities these areas were the last to receive consideration. Man gave attention to his roof — against the weather; to his walls — against the enemy; but the street in front of the house and the floor within the house received, in primitive times, little intelligent treatment. When man's dwelling was rude, the places under foot were neglected, we are told, and these were then as now the last to be given consideration. Only when the race arrived at some degree of sanitary sense were the floors of the dwellings and the city streets in front of the dwellings kept in any decent condition, and consequently these areas were the last to receive any adequate consideration from a decorative standpoint.*

To-day we frequently see churches built in which the architects devote all their time and all the funds to the walls and roofs, the stained glass, the carving of altars and accessories, and to the pews and the plumbing, while the floors are allowed to wait until additional funds may be raised.

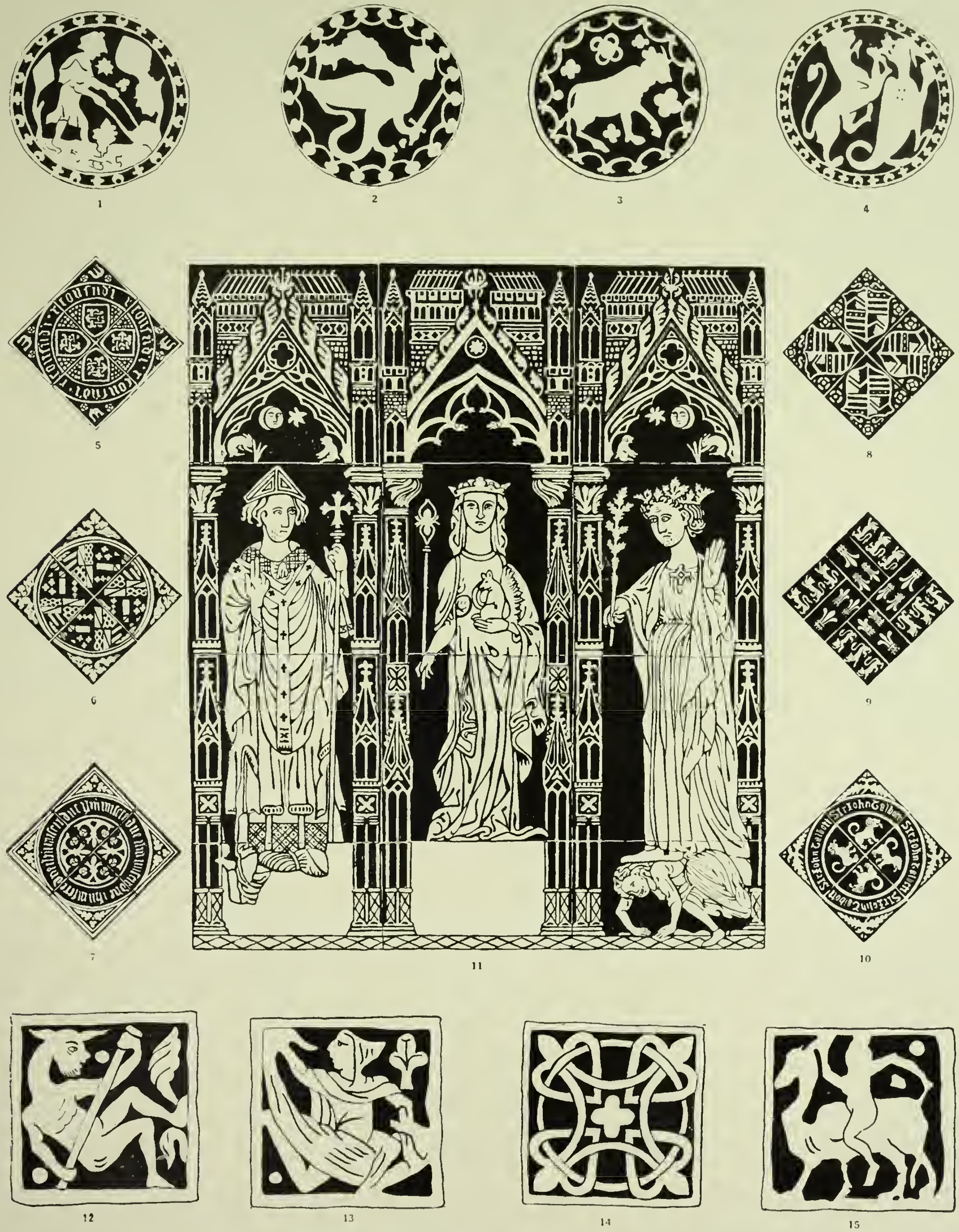
So, in our own time, the areas trodden under foot still hold for us an humble place. We have banished the poultry and pigs from the hallway of the dwelling, and our city streets are no longer open sewers; but civilization has not yet arrived at the degree of culture where these areas are given anything like adequate attention,— in the private house, the public building, the museum, art gallery, or church,— and the streets of the cities remain a menace to the health of the inhabitants.†

Show me your floors and I will tell you what you are, might run a paraphrase. All of us who have occupied gallery seats in the theatres or opera houses have seen the gondolas in the Venetian scene and at other times the gladiators and chariots of Rome on the same boards of the stage. The trees and foliage, the moon and stars, and Juliet's balcony are all executed with ambitious paint and effect; but the floor of the stage, until recently, was the same in this rôle or as a Roman arena or the Grand Canal.

This was not the case in the ecclesiastical edifices of the proud days when the church was the patron of art and

* "Although unpleasant, this sprinkling of the hall [with soot which fell from the roof] was not undesirable, as it served as an antiseptic to render harmless the foulness of the floor, which was covered with straw or rushes. In these the dogs lay and gnawed the bones flung to them. In this, on cold nights, were quartered the chickens and the four-legged youth of the barnyard, as there were no outbuildings to shelter them. And when the straw rushes grew too foul for endurance, they brougbt a fresh supply and spread this over the old." Page 33, "The History of the Dwelling House and its Future," by Robert Ellis Thompson, LL.D.

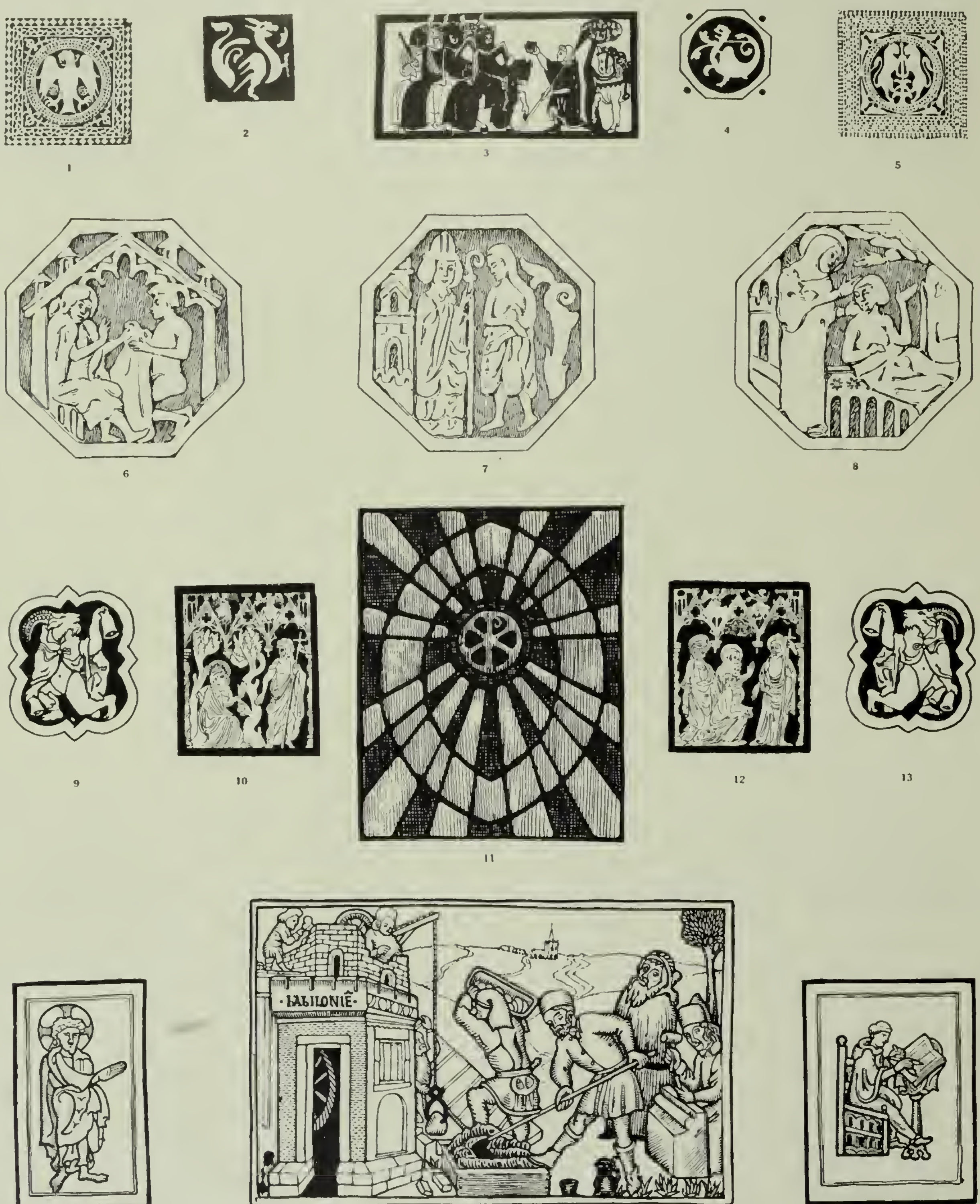
†In the United States our inadequate attempts in street cleaning are a cause of reproach, and for a country as progressive as ours in many ways it is puzzling to contemplate how slow our civic consciences have been and how far our municipalities lag behind the old cities of Europe in this public duty. Any one interested in this subject will find a remarkably readable book in "Modern Methods of Street Cleaning," by George A. Soper, Ph.D.



1, 2, 3, and 4. From incised stone slabs, Canterbury Cathedral. Date XIII Century. 5, 6, 7, 8, 9, and 10. From St. David's Cathedral. Date about 1480. 11. Chertsey Abbey, Surrey, date XIII Century, showing an archbishop, a queen, and a king. 12, 13, 14, and 15. From incised stone slabs, Cathedral of St. Omer. Date XIII Century. After Henry Shaw, F.S.A.

GROUP OF ANCIENT ECCLESIASTICAL TILES

FROM DRAWINGS BY J. H. DULLES ALLEN AND SAMUEL PALMER



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

1 and 5. From Italian mosaic pavements. 2 and 4. Paving tiles of the Middle Ages. 3. Design from manuscript of the XIII Century. 6, 7, and 8. Tiles illustrating the legend of St. Martin, being three of a series of twelve tiles, after a tapestry in the Louvre. Date XIV Century. 9 and 13. Goats ringing bells, after English ecclesiastical designs. 10 and 12. Designs for pierced tile panels, after ivory open work carving of the XIV Century.

11. Arrangement for ecclesiastical mosaic panel. 14. A saint, after an illustration in the Bible of Cardinal Mazarin, French. Date XI Century. 15. After a water color drawing in the Nuremburg Bible now in the possession of the University of the South, illustrating building at Babylon. 16. After the illuminated manuscript of Giraldus Cambrensis in the British Museum, date 1200 A.D., showing a scribe writing the book of Kildare.

GROUP OF ECCLESIASTICAL TILE DESIGNS

FROM DRAWINGS BY J. H. DULLES ALLEN AND SAMUEL PALMER aroused in the architect and his craftsmen an inspiration worthy of their theme. In all those periods of the past to which we turn to study their culture and civilization, we find the flower of the architecture evinces a nice feeling for the floors and pavements. Many fragments of these have come down to us in a state of preservation that makes it possible to picture the original arrangements.

It will be noted the designs were made for the building where they were to be used, for the greater part, and to-day, no matter what the sect or religious persuasion of the flock may be, it would seem as inexcusable and as sacrilegious to employ in the house of worship and even before the altar materials in the same unstudied manner, whether of burned clay or other flooring, that is common in the café and public house. Tiles being sanitary are eminently suited to the Rathskeller, and for the same reason are in demand for the church floor; carpets gather germs from many feet and hold them as in a nest, until brushed, when the germs settle upon the pews and prayer books. Tiles, also, from an historical and religious standpoint, are associated with the flooring of churches, and it is most natural and fitting that they be so used; but intelligence should be employed in the design of the individual tiles, as well as the design of the comprehensive scheme of the arrangement of the floor, that the material may contribute to, and not detract from, the significance and sanctity of the ecclesiastical edifice.

There is at times a tendency upon the part of the architect and the building committee to concentrate upon those things which are exposed to the gaze of the congregation. Like a Parisian jewelry shop, the glistening display is often toward the public. Pass beyond and the glamour fades. There is, of course, no valid reason why funds should be unnecessarily expended upon the sacristy, and there is no reason why the choir boys or girls should not robe in an obscure chamber not always up to the standard of the locker-room of a well run factory. All the essential requirements are there, and why waste funds or time in studying the details of ornament or tiling the floors in keeping with the rest of the church or imparting to these rooms the effect of being an integer in the scheme, a real part of the religious building? The answer is, and with due reverence I say it, that if the ambulatory resembles a rear entry in a boarding house, and the sacristy one of the unhallowed chambers in the same house, and one passes from these into the glory of carving and coloring of the chancel, one cannot refrain from a feeling that the church, like the theater, is too conscious of the audience; that the things which are *seen* are paramount, but the things which are *unseen* are not necessarily eternal, but rather negligible.

A color study of the church floor is as a rule simple in the narthex, entrance, or vestibule. In the aisles it is not uncommon for the architect or his craftsman to design the central portion in some restrained pattern, confining the ornament, color, and decorative elements to the border which at intervals may cross the aisle to break its monotony. When the entire area of the chancel is tiled and chairs instead of pews are used, it is possible to introduce color and design-interest in a diaper pattern or incidental spots through the field.

At the steps to the choir, or that area which is synonymous in other churches, the risers and treads or platform offer an opportunity to enhance the more restrained treatment of the nave and form a connecting link, as it were, between that and the more colorful rendering of the area beyond. Here it would seem color might be introduced with more warmth and feeling, and the design and musive arrangement treated in a manner indicating the approach to the focal point of all Christian churches. Again at the steps leading to the sanctuary there is an opportunity for design in the floor areas which is lacking in most buildings. As the ornament of the church is held to be complementary to the worship therein, here where the heads of the worshipers are inclined and eyes frequently cast down would seem a becoming space in which to delineate in thoughtful, solemn purpose some epitome of the professed faith, some essence of the inspiration of the religion of *fides*, *spes*, and *caritas*.

In the area before and surrounding the altar it would appear appropriate to eliminate the dull and lack-lustre earth colors and enrich the pavement with those hues and tints which hint of the higher aspirations of life, even the exalted blue dome of heaven itself. Tiles are made in such an extensive palette that the architect who so desires may in the alliance of the craftsman find assistance in blending the tones of the enriched pavement with the mural decorations of the sanctuary to which the pavements of the vestibules, aisles, and choir will form a colorful prelude.

Have you not attended a church, done in the period which Pastor Wagner might have included in his "Plush Age"? And have you not observed the legend emblazoned on high, in pseudo-Gothic letters, "Worship the Lord in the beauty of holiness"? No matter how much you may have been in sympathy with this thought, and all the noble work of the church and what it stands for in our civilization, did you not find food for thought tinged with irony?

How long will a people who recognize the handiwork of the Almighty in the mist-hung mountains at twilight, in the sapphire of the sea at dawn, continue to erect to Him and His glory buildings which in many instances are little more than barns, and in the rafters of which man's handiwork is displayed in jig-saw?

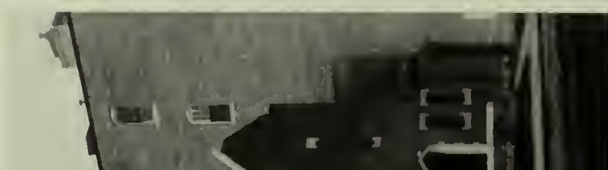
Religion in all its spiritual manifestations of the aspirations of mankind to higher ideals is in its very essence articulate beauty; yet the houses of religious worship too frequently exhibit a curious incompatibility with sense and sentiment.

Can any man contemplate in thoughtful mood the art and architecture of the old and well loved shrines without a feeling of regret for to-day? Has any one conscientiously studied the ancient ecclesiastical ornament and decoration without being impressed with the failure of the churches of our time to fulfil their traditional obligations to art?

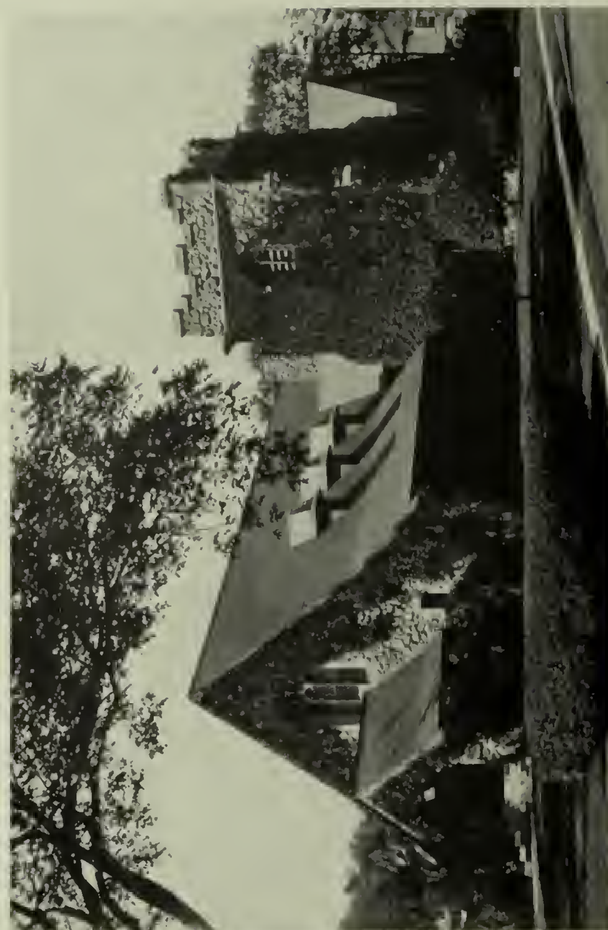
While the saloons, cafés, hotels, department stores, recreation parks, theaters, opera and moving picture houses have been alive to color and form which have an emotional appeal to the people, the churches, all too often, have not availed themselves of the modern knowledge of the psychology of color and a sympathetic understanding of the æsthetic in art; but have held lightly their rich and lawful inheritance, and have remained content within their shells of inadequate conservatism.

FIRST CHURCH, CHESTNUT HILL, MASS.
J. LOVELL LITTLE, JR., ARCHITECT

FIRST CONGREGATIONAL CHURCH, BRAINTREE, MASS.
GEORGE NEWTON, ARCHITECT



ST. LUKE'S EPISCOPAL CHURCH, ALLSTON, MASS.
BERRY & DAVIDSON, ARCHITECTS



UNITARIAN CHURCH, BRAINTREE, MASS.
EDWIN J. LEWIS, JR., ARCHITECT

The Small Brick Church

AS IT HAS BEEN DEVELOPED IN ENGLAND.

By R. RANDAL PHILLIPS.

THOUGH it could hardly be said of any other building, a new church is in essentials very much like an old one, churches having certain characteristics of plan and arrangement which survive in spite of great differences of style. But in one respect, at least, there has been a distinct production in modern times, — the cheap church. This is the direct outcome of conditions, and, in the majority of instances, for the architect to-day it has resolved the problem into one of cost. There are, of course, numerous examples of churches built and furnished with ample funds available from the commencement, some wealthy member of the community having desired to provide a building to the glory of God, for his own gratification, or perhaps as an impersonal expression of esteem for the church as a factor in human life. In such cases the architect has been in the enviable position of being asked to formulate a complete scheme and to carry it out thoroughly, to plan a substantial fabric, and to direct its embellishment. But more often he is required to do a great deal for a very little, — to provide, in short, a cheap church, — and though that must inevitably be a difficult task to solve satisfactorily, it can be done, as the late Mr. Bentley, among others, has shown. Still, there is no gainsaying the evidence that confronts us, in the form of cheap churches which are painfully cheap, built with the utmost economy, and, as such, having all the disagreeable elements of the poor-law building and the barracks. Or, again, the architect may be called upon to provide a scheme which can only be carried out piecemeal, there being insufficient funds to enable the whole to be proceeded with. Thus it is no uncommon sight to see a church without its tower, or with its western end temporarily boarded in, its doorways waiting for the mosaic or the carving they are intended to receive; there are great corbels in the nave that will one day be fashioned with the chisel; the windows, now filled with plain glass, are ultimately to be translucent color, and the plain boarded roof will some time in the future be overspread with rich decoration. But it is an architect in a later generation that shall see these things, unless, indeed, a newer order of things prevails in the meantime.

All Souls' Church, South Hampstead
Nicholson & Corlette, Architects

One cannot exclude even that possibility, when one remembers the changes of taste that have occurred during the past half century. In the days of the Gothic revival, for example, any suggestion that Georgian architecture could have enshrined features in church building which were worthy of emulation would have been scorned. To-day, however, when the Gothic fervor has spent itself, we adopt a different attitude, and, among other examples, we recall with no little pleasure the delightful little brick chapels of the eighteenth century, — quiet, dignified, and appropriate, — even though a wilderness of boxed-in pews was the predominating characteristic of their interiors.

Mr. A. C. Benson cites a striking instance of the change in taste that may occur. It concerned one of the finest of the Cotswold churches. "The vicar," says Mr. Benson, "was an excellent man, abounding in energy and ecclesiastical *bonhomie*, and he took me round his church with irrepressible pride. In the tower were piled up the pieces of a grand, late seventeenth-century reredos — a broken pediment, columns, great oak panels, gilded urns, the ineffable name in a glory. I do not suppose it could have been put up for less than a thousand pounds. I asked what it was. 'The old reredos,' he said cheerfully, 'a hideous thing! The moment I set foot in the church, when I was appointed, I said to myself, "Well, *you* have got to go!" Of course the people didn't like it, — they said they were fond of it, — but I used a little diplomacy and went to work gradually, and now we have got something a little more in accordance with Christian feeling and church tradition — and I am just waiting to sell it all to a dealer.'" What the vicar had got that was so much more in accordance with Christian feeling and church tradition is thus described by Mr. Benson: "I looked at the east end. There was a poor, flat, alabaster reredos, with three compartments crowded with tasteless figures, and little blobs of bright colored crystals inserted, looking like jellies at a garden-party. The connection of such an object with art was easy enough to define, because it had none. The connection of it with Christianity was still more obscure. It was just a specimen of the hybrid taste of vapid designers — sentimental, pietistic. Instead of arousing emotion and interest, it left one drearily wondering out of what tame and smug wood it could have originated; it was a mere combination of forms imperfectly recollected, and of materials wholly misunderstood."

Returning to the modern problem, that of providing a suitable church with limited expenditure, some observations by Sir Charles Nicholson, himself a very capable designer, may be given. In the first place, as he points out, the cost of a church does not vary with its cubic contents in the same way as does that of a building which is cut up into a number of moderate sized rooms. Thus, if a church of the usual form, with low aisles and a clerestory, is compared with one of exactly the same height, breadth, and length, in which the aisles are the full height of the building, it will be found that the first plan has less cubic capacity than the second, but that it will work out the more costly building. On the other hand, there are circumstances in which a nave with tall clerestory and very low and simple aisles may be an economical design. It would at first sight seem likely that a type of plan without aisles would give the best results for a stipulated expenditure; but this is not the case, except when the accommodation required is small, because such a church requires to be much loftier than one which is subdivided, in order to obtain an equal effect of dignity, which depends principally upon the relation of height to breadth. The apparent breadth of an interior is reduced by the fact of its being subdivided, thus enabling a sense of loftiness to be secured with only moderate dimensions. For a church accommodating any less than five hundred people, a very economical plan is that of a nave with a broad aisle on one side only. This gives a considerable cubic space with a moderate amount of structure, the lighting is direct and simple, and the number of windows and pillars and other architectural features is less than in many other types of plan. On the other hand, if a church is to be on an unusually large scale, say, if it is to hold 1,200 or 1,500 persons, it would probably be judicious to consider the advantages of a four or five aisled plan. One matter, however, which should, I think, be always taken into very serious consideration, is the arrangement whereby the bulk of the congregation gain a view of the altar and the pulpit. This applies with equal force whether a church is regarded as a building where one may offer worship, or as a building wherein one may receive instruction and take part in congregational devotions. In the former case, the altar is the focus of everything, and should be visible to every worshiper; while in the latter case the preacher is the center of interest, and the pulpit should therefore be visible from all parts of the church. The great Roman Catholic Cathedral at Westminster fulfils both these conditions, consisting as it does of a huge

Church of St. Jude-on-the-Hill, Hampstead Garden Suburb
E. L. Lutyens, Architect

Detail, the Free Church, Hampstead
E. L. Lutyens, Architect

Detail, Church of St. Jude-on-the-Hill
E. L. Lutyens, Architect

Interior, Church of St. Jude-on-the-Hill, Hampstead Garden Suburb
E. L. Lutyens, Architect

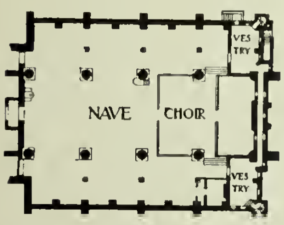
nave with processional aisles on either side, and, similarly, though applying to a different type of service, the beautiful church of Holy Trinity, Sloane street, is equally satisfactory.

In the case of Nonconformist churches, the most suitable type of plan would seem to be one embracing a wide nave with narrow aisles and a shallow chancel, with the organ in a gallery at the west end. Considering the number of chapels that are spread throughout the length and breadth of the land, it is surprising that a more satisfactory type of plan than that usually adopted has not been evolved. In my opinion, considering the widening of the religious horizon, there is no question that the common arrangement, whereby a congregation faces a row of organ pipes, with a pulpit set in front of them, will be abandoned in the future, and a type of plan adopted similar to that indicated above.

The accompanying illustrations serve to indicate some of the possibilities of the modern church. They show work by Mr. Scott, Mr. Temple Moore, Messrs. Nicholson and Corlette, Mr. Lutyens, and other well known architects. Detailed particulars of them are not here called for, but a few notes may perhaps be acceptable. The two churches at Hampstead, by Mr. Lutyens, are notable examples of modern brickwork, more successful within, however, than without. They stand on the highest part of the Hampstead Garden Suburb, on either side of what will ultimately be a civic square.

The Church of St. John the Evangelist, Upper Edmonton, by Mr. Quennell, is in a mean district of London, and may be regarded as a "cheap"

Suburban Church — Temple Moore, Architect



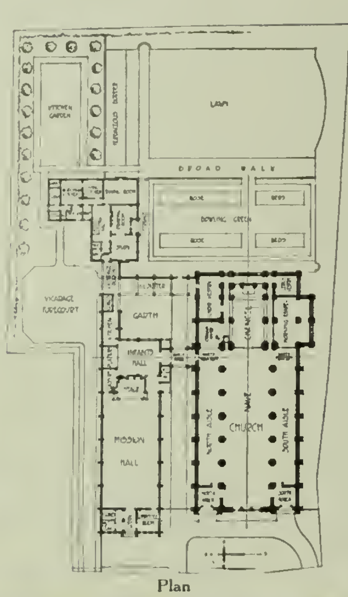
Plan, St. Margaret's Church

Interior, St. Margaret's Church, Leeds
Temple Moore, Architect

All Saints' Church, Tooting — Temple Moore, Architect

Plan, All Saints' Church, Tooting

Church of St. John the Evangelist, Upper Edmonton, London
C. H. B. Quennell, Architect



Plan

church successfully treated; the entire building was erected for $35,000, which is practically $44.50 per head. The walls inside and out are faced with yellow stocks, with bands of Luton gray bricks, the roof being tiled.

Among the examples of Mr. Temple Moore's work, the fine interior of St. Margaret's, Leeds, is very ample and deservedly worthy of note. All Saints', Tooting, is another fine church, comprising a nave and choir of seven bays, with a Lady Chapel beyond, the total length being one hundred and thirty feet.

Epsom Parish Church is noteworthy for its bold massing, and All Souls', Hampstead, by the same architects (Messrs. Nicholson and Corlette), is interesting as a piece of new work added to an older fabric.

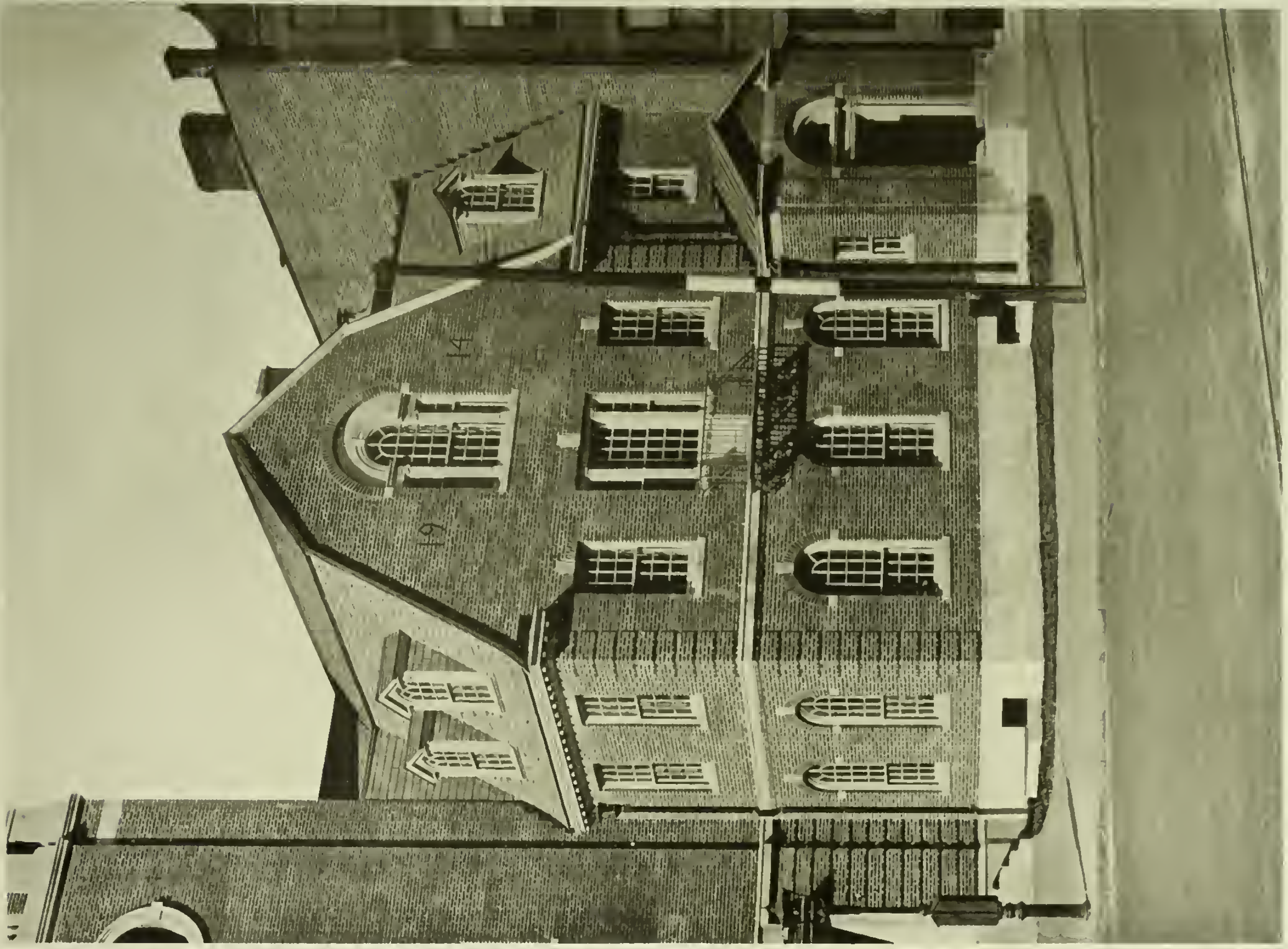
The examples by Mr. Gilbert Scott illustrate the rich character in ornament, set against plain brick walling, which can be made so effectual.

Interior, Church of St. John the Evangelist
Upper Edmonton, London

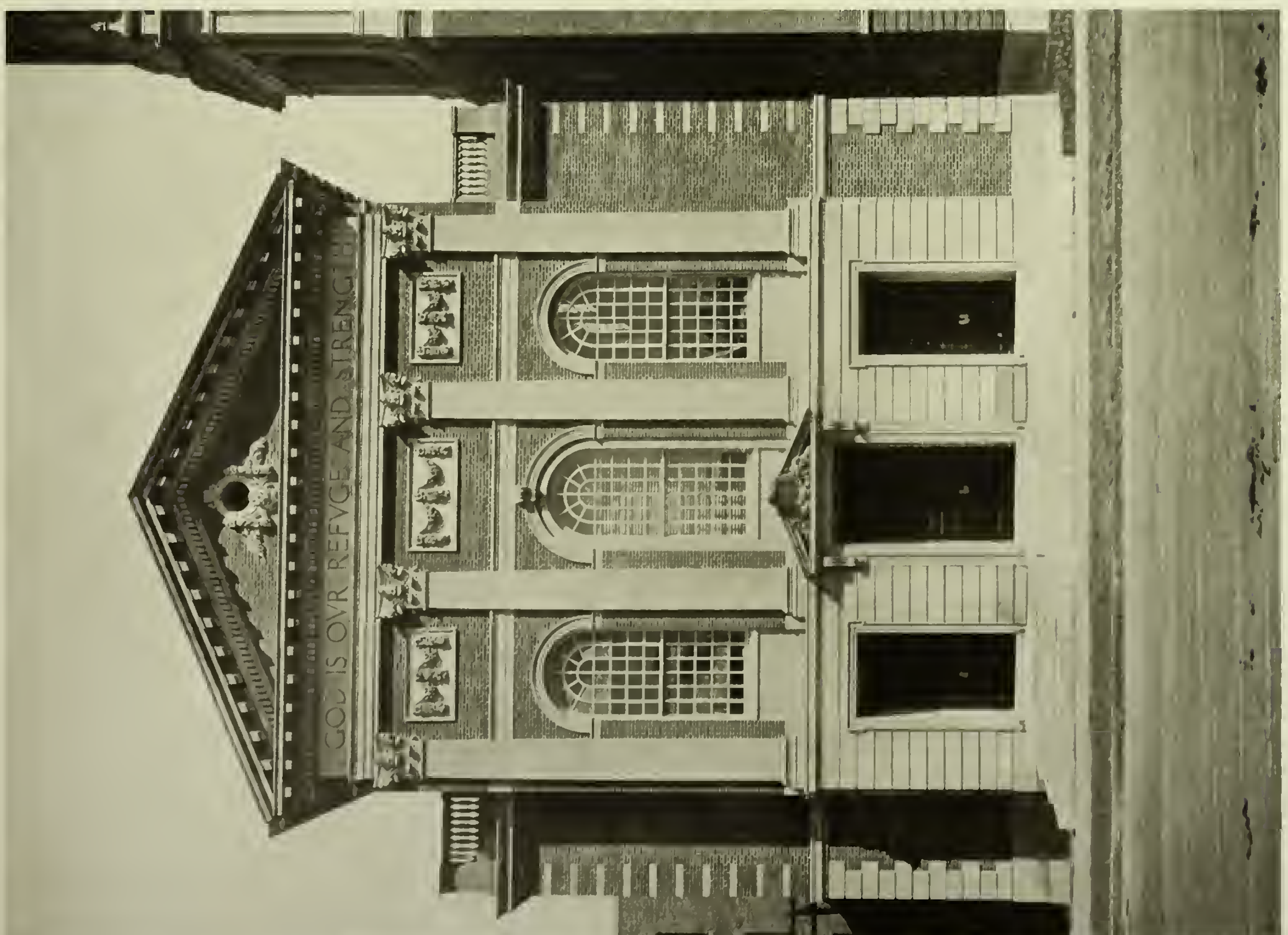
These published examples of inexpensive small churches are absolutely convincing, logical, and consistent in every manner. There is just enough historical association to give continuity, the religious feeling is above reproach, the adaptation of style to brick beyond criticism, and the designs viewed as pure architecture are of high order. The fault in our church building lies with the mental standards and processes of individuals, and until these have been improved by the educational influence of the architect working with a serious purpose to better conditions, the character of our church buildings will not be materially changed. If we can overcome false and alluring principles, which the architects of these churches have done, there is no reason why the architecture of the small and inexpensive church should not stand fairly on a level with that produced in earlier days.

Interior and Exterior of St. Joseph's Roman Catholic Church, Sheringham
G. Gilbert Scott, Architect

SECOND UNITARIAN CHURCH, AUDUBON CIRCLE, BOSTON, MASS.
CRAM, GOODHUE & FERGUSON (BOSTON OFFICE), ARCHITECTS



DETAIL OF SUNDAY SCHOOL BUILDING

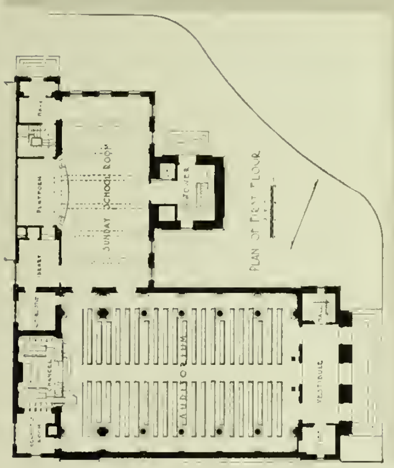


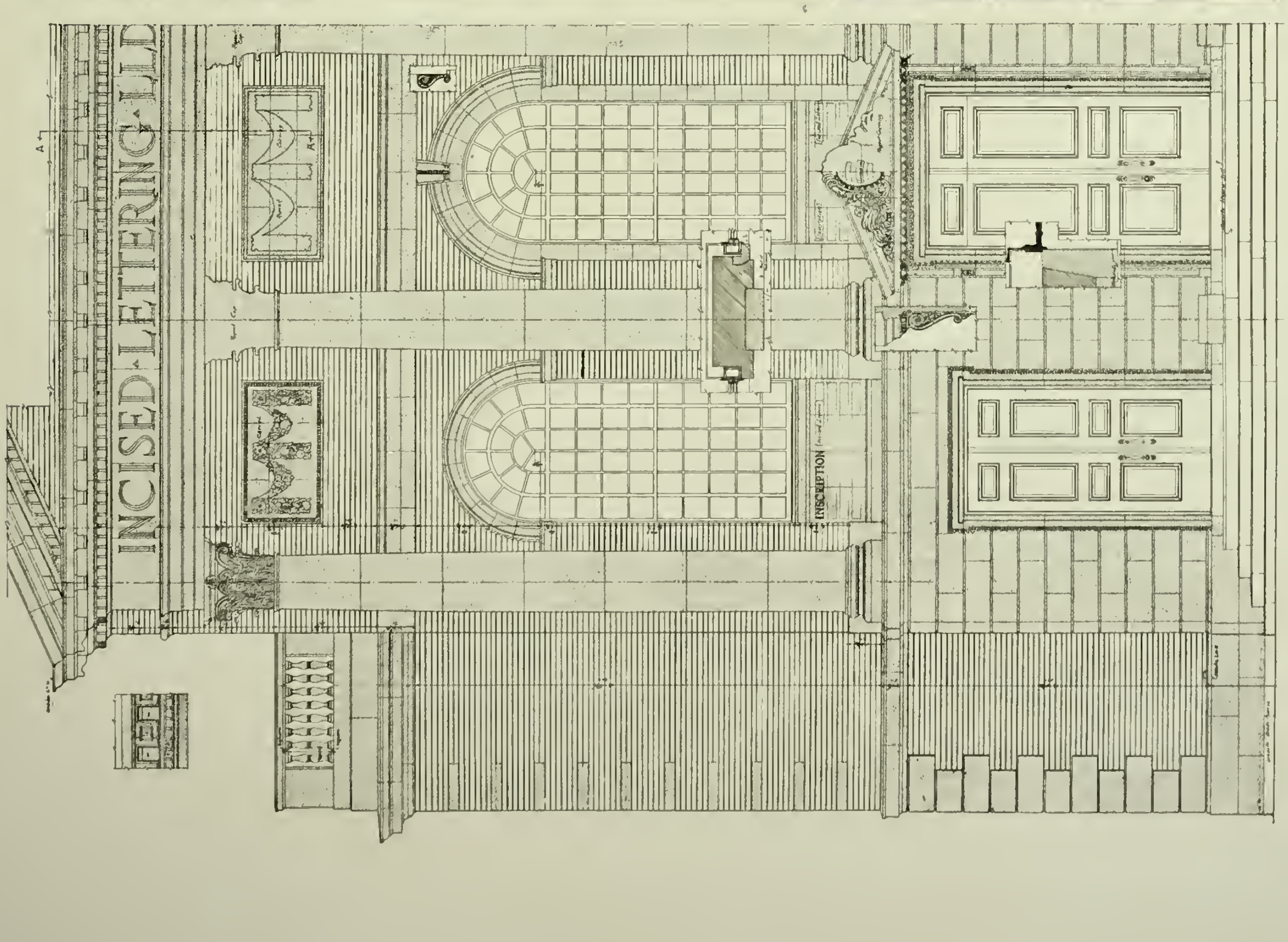
DETAIL OF ENTRANCE FACADE

SECOND UNITARIAN CHURCH, AUDUBON CIRCLE, BOSTON, MASS

CRAM, GOODHUE & FERGUSON (BOSTON OFFICE), ARCHITECTS

FACADE AND TOWER

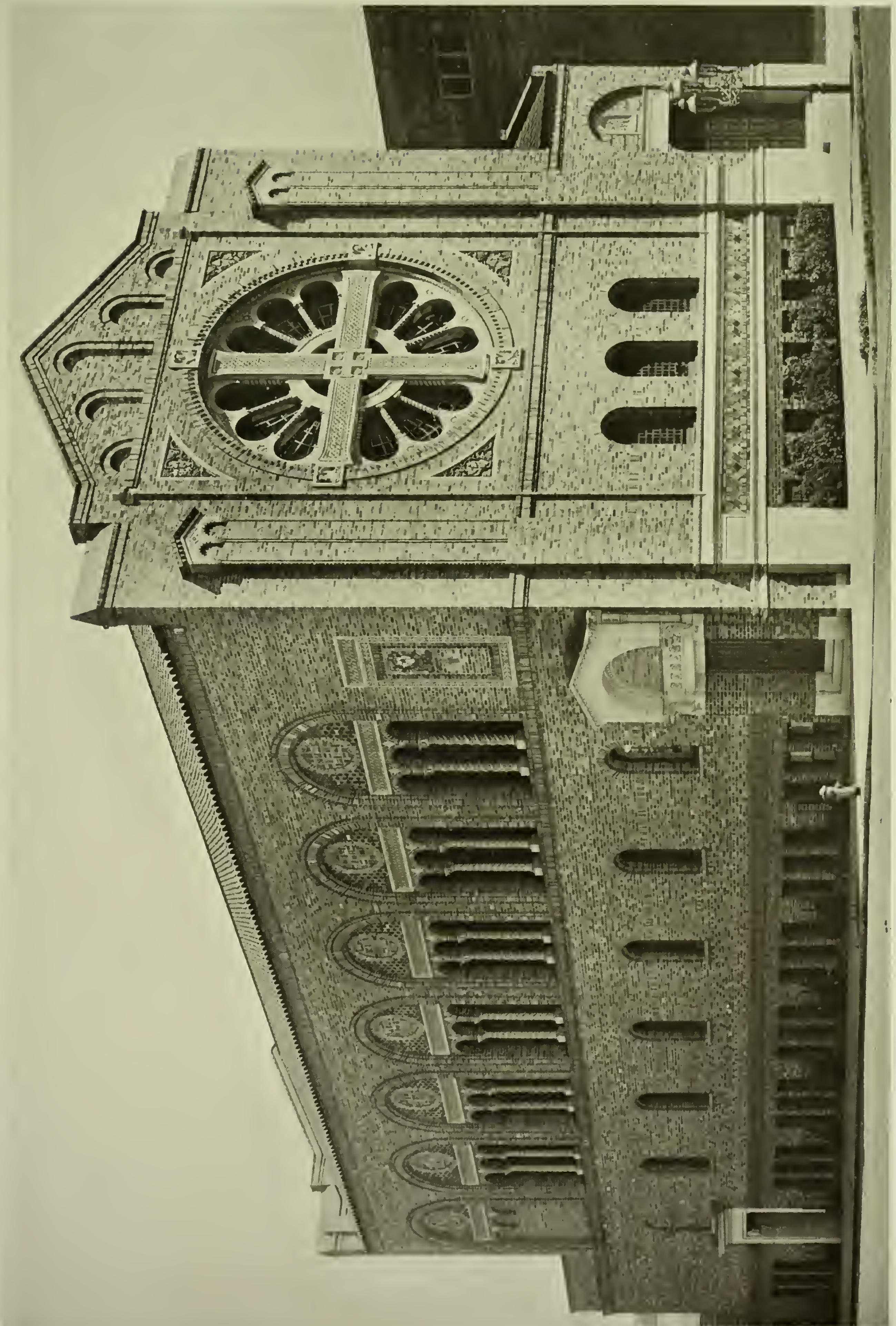




DETAIL OF ENTRANCE FACADE

SECOND UNITARIAN CHURCH, AUDUBON CIRCLE, BOSTON, MASS.

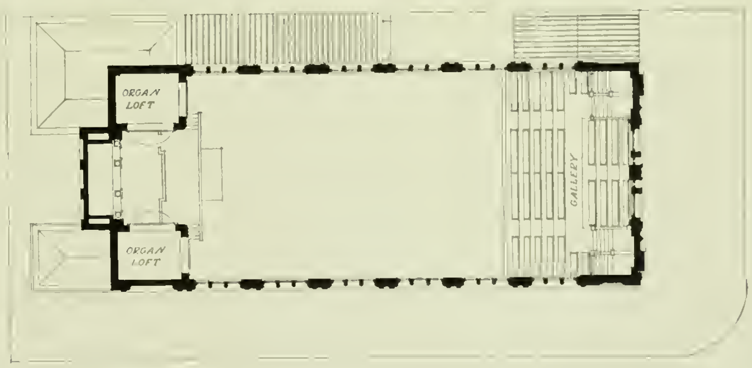
CRAM, GOODHUE & FERGUSON (BOSTON OFFICE), ARCHITECTS



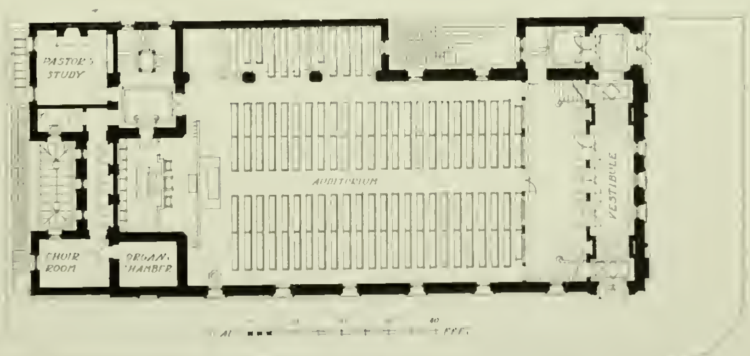
FIRST PRESBYTERIAN CHURCH, SAN FRANCISCO, CAL.
WILLIAM C. HAYS, ARCHITECT

DETAIL OF LOWER FRONT WALL

DETAIL OF ENTRANCE



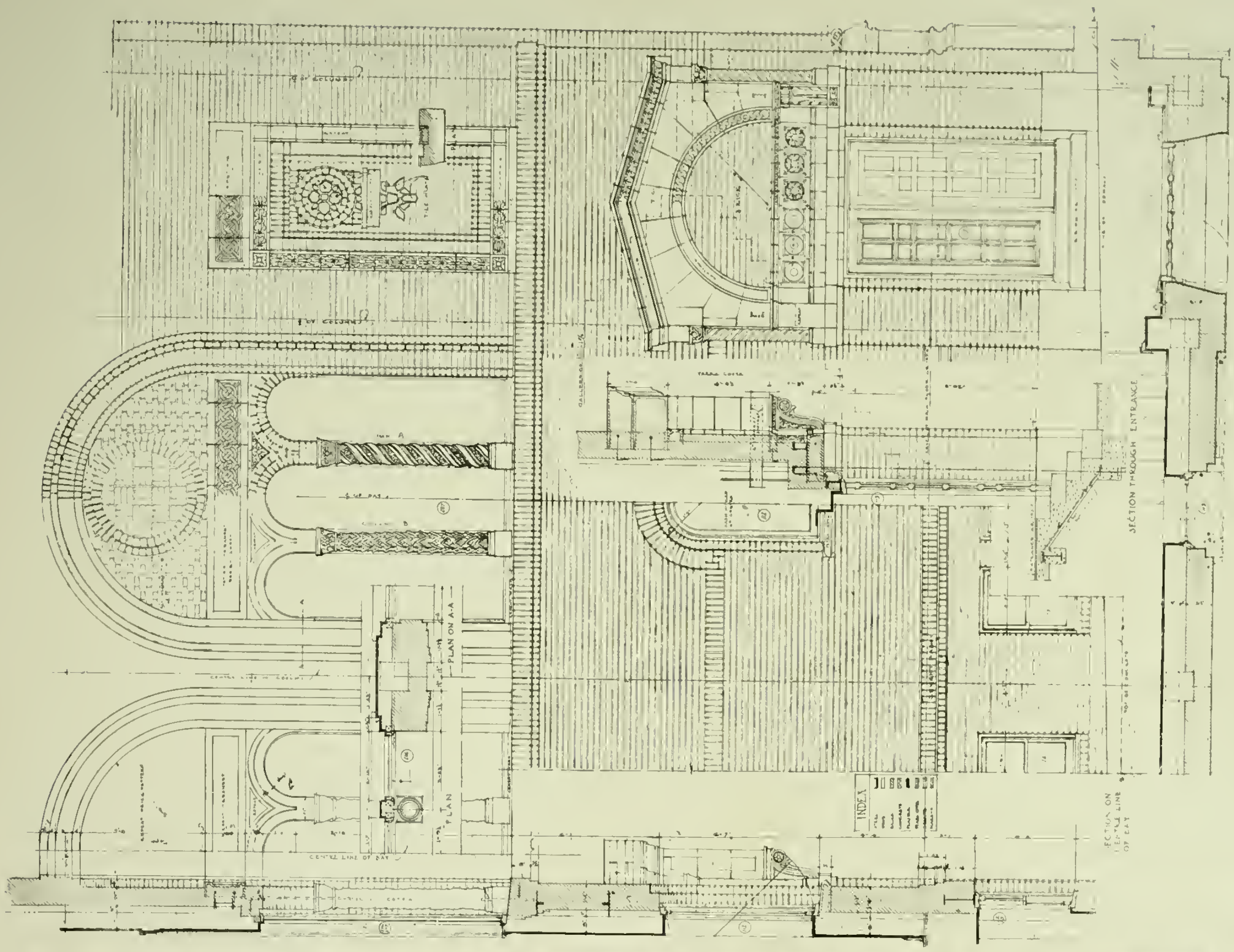
GALLERY PLAN

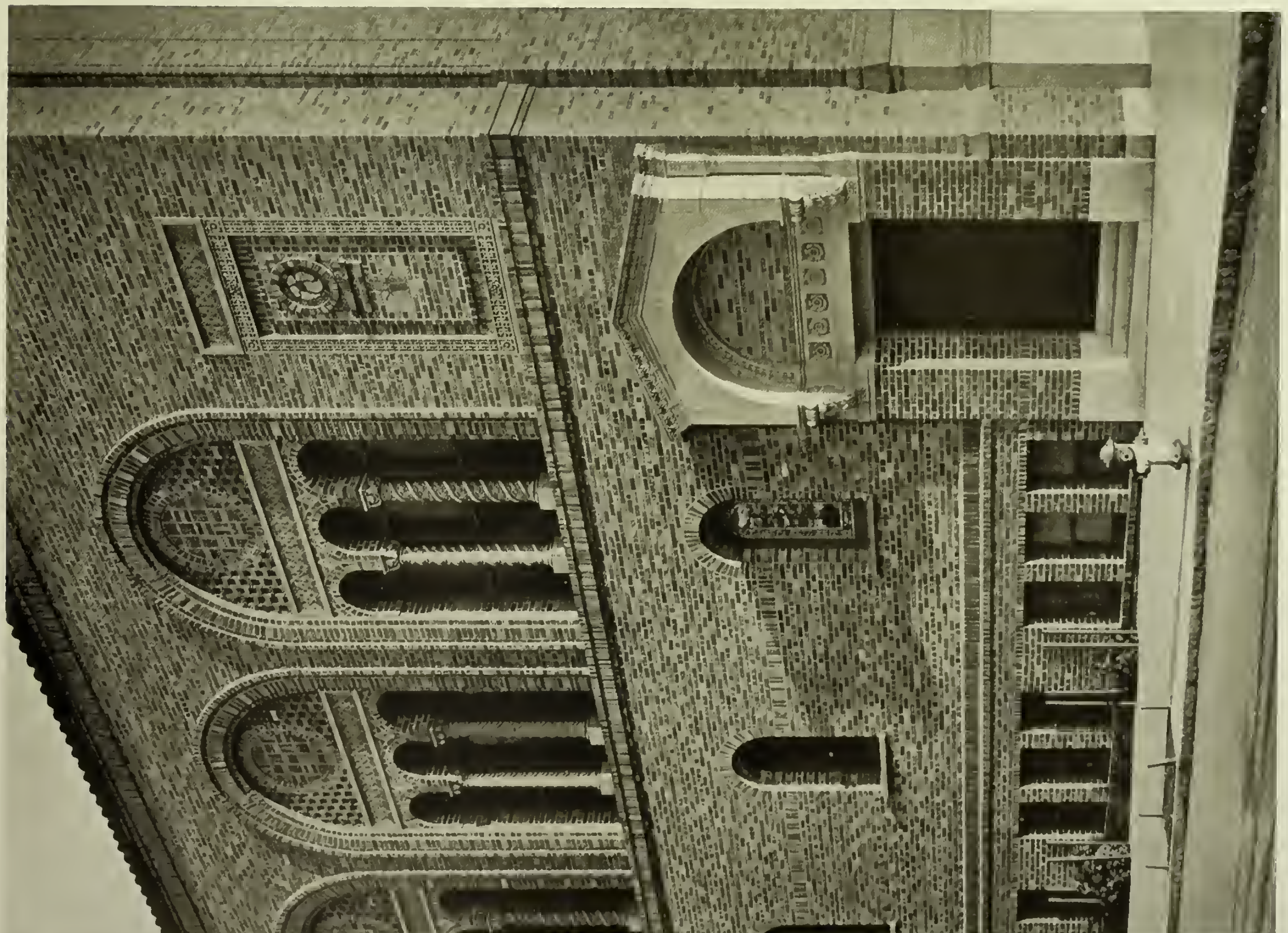


MAIN FLOOR PLAN

FIRST PRESBYTERIAN CHURCH, SAN FRANCISCO, CAL.

WILLIAM C. HAYS, ARCHITECT

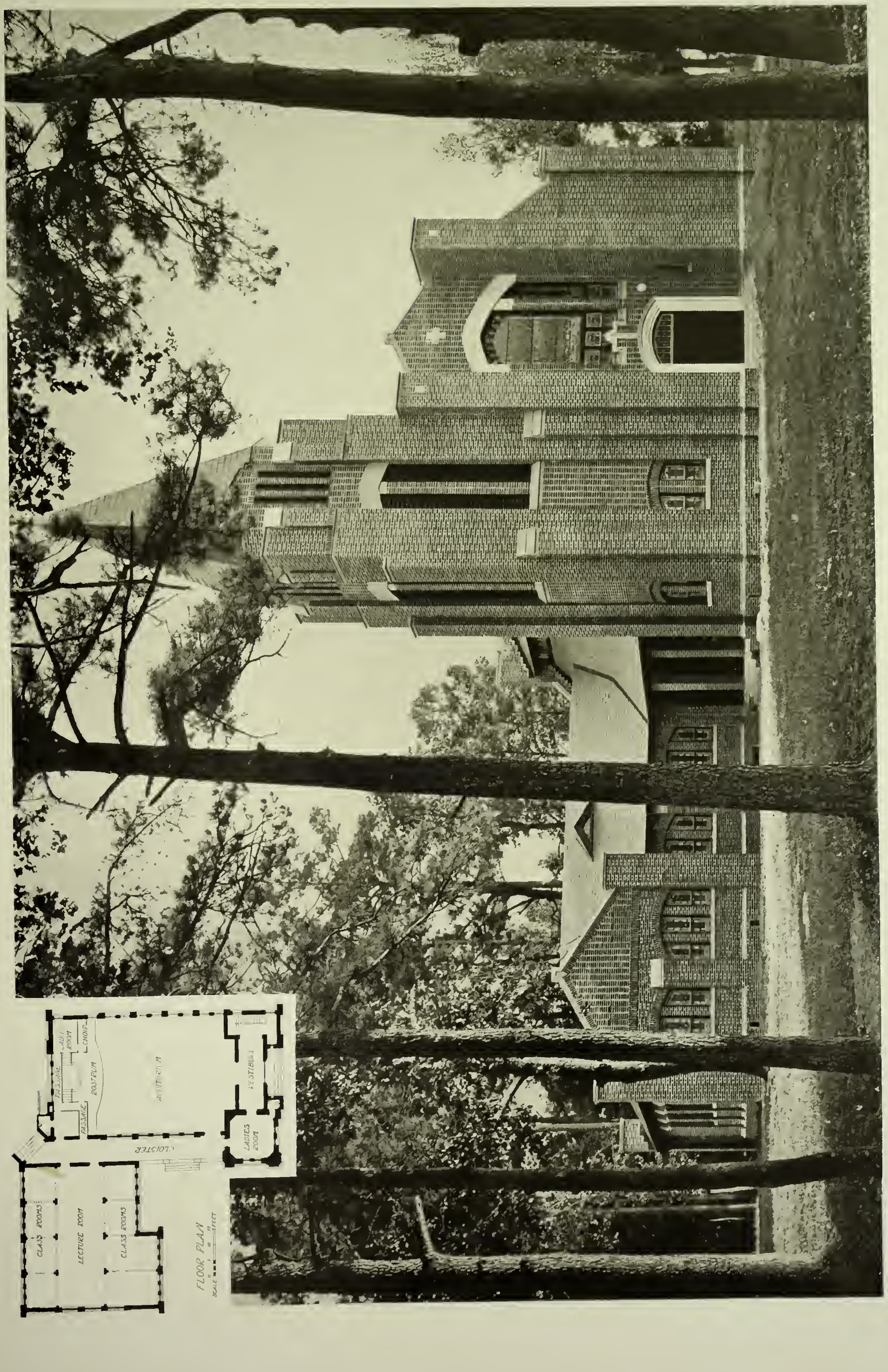




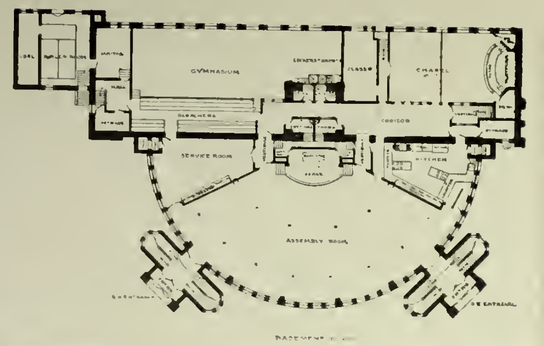
DETAILS OF SIDE ELEVATION

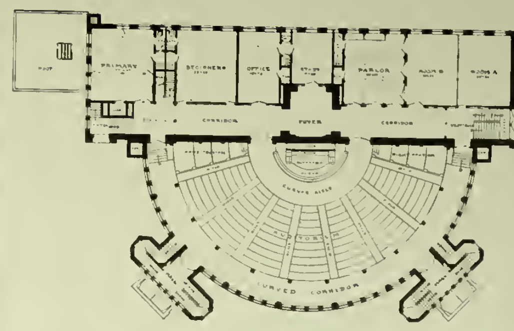
FIRST PRESBYTERIAN CHURCH, SAN FRANCISCO, CAL.

WILLIAM C. HAYS, ARCHITECT



BAPTIST CHURCH, CHURCHLAND, VA.
NEFF & THOMPSON, ARCHITECTS





MAIN FLOOR PLAN

ST. PAUL'S METHODIST EPISCOPAL CHURCH, CEDAR RAPIDS, IOWA

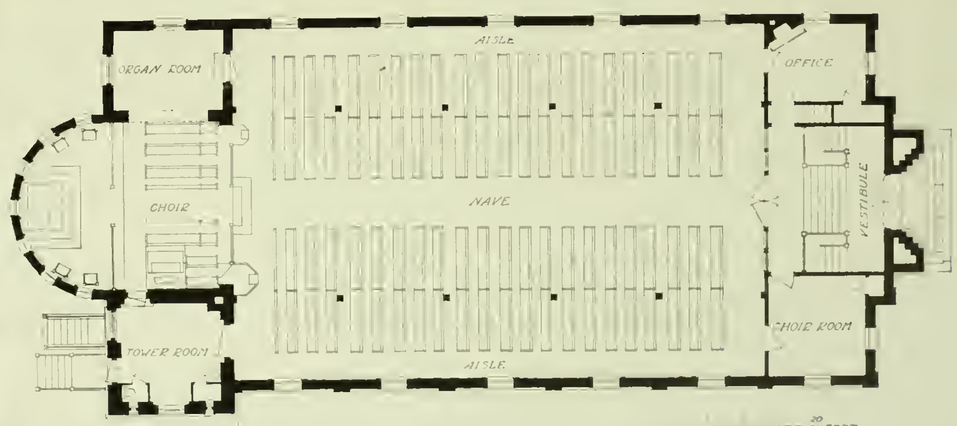
LOUIS H. SULLIVAN, ARCHITECT

MODIFIED AND COMPLETED BY WILLIAM C. JONES, ARCHITECT

CHURCH OF ST. AMBROSE, PHILADELPHIA, PA.
DUHRING, OKIE & ZIEGLER, ARCHITECTS

DETAIL OF ENTRANCE

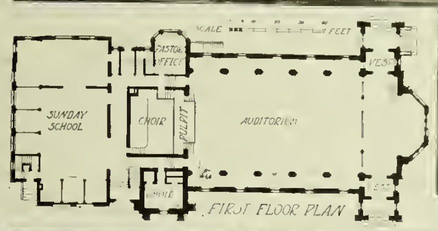
INTERIOR

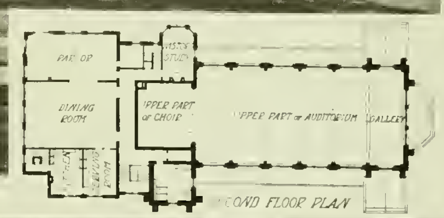


MAIN FLOOR PLAN

CHURCH OF ST. AMBROSE, PHILADELPHIA, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS



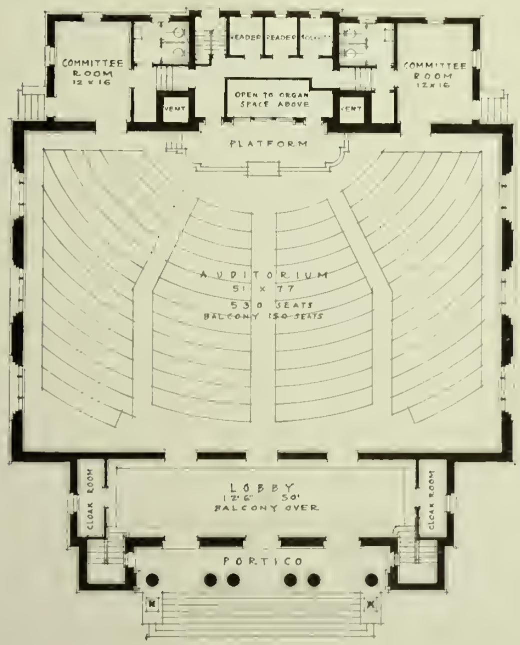


PRESBYTERIAN CHURCH, HIGHLAND PARK, ILL.

CHARLES S. FROST, ARCHITECT

FIRST CHURCH OF CHRIST, SCIENTIST, NEW ORLEANS, LA.
SAM STONE, JR., ARCHITECT

SIDE ELEVATION



MAIN FLOOR PLAN

INTERIOR

FIRST CHURCH OF CHRIST, SCIENTIST, NEW ORLEANS, LA.

SAM STONE, JR., ARCHITECT

MEMORIAL CHURCH, GREENWOOD, VA.

WADDY B. WOOD, ARCHITECT

MEMORIAL CHURCH, GREENWOOD, VA.

WADDY B. WOOD, ARCHITECT

ALL SAINTS' ROMAN CATHOLIC CHURCH, MASONTOWN, PA.
JOHN T. COMES, ARCHITECT

Some Old and Unfamiliar Spanish Buildings.

PART IV. DETAILS FROM THE SIGÜENZA CATHEDRAL AND PULPIT IN THE PALMA CATHEDRAL, PALMA DE MALLORCA.

By ARTHUR G. BYNE.

Illustrated from Photographs Specially Taken by the Author.

WHILE Sigüenza Cathedral dates from the XI. to the XIII. centuries, its cloister from which our Plateresque doorway was chosen was not finished till 1507, and its sacristy even later. Both these Renaissance features, as would be natural in a town so thoroughly medieval as Sigüenza, naively echo the older style. Thus in the cloister doorway where the carving has all the character of the platero's or silversmith's art, the form of the arch is Gothic, the pilasters are divided midway in most un-Renaissance manner, and the horizontal member is one floriated band instead of the conventional succession of mouldings. The whole *motif* is nevertheless very charming and has great decorative possibilities, particularly in architectural terra cotta. This is but one of many Plateresque features in the cloister. What is true of the stone work is true of Sigüenza's iron work, there being a succession of splendid semi-Gothic iron rejas along the cloister.

The deep arches of the sacristy are even more classic than Renaissance — really Roman in their composition. While giving the general appearance of semicircular arches, their center is really some distance below the spring course, resulting in a pleasant ungracefulness, if one may be permitted the paradox. As for the ornamentation of the barrel-vaulting it is considered the *bravura piece* of Spanish versatility. It consists of three hundred heads — portraits — separated by rosettes. Such profusion, clearly a reaction from the Moorish prohibition against the human semblance in art, would indicate that the architect was a disciple of Diego de Riaño of Sevilla, who inaugurated a system which laid great emphasis on statuary, not only in friezes and on the shafts of pilasters, but in the soffits of arches, in spandrels, and in domes. The light which filters through the one Romanesque cart-wheel window (the second being blocked up) is very impressive on this carving, and there is no doubt its meagerness was in the carver's mind, for none of his work is so flat as to be lost.

The length of the sacristy is seventy-two feet divided into four equal bays; the width of the room between columns twenty-two feet, and the arched recesses, three and one-half feet in depth. These dimensions are of sufficiently moderate scale to be applicable to-day, and a scheme which is practical for execution in architectural terra cotta.

Sigüenza Cathedral is a treasure-house of rich furnishings, the structure itself is an unusually fine piece of Romanesque; so, though the old town holds but little else than its cathedral, it is well worth an architect's visit. It lies halfway between Madrid and Zaragoza, and is unspeakably primitive.

Pulpit in Palma Cathedral. No architect visiting Spain should omit a trip to Palma de Mallorca, capital of the Balearic Islands. This city having always been inhabited by a wealthy aristocracy contains a large number of architectural monuments where certain very Spanish features may be observed. Palace patios, for instance, while common to all Spain, are here larger and treated in a much more important way, for the clemency of the climate permits their constant use; cornices, carved in wood and resting on stone bed moulds, have reached a more daring projection than elsewhere, and the open loggia at the top of the building is more generally seen. In short, there is a whole collection of architectural details well worth studying.

Palma possesses, besides her palaces, a remarkable Gothic cathedral. It belongs to the wide-naved Catalan class, having a span of sixty-four feet in the clear — one of the largest in any medieval building. Among its many beautiful furnishings some belong to the Renaissance period, and from these we have chosen a pulpit for illustration. It is one of two situated in front of the choir and connected by a balustraded screen. Who made it is unknown, but it is safe to say that the artist had visited Italy or may indeed have been a journeying Italian, for the work is reminiscent of several of the early Italian pulpits. Its base, resting on lions, goes back to the Romanesque period when this feature was much favored, but the rest is all Renaissance. The shaft composed of seven little niches, separated by ornamented colonnettes, is the most interesting part, and above it where the composition bellies out, is the most characteristically Spanish portion. Its corbeled figure is often seen in Spain, but one wishes it were better composed and executed in this instance — that it had more of the refinement noticeable above and below it. Fortunately, in the dim light of the cathedral, this connecting stage between the more admirable parts is in deep shadow and does not mar the satisfactory effect of the whole. The projecting *motifs* supported by the corbels are pleasant in themselves and frame in an interesting way the well sculptured reliefs between them.

Marble pulpits are not common in Spain, wrought iron, bronze, and carved wood being more often met with. This example is fourteen feet high, nearly thirteen feet across the top, and six feet through the shaft.

DETAIL OF CLOISTER DOORWAY

SIGÜENZA CATHEDRAL, SIGÜENZA, SPAIN

DETAIL OF SACRISTY

SIGÜENZA CATHEDRAL, SIGÜENZA, SPAIN

DETAIL OF PULPIT

PALMA CATHEDRAL, PALMA DE MALLORCA, SPAIN

Church Bells, Chime, and Peal Bells.

By CLINTON H. MENEELY.

"Unto the church I do you call, Death to the grave will summon all." — *Inscription on bell in Hampshire.*

ARCHITECTS who have traveled abroad and who have enjoyed the intonation of the wonderful chimes which so many of the cathedrals and even smaller parish churches possess, must realize that their fine, musical effect was not obtained by mere chance or even altogether by the style or quality of the bells. In all probability a great many calculations which seemed second nature to the craftsman of the early days were instrumental in producing the effects which we admire. Many conditions which detract from or increase the beauty of the bells are within the province of the architect of to-day, and a knowledge of the various classes of bells and the tones that it is desired for them to produce will enable him to construct his towers and belfries in such a manner as to utilize to the utmost the possibilities in the bells.

There is no limit to the number of bells that constitute a chime or peal, but in this country a chime is generally said to consist of eight bells, attuned to the eight tones of the octave, and in almost every case a bell attuned to the flat seventh tone of the scale is added, thus rendering the chime capable of producing music in two keys. A peal usually consists of three bells, attuned to the first, third, and fifth tones of the musical scale.

The part of the church tower which is to be used for bells should be carefully designed for this express purpose. In other words, a bell chamber should have special reference to bells, architectural proportions or ornamentations being entirely subservient in this part of the tower plans.

This bell room should, in every case, be as nearly *open* as possible, and this implies that, if windows are to be used, they should be as wide and high as space permits, and should be free of louvers, so far as the bell service is concerned. If louvers are used, they should be placed at an angle of 45 degrees, and so set that the *top* of one louver is lower than the *bottom* of the louver just above. Perpendicular pendants should not be placed on the outside edge of these louvers, for such pendants greatly disturb bell sound.

In view of the complications which are apparent in many bell chambers, every founder will say that, independent of architectural beauty, the bell chamber should consist solely of a ceiling and four corner posts. Such a simple arrangement would surely solve the question of bell sound outlet.

The next consideration is that the floor of the bell chamber should be *higher* than the roof of the church and nearly on a level with the base of the windows, so as to avoid the dead space of a pocket below the windows, since such a pocket, in every case, greatly mars the smoothness of the bell tone. For like consideration, the windows should be carried as high as possible, so as to have the bell room, between the top of the windows and the ceiling, also free of dead space. Inasmuch as the floor and ceiling of the bell chamber have no bearing on the outside appearance of the tower, these suggestions as to their proper location and consequent help to the bell tone are strongly urged.

The tower of every church should have trap doors of ample size, all the way from the base to the bell room floor, since the cutting away of floors or ceilings or the tearing out of windows or mullions to secure bell passage is seriously destructive.

The ceiling in the bell chamber, and which is often entirely neglected, is nearly as essential for sound effect as the bell clapper itself, since this overhead planking, properly placed, not only prevents the bell tone from passing up into the tower to be lost in part, and badly muffled at best, but when properly set and backed up so as not to waver, this ceiling becomes a most desirable sounding board in reflecting the bell tones downward. This part has to be well considered, since the vibrations of a bell have an upward tendency and ought to be reflected towards the ground, which is a natural conductor of sound. Spruce, which is a resonant wood, is the best wood for use in a bell chamber.

"Our church is on raised ground and the bell will have a good chance," is a common statement of many architects, but the discouraging reply has to be that a bell which is in a church situated in a valley has every advantage over a bell which is located on higher ground, as explained in the preceding paragraph.

The *relative* tone carrying capacity of bells of different weight receives much consideration from those who are investigating bells, so it is interesting to know that the tone of one bell is heard about as far as that of another without regard to the difference in the sizes of the bells. For instance, in a chime in which there is a bell of 1,000 pounds weight and another of 3,000 pounds weight, the small bell will be heard nearly, if not quite, as far as the larger one. Since all bells, so to speak, can be heard about the same distance, the question comes up as to why a larger bell, at much greater expense than a smaller one, is ever secured. The answer is because of the pitch or keynote of the respective bells, the larger one having what is termed more *dignity* of tone than the smaller one. There are very few church societies, however limited their funds may be, that want a summons to service to be at all suggestive of "all aboard," and it has been to avoid the shrill tones of the very small bells, in both peals and chimes, that they have been greatly ignored.

The music, too, which should be played on peals and chimes, has to be appropriate and not at all trifling in character, and the selection of the music should be in charge of those who will discriminate between such a tune as "The Church's One Foundation" and a rag-time ballad of the street. With this care in selection and discrimination, a properly attuned and equipped set of bells carries most agreeable sound, not only throughout the general community, but into the homes of those who, through illness or disability, are unable to attend church service. Then, too, peals and chimes are in great demand on holiday or patriotic occasions, and many chimes, in this country and elsewhere, are regularly scheduled for popular concerts.

This short essay on music, to so term it, may be of some value to architects, since one of the first questions which a church committee is apt to ask is in reference to the weight, tone, and number of bells appropriate for the proposed tower, and an architect cannot be too well informed in this part, since both peals and chimes, many of these being in memorial form, have become exceedingly popular and the possible installation of such bells has to be considered.

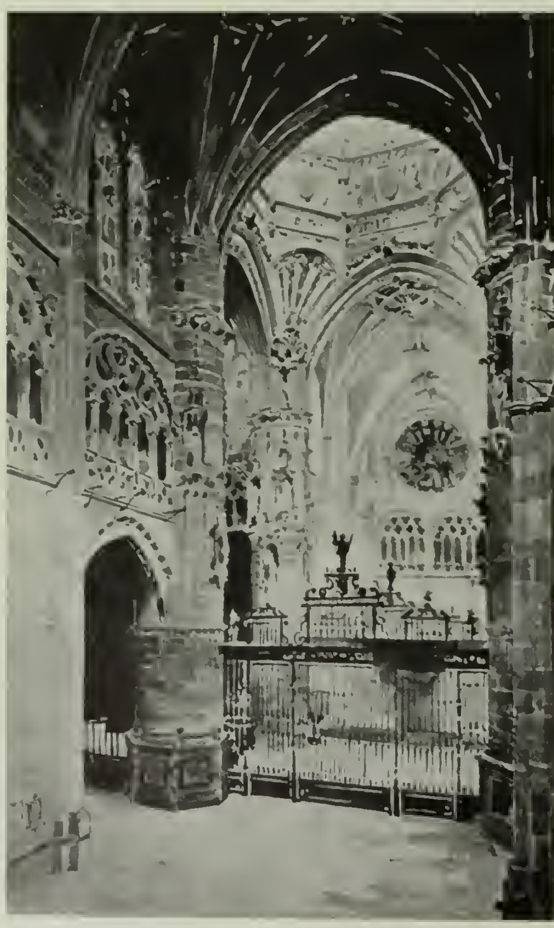
The majority of bells which are furnished for church use have appropriate cast or engraved inscriptions upon them, and architects are frequently consulted in the matter of their selection.

The architect is perhaps most concerned in the amount of space which various types of bells occupy, and it may be generally accepted that a peal, which usually consists of three or four bells, can be set in a space of 8 to 10 feet square, and that a chime, usually consisting of nine, ten, or eleven bells, can be set in a space of 10 to 14 feet square. A ringing room, so termed, has to be considered for some story below the bells, and such a room, of course, should have ample light and ventilation. Contrary to what is generally thought, there is very little sway or jar on the part of tower bells which have been properly erected, whether these be few or many.

Always beautiful in form, bells are an ornament to any tower, and it was really for the installation of bells that towers were originally designed. It is interesting to note that, realizing the necessity and convenience of bells, one of the canons of a large church organization especially directs that "churches must secure bells and bell ropes."

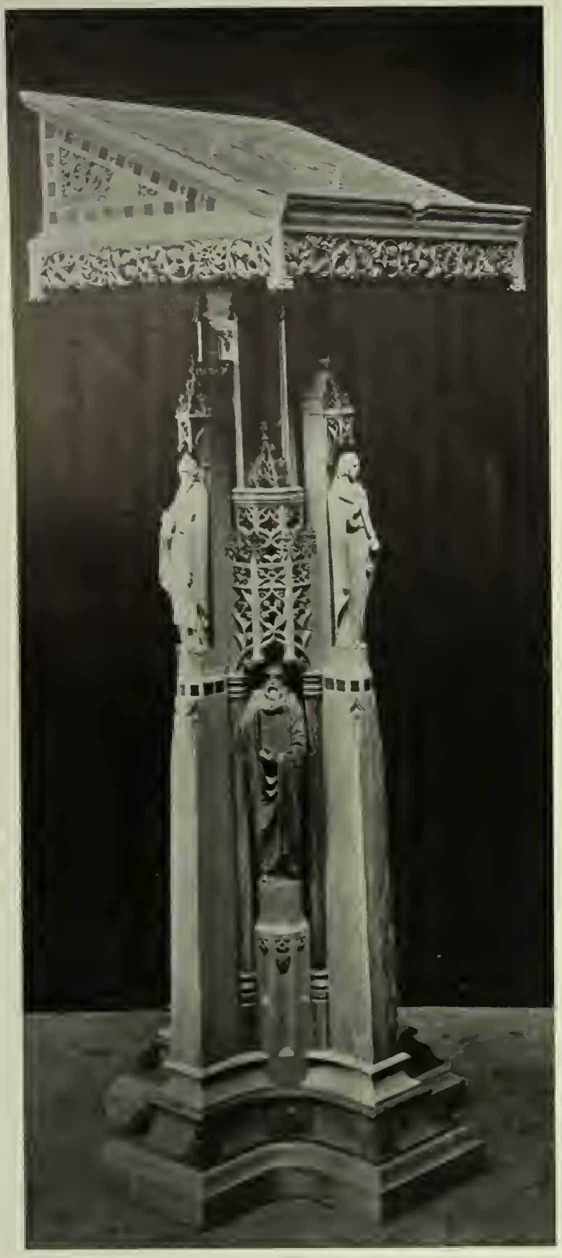
The practical requirements of bell installation are few and simple and easily expressed, but in a romantic or perhaps sentimental way volumes could be written upon the bell. It can with truth be said of bells that ever since their introduction they have been highly regarded by all nations, the Turks, alone, excepted. Even the Puritans, although the enemies of church music and of almost everything which had been associated with established religious forms, did not wage direct war against bells. Certainly there is nothing of simple human contrivance for which the community, in whatever locality, has stronger regard, or with which associations are more deeply mingled, and there is a feeling connected with bells which has caused them to be considered by the people of nearly every nation as not inappropriate memorials to departed relatives and friends.

Says a distinguished English writer: "From youth to age the sound of the bell is sent forth through crowded streets; or floats, with sweetest melody, above the quiet fields. It gives a tongue to time, which would otherwise pass over our heads as quietly as clouds, and lends a warning to its perpetual flight. It is the voice of rejoicing at festivals, christenings, and marriages, and of mourning at the departure of the soul. From every churchyard it summons the faithful of distant valleys to the house of God; and when life is ended they sleep within the bell's deep sound. Its tone, therefore, comes to be fraught with memorial associations, and we know what a throng of mental images of the past can be aroused by the music of bells."



INTERIOR OF BURGOS CATHEDRAL, SPAIN

FROM WATER COLOR DRAWING BY CHARLES Z. KLAUDER



Lectern in St. Thomas' Church, New York
Bertram G. Goodhue, Architect

Reredos, St. Mark's Cathedral, Minneapolis, Minn.
Edwin H. Hewitt, Architect

Ecclesiastical art reaches the most elaborate terms of interpretation in the altar and chancel fittings. Upon these the designer may lavish his fullest creative ability to make the sanctuary the focal point in the interior. The accompanying examples are illustrative of the use of figure sculpture and ornamentation in which there is evident a fine sense both of proportion in scale of the ornament to the figures and of balance in composition.

Lectern in Bethlehem Chapel, Washington Cathedral
Henry Vaughan, Architect

EXAMPLES OF ECCLESIASTICAL FURNITURE

EDITORIAL COMMENT AND NOTES FOR THE MONTH

LOVE and devotion, enthusiasm and faith, lie behind all men who successfully do the big things in ecclesiastical architecture. These constitute the mainspring of their activity, and without these things nothing whatever can be done.

The question of rightly expressing the church through architectural forms has developed many briefs. The modern Goth is the defender of Christian civilization against paganism. He considers it folly to think of any form of classical architecture as a fitting material expression thereof because Christianity had definitely rejected them after a fair trial, and because Renaissance architecture was the style developed to voice that element in the Renaissance which was triumphant over all that was sane, sound, and Christian.

The devotee of the Gothic style believes that he wrongs the reformed church, Catholic or Protestant, if he tries to cloak her glory in the vesture of heathendom. That there is one Christian style, and only one, he is sure; it did not die in the sixteenth century, but lives to-day; it grows by accepting new expedients, fitting itself delicately to every changing mood and movement in the world. Naturally, it will become as different to what is now called Gothic as that of the fifteenth century was to that of the thirteenth, but it must begin where it left off working at first from precedent.

It is the hope of many that some day just one school of architecture will range itself boldly on the side of Christian art as against pagan art. The teachings which lie beneath Greek and Roman and early Renaissance should form the basis for the proper development of Christian architecture. The laws which are laid down should be learned first. One would then understand that the forms of pagan architecture possess no exclusive sanctity whatever and are much less beautiful and highly developed than those of the Christian style. They will teach that architecture, with all other forms of art, is a language and that in spite of appearances this is really a Christian civilization under which we live, and therefore it must voice itself through a Christian tongue.

IT IS really impossible to report at this time without expert examination, which is not at present possible, what damage has been done to the Cathedral at Rheims. The photographs which have come to our notice show that the great mass of the Cathedral is intact, not even the whole roof having been destroyed. The structure must have been badly shaken and made insecure, but we have yet to learn the damage done to mouldings, tracery, glass, and sculpture. We have every hope that it will be possible to restore most of the original beauty and glory of this wonderful edifice.

There are those who think that if the destruction has gone too far, it would be better to leave the great building a ruin for all time to commemorate what it is hoped may be the last expiring effort of barbarism in Western Europe.

THERE has been a good deal of comment and some criticism of the general layout of the different elements of the new building for the Second Church in Boston, Plates 145-147 in this issue. The problem was a very unusual one and quite different from the ordinary arrangement of a Georgian Church. The two determining elements in the problem were the shape of the lot and the style chosen by the Building Committee. The lot is roughly triangular with a concave curve on the hypotenuse side, leaving thus a good deal less land available than if the triangle were complete. On the Beacon street side of the lot there was a restriction which necessitated keeping the main building back on the line of the existing houses.

There are three obvious *partis*,— first, to place the church on the 45-degree line with the façade facing Audubon Circle; second, to place the church proper perpendicular to Beacon street, and third, parallel to Beacon street. The architects felt in regard to the first scheme that it would be extremely difficult to obtain the right feeling to the whole group. The church, as has been said, was to be Georgian, and express, as far as possible, the Colonial tradition of the old society for which it was being built. The precedents were, of course, of two sorts, — first the Colonial meeting house, and second, the churches in England, of which Sir Christopher Wren's are the chief examples. The Colonial meeting house was usually built on an absolutely unrestricted site, with plenty of room in all directions, and consisted simply of a church and tower.

Wren's churches were built on irregular city lots, hemmed in on all sides by other buildings and without any exterior effect except for the towers. Neither of these conditions prevailed on Audubon Circle, so the problem had to be treated on its own merits. Having abandoned the 45-degree placing of the church proper, there remained the other two possibilities. If the church proper were perpendicular to Beacon street, one wall would be the party wall against the next houses and would, therefore, be dark except for the clerestory. For this reason, the other plan was chosen of placing the church proper parallel to Beacon street at the farther edge of the lot, thus enabling the nave to be lighted from two sides.

The most important aspect of the church is from Audubon Circle and, therefore, the composition was considered largely from this point. If the tower had been placed in the traditional position at the end of the church proper, the composition would be unbalanced and one-sided, therefore the tower was placed in the center, filling out the reentrant angle between the church and Parish House, thus taking its place as the dominant factor in the composition.

THE BRICKBUILDER

VOLUME XXIII NUMBER 11

CONTENTS *for* NOVEMBER 1914

PLATE ILLUSTRATIONS

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PENCIL DRAWING OF WASHINGTON ARCH
WASHINGTON SQUARE, NEW YORK, N. Y.
McKIM, MEAD & WHITE, ARCHITECTS
BIRCH BURDETTE LONG, DELINEATOR

THE BRICKBVILDER

VOLUME XXIII NOVEMBER, 1914 NUMBER 11

Recent Collegiate Architecture

AS EXEMPLIFIED IN THE WORK OF MESSRS. SHEPLEY, RUTAN & COOLIDGE AT HARVARD UNIVERSITY AND MESSRS. CRAM, GOODHUE & FERGUSON AT RICHMOND COLLEGE.

THE early American colleges had their start with modest endowments, which were conserved for the maintenance of professors and the building up of scholarly institutions rather than expended in the erection of fine buildings. The growth of these colleges proceeded slowly, but on a sound and rational basis, and as money was available and expansion necessitated, their buildings were increased in number. During this time, however, the art of architecture in America was in a transitional state, and the buildings erected from 1830 on, that now stand, are monuments to the perverted architectural ideals of the time.

The American universities have, as a result, no great architectural heritage with the exception of the older eastern ones, which had their first buildings conceived before the Revolution or in the early days of the Republic. In the following illustrations of the new Freshman Dormitories at Harvard and the new buildings for Richmond College there are evident two widely different types of architecture. The one is the result of working in the spirit of Colonial tradition — the only real American heritage we possess — and the other the widely accepted style of modified English Collegiate Gothic.

In recent years the leading American colleges have been fortunate to a greater degree than those of any other country in receiving large and frequent gifts of money. This has provided at once the services of the ablest staff of professors, the best possible equipment, and buildings which are well fitted to educational purposes. With ampler means and a widened conception of architecture by the college authorities, the opportunity was afforded the firms of Cope & Stewardson, Frank Miles Day & Brother, and Cram, Goodhue & Ferguson, among others, to inaugurate and develop an American style of collegiate architecture which, in the light of recent achievements, promises to rival that of the older English institutions in excellence.

Probably the first serious attempt at developing a collegiate style was made in the buildings of the University of Pennsylvania by Cope & Stewardson and, having little worthy tradition to guide them, the designers naturally turned to the great English universities for their inspiration. Their example was shortly followed in similar work at Princeton, Yale, and Washington universities, which established a very strong precedent, till now practically every college in America has adopted this style as being the most expressive for collegiate purposes, with the principal exceptions of Columbia, the Massachusetts Institute of Technology in their new buildings on the Charles River in Cambridge, and Harvard University, who still adhere to the Classic.

Messrs. Cram, Goodhue & Ferguson of late years have had many and large commissions in this field. Their work at the U. S. Military Academy at West Point and the recently completed Graduate School at Princeton are examples of the masterful way in which they work, and in the new buildings at Richmond College they have once again proved the great beauty and utility of the style. Conditions in this case, however, were different from those that existed at West Point and Princeton in that financial means were not so ample, and that the prime consideration was to obtain as large and complete a group of buildings as possible with the funds available, the architecture being a matter of secondary importance. This difficult condition they have met with marked success — the buildings have been built with a strict regard for economy and have therefore been reduced to the simplest terms of the style, and in spite of these limiting conditions they fit the gently rolling character of the country side on which they are placed to an unusual degree.

The new site of Richmond College is a very remarkable one. It is a tract of almost unoccupied land about five miles west of Richmond, in the town of Westhampton. In the center is a narrow lake, about a quarter of a mile long. The land is generally wooded with pine, some hard wood, and a good deal of undergrowth. It slopes down to the lake on both sides, but is broken up laterally into hillocks and ravines, which are of the most irregular contours, especially on the east side, where most of the buildings have been placed. Any formal arrangement of buildings was utterly impossible, and in the final plan the architects followed in great measure the contours of the land, depending upon interesting grouping and vistas to give the group architectural character. Certain axes have been developed and emphasized, it is true, but the picturesque relation of the elements of the composition is far more important.

The main group, the Men's College, is on the east side of the lake, and the Women's College on the west, so far away from the other buildings as to have very little architectural connection with them. The center of the Men's College will be the great tower in the center of the Administration Building. About this are grouped the recitation halls and library. The professional schools make another group, the dormitories and chapel a third, the stadium, gymnasium, and refectory a fourth. The power house is on low land at the lower end of the lake, and the laboratories west of it, nearer the Women's College.

Standish Hall from Charles River Boulevard

The Women's College is the largest single building of the group; it is made up of a wing of lecture rooms and a residential quadrangle containing a dining room, common rooms, and dormitories. These latter are arranged on the corridor plan, but are divided into groups, each under the supervision of a resident teacher.

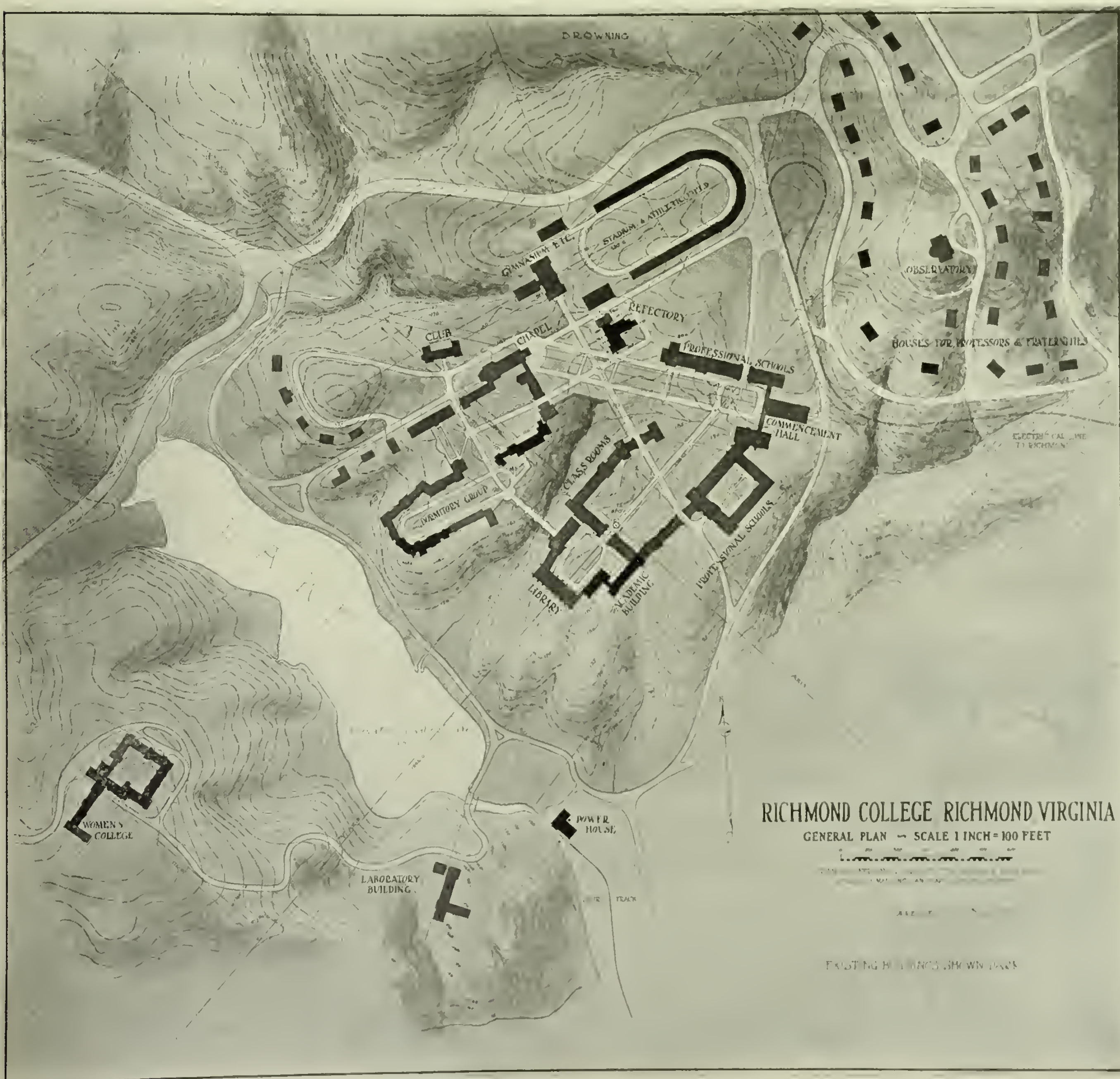
The buildings are fireproof throughout, built of brick with concrete stone trim. All the windows have metal casements with leaded glass. A considerable amount of glazed colored tile has been used on the exterior of the buildings with very effective results. The roofs are of variegated slate. The whole structure is an honest, straightforward piece of design and construction and an interesting addition to American collegiate architecture.

In considering the new dormitories at Harvard University in Cambridge, we encounter other conditions than those affecting the design of the preceding group. There were large funds at the disposal of the university; there was a decided rich font of architectural precedent to draw upon, and the buildings were to be located on a comparatively small area of ground in the center of a closely built-up section. The college authorities and the architects, Messrs. Shepley, Rutan & Coolidge, elected to perpetuate the Colonial traditions in the new group, and wisely so, for perhaps in all American universities there is nothing to equal the romance or inspiration to be derived from the fine old buildings that grace Harvard College yard.

The old Harvard halls have obviously been taken as a

General Plan
Harvard University Freshman Dormitories, Cambridge, Mass.
Shepley, Rutan & Coolidge, Architects

General View of Women's College from the South



General Plan, Completed Buildings Shown Dark

Richmond College, Richmond, Va.
Cram, Goodhue & Ferguson, Architects (Boston Office)

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General View of Women's College from the South

General Plan, Completed Buildings Shown Dark

Richmond College, Richmond, Va.

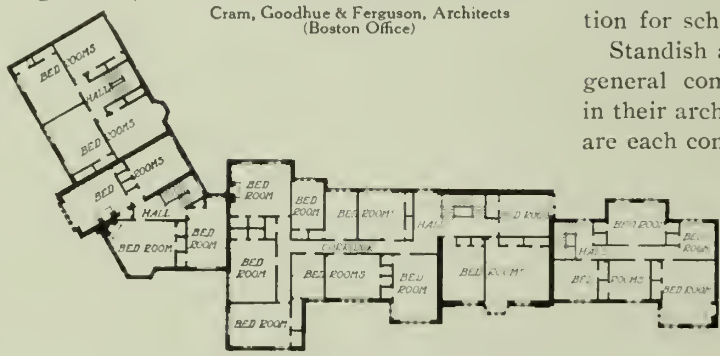
Cram, Goodhue & Ferguson, Architects (Boston Office)

model, but the newer buildings can in no sense be considered a copy of this existing work, but rather highly individual pieces of design which have been based on this excellent precedent. The whole scheme is a monument to the judicious expenditure of generous donations and to the untiring efforts of President Lowell, whose project of housing the freshmen together has thus been brought to completion in a very brief space of time.

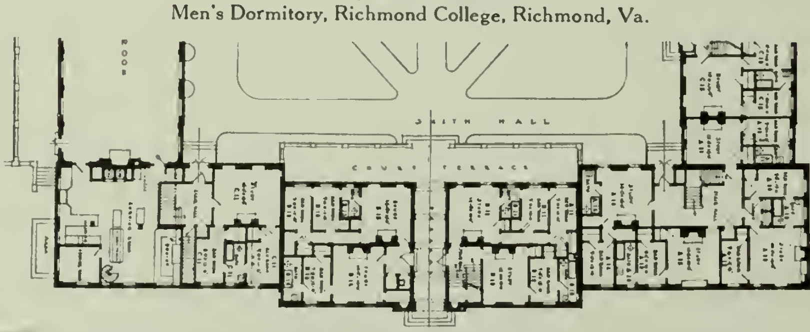
The buildings are located on the river bank, only a short distance from the college yard and easily reached from there by way of Boylston, Dunster, or Holyoke streets. They are equally near the college boathouses and within easy reach of Soldiers' Field and the Stadium just across the river. The largest hall, accommodating about two hundred students, fronts on Boylston street, while the others, which are somewhat smaller, face the river. The three halls have a total accommodation of about four hundred and seventy-five students, and the scheme contemplates the construction of a fourth, facing the river, to provide for future growth.

The Smith Halls, as they are called, after the donor and his parents—George, Persis, and James Smith — form the largest group. Persis Smith Hall fronts on Boylston street, and directly across the court on the same axis is James Smith Hall, with George Smith Hall at the north side and the dining hall on the south side. These halls are the most domestic in style and possess some of the choicest Colonial detail of the entire group. The quadrangle is spacious and the long interior façades appear to advantage from any angle. The lower stories have heavy white shutters hung with wrought iron hinges and fastened back to the wall by the iron S-shaped turnbuckles typical of the period. The various entrance doors have been distinguished with different Colonial treatments and lighted by graceful iron lanterns, all of which help to create an atmosphere that at once is in complete harmony with time-honored traditions and a great inspiration for scholarly thought and conduct.

Detail of Men's Dormitory, Richmond College
Cram, Goodhue & Ferguson, Architects (Boston Office)



Typical Floor Plan
Men's Dormitory, Richmond College, Richmond, Va.



One-Half Plan of Smith Halls, showing First Floor Plan of James Smith Hall

Standish and Gore Halls are alike in general composition, though differing in their architectural treatment. They are each composed of a central portion, four stories in height, flanked by lower wings, the whole making three sides of a court, the fourth side of which is an enclosing fence with entrance gates in the center. In Standish Hall the architects have followed the older Harvard buildings to a greater extent, probably, than in any of the others, such details as the moulded brick water table and belt courses being taken directly from Hollis Hall. Gore

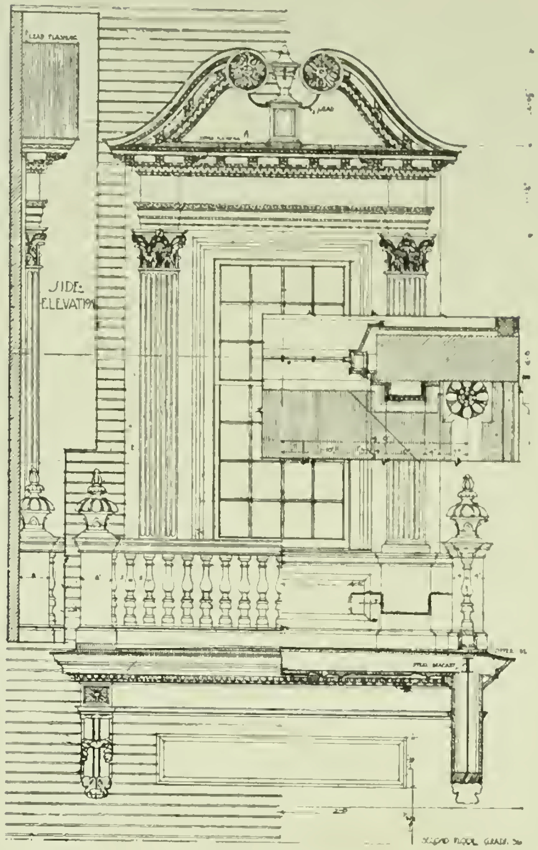
Façade of James Smith Hall from Extension of Dunster Street
Harvard University Freshman Dormitories, Cambridge, Mass.
Shepley, Rutan & Coolidge, Architects

Hall, while similar in mass and proportion, shows on the other hand the influence of English work of practically the same date. Its architecture pleasantly suggests the best period of the English Renaissance or the quiet dignity of an old London town house. The detail of the central portion has a sober dignity that is very restful and inviting. The carved festoons, the bold use of the order, and the circular openings give the court façades an undeniable amount of style and charm.

Each of these buildings is divided into five sections, containing ten to sixteen suites with an entrance from the court and separate interior staircase, but they are connected on each floor by fire doors to furnish a secondary means of exit in case of emergency. The dining and common rooms in Standish and Gore Halls occupy the entire first floor of the central sections. The floors have been lowered below grade to give greater height to these large rooms without affecting the expression of story heights on the exterior.

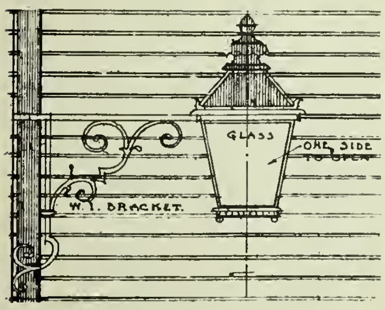
In the basement of the dining hall wing of Smith Halls is the immense kitchen in which the food for all three dormitories is prepared. It is connected with serving rooms in the other dormitories by a long tunnel about 8 feet high and 6 feet wide, which contains the heating pipes from an adjacent power house.

The exterior walls are of rough, hard burned red brick with variegated slate roofs and stone and white painted wood details. They depend for their effectiveness upon the texture of the brickwork and the spacing and proportion of the openings, rather than upon any emphasis that has been given to architectural motives. The simple architectural details which have been used are, however, no less excellent than the proportion and fenestration. They follow the best Colonial precedent, and brought together in this consistent way they are as perfect an interpretation of Colonial forms as it has been our good fortune to see.

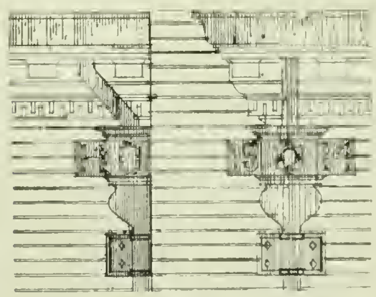


Detail of Central Window on Quadrangle Façade of James Smith Hall
Scale of Reproduction, 1 inch 4 feet

Our readers will note that on this and other pages we reproduce the detail drawings of the Harvard University Fresaman Dormitories in a special manner which will permit them to be scaled accurately, and insures to those interested the fullest means of studying these drawings of exceptional Colonial forms.



Detail of Wrought Iron Lantern
Scale, 1 inch = 2 feet

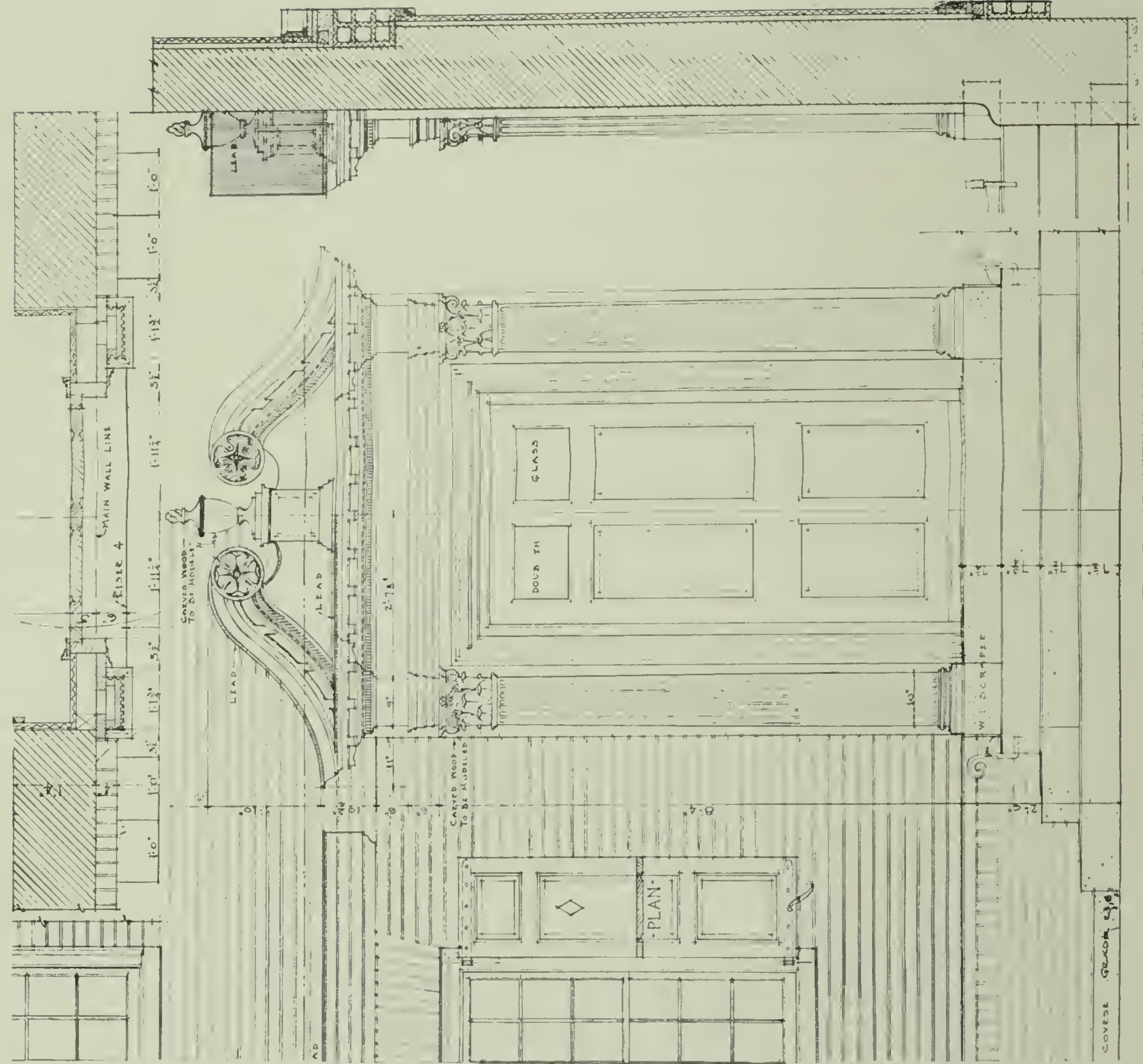


Detail of Typical Leader Head
Scale, 1 inch 3 feet

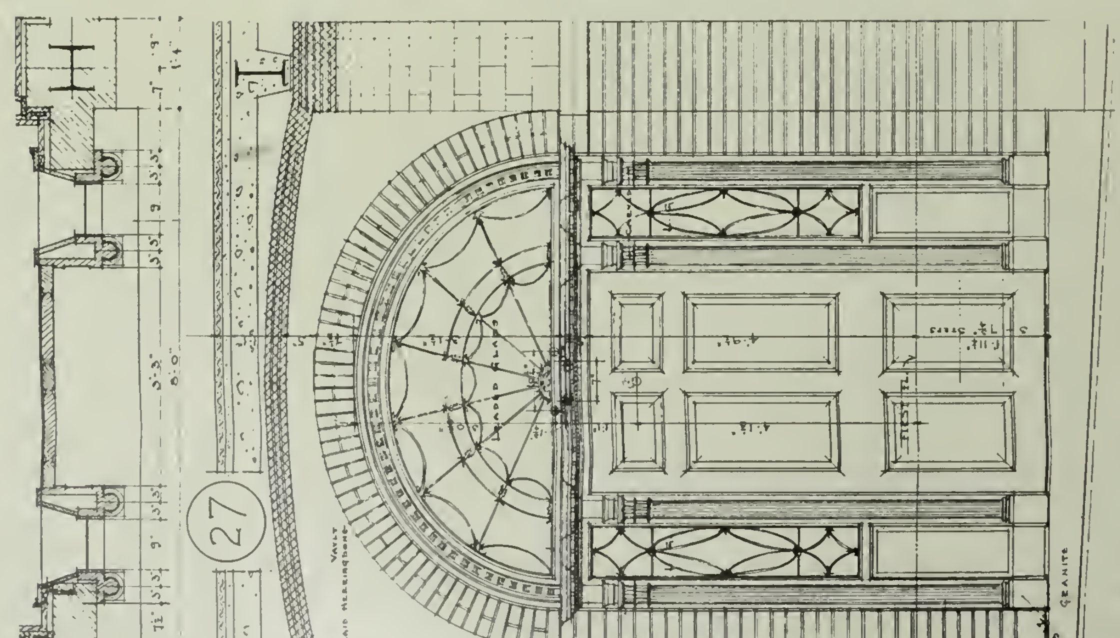
Entrance Door to Smith Halls Dining Hall

Central Portion of Court Side of Wings of Gore Hall

Entrance Door on Court Side of George Smith Hall



DETAIL OF CENTRAL ENTRANCE TO GEORGE SMITH HALL FROM QUADRANGLE



These drawings are reproduced at the same scale and show the comparative size and scale of the two doorways as they exist, which is not apparent in the photographs of the completed work reproduced on the page below.

DETAIL OF ENTRANCE IN ARCHWAY OF PERSIS SMITH HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

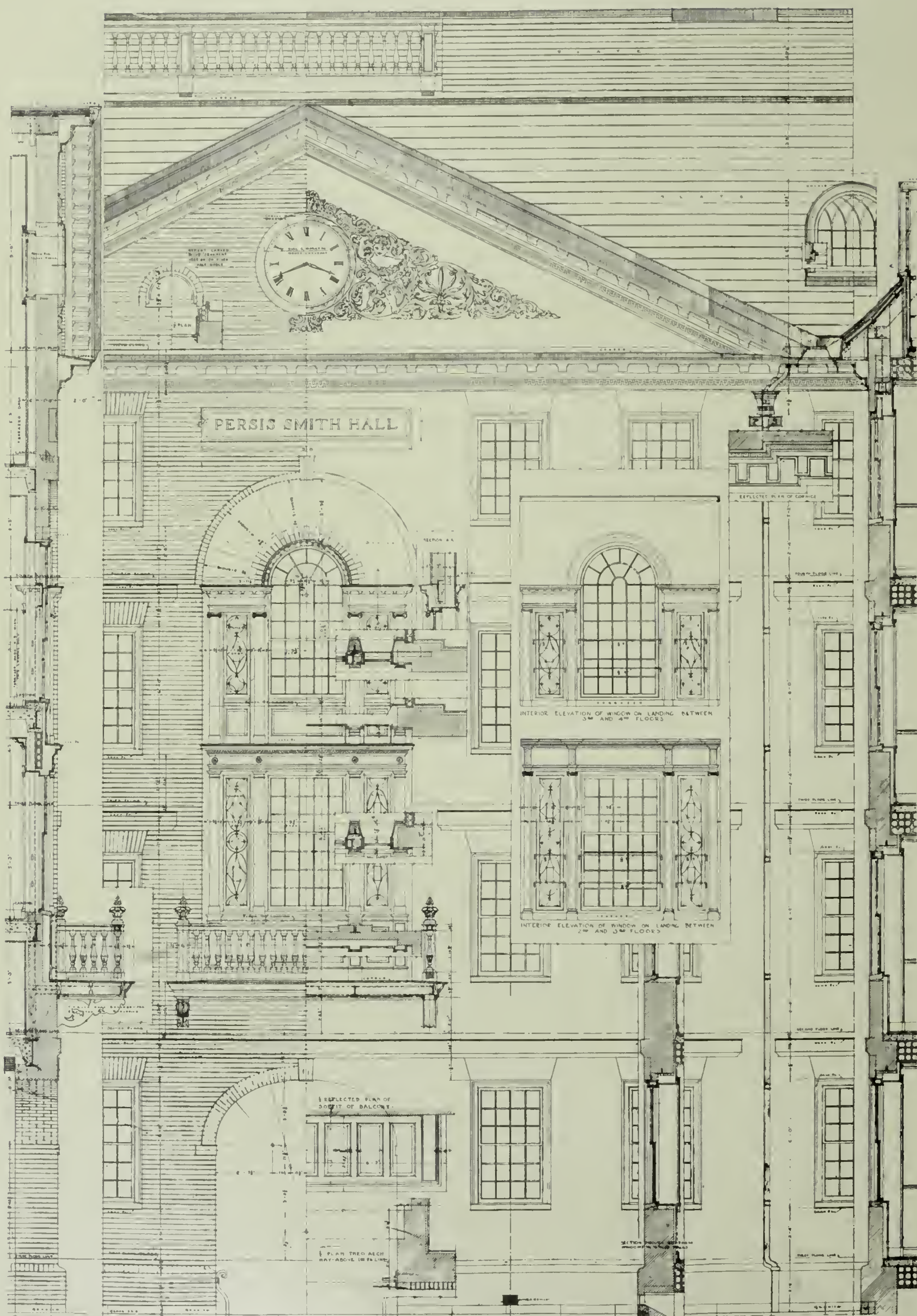
Scale of Reproduction, 3/8 inch 1 foot

CENTRAL DOORWAY ON QUADRANGLE SIDE OF GEORGE SMITH HALL

DOORWAY TO PERSIS SMITH HALL IN ARCHWAY LEADING TO QUADRANGLE

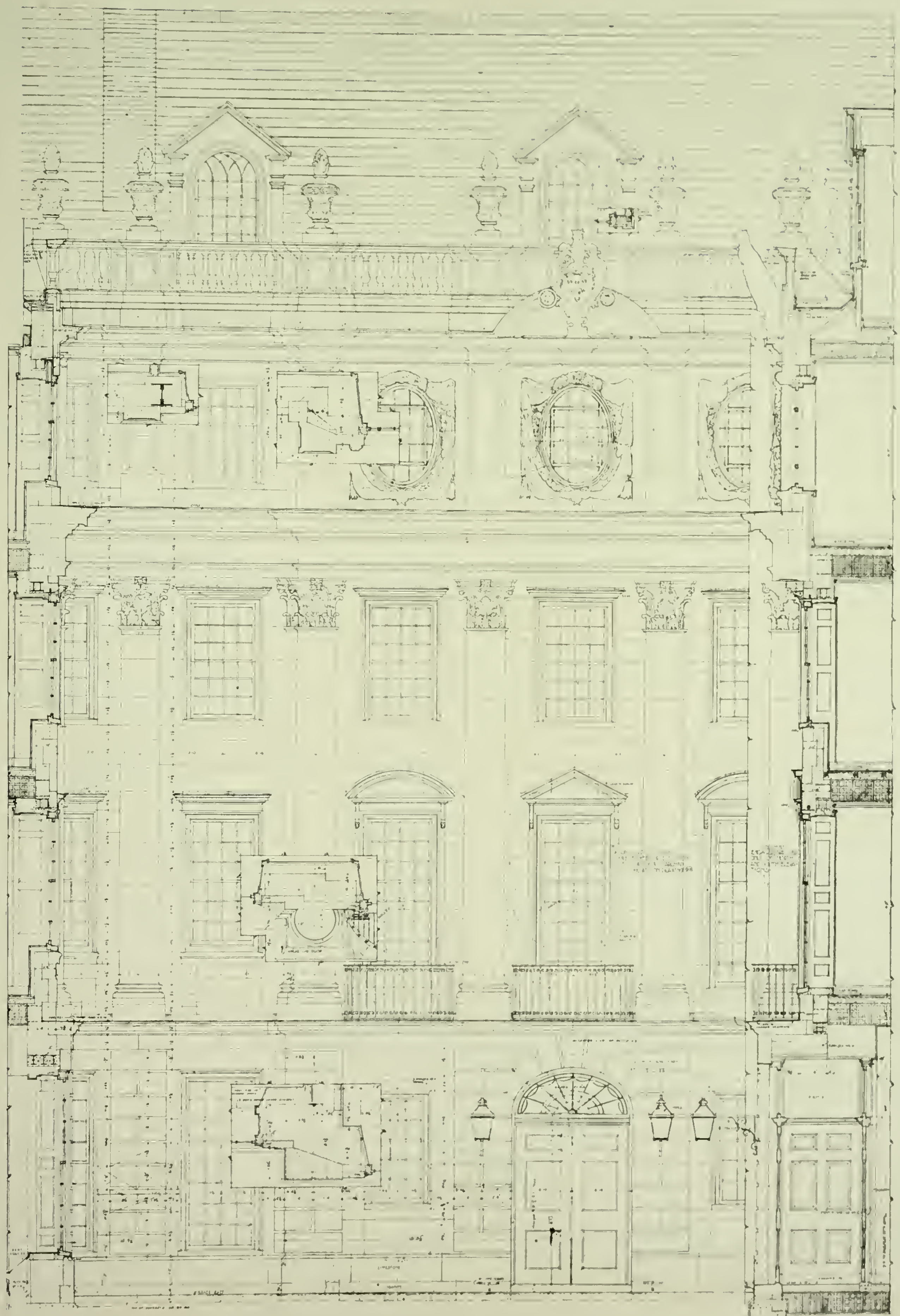
HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS



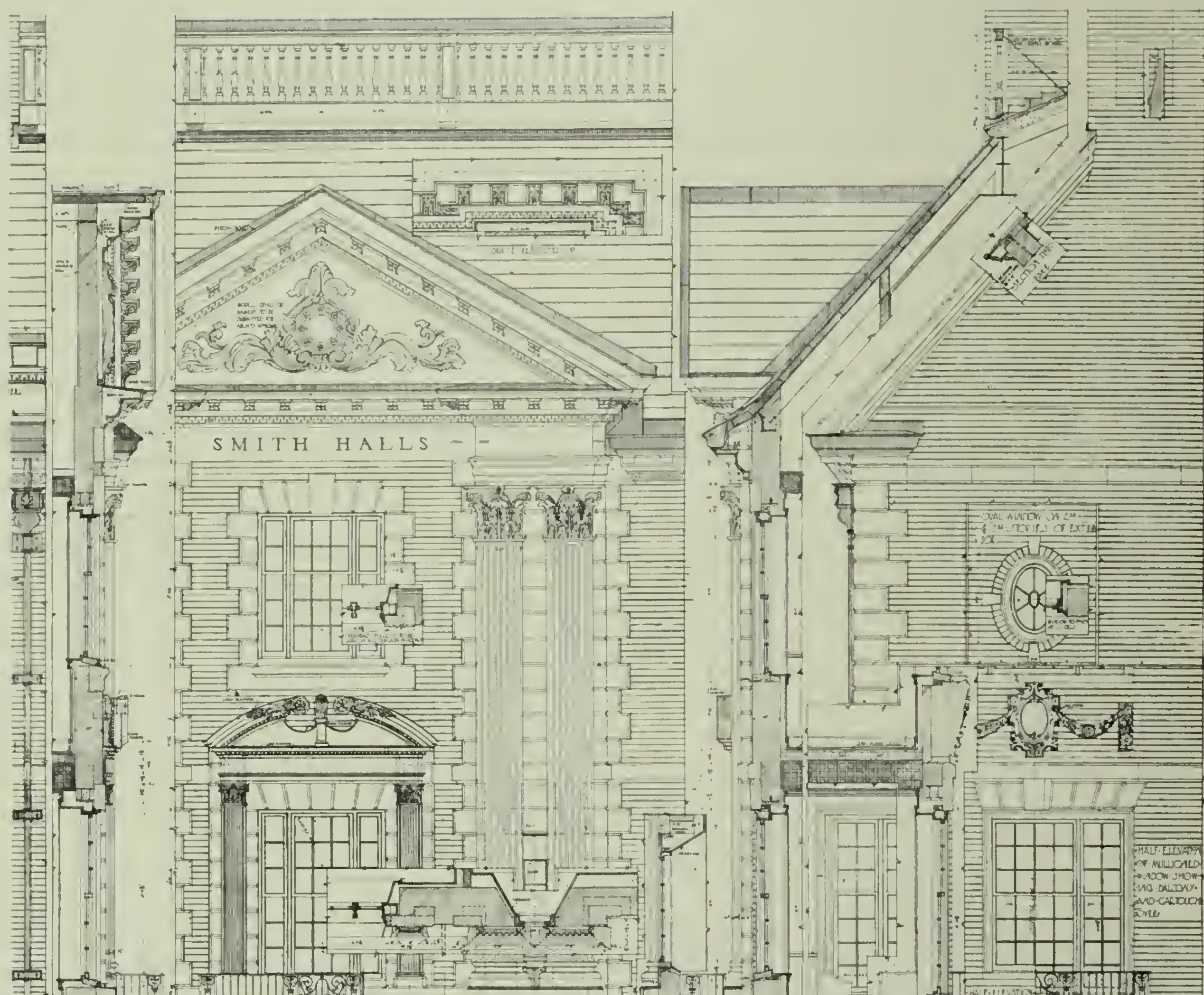
DETAIL OF QUADRANGLE FAÇADE OF PERSIS SMITH HALL
HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

Scale of Reproduction, 1 inch = 6 feet



DETAIL OF CENTRAL ENTRANCE PAVILION OF GORE HALL
HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

Scale of Reproduction, 1 inch = 6 feet

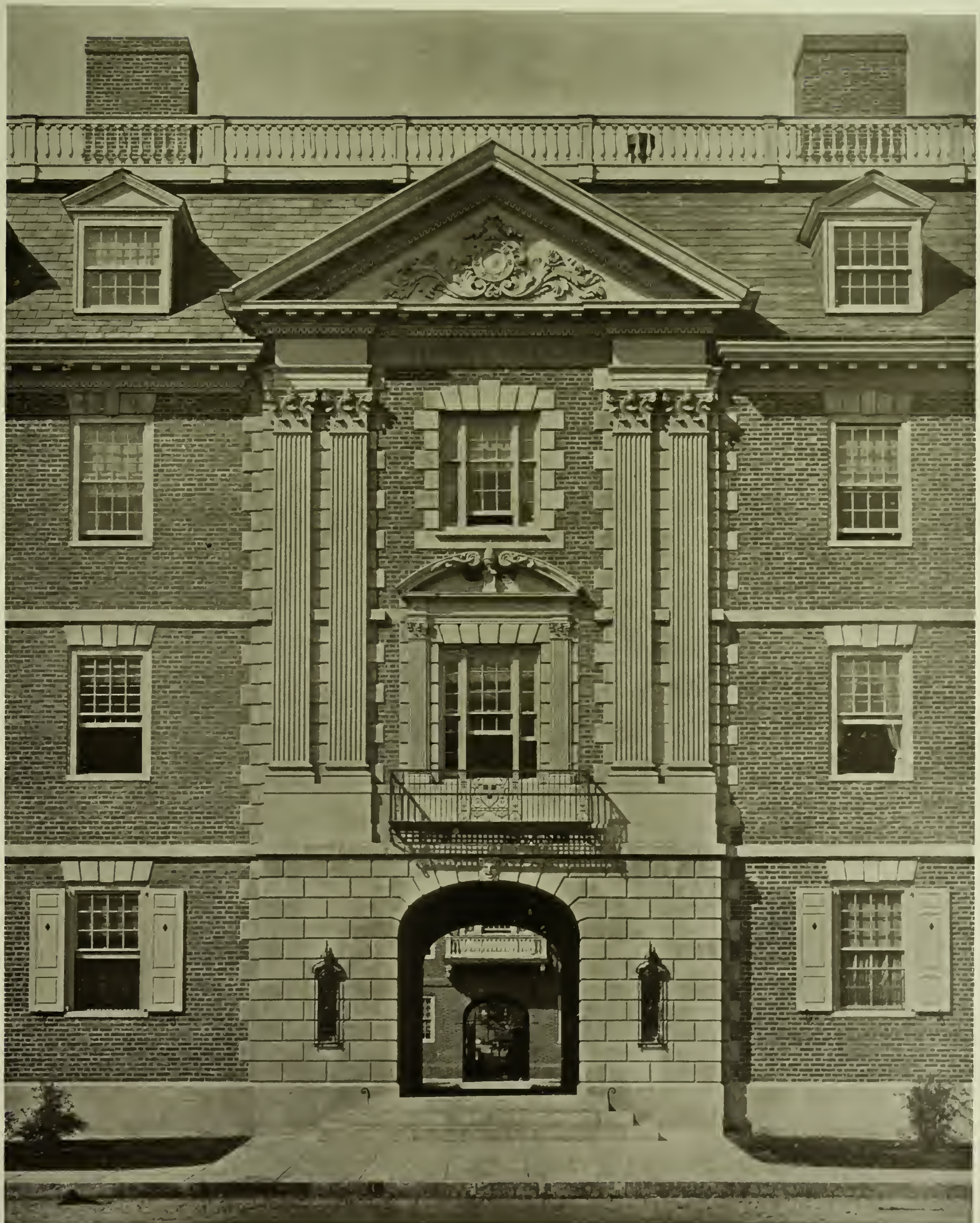


DETAIL OF DUNSTER STREET FAÇADE OF JAMES SMITH HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

Scale of Reproduction, 1 inch 6 feet

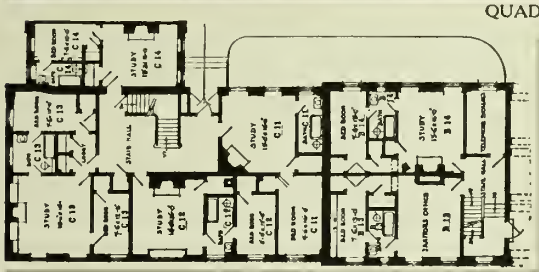


DETAIL OF ENTRANCE TO JAMES SMITH HALL AND QUADRANGLE

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

QUADRANGLE FACADE OF GEORGE SMITH HALL



BOYLSTON STREET FACADE OF PERSIS SMITH HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

DINING HALL OF SMITH HALLS

QUADRANGLE FACADE OF PERSIS SMITH HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

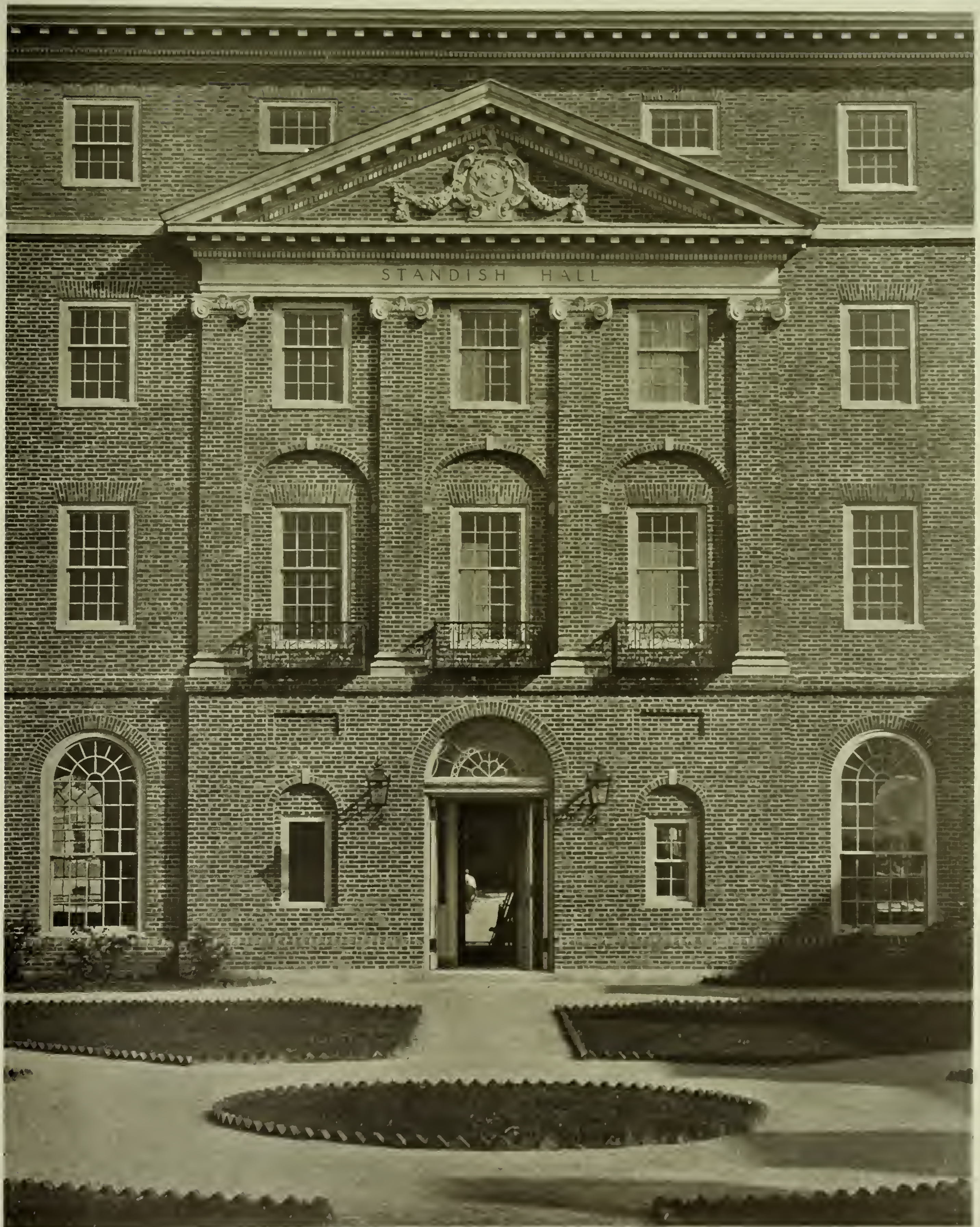
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

DETAIL OF ENTRANCE TO JAMES SMITH HALL FROM QUADRANGLE

DETAIL OF ENTRANCE TO STANDISH HALL WING FROM COURT

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS



DETAIL OF ENTRANCE TO STANDISH HALL FROM COURT

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

GENERAL VIEW OF COURT SIDE OF GORE HALL

DETAIL OF ENTRANCE GATES AND COURT OF GORE HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

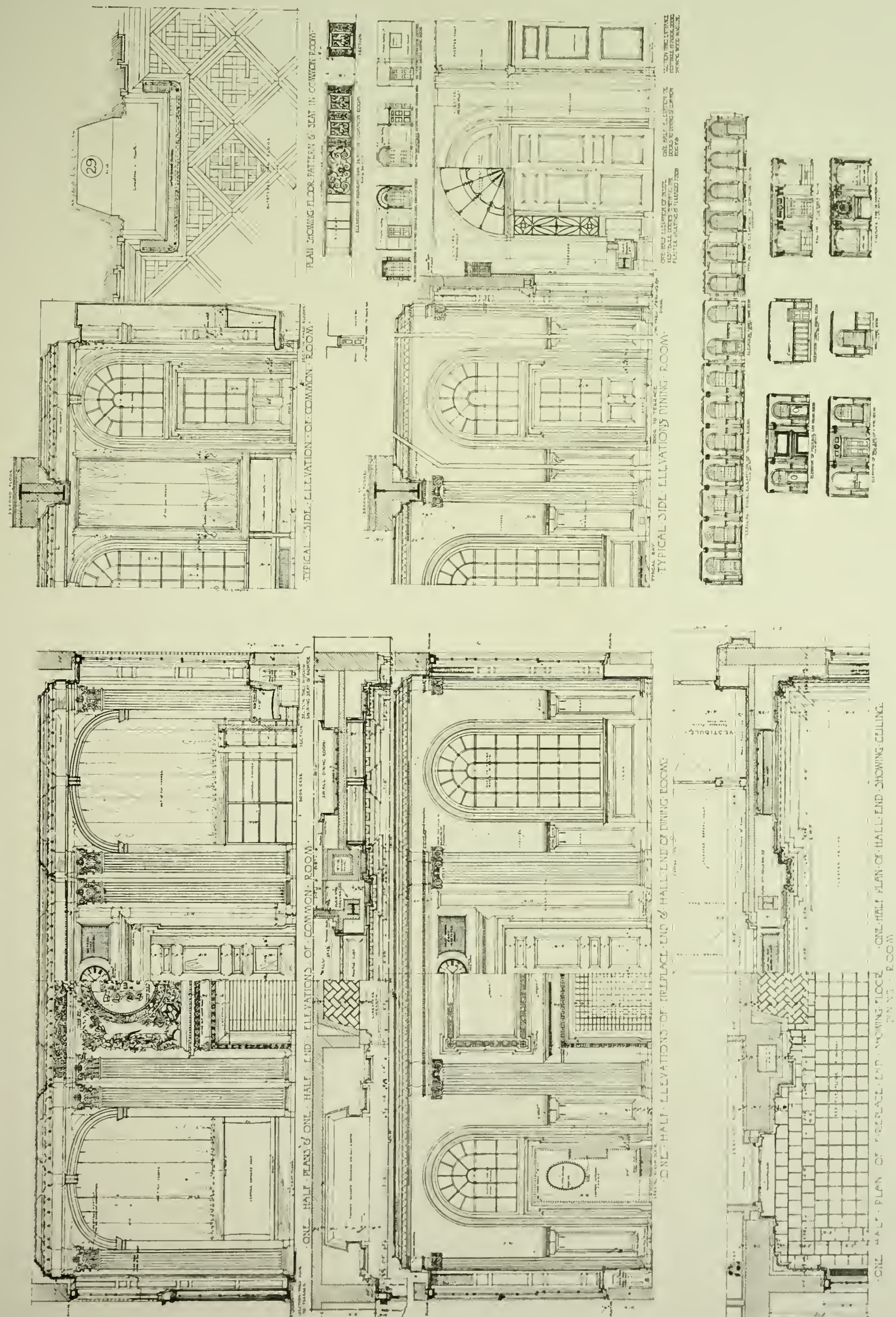
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

COMMON ROOM OF STANDISH HALL

COMMON ROOM OF SMITH HALLS

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS



DETAIL OF COMMON AND DINING ROOMS OF SMITH HALLS

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

DINING ROOM OF STANDISH HALL

DINING ROOM OF GORE HALL

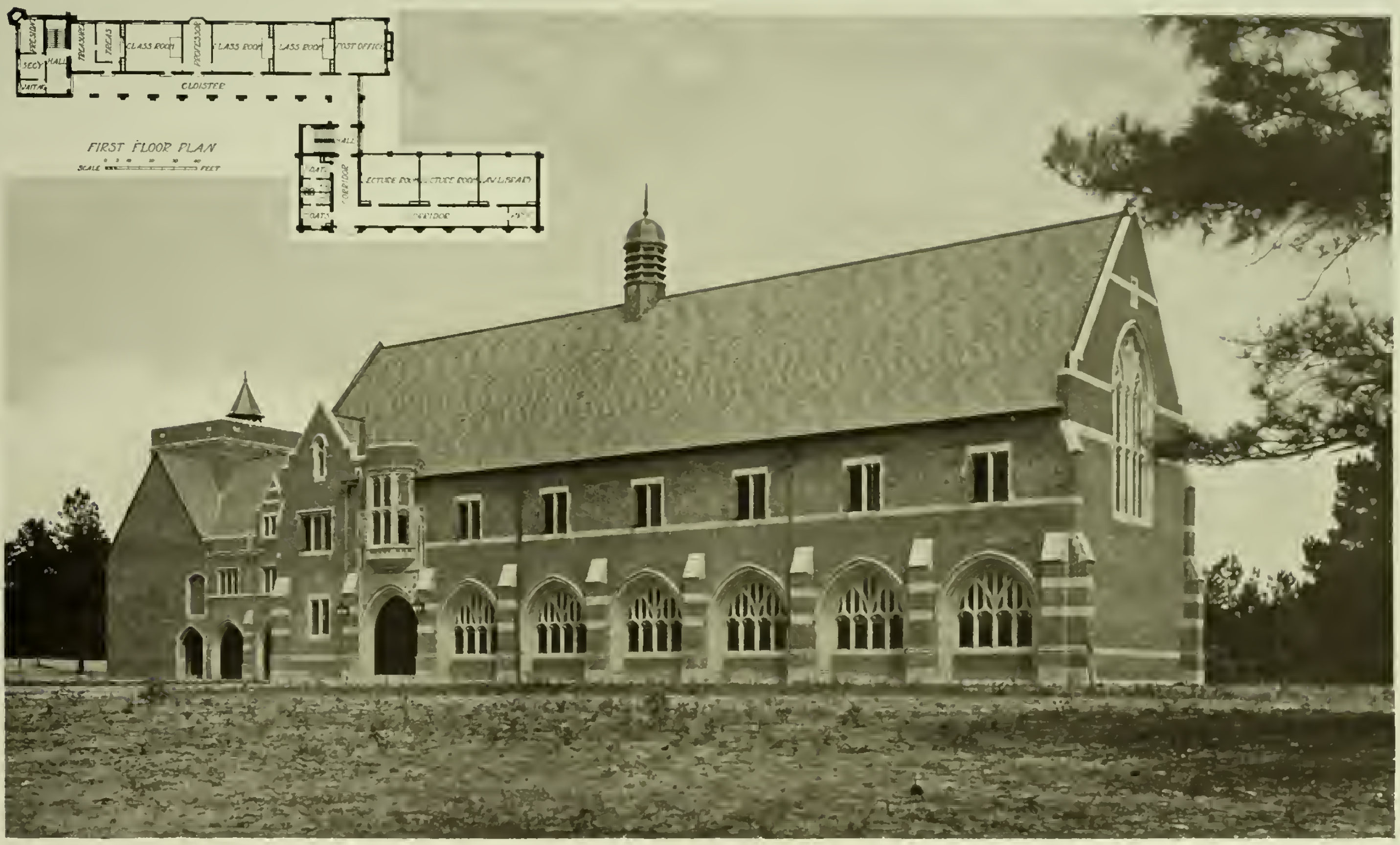
HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

MAIN ENTRANCE OF LIBRARY WING, ACADEMIC BUILDING

RICHMOND COLLEGE, RICHMOND, VA.

CRAM, GOODHUE & FERGUSON, ARCHITECTS (BOSTON OFFICE)



LIBRARY WING OF ACADEMIC BUILDING

CLOISTER AND DORMITORY QUADRANGLE OF WOMEN'S COLLEGE

RICHMOND COLLEGE, RICHMOND, VA.

CRAM, GOODHUE & FERGUSON, ARCHITECTS (BOSTON OFFICE)

TOWER AND WEST SIDE OF DORMITORY QUADRANGLE, WOMEN'S COLLEGE

RICHMOND COLLEGE, RICHMOND, VA.

CRAM, GOODHUE & FERGUSON, ARCHITECTS (BOSTON OFFICE)

TOWER AND WEST SIDE OF DORMITORY QUADRANGLE, WOMEN'S COLLEGE

RICHMOND COLLEGE, RICHMOND, VA.

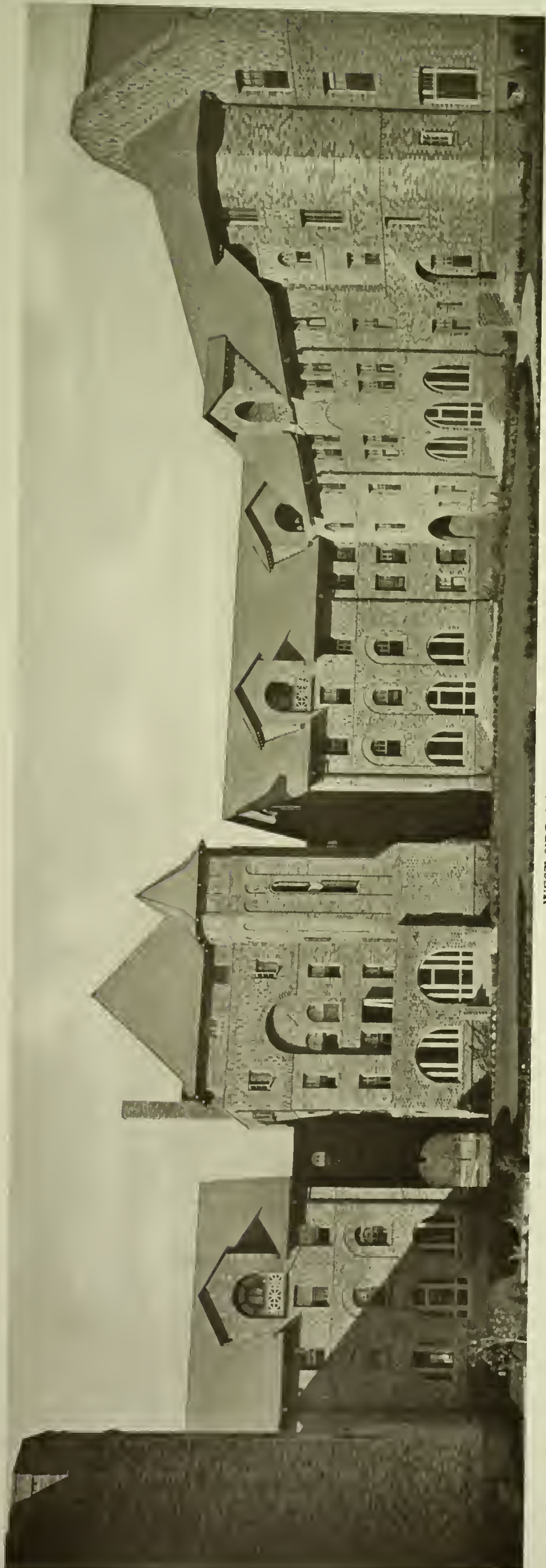
CRAM, GOODHUE & FERGUSON, ARCHITECTS (BOSTON OFFICE)

ENTRANCE TO DORMITORY QUADRANGLE, WOMEN'S COLLEGE

ENTRANCE AND BAY OF COMMON ROOM, WOMEN'S COLLEGE

RICHMOND COLLEGE, RICHMOND, VA.

CRAM, GOODHUE & FERGUSON, ARCHITECTS (BOSTON OFFICE)



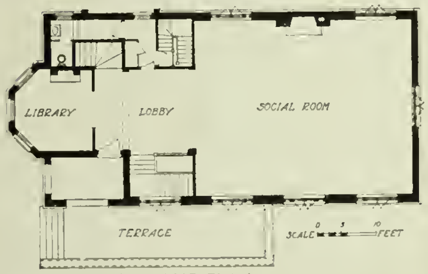
WEST SIDE OF QUADRANGLE

FAÇADE ON SHERIDAN ROAD

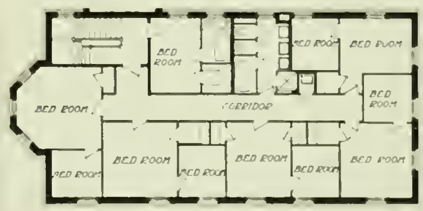
DORMITORY GROUP, NORTHWESTERN UNIVERSITY, EVANSTON, ILL.

PALMER, HORNBOSTEL & JONES, ARCHITECTS

REAR VIEW OF BUILDINGS ON SOUTH SIDE OF QUADRANGLE



FIRST FLOOR PLAN



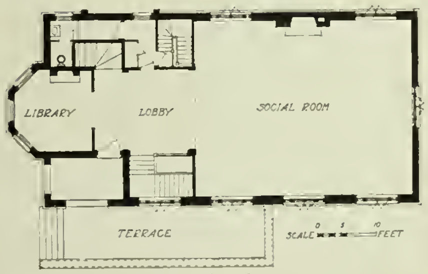
SECOND FLOOR PLAN

VIEW OF FRATERNITY HOUSES AT OPEN END OF COURTS

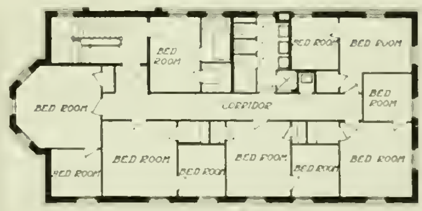
DORMITORY GROUP, NORTHWESTERN UNIVERSITY, EVANSTON, ILL.

PALMER, HORNBOSTEL & JONES, ARCHITECTS

REAR VIEW OF BUILDINGS ON SOUTH SIDE OF QUADRANGLE



FIRST FLOOR PLAN

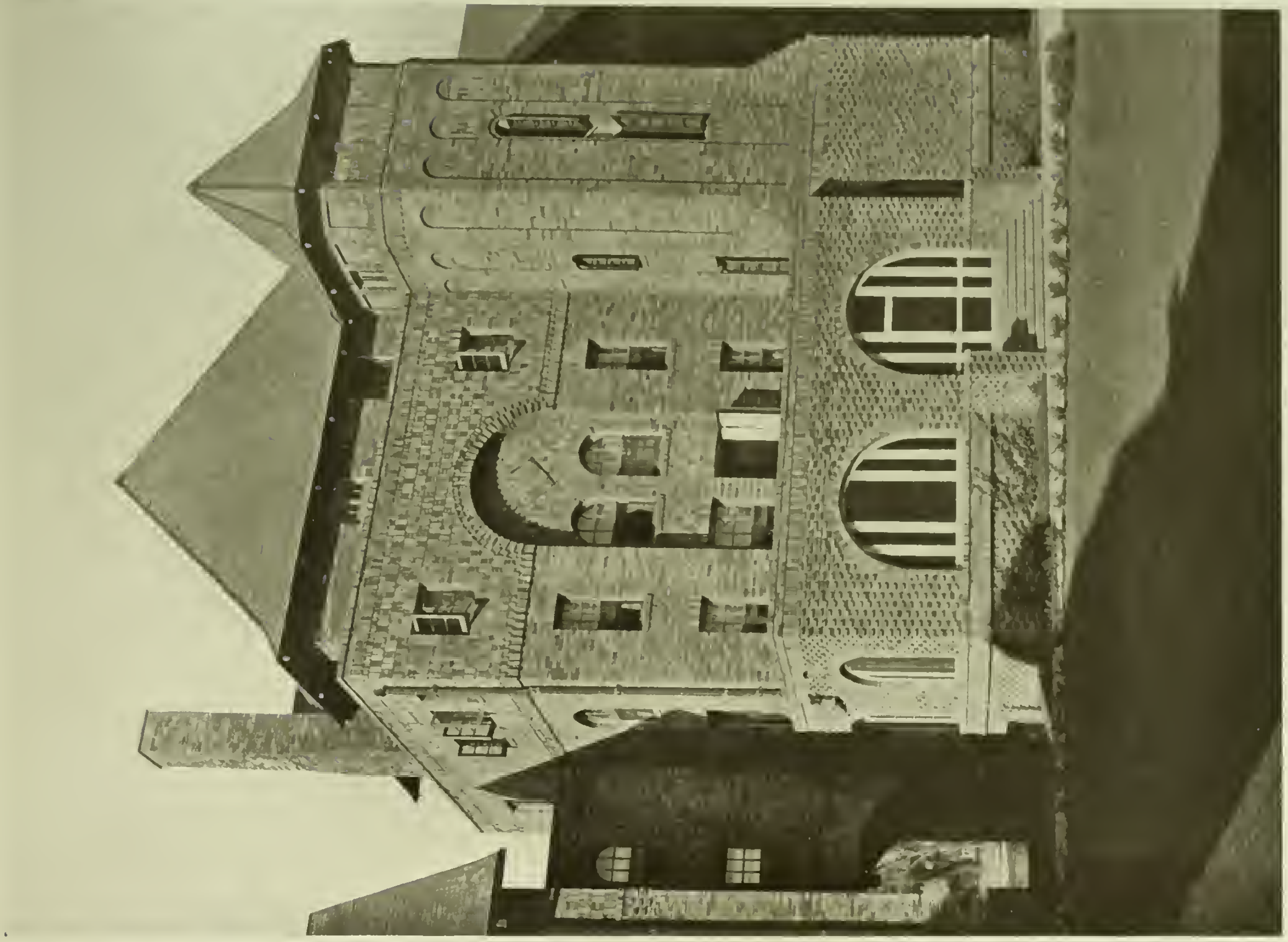


SECOND FLOOR PLAN

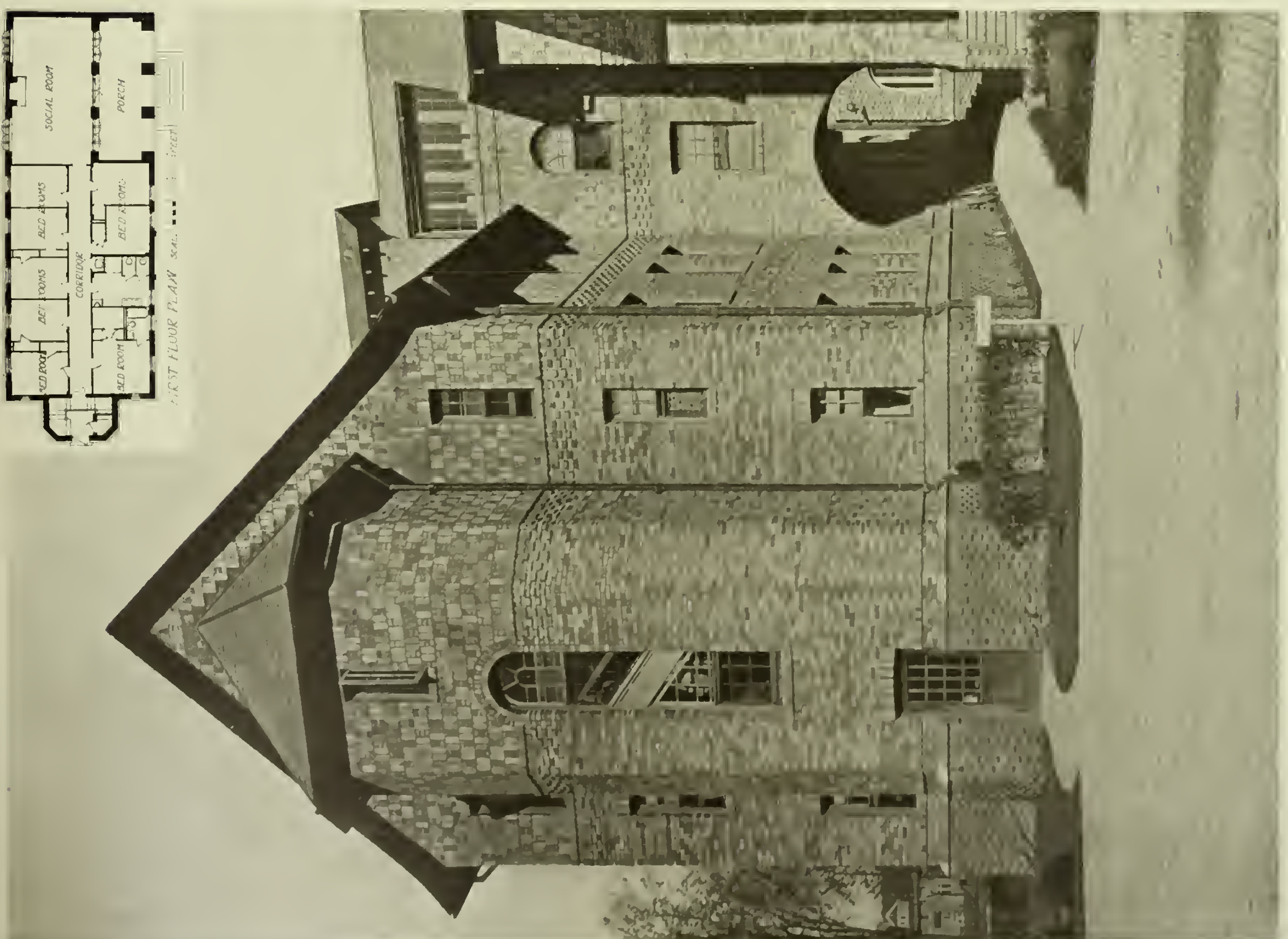
VIEW OF FRATERNITY HOUSES AT OPEN END OF COURTS

DORMITORY GROUP, NORTHWESTERN UNIVERSITY, EVANSTON, ILL.

PALMER, HORNBOSTEL & JONES, ARCHITECTS



DETAIL OF FRATERNITY HOUSE ON AXIS OF COURT



END OF BUILDING FRONTING ON SHERIDAN ROAD

DORMITORY GROUP, NORTHWESTERN UNIVERSITY, EVANSTON, ILL.

PALMER, HORNBOSTEL & JONES, ARCHITECTS

The New Dormitories of Northwestern University.

By WILLIAM D. FOSTER.

A NEW group of collegiate buildings is always a matter of interest to the architect, and of especial interest — almost curiosity — when the work is from the office of Palmer, Hornbostel & Jones. In this issue are published views of the first part of a new group recently completed by them at Northwestern University in Evanston, Ill. With not too great financial resources, but a pleasing location, the architects, by the use of brick, have succeeded in producing some very striking buildings of undoubted originality.


Block Plan of One Element of Group

The authorities of the university recently decided to follow the excellent example of other and far-seeing universities in the matter of building toward a definite scheme and having all new buildings fit into that scheme. With that purpose they held a competition for plans for the complete revision and new development of the whole campus. The land involved is a strip more than three-quarters of a mile in length and from 700 to 1200 feet in width, which runs north and south along the west shore of Lake Michigan, and is bounded on its long side by Sheridan Drive, an important interurban highway. The winning scheme, that of Messrs. Palmer, Hornbostel & Jones, contemplated the development of several cross axes, around each of which would be erected buildings more or less allied in their purposes; and the whole to be joined by one or two north and south roadways.

To the extreme north, in this scheme, were placed the living quarters, that is, the dormitories and fraternity houses. These were first grouped to form a large quadrangle, with its open side facing Sheridan Drive, but with later study they were divided into four courts about 160 x 120 feet, with seven buildings to each court. The open sides of the quadrangles are on the east, affording a view of Lake Michigan for each building, and for all the living rooms complete privacy from the street. This idea of privacy has been adhered to, to the extent that not even those buildings nearest the roadway can be entered from that side. The spaces between these groups naturally form themselves into three minor courts, which open directly on to the highway, and are used for the service, thus isolating that function from the view of the living rooms. The buildings are about 250 feet from the bluff, which forms the lake shore at this point, and fortunately this stretch is to be developed to make the most of the unusual natural advantage of the site.

The buildings, of which eleven are now completed, are divided in their use: some are dormitories open to any male student of the university, while others are fraternity houses, which have been partially financed by the various fraternity alumni. The fraternity houses have been designed to suit individual tastes and therefore present considerable variety. The so-called dormitories or university owned buildings are more uniform. Each has on the first floor a large enclosed porch and delightful club rooms, and also a few students' rooms; while the second and third floors are given up entirely to single rooms.


General Plan, Winning Competition Design for Future Development of Northwestern University
The Various Units in the Arrangement Reading from the Left are: Dormitory Group, Gymnasium, School Group, Chapel, Library and Museum Group, and Second School Group
Palmer, Hornbostel & Jones, Architects

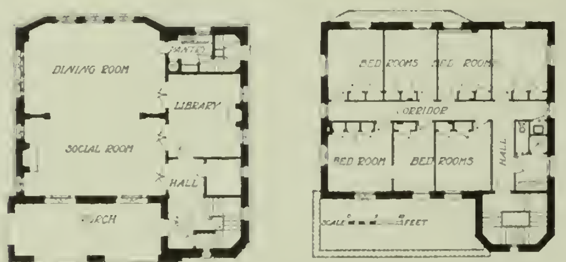
The fraternity houses have equipped themselves with kitchens and dining rooms, but the dormitories are entirely without such arrangements. This need is to be met in the future with a large university dining hall or commons, placed conveniently near the new group.

It is an interesting fact that while most of the universities which have recently planned new student housing systems have adopted the Oxford, or "stairway group" type of continuous buildings, nevertheless, in this case, after considerable thought and investigation, a continuous group is formed, but with each building as an individual unit. The continuity of the units is attained not merely by such subtleties as uniform height of openings and belt courses, and by uniformity of mouldings; but they are actually united by bridgelike connections.

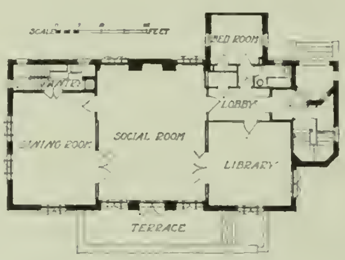
As one approaches the buildings he is first struck by the unusual grouping of roofs and by the color and pattern of the brickwork. Although the view from the roadway is somewhat abrupt, that from the lake side shows an interesting composition where the more horizontal lines of the flanking buildings and their roofs lead up to the higher and more vertical one placed on the axis of the court. Interest is given to the somewhat rigid roofs by breaking them with gabled dormers. In this matter, as in all of the other smaller parts of the design, considerable attention has been directed towards variety.

The most striking point of the whole group is the color and use of the brick. Dull yellow and laid with a wide joint of similarly colored mortar, they give a mass of color which is relieved by contrast with the browns, blues, and bright greens used in the painting of the trim. Patterns occur freely in the brickwork to give texture and to form flat motives on the façades. The upper portions are laid in a diaper pattern under the projection of the roofs; while the basement walls are given scale by projecting the bricks and in some places using the flat sides in the pattern.

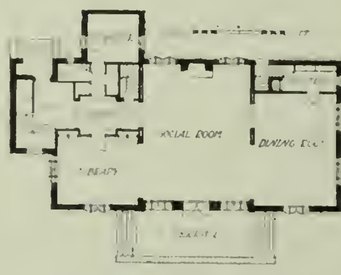
The beauty of the buildings will undoubtedly increase with the weathering of time and with the growth of vines, which will relieve what now appears as a rather large mass of dull yellow color. The completion of the rest of the courts will also give strength to the design by allowing a greater stretch to the color and type which now stands in too small mass among other types of architecture. The real architectural value of the buildings lies in their originality, which, by giving satisfaction to the eye, does not startle, but attracts.



First Floor Plan Second Floor Plan
Fraternity House, Northwestern University



First Floor Plan
Of Fraternity House Shown Below



First Floor Plan
Of Fraternity House Shown Below

Two Fraternity Houses of Northwestern University, Dormitory Group
Palmer, Hornbostel & Jones, Architects

Monumental Treatment of the Fireplaces in the Harvard University Freshman Dormitories.

By DAVID E. FULTON.

THE architectural treatment of the large dining and common rooms in the Harvard University Freshman Dormitories is specially worthy of note in that it points out clearly that the work of the American Colonial and English Georgian periods is capable of a great variety of interpretations, making it possible to design a number of rooms of similar purposes that will be absolutely congruous and yet vary the treatment to such an extent that each apartment will have a distinct individuality.

For creating an intimate and domestic feeling in an interior there is probably no style quite so fruitful as the Georgian and, likewise, there is no period in which greater artists were developed whose work can be drawn upon for inspiration with assurances of greater success. The renaissance of architecture in England came about with the introduction of Palladio's conception of classical forms and proportions, under the encouragement which the Stuarts gave to art. The foreign influence was cultivated by Inigo Jones, whose work in turn was taken up and further developed by Sir Christopher Wren. The latter had his great opportunity presented to him in the rebuilding of London, after the great fire, and with such incomparable craftsmen as Grinling Gibbon in wood carving and Jean Tijou in metal work, aided by the encouragement of the reigning sovereign, he developed architectural forms of great magnificence. It was during this period that the art of interior design reached a high and logical stage, and the beautiful plaster work, wood carving, and paneling of the interiors created by these men furnish rich precedent to guide the architects of to-day in similar work, which it is pleasing to note is claiming more and more of their best thought and talent.

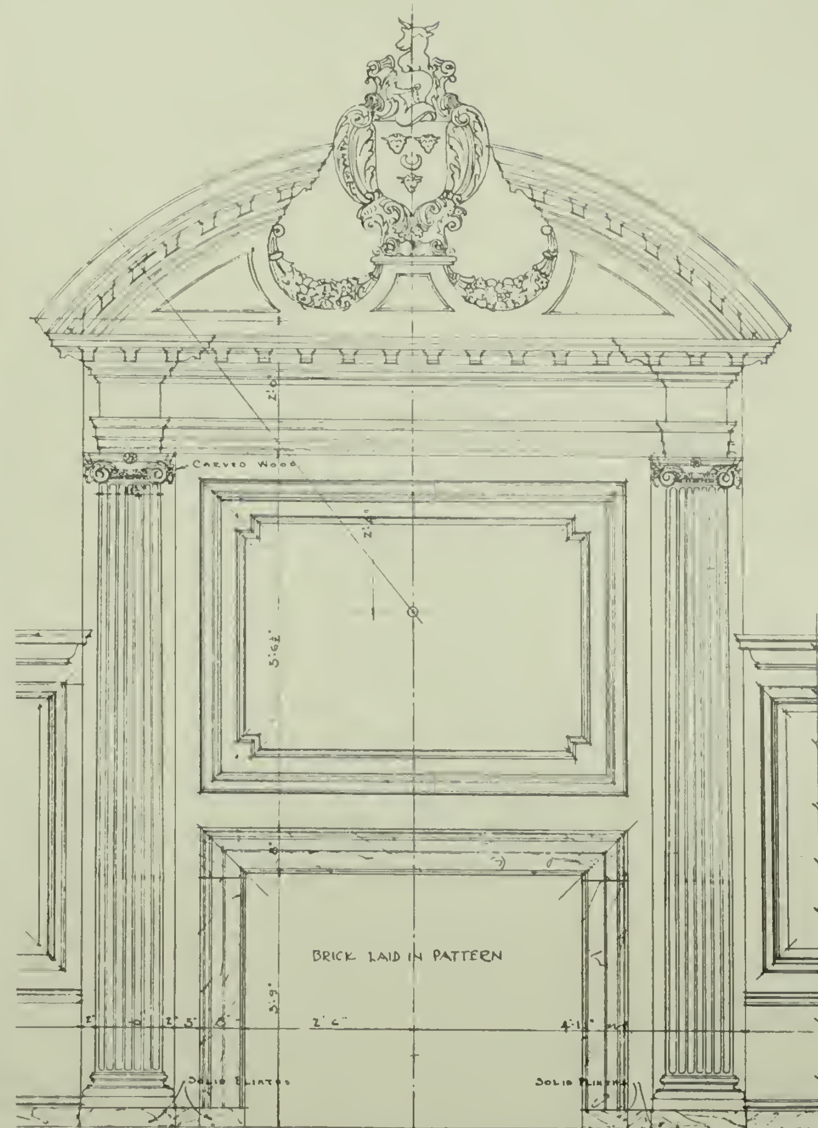
The common rooms in the various buildings of this group are a distinct addition to American interiors, and a careful study of the results attained in them should be helpful in creating more work of equal merit in this interesting field. They are composed of extremely simple elements, — the long sides are broken up with regular and well proportioned fenestration, the entrance is at one end, and the fireplace on the same axis at the opposite end. This arrangement makes the fireplace the focus of attention upon entering, and it is in the treatment of the chimneypieces that the architectural accent of each room is struck.

The mantels in the dining rooms of Standish and Smith halls are executed in white enameled birch and are a free adaptation of Colonial forms. The band of pierced wood framing the panel in the overmantel of the fireplace illustrated on this page is an adaptation of the fretwork used so commonly by Chippendale in much of his cabinet work of the period, and while its use in this manner is unusual it certainly is interesting and appropriate enough. This mantel and the one in Smith Halls common room may be considered structural, inasmuch as they occupy the full height of the wall and depend upon the room cornice to complete them, thus making one continuous treatment for all walls. In the other rooms the mantels are isolated, although they bear a recognized relation to the paneling and other details.

The end wall of the room in each case has been brought out to the plane of the chimney breast, but arched or low ceiled recesses at either side in which are placed subordinate doors or built-in seats indicate the necessary wall thickness to take care of the flue. This overcomes the awkwardness of the projecting chimney breast and permits all horizontal lines to appear continuous in perspective, which is impossible in the usual treatment. This, furthermore, permits a broader treatment of the chimneypiece itself, when it is desired, without reducing the apparent size of the wall spaces at either side or endangering their proportions, as evidenced in the mantel of Smith Halls common room. This, in many respects, is the most interesting and, without doubt, the most impressive of all the mantels. The well proportioned pilasters with the beautifully carved Corinthian capitals frame, in a most dignified and architectural manner, the central portion of strikingly grained oak on which is carved the seal of the university surrounded by a graceful festoon of fruits and flowers after the manner of Grinling Gibbon.

These chimneypieces are examples of successful architectural treatment because they very fittingly provide the focal point of the interiors and as individual elements of the design display the rules of good proportion and accord in scale with their surroundings.

Fireplace in the Dining Room of Smith Halls



Fluted pilasters support a bold cornice and broken curved pediment, the intervening space of which is filled with a cartouche and festoons of flowers, carved in oak. The opening is framed with a bold marble architrave and the hearth is laid in slabs of the same material to harmonize with the floor of large black and white squares of marble paving. The height of the mantel is accentuated by the absence of the usual strong horizontal division made by the mantel shelf, which, if used, would be difficult to reconcile in this instance.

FIREPLACE IN DINING ROOM OF GORE HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

Reproduction Scale of Drawing, 3/8 inch = 1 foot

In this example the whole height of the room has been embraced as the unit of the design. It has a broad and large scaled appearance to accord with the bold paneling of the walls. The opening is enclosed with a heavy moulding of stone and the overmantel is enriched with the university seal and strongly carved festoons.

FIREPLACE IN COMMON ROOM OF SMITH HALLS

This interesting chimneypiece follows the period of the late English Renaissance in its general design and proportions. All projections have been kept flat and the carving reduced to a minimum. It is executed in oak, treated only with a filler, making the mantel appear to advantage against the gray green plaster wall.

FIREPLACE IN COMMON ROOM OF STANDISH HALL

HARVARD UNIVERSITY FRESHMAN DORMITORIES, CAMBRIDGE, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS

Water Color Drawing of Winning Competition Design for the Robert Fulton Memorial, New York, N.Y.
H. Van Buren Magonigle, Architect — Birch Burdette Long, Delineator

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

X. THE WORK OF BIRCH BURDETTE LONG.

THE work of Mr. Birch Burdette Long is so universally and deservedly well known, that the editor has for a long time hesitated to include him in this series, feeling that there could be little said about him with which every one was not already familiar. But, as the different articles have been written, the writers have so frequently used Mr. Long's work as a basis of comparison with that of other men, to complete the series it has seemed necessary to include his name. Such comparisons between his work and that of other renderers would appear to be inevitable, since Mr. Long has worked in all mediums and in several manners, covering pretty nearly the entire field of architectural renderings, and there are therefore few men whose work does not at some point touch his. These comparisons are seldom to Mr. Long's disadvantage, for he is quite as much at home in one method of rendering as in another, and the standard he has set is so high that he is, more than any other one man, responsible for the excellent pictorial quality of American perspective rendering.

A few words about his career will be enough: he began his work as a draftsman in one of the Chicago offices, soon after the beginning of his career, and worked for some time under Frank Lloyd Wright, doing renderings for other men concurrently. He won the Chicago Architectural Club's Travel Prize, spending a year in Europe, and on his return settled down in New York as an architectural renderer without a connection with any office, and for the last ten years he has been continuing that work in New York. About six months ago he became associated with Mr. Fellheimer, formerly of the firm of Reed & Stem, and is now a practising architect as a member of the firm of Long & Fellheimer.

It may be worth while to say something about his architectural ability. While he has prior to his connection with Mr. Fellheimer done very little independent architectural work, the little that he has done has shown very great ability, and those architects for whom he has rendered drawings will unanimously bear testimony to the helpfulness of his criticisms.

Of course, there are many men who can give an excellent criticism who are incapable themselves of design; but it will be realized that criticism which is constructive and helpful, not alone because it points out the bad things in design, but also indicates ways for their improvement, is invariably indicative of ability to design. It is this sort of criticism that Mr. Long gives; his taste in color schemes is of course exquisite, and he seems to know instinctively the precise degree of vividness of color which should be used in conjunction with given materials or at fixed heights above the eye. In matters of scale he is not less capable, and he has also real constructive feeling. A good color sense and a good idea of scale might not necessarily indicate a capable designer, but only an artistic personality; add to these, however, an instinctive feeling for structure, and the result must be a very capable architect — all these qualities Mr. Long has.

His first piece of work, which he executed by himself, was a shelter in one of the parks in Chicago, and his own account of the difficulties he got into over that work are very amusing. It seems that at the time he was a draftsman in Mr. Wright's office, and won this commission in competition with a design even more *outré* than Wright's work; the columns were striped red and white, like candy poles; the roof was a combination of Japanese and "Chicagoese" architecture, and when it was finally built in a rather prominent location, nobody knew what to make of it — in consequence nobody liked it much. The papers had letters about it, and even editorials regarding the disfigurement of public property, and yet from the photographs of the structure which the writer has seen, it seems to have been a very charming and appropriate little building, not easily to be classified under one of the architectural schools perhaps, but filled with a playful charm and gaiety of composition which may be singularly appropriate to its position and its purpose.

The next independent piece of work which Mr. Long did that has come to the writer's notice is his own house at Peekskill done fifteen years or more after his park shelter. This shows the complete revolution wrought in the designer's mind by fifteen years of training, and perhaps also by the difference in environment between New York and Chicago. The Peekskill house is, in a sense, quite as free and cheerful architecture as is the park shelter in Chicago, but it is solidly based on the Colonial farmhouse precedent, and is treated with an admirable adaptation to a very difficult site, which would have been the despair of most architects, but which to Mr. Long only offered an inspiration.

Water Color Drawing of Cathedral of the Incarnation, Baltimore, Md.
Bertram G. Goodhue, Cram Goodhue & Ferguson, Architects
Birch Burdette Long, Delineator

Now from Frank Lloyd Wright to Colonial is a far cry, but it is no farther than Mr. Long has traveled in his renderings. Most of the early drawings made in Mr. Wright's office followed in principle the Japanese prints: they were line drawings in pen and ink with the surfaces washed over in flat tones, and a comparison of one of these early drawings, beautiful as it is, with the sober, scholarly rendering of the Hudson Fulton Memorial, shows how far removed is his maturer work from that of his earlier days. Yet he has never forgotten, nor even completely abandoned, his earlier technique, although at the present time he uses it only for drawings whose subjects and surroundings are suitable to it. He can still be as Japanese as Japan itself when he has to render a tea house in the woods and wishes to secure extreme pictorial quality; but he no longer attempts or desires to attempt to render monumental architecture in so playful a way. Through all his renderings, however, the gay, the trivial, and the serious, there runs one single strain of color composition; he is never blatant nor dashing, and yet the subdued and quiet tones of his pictures cannot be killed by the noisiest and most brilliant drawings, in no matter how close juxtaposition they may be hung.

Those who have followed the recent exhibitions will remember some large, quiet drawings he made of the Massachusetts Institute of Technology for William Welles Bosworth. They are built up of pale, flat tones with shadows only faintly indicated, and with no accents whatsoever; yet they convey an impression of luminosity, perspective, and atmosphere of a surprising depth and quality. One has the impression of a group of serene and lofty buildings, seen under the pale light of a northern sky in a quiet and ordered city; and all this by the use of a few flat washes and occasional fine pen lines in diluted ink. Compare these drawings with the large rendering of the San Diego Exposition made for Mr. Goodhue, and note the difference in quality of the two; one feels the hot sun of California reflected from brilliant colors and half barbaric architecture. There is a richness and depth in the coloring, and yet on analysis we find that the positive tones of the colors are not very much strengthened, or more than slightly intensified, but that Mr. Long, by subtle differences in the grouping of the colors, has achieved an effect radically different from the drawings of the Institute.

Water Color Drawing of the Massachusetts Institute of Technology Group, Cambridge, Mass.
William Welles Bosworth, Architect
Birch Burdette Long, Delineator

These drawings, like all others of Mr. Long's, possess his distinguished qualities: his work is never bold, coarse, or violent; it is rather precise, delicate almost to daintiness, and refined to the edge of fragility; but its exquisiteness never falls into weakness, and we feel that there is restrained nervous force and vitality of an able man behind the work.

Of his ability to draw landscape it is almost unnecessary to speak; we have all seen the beautiful bird's-eye perspectives that he has made for different group plans, and we are able to appreciate that the physical aspect of the localities which he has drawn closely approximate the indication in the drawing, but his ability to indicate urban surroundings in the same precise and interesting manner is not so well known. Some of the drawings for the city improvement scheme for the city of New York showed long vistas through the city streets, and others bird's-eye views over the roofs of the city and the rivers surrounding it. Somehow he contrived in these drawings to show New York as a very lovely place and yet without distorting the actual conditions. His eye simply revealed to us the things of interest and a beauty to which we were too accustomed to properly observe, and in those drawings he has caught for us and preserved the wonderful shimmer of color which plays over the roofs of the city at certain hours of the day. There is in every city something curiously fascinating and absolutely distinctive about the general color scheme as seen from above: Paris as viewed from the Eiffel Tower is a thing of pastel shades, pale pinks, blues, and pale yellows, with occasional spots of dull olive green; New York like Paris has tones which are all its own,—grays, violets, and dark reds,—and it is because Mr. Long has seen and appreciated these colors that his city drawings are so delightful.

It is impossible to speak of his methods with much certainty; they vary with every drawing that he makes; he uses water color or pencil and water color, or pen and ink, or pen and ink and water color, or Chinese white with equal freedom and apparent equal indifference. For many of his drawings he uses a colored paper with the light spots brightened with Chinese white; he not infrequently uses Japan vellum, going over the drawings with a brownish ink, and using water color as if it were stain rather than paint. Most of his large drawings are probably done on white drawing paper, although when this is the case he commonly begins the drawing by running a faint wash over the entire surface, suiting his technique to the paper and the subject.

He can, if necessary, make a very brilliant drawing, but he cannot make a drawing of big contrasts — he does not see things that way. His windows have no heavy blacks, and his shadows never obscure the detail upon which they lie, and perhaps for this reason the one drawing which he cannot successfully make is a rendered elevation in true academic style, and in this one field alone he does not compare with the dozen other draftsmen one could name, although in rendering of block plans or group plans his excellence is unquestioned. His facility in making drawings is probably due to the fact that he has not one but about a dozen formulas upon which he can draw, so that for certain sorts of buildings, office buildings and the like, his work has become to him more or less a matter of habit and, therefore, proceeds very rapidly.

On the other hand, if a drawing does not go well and he finds the colors are not hanging together as he could wish, he has one last resource, which is his invariable advice to any one else who is making a rendering, "Put a wash of yellow over it, — that will do the trick."

Water Color Drawing of Approach to San Diego Exposition, San Diego, Cal.

Bertram G. Goodhue, Architect

Birch Burdette Long, Delineator

The Small Church

F. Donald Robb

SECOND PAPER — DECORATION AND INTERIOR FITTINGS.

IN the preceding paper the writer discussed some of the necessary adjuncts and accessories to the church proper. One more feature bearing directly on the life of the church is the parish house or Sunday-school building. This is a distinctly modern and very important feature, as it is through the various semi-religious organizations which center around the parish house that the church exerts a large proportion of its influence. For this reason, the plan and equipment of the parish house are matters deserving of the closest study.

The parish house is sometimes entirely separate from the church proper, but is frequently required to furnish the church auditorium with additional seating by opening into it. This arrangement is very seldom satisfactory, for the parish hall is generally located to one side of the main auditorium, and consequently the acoustics are bad and the interior effect of the church always suffers.

The requirements of the parish house are ordinarily about the same for all denominations. The Sunday-school hall is the principal feature of the plan. It is best to arrange this in such a way that it can be used during the opening exercises as one large room and afterwards divided into numerous small rooms with the least amount of commotion by means of accordion doors, rolling screens, or perhaps a simple curtain.

The primary class usually occupies a sunny room near the entrance, with provision for dismissing the children quietly without disturbing the other classes. This room should also open into the general room.

At the sides of the platform should be small rooms which can be used during entertainments as dressing rooms and at other times for library and Sunday-school superintendent.

A generous sized kitchen, fully equipped with dressers, sink, and gas stove is a necessity and should naturally be convenient to that room which is planned to be used for church suppers. The Sunday-school hall can be used for this purpose, but often a basement room of ample size, which can be used at other times as a gymnasium, will be a wise provision.

A Good Example of the Decoration of a Traceried Window

Tower of St. Agatha's Church, Sparkbrook, Birmingham, England
W. H. Bidlake, Architect
Showing a Good Handling of Brick and Stone

Several smaller rooms for the various guilds and social societies of the church may also be required, including a ladies' parlor with cupboards and, of course, toilet accommodations.

In the revival of the use of color as an adjunct to architecture, the church has been well to the front. Since the days of the Gothic revival in England the church architecture of England has been quite generally decorated in color. It is true that the early attempts at color decoration were as crude and lifeless as the resuscitated Gothic architecture itself; and the new movement as echoed in this country produced decorations quite as bad as the structures they were meant to beautify.

Through the seventeenth and eighteenth centuries all classes of buildings were uniformly colorless. The vigorous colors of the Gothic churches had slowly faded into the pale grays and dead whites of the Georgian work, and the brilliant decorations of the medieval castles and civil buildings had given place to the cold and severe treatment of the Brothers Adam, and the equally colorless creations of the French contemporaries.

With the rise of the French mural painters of the last century a certain amount of color was introduced into the hitherto cold and cheerless classic buildings, but this decorative treatment was quite different from that employed by the ancients, who decorated not only the plain wall surfaces, but the carved and moulded work as well. We are only beginning to appreciate the vast opportunities for effective work in the use of color after the manner of the ancients. We have been accustomed to regard the love of brilliant color as an indication of uncultivated taste — either a taste akin to the young child or the Hopi

Indian — and we are loath to be suspected of belonging either to the one class or the other.

It comes as somewhat of a shock, therefore, to read such extracts as the following from authorities on the subject of decorative painting as practised by the Greeks in their best periods:

"Why do we deprive ourselves of all the resources of art? Why does the classic school pretend that coldness and monotony are the inseparable accompaniments of beauty, when the Greeks, whom they present to us as artists *par excellence*, always colored their buildings inside and out, not timidly, but by putting on colors of extreme brilliancy?"—*Viollet-le-Duc.*

"From the traces of coloring found in the Doric temple of Æphaia, at Ægina, it has been proved that the architrave was painted red, of an uniform tint. This served as a ground for the gilded shields on which votive inscriptions were placed and executed in metallic letters. Above the architrave the frieze presented an alternation of triglyphs and metopes, the former being painted blue, while the ground of the sculptured metopes was red, which relieved the sculptured decoration, the latter being kept the natural marble color, only that the accessories of the figures were of gilded bronze. The mutules of the cornice were painted blue. The tympanum of the pediment was also blue, serving as a background to the sculptures, which were possibly tinted a pale yellow. The surrounding mouldings were decorated with leaf patterns in red and green, or red and blue, and the gutter, or crowning member, received a similar treatment of lively coloring.

"Fragments of color found on the Parthenon and Propylæa prove that the ancient Greeks in their best period were lavish in their use of color on their buildings."—*James Ward*, "History and Methods of Ancient and Modern Painting."

It is a long way from the colorless modern city to the realization of a joyful ideal such as the above. It is just possible that the jaded nerves of the "tired business man" of to-day will not stand the mild excitement caused by a continued association with bright colors; but surely his appetite for grays must be more than satisfied by the colorless surroundings in which most business men spend the largest part of their lives.

From the few remains that have come down to us from medieval days we may be sure that the churches of those days were resplendent with glorious color. We have conclusive proof in old records and accounts, that a church or cathedral was not considered finished until it had been decorated throughout in color and gold. This was merely a continuance of the universal practice followed in classical and still more ancient times.

Interior of Trinity Church, Asbury Park, N. J.
Clarence W. Brazer, Architect

Mouldings, whether of stone or wood, were always colored, or were intended to receive color, as well as piers, capitals, and columns. The moulded jambs and arches of doors and windows, and the ribs and bosses of vaulted ceilings, were all painted, and the fillets and bosses often gilded. It was customary to color the web of the vault for only a short distance up from the caps, and out from the bosses which occurred at the intersections of the ribs; but often the entire vault surface was covered with arabesques. Bosses were frequently gilded with strong color in the interstices to relieve the carving. Wood roofs were also decorated with monograms, heraldic devices, and running texts.

Plain ceilings or even vaulted ones were painted blue and adorned with lead stars, wavy rayed, and gilded, as a conventional representation of the firmament.

The painting was usually done on a thin ground of plaster with which the stone was first covered. This method was common to the Egyptians, Greeks, and all ancient peoples, as well as to the builders of the Middle Ages.

The practice of painting and gilding the woodwork of screens, galleries, pulpits, organ cases, reredoses, and font covers was common during the Middle Ages. In fact, wherever woodwork was treated at all, it was usually done in this way with color.

The palette of the medieval decorator was very limited, with the inevitable result that the decorative schemes possessed great simplicity, vigor, and directness. Red, blue, green, white, and black are the only colors commonly met with, a favorite and extremely masculine combination being red, white, and black, with an occasional touch of gold. The colors were as bright as it was possible to get them, no "antiquing" of the colors with glazes of dust and lacquer was indulged in in those days when art was creative, not imitative. The fact that the color spots were small seems to serve the purpose of softening the whole; but, if a single feature is out of key with this scheme, it is at once noticeable. Even England is not altogether free from those creations of the commercial church decorator in stained glass, furniture, and painted work, which harmonize with nothing under the sun.

The interior wall surfaces of small churches were usually of plaster, the larger ones of stone. The plaster was prepared by simply painting it with a light wash of distemper in soft colored tints of red, blue, or green. On this ground the decorative pattern in diaper, or in alternating devices, was painted, usually in one, not more than two colors. While the range of colors was limited, perhaps, deliberately, they made good use of those at hand by cleverly transposing the colors in the alternating portions of the design, producing variety in simplicity.

In modern work these designs are frequently stenciled, but in the old examples they were unquestionably done by "pouncing," or pricking holes through the original drawing to locate a few principal points, then executing the design with the brush. This is clearly evident from the slight irregularities met with in the drawing of the patterns, and by the greater freedom characteristic of brush work.

The materials and mediums used in the early work were the dry colors ground in water and applied with parchment or egg size. The former size was made by boiling cuttings of parchment, or from ordinary glue, the latter from egg beaten and mixed with water. In later work much of the decorations are in oil, although the early tempera painting when varnished presented the appearance of oil work.

Mouldings were decorated in a variety of ways, with barber-pole, chevron, or plain color, and the fancy of the designer was at perfect liberty to invent new and strange forms. As it is usually dangerous to work with more than three colors, not including gold, so is it always advisable to limit the number of decorative elements for the sake of simplicity. Running texts painted in black on a white scroll with rubricated caps make a rich but costly decoration. Sometimes when carved in wood or stone they are gilded.

It may be contended that this almost universal custom of treating the interior stonework, both moulded and flat surfaces, with a thin coating of plaster, obscuring the jointing and deliberately sacrificing all that effect of splendid strength which we admire in good masonry, for the sake of the painted decoration, may not be a display of good artistic judgment. And it may be held as a matter of good fortune that so very few churches were ever completely finished in this direction. Certainly the painted work of the interior of the Sainte Chapelle, which, though modern, we may regard as a fairly correct example of French work, does not give one as great a feeling of satisfaction as would have been the case had the decoration been confined to a few salient points. Other examples of painted decorations, some of which are, however, modern restorations, are to be found at Rheims, Albi, Abbeville, Poitiers, St.-Germain-des-Prés, Chartres, in France; Durham, St. Albans, Sherbourne, and ancient painted roofs in great abundance at Ely, Peterborough, St. Albans, Worcester, Tewkesbury, and a host of smaller churches throughout England.

It is needless to say that in carrying out a scheme for the decoration of a church the architect should have supreme command. This should be, and usually can be, arranged at the very beginning of negotiations with the clients, and should be so stated in the contract between architect and client. In this way the decorative scheme can be controlled and each feature, when it is executed, can be made to take its proper place as a part of the whole. The subjects included in the decorative scheme whether they be for painted work, stained glass, carving in wood or stone, hardware, tiles, or embroidery, can then be arranged in an interesting sequence; and, as each memorial is to be presented, its donor selects the item and subject from the prearranged scheme, and adheres to the restrictions laid down by it.

This is of especial importance in the question of the memorial windows, for the reason that of all the decorative features in the church, the windows, being the source of light, are by far the most conspicuous; and, of all the arts and crafts that go towards the making of the church, no single one is so likely to make or mar the interior effect as the glazing of the windows. And no one of the arts of the church has sunk so low since the age of good church building as the art of stained glass. In no other art is it quite so easy to disregard the limitations imposed by the materials and transgress the rules of good design. In this, as in other crafts, the workmen have become too expert. Inasmuch as anything can now be accomplished in glass, they argue that they are at liberty to do anything their fancy prompts. There are, however, some simple rules which should guide the architect in his criticism of the windows about to be installed in his church, and these rules the stained glass man should be compelled to respect.

A Window Possessing Real Churchly Character

His design, being a decoration, should regard the form to be decorated, and if the window happens to be mullioned, the mullions should confine the decoration, each light being given over to a single figure or group; or if the decoration is small in scale, to a series of superimposed panels.

Being decoration, it should be conventional and not pictorial. Perspective, or lights and shadows, should not be allowed under any circumstances, the former being out of place in any good decoration, and the latter particularly so in a transparent medium.

Being ecclesiastical decoration, it should be a strictly religious subject, and be treated in as dignified a style as the artist is capable of producing. The medium being glass, the subject will look better if handled in a set and rather brittle manner, avoiding all soft and flowing lines, and all semblance of prettiness in the true meaning of this word.

The glass being held in place by lead cames, the leads should frankly play an important part in the design, in fact, they should be strongly featured. The supporting bars or armatures, if any, should also be recognized as a condition to be dealt with.

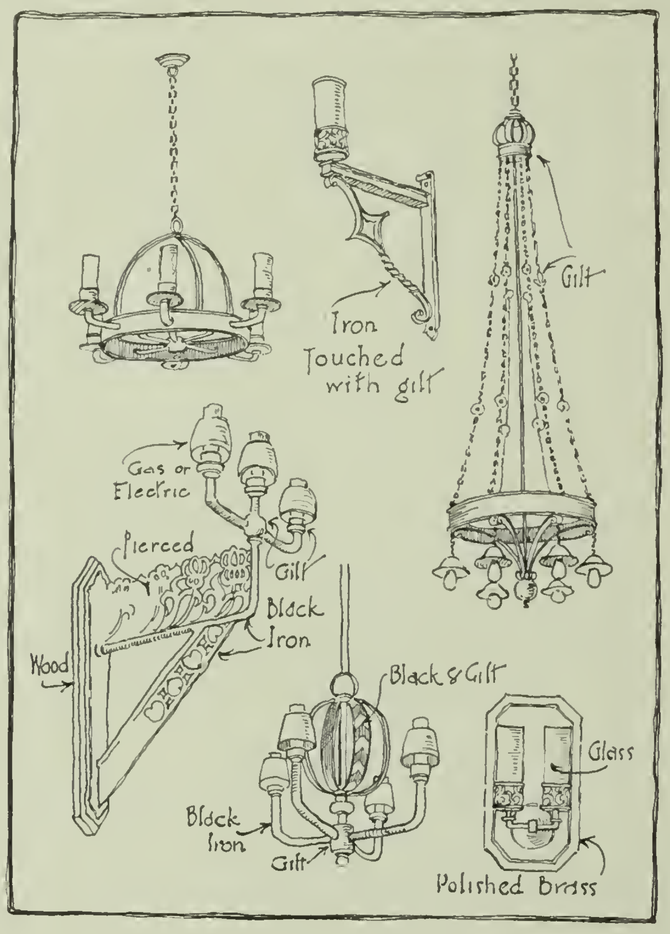
The color scheme is more a matter of choice, but in this, as in our painted work, it is disastrous to work with an unlimited palette. Five or six colors with their different degrees of intensity are all that are necessary or desirable. Whether the colors are heavy or light, will depend largely on the particular building in hand; but this should be given due consideration.

Sentimentality, or effeminate prettiness, to the large majority of the untrained public, especially to those whose better judgment has been recently dislocated by some bereavement, is the acme of beauty. This fact is thoroughly understood by many stained glass purveyors, who play on the overwrought feelings of their prospective patrons, and introduce into their designs lovely maidens with dove-like expressions, resembling that of the departed, perhaps floating in graceful curves, or accompanied by sad-eyed cherubs and fleecy clouds. That sort of art should not be allowed to disfigure the tracery of a real church. In the same class with this is the copy of the Hoffman picture, — shades, shadows, and all, — or the wholly unreligious subject, a good example of which completely counteracts the good influence of one of our best known modern churches. The subject — an apple tree with widespread branches — fills the upper half of a five-light window; in the lower half is a winding stream, ending in a gorgeous sunset, without doubt the identical place where the wealthy donor went swimming as a boy.

The temporary glazing of the church windows should be given its proportion of study. The common type of glazing is of course the diamond. While this is perfectly acceptable, there is no harm in making this temporary glazing somewhat more interesting, for oftentimes it serves to keep out the weather for many years, and, in fact, good temporary glazing is preferable in every way to bad stained glass. There are many simple patterns, each capable of great variation, but none very expensive. An inexpensive variation from the common diamond treatment is the oblong on end. This effects a saving in glass and in cutting, and this saving will sometimes be sufficient to supply a little ornamentation in the upper end of the light, either in the form of a shield with simple device or merely in fantastic leading.

Where funds will permit, more or less ornamental grisaille glass is possible with little additional outlay, providing the pattern is repetitive, and the stenciled or painted portions are kept few and simple. At a somewhat greater cost, it is possible to obtain a most interesting sequence of windows in a grisaille with medallions containing emblematic figures or devices symbolizing events or personages from the Old and New Testaments, arranged in progression from west to east, culminating in the crucifixion at the altar.

Much could be said on the subject of chancel furniture, — the dimensions, arrangement, and design of each piece, — but space will not permit of anything like the detail which such a comprehensive study would demand. The two types of chancel — the liturgical and the non-liturgical — have been touched upon in a former paper. There are many indications that these two types will some day become one, the shallow chancel with portable communion table giving place to the more ancient and dignified arrangement now in use by the churches having a more formal service. There is one thing of vital importance throughout the church, and especially in the chancel — dignity. The design of each article of furniture, both here and in other parts of the church, should assist towards this end — to attain that dignified solemnity which is the making of the church.



Sketch of Church Lighting Fixtures

The fascinating study of the furnishings of the altar and the vestments of the clergy would occupy a volume in itself, and cannot, therefore, be more than mentioned in a hasty survey of the subject such as this. The field of ecclesiastical needlework, by no means a small one, as well as the work of the gold and silversmiths, is included in this department of church design, and the student of these subjects will find many interesting and valuable works treating them thoroughly.*

The artificial lighting of the church is a problem with which the builders of the Middle Ages were not concerned, the result is that we have very few lighting fixtures that may be spoken of as strictly Gothic. The modern fixture houses, however, have not been in the least hampered by this scarcity of precedent, and have prepared for us an assortment of bracket lights and chandeliers which are, without exception, bad. A number of fixtures taken from modern English churches are shown on this page, which are admirably suited to the Gothic interior, although the Gothic quatrefoil and battlement are conspicuous by their absence.

Closely allied to the lighting fixture problem is the question of hardware. Here again the commercial artist has supplied us with page after page of Gothic designs in cast brass or bronze, rich in crockets and tracery, but meaningless when considered in the light of an architectural accessory. These should by all means be scrupulously avoided, and the hardware, at least that operating the principal doors, should be hand wrought. This is by

* "The Ornaments of the Ministers," Rev. Percy Dearmer; "The Chancel and the Altar," Harold C. King; "Glossary of Ecclesiastical Ornament," Pugin; "English Embroidery," A. F. Kendrick; "Dictionnaire du Mobilier Français," Viollet-le-Duc.

no means a financial impossibility, even in the inexpensive church. It would be ideal to have the hardware and lighting fixtures made by the same artisan — in any case they should be of similar materials and finish. The churches of the Middle Ages are rich in examples of hardware, from the very simple to the most elaborate, and these are easily adapted to our modern mechanism without loss of character. We have in this country a few craftsmen of a very high order, who are capable of executing this work in the real spirit and with much the same enthusiasm as the worker of the Middle Ages. The large manufacturers of good hardware also realize the worth of these efforts, and in many of the newer small churches the influence of these craftsmen working in the spirit of earlier days is evidenced in the constantly improving character of the hardware.

It is a most significant and important fact that the arts and crafts movement has progressed as much, if not more, in the past two decades than the movement for good church architecture itself; for in no other department of architectural design is the architect so dependent upon the individual craftsman employed to carry out the spirit of his work. This is, possibly, because the average workman's experience has been largely upon classic works, and his dealings have been mostly with machine made products, both of which demand a highly finished and mechanical result, free from all those pleasing irregularities and variations in detail or surface treatment which add so much to the charm of Gothic work and which, in fact, are absolutely indispensable to it.

The arts and crafts movement is significant in that it points to a larger and more general appreciation of the Gothic, or free spirit, in design, as opposed to the classic or more orderly ideal; and the growing public regard for this spirit will materially assist its advocates in its development.

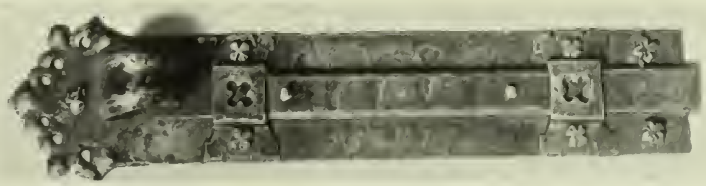
Of the craftsmen who are working to-day in the real spirit of the old work, we have conspicuous examples in the field of furniture and joinery, in wrought iron and hardware, in stained glass, painted decoration (which, however, is still little explored in America), and ecclesiastical tile work.

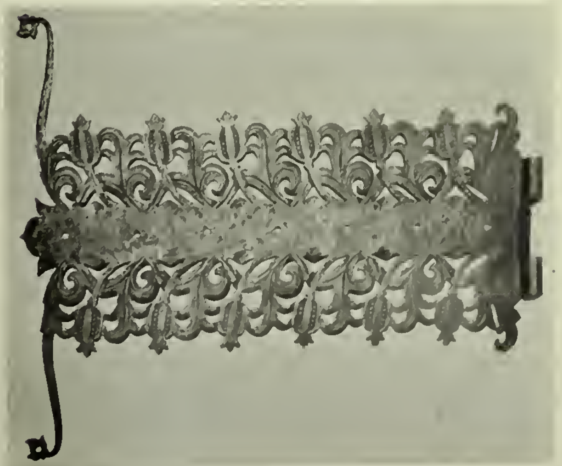
In enumerating the various arts associated with the Gothic movement, we have overlooked that of the ornamental plasterer, possibly because we have not as yet produced in this country any work of note comparable with that done in England; and, possibly, because this work has never been extensively employed in the church proper. Ornamental plaster is sometimes to be found in the decoration of chancel ceilings, more, however, in modern than in medieval work. In the parish house it is often used with good effect in ceiling decoration. Some good examples of this work can be seen in the parish houses and sacristies of St. Thomas's Church and the Chapel of the Intercession in New York, the Russell Sage Memorial Church at Rockaway, and in a few other works of Cram, Goodhue & Ferguson, not forgetting the attractive offices of Mr. Goodhue.

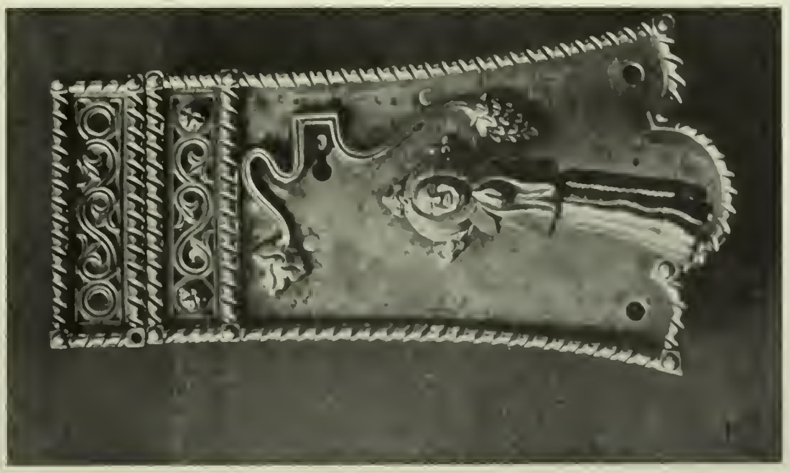
Many of the men working in these fields are artists as well as craftsmen, and, in accordance with the principles of good artist-craftsmanship, they all prefer to design the work which they execute, working sometimes from a small scale sketch of the architect's, giving a rough idea of the salient points to be observed in connection with the architectural surroundings.

It may some day be realized that the mason, the carpenter, the roofer, the plasterer, and the painter are craftsmen, as much as the workers in the more ornamental lines. This was indeed so in the Middle Ages, but is hardly possible under the present system of labor unions, which discourage anything in the nature of individual effort, commercialize the workman's time, and reduce every one to one level, robbing their work of all personal interest.

A start in the right direction has already been made, and it is incumbent upon the architect to press forward the good work, trying to inspire a real interest on the part of the workman for his craft, even though it becomes necessary for him to throw off his coat, roll up his sleeves, and wield trowel and mallet himself. The result will surely be a fuller co-operation between architect and workmen, removing much of the present spirit of discontent. The building trades will then surely be elevated to the level of the crafts, and the art of building will be even more deserving of her title, "Mother of the Arts."







Some Examples of Carefully Wrought Iron Hardware Appropriate for Church Use

EDITORIAL COMMENT AND NOTES FOR THE MONTH

TRUTH of form in architecture was the great demand of Ruskin in all of his writings. If an ornamentation had no precedent in natural forms to allege for its use, he convicted it of ugliness. Of late we have noticed the ribbon considered as an ornament introduced to carry the written sentence or motto. Of the use of ribbons in architecture, Ruskin says : " Ribands occur frequently in arabesques — in some of a high order, too — tying up flowers, or flitting in and out among fixed forms. Is there anything like ribands in nature? It might be thought that grass and seaweed afforded apologetic types. They do not. There is a wide difference between their structure and that of a riband. They have a skeleton, an anatomy, a central rib or fiber, or framework of some kind or another, which has a beginning and an end, a root and head, and whose make and strength affect every direction of their motion, and every line of their form. The loosest weed that drifts and waves under the heaving of the sea, or hangs heavily on the brown and slippery shore, has a marked strength, structure, elasticity, graduation of substance ; its extremities are more finely fibered than its center, its center than its root ; every fork of its ramification is measured and proportioned ; every wave of its languid lines is lovely. It has its allotted size, and place, and function ; it is a specific creature. What is there like this in a riband ? It has no structure ; it is a succession of cut threads all alike ; it has no skeleton, no make, no form, no size, no will of its own. You cut it and crush it into what you will. It has no strength, no languor. It cannot fall into a single graceful form. It cannot wave, in the true sense, but only flutter ; it cannot bend, in the true sense, but only turn and be wrinkled. It is a vile thing; it spoils all that is near its wretched film of an existence. Never use it. Let the flowers come loose, if they cannot keep together without being tied ; leave the sentence unwritten if you cannot write it on a tablet or book, or plain roll of paper. I know what authority there is against me. I remember the scrolls of Perugino's angels, and the ribands of Raphael's arabesques and of Ghiberti's glorious bronze flowers ; no matter ; they are every one of them vices and ugliness. Raphael usually felt this, and used an honest and rational tablet, as in the Madonna di Fuligno. I do not say there is any type of such tablets in nature, but all the difference lies in the fact that the tablet is not considered as an ornament, and the riband, or flying scroll, is."

IN the *National Intelligencer* of Washington, published a hundred years ago, we find the following curious extract, which is given as originally printed.

" The ingenious Mr. Daniel French bro't his discovery of a mode to make BRICKS out of the earth, in its natural state, without any other preperation than being pulverised by the machinery, to perfection. By the machine he has constructed, 20,000 bricks may be made in a day, without the use of manual labour — They are moulded in the neatest manner in cast iron moulds, are consequently all exactly of the same size, and extremely smooth and polished — and fit so closely, that the saving in mortar and lime will be very considerable. They weigh nearly as heavy again as common bricks — and experience has shown, they burn equally as well. They are ready to be carryed to the kiln as they are made, and therefore, save all the labour of making and piling, as well as the risque of wet and bad weather. This invention is one of those which will be of infinate advantage to our country — and the knowledge of it out to be diffused as widely as possible. It particularly promises to aid the improvement of the Western section of the Union. In Kentucky and Tennessee, the Ohio, and Mississippi territories, it will be peculiarly useful, and being now no longer a matter of speculation, but reduced to actual practice, all doubts of its success are done away. A model of it may be seen at Mrs. Wilsen's on the Capitol Hill, in this city."

THE damage done to Rheims Cathedral is officially given in a note issued from Bordeaux by the French Under-Secretary of State for Fine Arts, which says :

" Rheims Cathedral was shelled several times. It had all the roofing burned and the stained-glass windows riddled, and to a large extent broken.

" The northern tower of the façade, which was struck by shells in the upper part over the portal, was seriously damaged by flames. The sculptural decorations and statues are irreparable.

" Inside the church, straw, which had been collected for the wounded, caught fire, generally damaging the stonework. The wall facings and masonry are charred.

" Instructions have been given to protect the vaults by building temporary roofing."

THAT the late King of the Belgians, Leopold II, was a mighty builder, and that he spent vast sums out of his own personal wealth towards beautifying Brussels, are facts not generally known. His work did not have the backing of the nation at large, but nevertheless he built palaces, museums, arches of triumph, and in fact remodeled the whole of Brussels much as if he were a second Louis XIV. Brussels was made infinitely richer as a result of Leopold II's constructive passion.

THE building operations for October show an improvement over September, but with a shrinkage of 20 per cent from the figures of October, 1913. This loss is, of course, serious, but each successive month shows improvement, and the first days of November indicate decided gains due to the gradual easing of the money market which is permitting the delayed execution of many plans.

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CONTENTS *for* DECEMBER 1914

PLATE ILLUSTRATIONS

LETTERPRESS

General Index for year 1914 precedes first advertising page in this issue

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WATER COLOR DRAWING OF DESIGN
FOR A CHURCH FAÇADE
HENRY WILSON, ARCHITECT AND DELINEATOR

THE BRICKBVILDER

VOLUME XXIII | DECEMBER, 1914 | NUMBER 12

The American Theater.

ITS ANTECEDENTS AND CHARACTERISTICS.

By HUGH TALLANT.

THIS is the first of a series of articles which will capably treat of the development of the Modern American Theater Auditorium from both its practical and artistic sides. The author, Mr. Tallant, brings to this work his long and varied experience in the design of important theaters which assures an authoritative discussion of the subject. He has designed in partnership with Henry Herts among other theaters, the New Amsterdam, New York, and the Brooklyn Academy of Music, both well known examples.

He was born in Boston, in 1869, attended Roxbury Latin School and took the A.B. and A.M. degrees at Harvard in the class of 1891, received the Diplômé par le Government Français at the Ecole des Beaux Arts in 1896, subsequent to receiving numerous medals during his course, covering mathematics, modeling, and architectural design. He is a member of the standard art, architectural, and scientific societies, and is a frequent and appreciated contributor to THE BRICKBVILDER. — EDITOR'S NOTE.

INTRODUCTION.

"GOOD building," says Sir Henry Wotton, "has three essentials: commodiousness, stability, and pleasing."* It must be practical, safe, and artistic. Development may result from progress in either of these directions; it is sure to follow progress in all three. Within the last generation this country has seen a general advance in the conditions of living, the methods of construction, and the principles of architectural design. The natural result has been the development, if not of a distinctively American art, at least of certain distinctively American types of building.† Our sky-scrapers, hotels, and apartment houses are to-day as individual in treatment as they are unprecedented in size. Our great railway terminals are almost equally characteristic in appearance. Even our more modest buildings, such as libraries, schools, hospitals, and banks, are rapidly assuming a consistent and appropriate exterior.

This movement is strikingly illustrated in the case of our theaters and music halls. Thirty years ago they were designed and constructed along the same lines as their English prototypes. They had the same subdivision of the seating on the main floor — the American distinction between parquet and parquet circle corresponding to the English separation into stalls and pit. They had the same stage-projection or apron, the same horseshoe balconies, the same eternal decoration of florescent columns, grotesque masks, and pudgy cupids. Three decades have wrought notable improvements on both sides of the Atlantic; but while the foreign playhouse still retains much of its original character, our own has undergone a complete transformation. The seating is now continuous from front to back of the main floor. The balconies have become flat and deep, the projecting apron has disappeared, and the trite and cumbersome embellishments are rapidly falling into disfavor. The American theater of to-day is inviting — even cozy — in its interior decoration, and has acquired an individuality in arrangement and construction which is essentially its own, and from which it is not likely soon to deviate.

The practical side of this evolution was largely the achievement of a single architect, Mr. J. B. McElfatrick, who might well be called the Father of the American Theater. The writer remembers him well, — a kindly, genial old gentleman, quite willing to pass along to the rising generation the experience which he had painstakingly extracted from the hundreds of theaters entrusted to his care. The general characteristics of his work and of that of his contemporaries are described in the treatise on "American Theaters," published in 1896 by Mr. William A. Birkmire. The technical details are precised in the New York Building Code of 1899. To this data the following pages will add a summary of previous and subsequent conditions. An introductory outline of the theaters of Greece, of Rome, and of the Renaissance will suggest the historic antecedents of the modern playhouse and will furnish certain practical information concerning the layout of open-air auditoriums. It will also serve to explain the mutual interdependence of the theater and the drama, and to show why certain types of the one are specially adapted to corresponding types of the other. The main discussion will then cover in order the various characteristics of the up-to-date American theater, — its design, construction and arrangement; and its principles of seating, sighting, ventilation and acoustics. In this way, it is hoped, definite light may be shed on what is, perhaps, the most comprehensive and difficult problem with which the modern architect is called upon to cope.

The writer is already indebted to Prof. Brander Matthews and to Mr. John Corbin for many valuable suggestions, and to Mr. E. R. Smith for great help in matters of literary research. Further obligations will be acknowledged as incurred.

* Bona aedificatio. tres habet conditiones: commoditatem. firmitatem & delectationem — Elementa Architecturæ collecta ab Henrico Wottonio. Equite etc. See also the introduction to "The Architecture of Humanism" by Geoffrey Scott.

† See the articles on "Distinctive American Architecture" by Montgomery Schuyler and Aymar Embury II. which have appeared in THE BRICKBVILDER during the past year.

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PART I. HISTORIC ANTECEDENTS.

THE THEATERS OF GREECE, ROME, AND THE RENAISSANCE.

IT IS often said that the theater is the complement of the drama. To a certain extent this is the case; but it is to be noted that while the theater exists solely for the purposes of the drama, the drama, on the contrary, exists primarily for the expression of human sentiment, and merely conforms of necessity to such architectural restrictions as are imposed upon it.* As a result, its development has always anticipated that of the theater, progressing faster in every period of great intellectual activity, and arriving sooner at its fullest and noblest expression. The tragedies of Æschylus and Sophocles were witnessed by audiences on rough wooden benches a century before the first stone proscenium was erected. Terence and Plautus saw their plays enacted in temporary enclosures on the hillsides of Latium; while Shakespeare staged his masterpieces in structures little better than an open courtyard, and devoid of artificial light or scenic facilities. Thus the history of the theater becomes largely a corollary of the history of the drama, and in tracing the origin of its various phases we shall find that the bacchanalian revels of an almost prehistoric generation dictated the ultimate arrangement of the classic hemicycle, and that the miracle and morality pageants of the early Renaissance have transmitted their reminiscences to the American playhouse of to-day.

* * * * * * *

The Greek theater apparently had no prototype. It was an indigenous creation, which grew up in response to the increasing demands of the drama. In its earliest and most rudimentary form it consisted of merely a circular dancing-place, or orchestra,† marked out on level ground by means of a narrow margin of flat stones. Here, on the occasion of the annual festivals of Dionysus, the god of wine and growth, the bacchantes exhibited their newest steps and shouted their triumphant chorals,‡ while spectators gathered around the ring from all directions. At first the performances were wholly amateur — in fact, many of them were in the nature of a social entertainment, or *komos*,§ and as such came to be known as *comedies*.‖ The more important, however, were thoroughly religious in character. They were always preceded by the sacrifice of a *tragos*,¶ or goat, from which fact they acquired the name of *tragedies*,** although they were not necessarily tragic, in the modern sense of the word, except so far as the unfortunate goat was concerned. Some idea of their character may be inferred from the archaic relief depicted in Fig. 1. Here we have two performers engaged somewhat strenuously in music and dance, while between them stands an attendant holding in his hand the knife with which he has just performed the initial sacrifice. Costume is evidently a matter of secondary importance for the purposes of this production, but the musical instruments seem almost as well developed as those of later days.

* The influence of the theater upon the drama is discussed on pages 44 to 53 of A Study of the Drama, by Prof. Brander Matthews.

† ὀρχηστρα.

‡ The dithyramb (διθύραμβας, from διος descended from Zeus, and θριαμβος, a song or shout of triumph) was introduced among the Dorians from Crete, where it was used to celebrate the birth of Dionysus.

§ κωμος. ‖ κωμῳδια. ¶ τραγος. ** τραγῳδια.

As time went on these exhibitions gradually became less ceremonial and more distinctly dramatic in form; but they never lost their association with the worship of Dionysus, even after they had grown into distinctly literary contests and were carried on exclusively by professional actors and musicians.

The first step toward the development of actual drama was the introduction of a dialogue between the *coryphæus*,* or leader of the chorus, and the other bacchanalians. For this purpose the coryphæus — following an impulse still prevalent under similar circumstances — used to mount upon the sacrificial table which stood beside the altar in the center of the ring, and which thus became the prototype of the later Greek stage. Thespis is said to have been the first to conceive the idea of introducing an actor in the place of the coryphæus, who, from this time on, was relegated to his original station among the chorus. The dialogue was also enlarged into a series of impersonations, which resulted in the erection of a *skené*,† or tent, just outside the circle, in which the actor could change his dress and mask. The sacrificial table was replaced by a platform located, for convenience, directly in front of the tent, and called on this account the *proskenion*;‡ while to make good the loss of standing room entailed by this change, which confined the spectators to about two-thirds of the original circle, the orchestra was marked out, whenever possible, at the foot of a hillside, so that the audience could be accommodated on successive rows of benches rising one above the other up the slope.

Of course these early structures were rough affairs, knocked together temporarily for festival purposes like the bandstand and pavilion of a modern county fair, yet in their general features and arrangement they exhibited all the essential characteristics of the splendid stone hemicycles of later classic days, and even of our own playhouses of the last generation. How slight was the progress of two and a half millenniums will be seen from Fig. 2. At A is shown the typical arrangement of the Attic theater of the latter half of the sixth century before our era;§ at B the plan at approximately the same scale of the small theater at Pompeii; and at C the main floor of the American Theater, opened in New York City in 1893. The similarity of arrangement is obvious. Not only is the relative position of dressing rooms, stage, and auditorium identical in the three cases, but the arrangement of the Greek *ikria*,‖ or benches, enclosing the orchestra, is precisely duplicated in the American theater by the parquet circle enclosing the parquet. Even the nomenclature of the Greeks has come down to us with but slight variation in form and meaning. Their *orchestra* served for both dancing and music, while ours serves only for the latter. Their *proskenion* was the stage itself, while our *proscenium* is the frame around the stage. Their *skené*, while primarily a dressing room, served also as a background for the stage picture, like the *scene* on our back-drop. Finally,

* κορυφαῖος. † σκηνή. ‡ προσκήνιον.

§ This drawing is based on the description contained on page 81 of "The Attic Theater" by A. E. Haigh and A. W. Pickard. Cambridge.

‖ ἰκρια.

they spoke in a general way of the auditorium as "the theater,"* just as we speak of it as "the house."

Dramatic exhibitions were introduced into Athens about the middle of the sixth century before our era.† At first they were a matter of private speculation, but towards the end of the century they were taken over by the state and placed in charge of a special official. From this time on, they became contests in literary and musical skill. As has already been mentioned, they occurred only in connection with the annual festivals of Dionysus; and as only two of these — the Lenæa and the City Dionysia — were of any civic importance, the celebrations were looked forward to with corresponding eagerness. Unfortunately, the Lenæan festival occurred in January, and at that time of year even an Athenian was apt to find his literary enthusiasm somewhat chilled after a few hours of immobility upon an open bench. The City Dionysia, however, was held at the end of March, when the season was favorable and when the city was crowded with visitors, with the result that all Greece was present at these spectacles. Even the poorest could attend the show if they wished, for according to a measure framed between B.C. 422 and 404, every Athenian citizen could obtain the price of a seat — two obols — if he cared to apply for it. Admission was by checks of lead, bone, or bronze similar to those shown in Fig. 3, which is reproduced from the *Journal International d'Archéologie Numismatique* for 1898.* On one side they usually bore a head of Athena, and on the other a letter corresponding to a section of the auditorium. Within the limits of the section it was apparently a case of "first come first served," and as the performance was continuous from sunrise till dark, the spectators came early and brought their lunch, while hucksters plied a profitable trade in wine and raisins. Under such conditions business was at a standstill during the five or six days of the festival, and all classes gave themselves up to what they euphemistically called the worship of the wine god. The law courts were closed; a general moratorium on all debts was declared; and even prisoners were temporarily released from jail by a suspension of regulations similar to that recently in vogue at Sing Sing.

Apparently these performances had already been assigned to definite locations before the end of the sixth century B.C. The site of the Lenæa is unknown, but that of the City Dionysia has been identified with an ancient orchestra, whose remains have been discovered on the southern slope of the Acropolis, in what was known as the Sacred Enclosure of Dionysus Eleuthereus. In order to bring the grade of this dancing place to the desired level, it was necessary to cut down into the rock on the north and to terrace up on the south. Traces of the cutting and two fragments of the retaining wall still indi-

* *θέατρον* — Latin theatrum.

† Thespis is said to have won the first tragic competition in the year B.C. 535, but he had for some time been conducting dramatic exhibitions on his own responsibility.

* The article in question, *περὶ τῶν Εἰσιτηρίων τῶν ἀρχαίων*, by I. N. Σβόρωνος, contains many other specimens of these checks, together with a diagram showing the lettering of the various *kerkides*, or sections (*κερκίδες*, Latin *cunei*) into which the Dionysiac Theater was divided.

FIG. I. ARCHAIC RELIEF DEPICTING GREEK THEATRICALS

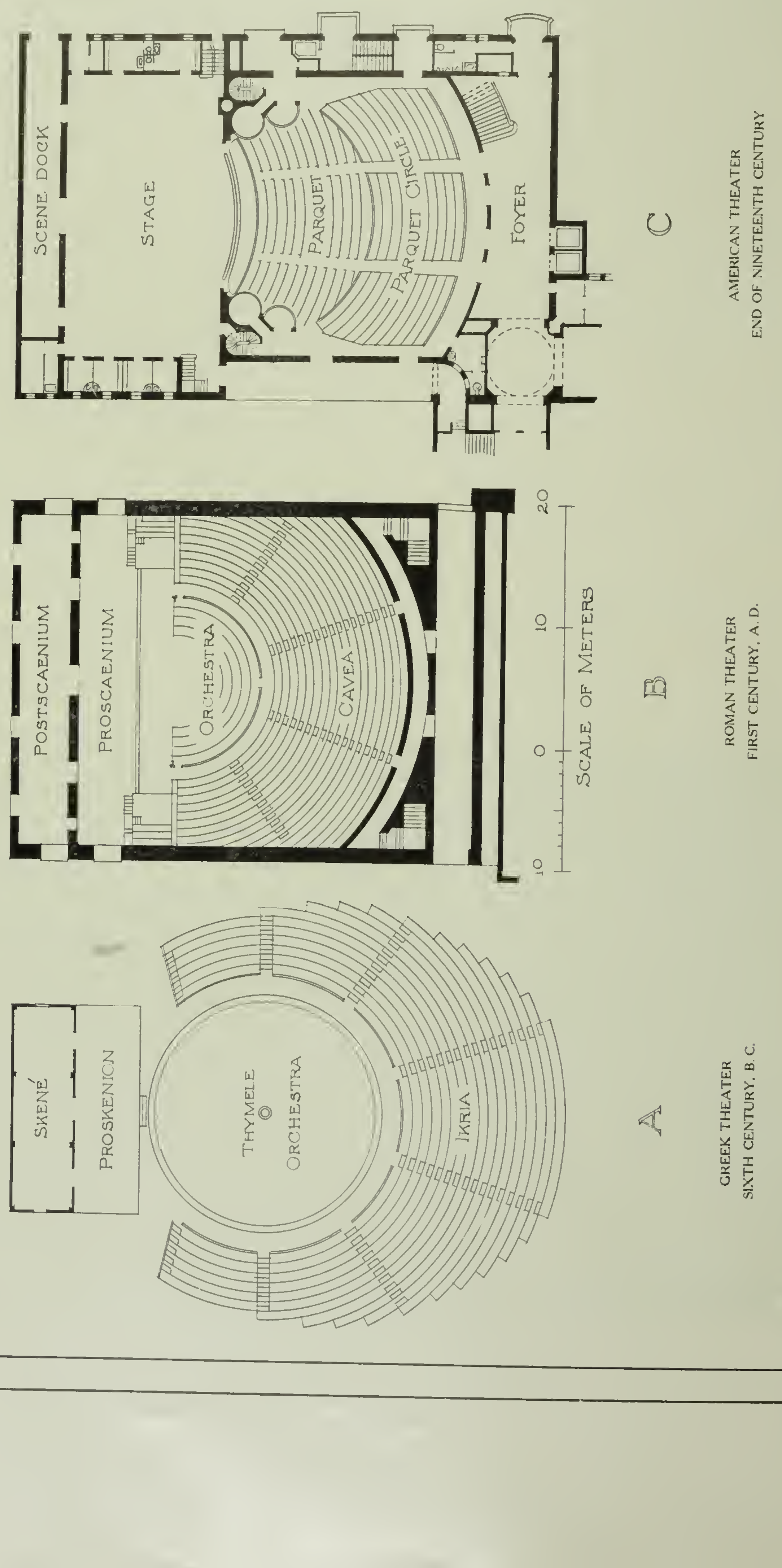


FIG. 2. COMPARATIVE PLANS OF EARLY GREEK, ROMAN, AND RECENT AMERICAN THEATERS

cate the exact size and position of the circle. It is shown on Fig. 4 by a dotted line, and, as will be seen, was located a few yards to the southeast of the stone paved orchestra of later days.

While the constructions of this date may have been permanent, they must have been laid out in an altogether incidental manner, to judge from a bit of slang which was long current at Athens. According to this saying, a bad seat at the play was known as the "view from the poplar." The explanation was that at the old performances the benches ran as far as a certain poplar, and that latecomers who could not find seats elsewhere used to perch themselves in the tree. It also appears that the wooden supports by which the benches were carried at an even level were none too strong, for in B.C. 499 a number of them collapsed, occasioning a serious accident. To avoid a repetition of such a mishap the new ikria were supported on earthen embankments. Certain portions of this fill can still be distinguished by the character of the rubbish which it contains.

The new theater proved so satisfactory that it soon attracted all the lyric and dramatic performances from the Lenæum and elsewhere. It was here that the prize for tragedy was won by Æschylus in B.C. 472, 467, and 458, by Sophocles in 438, with Euripides second, and in 428 by Euripides first. We cannot avoid a momentary feeling of disappointment when we realize that the works of these immortals were first produced in wooden buildings devoid of all architectural embellishment, before an audience huddled on wooden benches which were probably nothing more than boards resting on wooden supports driven into the ground below. However, it is only within the last few weeks that the football fans at Yale and Princeton have been accommodated on anything better, and those who have witnessed the enthusiasm which has been evoked upon occasion from the occupants of the old wooden bleachers will question whether any finer frenzy will ever be developed above a masonry construction. After all, once the seats were filled, the effect of the Athenian hemicycle was much the same, whether the ikria were made of wood or limestone; the evolutions of the dancers were almost as effective on solid earth as on a pavement; and the background of the play was in any case largely provided by the painted wooden screens, or pinakes,* which were used for purposes of scenic effect. When twenty thousand spectators acclaimed the crowning of the successful poet *and his stage manager*,† the ovation must have dwarfed anything accorded to-day to a successful playwright or impressario. Some things were done better in the Athens of twenty-four centuries ago than they have since been done, *even in France*.

* πινακες. † χορηγος.

FIG. 3. ADMISSION CHECKS TO THEATER AT DIONYSUS, GREECE

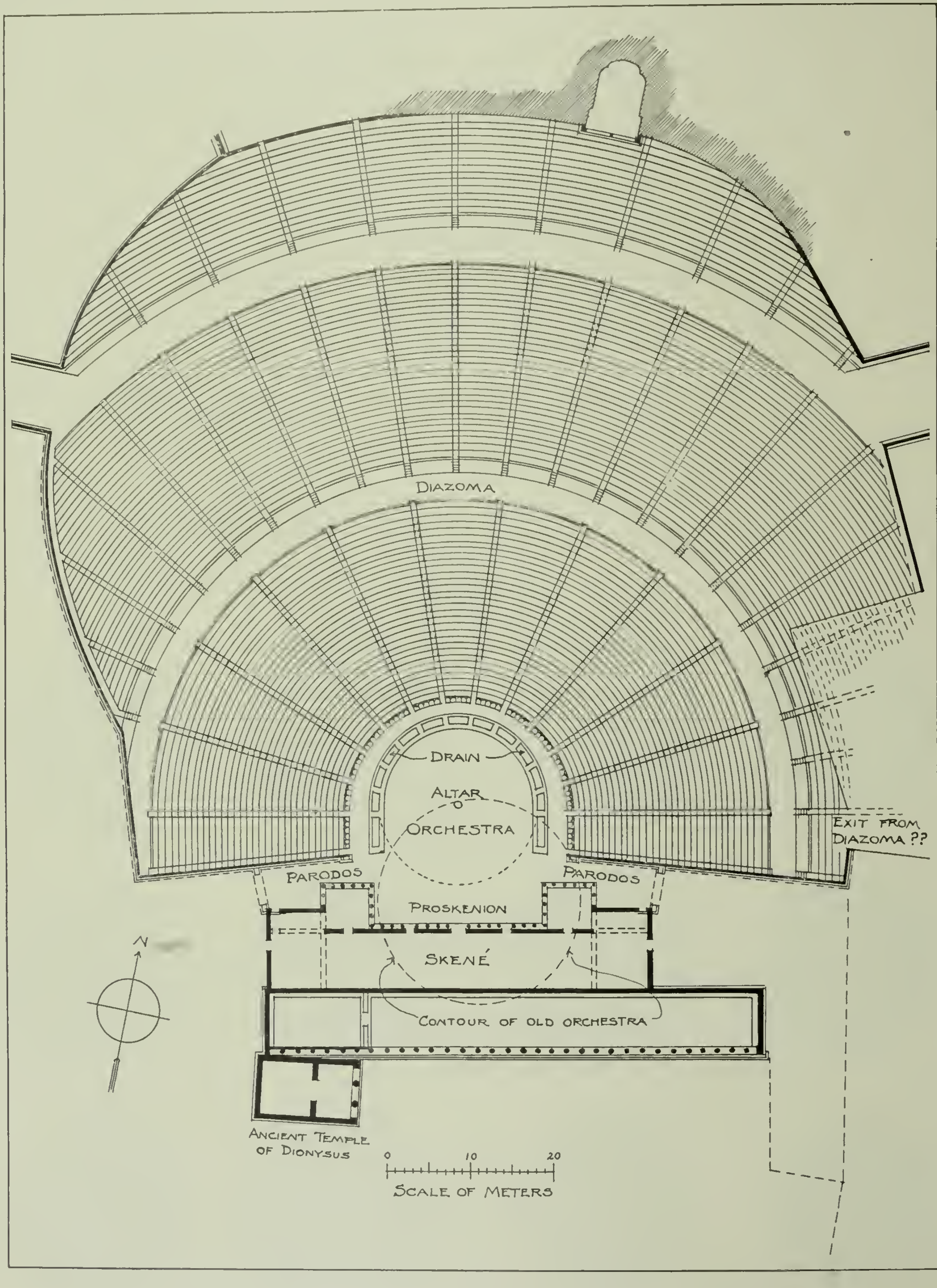


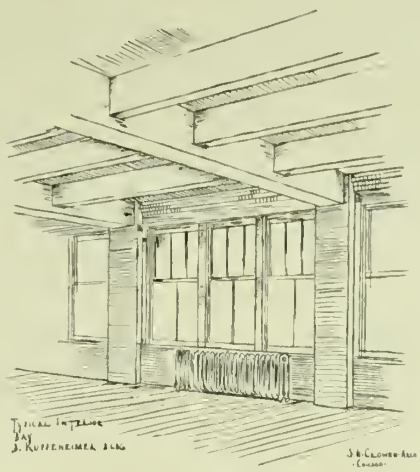
FIG. 4. ORIGINAL PLAN OF THE DIONYSIAC THEATER AT ATHENS

Efficient Planning in Mercantile Structures.

THE KUPPENHEIMER FACTORY BUILDING, CHICAGO, ILL., S. N. CROWEN, ARCHITECT.
THE WENTER & DRECHSLER STORAGE WAREHOUSE, OAK PARK, ILL., GEO. S. KINGSLEY, ARCHITECT.

THE word "efficient" is one that we very frequently hear spoken in these days of commercial activity,— many times, it is true, with little knowledge of its real significance,— nevertheless, it has a definite meaning, and efficiency is a quality that is now recognized and earnestly sought by manufacturers and, furthermore, one which must be taken account of in every serious constructive business that hopes for any degree of success.

Competition has reduced the profits in some industries to such an extent that the production cost had of necessity to be reduced to the lowest point consistent with the quality of the product to insure a fair return on invested capital. This circumstance directed the attention of the manufacturers to means for gaining a larger and steadier output from the same number of operators. This was followed in turn, through the agency of efficiency experts, by an investigation into the conditions under which the employees worked. Little effort was required to conclusively demonstrate that the maximum labor efficiency of employees could only be obtained by providing working quarters which would be conducive to those qualities in the workers which in themselves would produce the maximum efficiency.



Sketch of Interior Bay

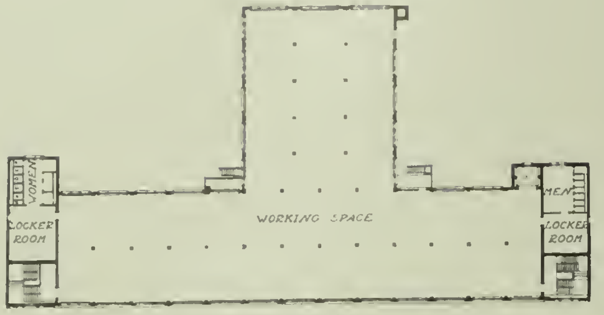
Thus, it is now well known that a factory building must have the largest possible amount of daylight, must have sanitary arrangements, must have good artificial lighting, must supply pure drinking water to the workers, and, what is perhaps most important, have a constant and abundant supply of pure air, warmed or cooled as the season of the year demands.

While these requirements have long been deemed necessary and advocated by architects and engineers, it has taken a long time to bring about their adoption, even in a small way. They are, however, now admitted to be the essentials underlying all successful manufacturing enterprises, and in the United States each succeeding year more and more factory buildings are being erected which are models in this respect. Although many architects have interested themselves in the development of these buildings embodying modern principles, no definite type of building has yet been evolved which has received general acceptance or recommendation as the best structure considered from the points of low first cost, convenience of arrangement, and durability, so that each new factory building which evidences modern attention to detail in its planning is of great interest to all concerned in the development of this type of structure.

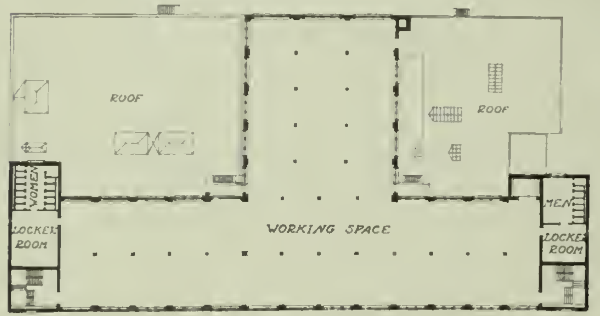
In the new factory built for B. Kuppenheimer & Co.,

Factory Building for B. Kuppenheimer & Co., Chicago, Ill. S. N. Crowen, Architect the second largest manufacturers of men's clothing in this country, some noteworthy results have been obtained. As a preliminary to the actual work of construction, the services of the architect were retained for one year for the study and analysis of their existing factory conditions, with a view of merging several of their shops into one building, which would be ideal from the standpoints of economy in construction, adaptability to their requirements, and, what they considered most important of all, the greatest comfort and welfare of their employees. The success of this building in fulfilling these conditions to the satisfaction of owners and welfare of the operators is a strong indorsement of this method of approaching the design of a permanent building which is to house a large industry. Furthermore, it is essential and absolutely necessary to the economical design of any structure of this type that the designer should have a good, clear understanding of the working machinery and the processes involved in the manufacturing carried on in the building. In too many cases factories are built first and the machinery placed afterwards, by engineers many times, but in many others by the shop foreman.

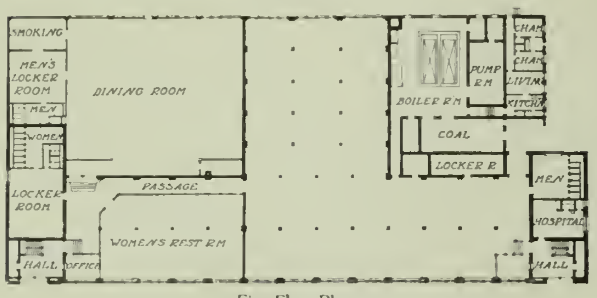
While the latter may be very practical, as the term is applied, more often than not the resulting use of the floor space is far from economical. Much machinery has to have special foundations, it has to be connected with electric current or other medium for power, all of which, if not properly allowed for in the construction plans, means a great deal of cutting and other damage to the finished building. On the other hand, if these accessories are considered in the construction plans, aided by a study of the progress of materials through the shop, there will be little lost motion, and the finished building will be as economical in point of operation, administration, and construction as modern engineering and



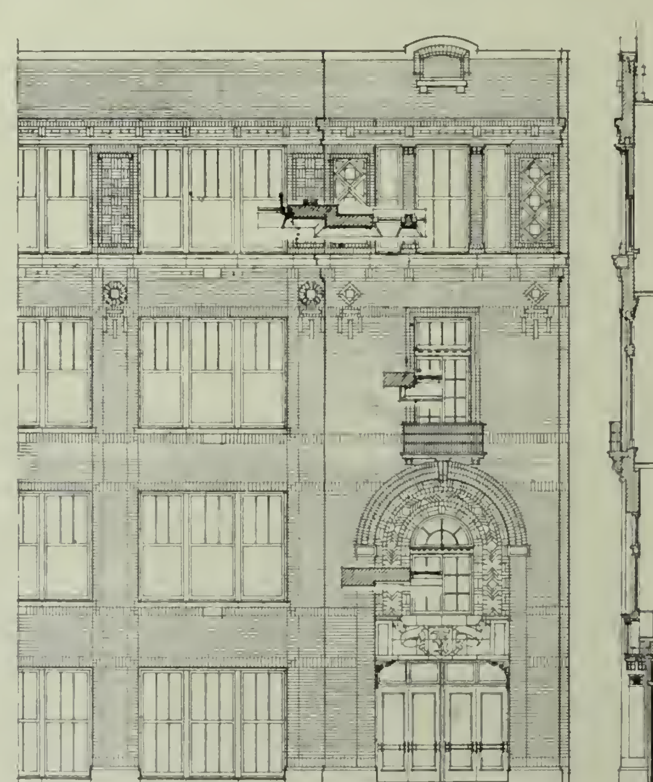
Third Floor Plan



Second Floor Plan



First Floor Plan



Factory Building for B. Kuppenheimer & Co., Chicago, Ill.

Details of Façade and Entrance Bay

S. N. Crowen, Architect

architectural experience can obtain.

COST DATA, KUPPENHEIMER BUILDING. Areas given below are the square foot floor areas of actual clear space.			
Disposition of space.	Square foot area.	Per cent of total.	Average cost.
Stairs, elevators, and halls	5,526	6.4	$9,526.82
Women's rest, locker, and toilet rooms	7,548	8.9	13,012.55
Men's rest, locker, and toilet rooms	5,241	6.1	9,035.48
Factory work space	55,332	65.2	95,606.31
Janitor's Apartment	835	.9	1,439.54
Offices	300	.3	517.20
Dining rooms, kitchens, and service halls	5,640	6.5	9,723.36
Hospital	408	.4	703.40
Mechanical equipment	4,614	5.4	7,942.54
Total clear floors space	85,544	100.	$147,507.20
Total cubic contents			921,920 cu. ft.
Cost per sq. ft. $1.724			Cost per cu. ft. $0.16

The architect having acquired a working knowledge of the operations underlying the manufacture of Kuppenheimer clothes, a list of the company's requirements for their building was prepared and checked over with the management, and with this and the proposed site as a working basis the preliminary sketches were prepared to embody the following conditions: the building was to be not over four stories high, must accommodate sixteen hundred workers, four hundred to a floor, sixty per cent male and forty per cent female, and all working spaces to have the maximum amount of daylight.

The area of the site comprised some 34,000 square feet, yet to obtain daylight for every square foot of working space only 18,000 square feet are occupied by the major portion of the building itself. The plan is T shaped, the main wing having a frontage of 259 feet and a depth of only 50 feet, with one row of columns in the center. The other wing running at right angles to the rear is also 50 feet wide and likewise lighted on both sides, so that no space in the interior is at a greater distance than 25 feet from the source of natural light.

Inside every provision has been made to retain and reflect the light which the shape of the building and its many openings allow to enter. The walls are lined to the full height with white enameled brick, which provides no lodging place for dirt, and can be easily cleaned, making the walls a constant reflector of practically all the light that enters.

The building has no basement, the ground floor occupying part of the courts to give space for boiler and machinery rooms as well as the janitor's apartment, all of which are separated from the main building by masonry walls. Half of the first floor area is given over to rest and recreation rooms, also a large dining room and kitchen capable of serving six hundred workers at one time. This portion of the building is so arranged as to permit the workers, the majority of whom live in the immediate vicinity, to use the recreation rooms at night for meetings, dances, and other suitable entertainments.

The toilets and locker rooms are placed at the extreme points of the main wing to insure as much privacy as possible, and to permit the female help to enter and leave the building without mingling with the male help. The plumbing fixtures throughout are of the highest type, with such additional features as lipped closets, foot operated faucets on lavatories, and shower rooms for men and women. All woodwork in the lavatories is painted white to carry through the entire building the keynote of cleanliness.

The heating and ventilating system is extensive, and so designed as to bring fresh air into the building at all times through direct and indirect systems, maintaining a uniform temperature of 70 degrees, and furnishing 20 cubic feet of air per minute for every worker. The foul air is exhausted through four large ventilating shafts having rotary ventilators mounted on the top of each shaft, so that there is a complete change of air every fifteen minutes.

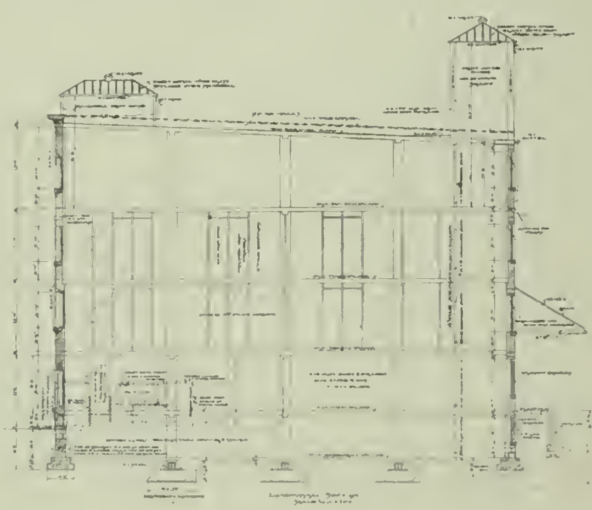
Wenter & Drechsler Storage Warehouse, Oak Park, Ill.
George S. Kingsley, Architect

A vacuum cleaning plant with numerous outlets on the various floors enables the sweepers to collect the trimmings and sweep them into two metal chutes which lead to a large receptacle in the boiler room, where they are assorted and let into a crematory.

The architectural aspect of the exterior indicates in a manner as completely as possible in a mercantile structure the pleasant working conditions within. The slight expense involved has been well invested, since there is a recognized value of beauty in two direct results: first, in promoting the efficiency of the workers through their pride and feelings of well being; secondly, in advertising value to the employers.

THE WENTER & DRECHSLER FIREPROOF STORAGE WAREHOUSE.

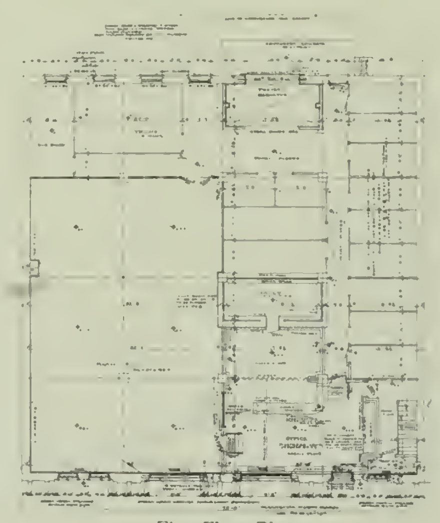
The solution of the storage warehouse problem differs in some respects from that of manufacturing plants. Perhaps the most important consideration in determining its type of construction is the matter of insurance rates. While factories can be economically built with floors of heavy timber frame and planking, following the method commonly known as mill construction, and obtain rates of insurance consistent with the profits of the enterprise, the competition in the storage business is so great that a low rate of insurance is an important factor in procuring business.



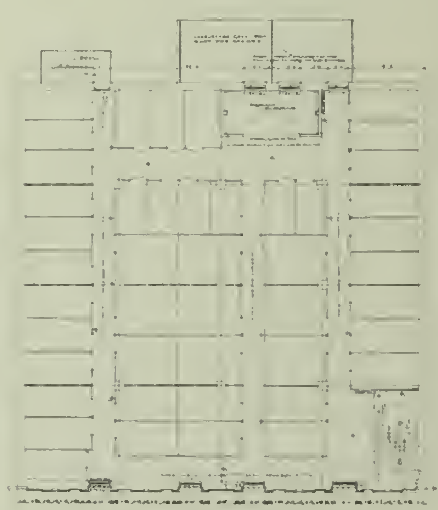
Longitudinal Section

Hence the only economical warehouse is the one that is as nearly fireproof as possible. This demands that the floors be fireproof as well as the walls and roof. Such a requirement makes it necessary to adopt a good form of construction, which in the case of the storage warehouse considered in this article consists of steel columns built of plates and angles and standard steel beams, fireproofed with hollow tile.

The insurance rate for this type of building without a sprinkler system is about 90 cents per year for each hundred dollars of insurance, as compared with a framed building requiring as an average a rate of \$1.50. With a sprinkler system installed the rate of 90 cents may be reduced about 60 per cent. The sprinkler equipment to install will cost from 5 to 15 cents per square foot of floor area, depending upon individual conditions. This would naturally add to the cost of the building, but it can usually be taken up in the first few years by the resulting lower insurance rates.



First Floor Plan



Second Floor Plan

In another respect unlike the factory building, the exterior walls of the storage warehouse are practically solid, having a very small window area, which makes the selection of their material an important feature. Although there is a wide range of choice, brick is undoubtedly the most satisfactory. Where the warehouse is not over four stories high, the walls may be built solidly of common brick ,with a good quality of facing brick for the outer surface laid up with some effort at architectural decoration, for a square foot price ranging from 40 to 60 cents, depending upon the grade of brick used and the architectural design. In higher buildings brick can be equally well used for the curtain walls, which are built in between the steel columns which form the real structure.

The total cost of this warehouse was a trifle under \$40,000, or, figured at the cubic contents rate, about $13\frac{1}{3}$ cents per cubic foot. It contains four stories and basement, the first floor being devoted to offices, toilet room, heated piano room, trunk rooms, and a few store rooms. The balance of the floor space, except that in the basement, is divided into small rooms for the storage of furniture.

The floors are of reinforced hollow tile finished with a top coat of cement, except the floors of the office portion which are covered with red quarry tiles. The interior walls of this portion are lined with pressed brick to two-thirds their height, above which is hard plaster. The counter is also constructed of the same pressed brick with a marble top, which with attractive office furnishings and electric fixtures, combined with the design of the exterior, make the appearance of the building an advertising feature of real value to the owners.

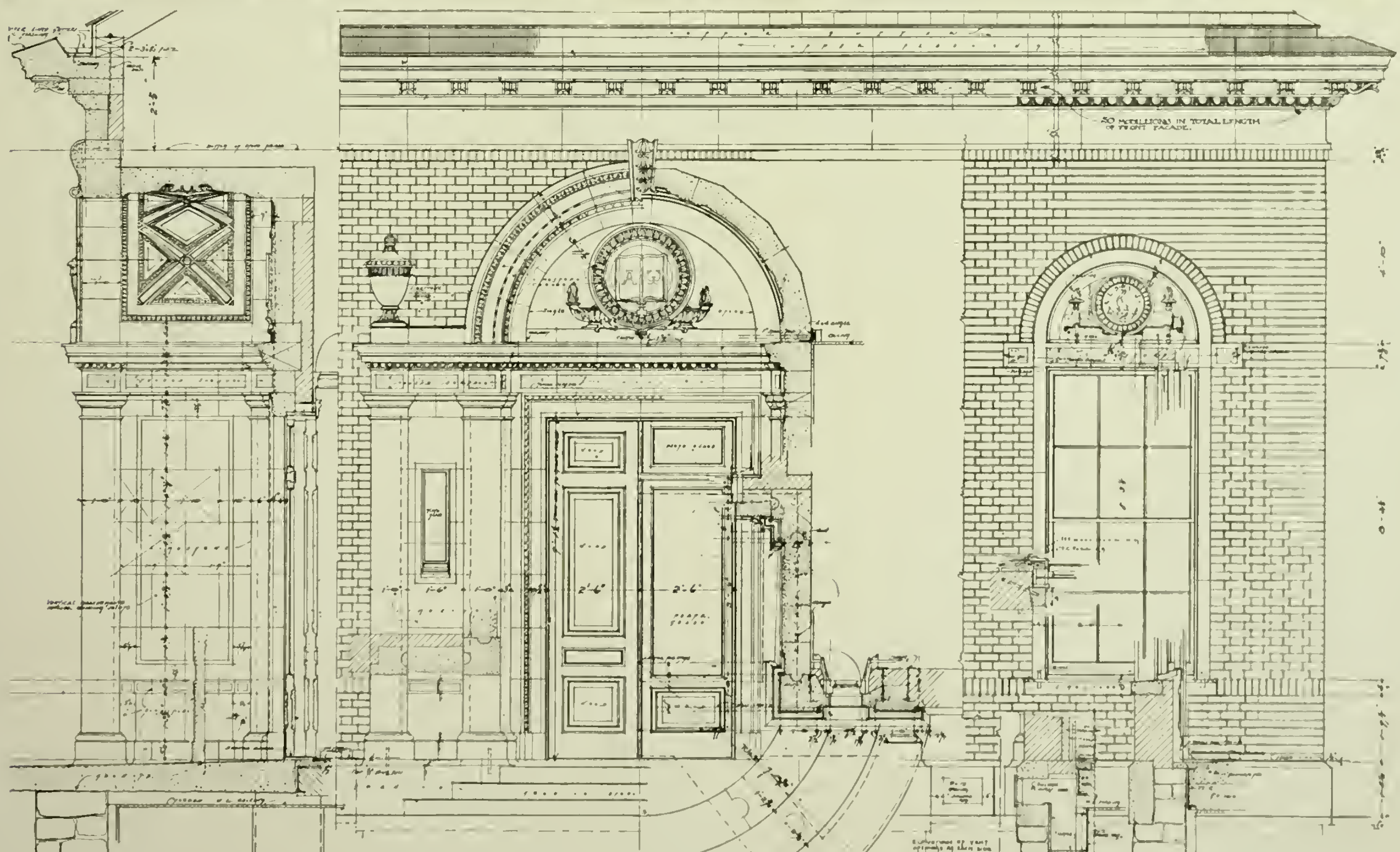
The business carried on within the building is materially aided by the convenient locations of the large freight elevator and the unloading platform outside, which is on the same level as the first floor and amply protected in bad weather by a large marquise.

These two structures in a field that has been more or less denied to the architect, show however what has been done. It is true that design of this character requires less knowledge of æsthetics and a broader one of engineering than that occurring in the average architect's practice, but even so æsthetics are not the least important consideration; they aid the moral caliber and general welfare of our citizens, as well as the physical appearance of our cities, and we should do everything to hasten the day when manufacturing and other purely commercial buildings will be given sufficient attention to make them take a place among the distinctive types of buildings which are being created in America to-day.

DETAIL OF ENTRANCE

MORRIS K. JESUP MEMORIAL LIBRARY, BAR HARBOR, ME.

DELANO & ALDRICH, ARCHITECTS



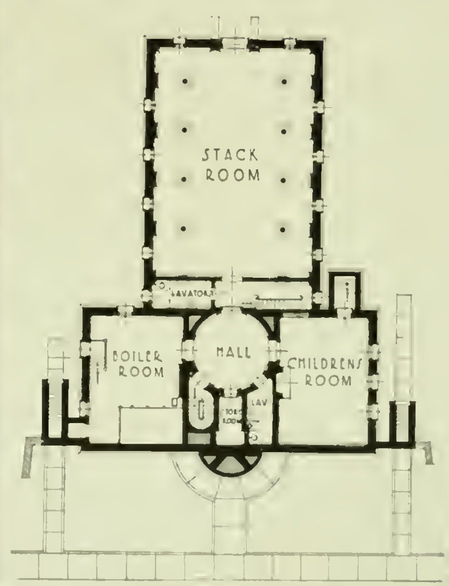
DETAILS OF PRINCIPAL FAÇADE

MORRIS K. JESUP MEMORIAL LIBRARY, BAR HARBOR, ME.

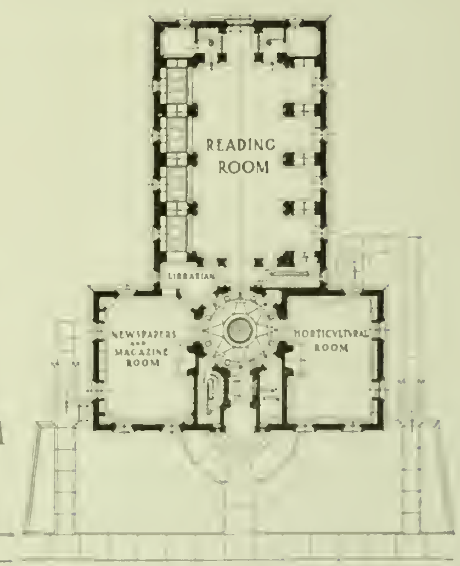
DELANO & ALDRICH, ARCHITECTS

READING ROOM

ENTRANCE LOBBY



BASEMENT FLOOR PLAN

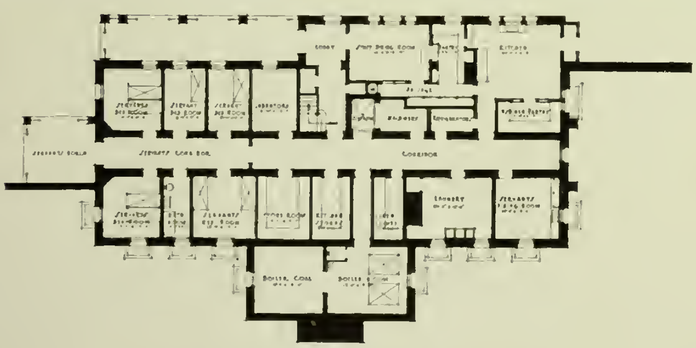


FIRST FLOOR PLAN

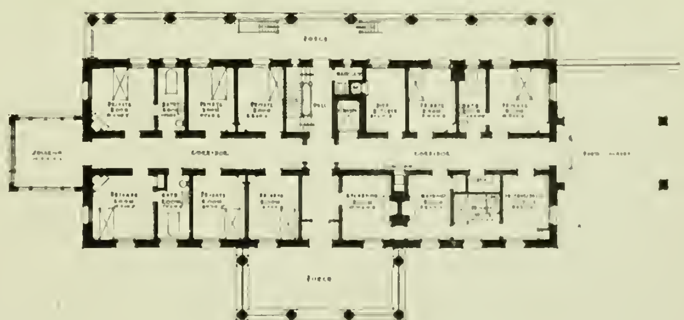
MORRIS K. JESUP MEMORIAL LIBRARY, BAR HARBOR, ME.

DELANO & ALDRICH, ARCHITECTS

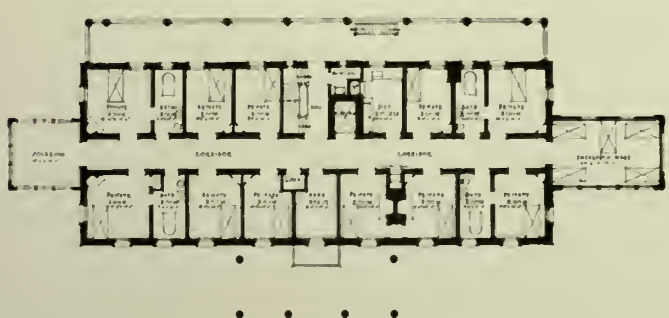
ENTRANCE FRONT



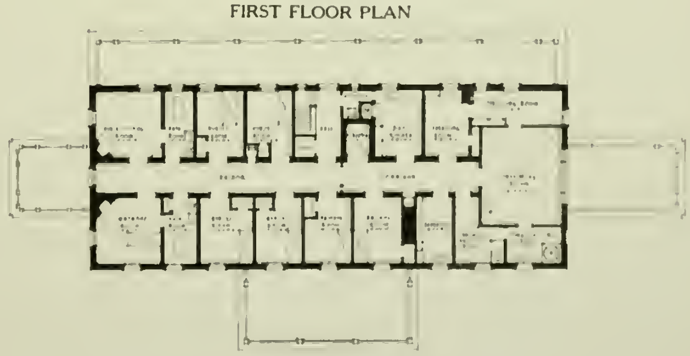
BASEMENT FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN

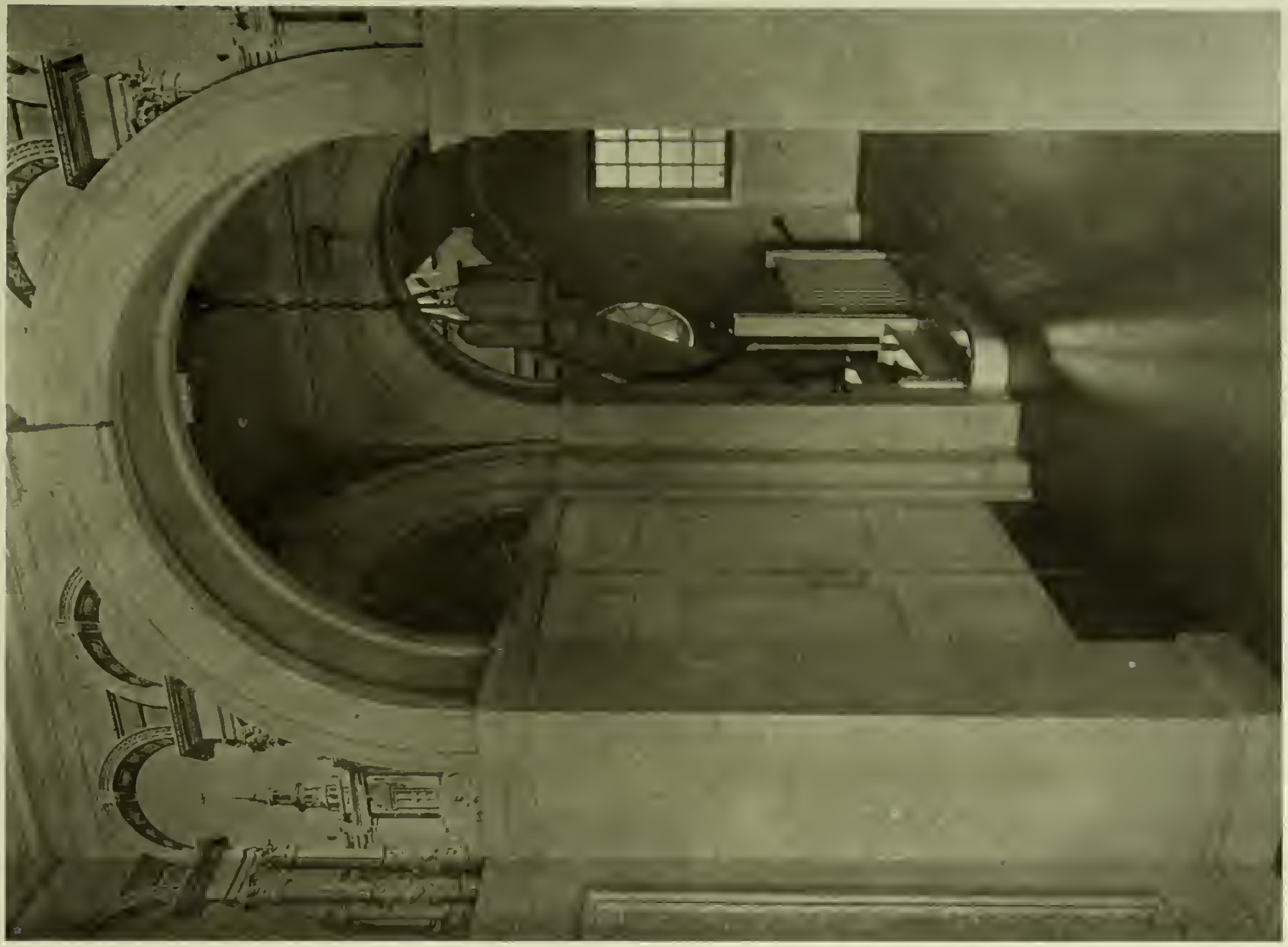


THIRD FLOOR PLAN

THE HIGHLAND PRIVATE HOSPITAL, FALL RIVER, MASS.

PARKER MORSE HOOPER, ARCHITECT

DETAIL OF ENTRANCE AND FRONT PORTICO



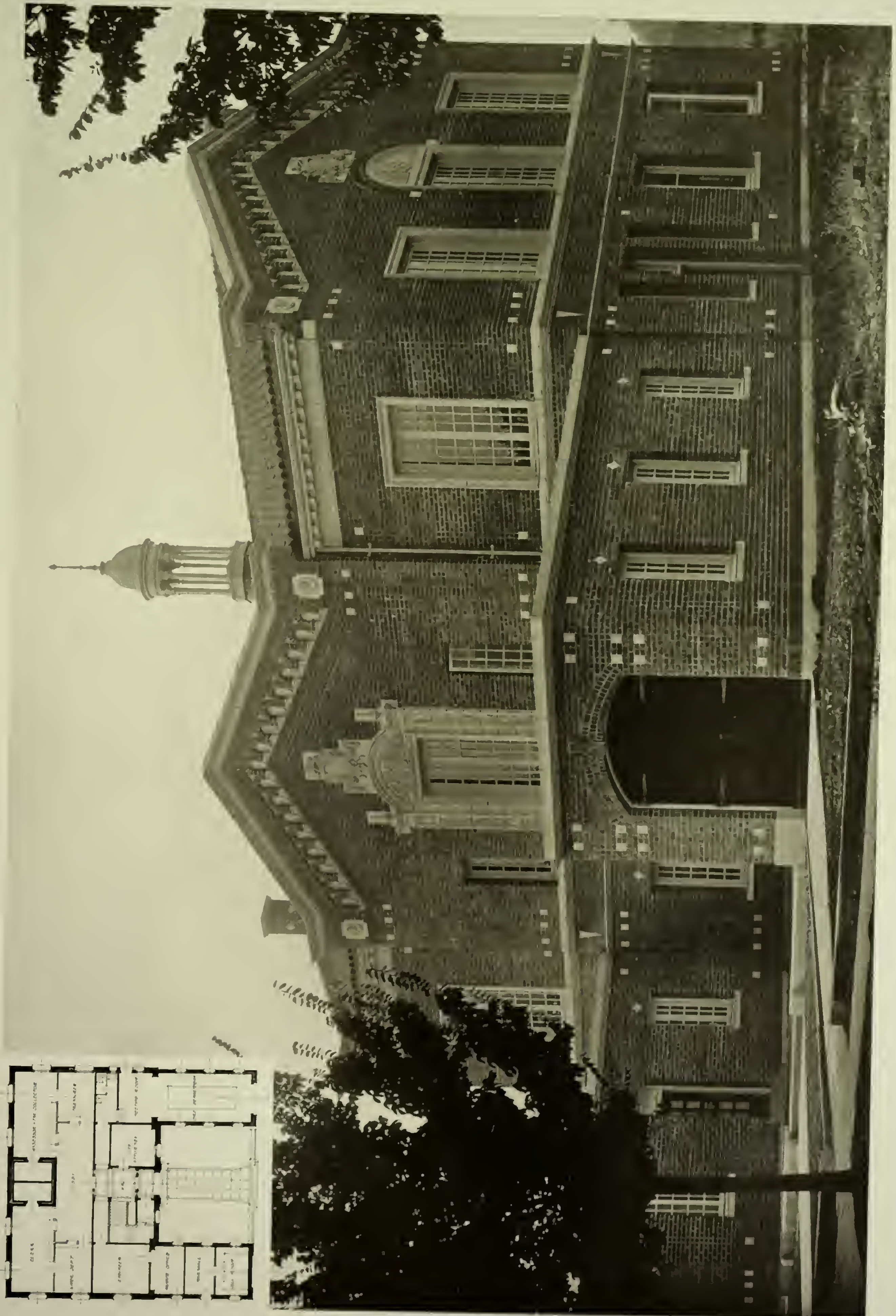
DETAIL OF HALL, LOOKING TOWARDS REAR PORCH

THE HIGHLAND PRIVATE HOSPITAL, FALL RIVER, MASS.

PARKER MORSE HOOPER, ARCHITECT

DETAIL OF ENTRANCE

CITY HALL, BURLINGAME, CALIFORNIA
CHARLES PETER WEEKS, ARCHITECT



CITY HALL, BURLINGAME, CALIFORNIA
CHARLES PETER WEEKS, ARCHITECT

ENTRANCE FRONT

GARDEN FRONT

HOUSE OF N. P. HALLOWELL, ESQ., READVILLE, MASS.

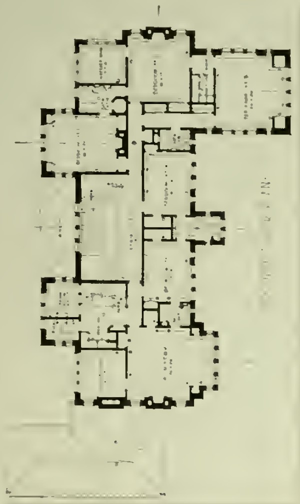
PARKER, THOMAS & RICE, ARCHITECTS

DINING ROOM

HALL AND STAIRCASE

HOUSE OF N. P. HALLOWELL, ESQ., READVILLE, MASS.

PARKER, THOMAS & RICE, ARCHITECTS



HOUSE AT PASADENA, CALIFORNIA
ROBERT D. FARQUHAR, ARCHITECT

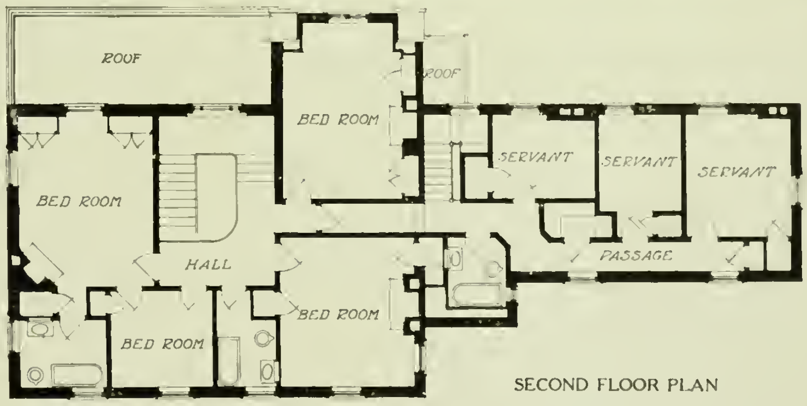
DETAIL OF FRONT ELEVATION

VIEW FROM STREET

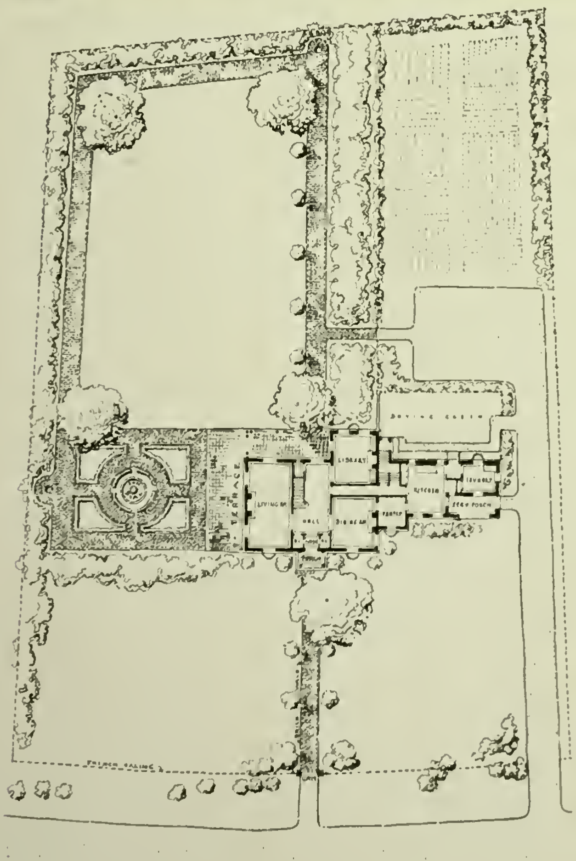
HOUSE OF MISS E. WATSON, GEDNEY FARMS, WHITE PLAINS, N. Y.

DELANO & ALDRICH, ARCHITECTS

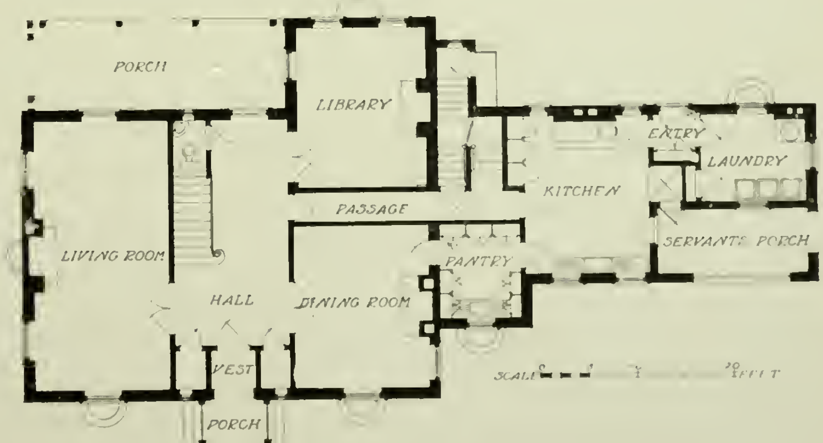
VIEW FROM GARDEN



SECOND FLOOR PLAN



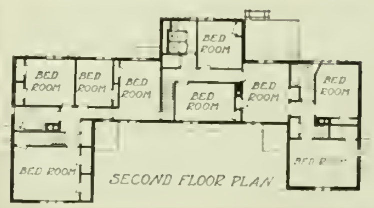
PLOT PLAN



FIRST FLOOR PLAN

HOUSE OF MISS E. WATSON, GEDNEY FARMS, WHITE PLAINS, N. Y.

DELANO & ALDRICH, ARCHITECTS



TENANTS' COTTAGES, HENRY FRAZER HARRIS ESTATE, CHESTNUT HILL, PA.

STEWARDSON & PAGE, ARCHITECTS

DETAIL OF ONE ELEMENT OF FAÇADE

GROUP OF HOUSES AT JAMAICA, LONG ISLAND, N. Y.
ELECTUS D. LITCHFIELD, ARCHITECT

GROUP OF HOUSES AT JAMAICA, LONG ISLAND, N. Y.
ELECTUS D. LITCHFIELD, ARCHITECT

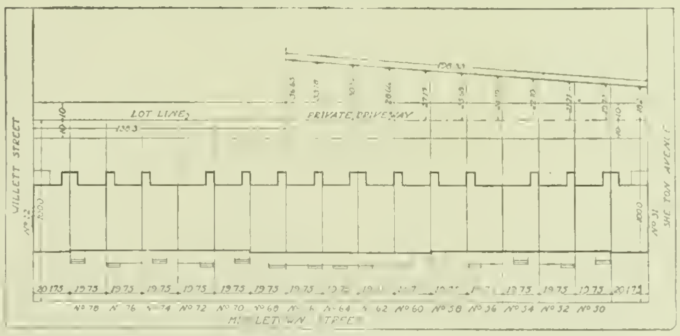
Architectural Design as an Aid to Real Estate Promotion.

PRINCIPLES OF GROUP PLANNING APPLIED TO SMALL SUBURBAN HOUSES BY ELECTUS D. LITCHFIELD, ARCHITECT.

By GARRETT H. IRVING.

THE influence which real estate developments are exerting upon the architectural character of our suburbs was pointed out in a recent issue of THE BRICKBVILDER and illustrated by selected examples of individual houses erected at Roland Park, Baltimore, Md. It was shown that very high standards were reached and adhered to by the company responsible for those houses.

At Jamaica, L. I. (now a part of Greater New York), we find another very interesting undertaking which involves the development of a section of about nine or ten city blocks. Four groups of small houses have been built, in which the results have justified the contention of many architects that real estate promoters can economically use an architect's service, and that the profits which will accrue from their investment will be the greater because of such services. In this instance the promoters realized this condition, and working in close harmony with their architect they have developed their property so that the appeal of the houses is to people of taste and refinement who will, in the course of events, be the greatest asset to their future operations in the neighborhood.



Group Plan

Detail of End House

Mr. Electus D. Litchfield has designed all of the houses of the four groups in a pleasing architectural style based on various Colonial precedents, and herewith is presented the latest addition to the group in a block of seventeen houses.

The architect's problem was to produce at a reasonable cost, completely finished, one-family dwellings, equipped with all the comforts and conveniences of the modern apartment house, such as steam heat, tile bath rooms, modern plumbing, electric light, gas ranges, etc.

The value of the land is such that in order that the house and lot may be sold at a price which will appeal to persons in moderate circumstances, the amount of land to be sold with each house must be as small as possible. On the other hand, it was desired to maintain, as far as possible, the suburban character of the neighborhood. For this reason it was planned to build only a certain number of individual houses, free standing upon moderate sized plots, and to have the majority of the houses semi-detached or in groups of four or five, and in some cases in very extensive groupings, such as those shown in the present illustrations.

This group of seventeen houses under one roof would seem justified by the open treatment of the opposite side of the block, where in the center four houses are grouped under one roof with an open space on either side between them and a group at each end of five houses. All of these groups set some distance back from the building line, and have yards and an alleyway extending through the length of the block in the rear for the use of tradesmen.

The plan for the houses is compact and of sound architectural merit. The architect has considered the possibility of the owners not employing any servant and has so arranged the various functions that household work can be accomplished with minimum effort. The houses are provided with one stairway only, and the space on the second floor has been used to great advantage by the proper position of the stairs.

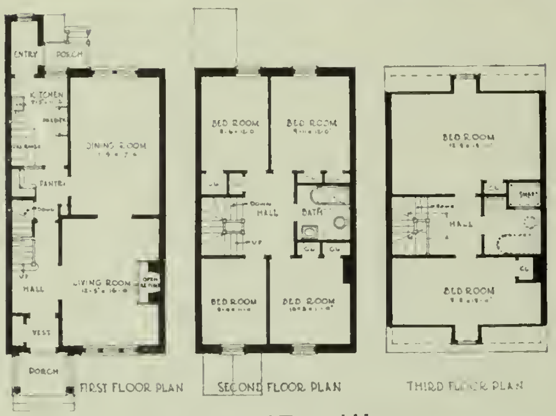
The houses have been built to sell for prices ranging from \$7,000 to \$8,500, including the land—a condition which necessitated very careful selection of materials and economy as well as simplification in design. They are constructed entirely of brick with slate roofs. All exterior and interior woodwork was specially designed, and while the interior finish is extremely simple in its character, it displays the quiet good taste which appeals to people of refinement. The flooring throughout the first floors of all the houses is ⅞-inch oak with hard pine in the other portions.

Much has been accomplished by the architect in the choice and handling of simple building materials. The whole work has been interestingly studied, and with the simple elements of good mass, good fenestration, and sparing use of strikingly good detail around the doorways, a group of houses which are at once attractive and marketable has been produced. It would seem to prove to any observing real estate operator that it is not necessary to use quantities of ornament or to spend large amounts of money in order to obtain the attention of a public that with each successive year is becoming more and more discriminating. This particular instance is very gratifying to every one interested in the architectural development of our suburbs in that a real estate company has had the foresight to entrust the design of what, in a sense may be called small work, to a competent architect.

The group of houses at Jamaica, L. I., have had the architect's careful thought, and the result is a collection of very livable dwellings which are an asset to the community and a source of pride to their owners.

The planning of small houses is a factor in our development that has not received sufficient attention, and while this instance obviously does not solve the workingman's problem, it at any rate points to a method deserving further study.


Detail of One Element of Group



Floor Plans of Typical House


Typical Entrance Doorways

The Monumental Treatment of the Fireplace.

ILLUSTRATING THE WORK OF MESSRS. McKIM, MEAD & WHITE, CARRÈRE & HASTINGS, AND JANSSEN & ABBOTT.

By DAVID E. FULTON.

THE fireplace has been the center of associations in the dwellings of civilized mankind from the earliest Saxon times. It has come down through the ages as the one unchanging and common heritage of all home-loving and peaceful peoples as the symbol of brotherly love and hospitality. In the earliest periods, when men were beginning to form their crude ideals of beauty, the fireside was the first part of the dwelling that received the attention of the craftsman.

In England, after the invasion of the Normans, the first semblance of our modern fireplaces took definite form. Projecting hoods, sloping back to the timbers of the roof, were built of stone over the hollowed space in the wall, in which the fire burned, to prevent the smoke from pouring into the room as it previously had done, to finally escape through a hole left at the apex of the roof. Some early examples of these stone hoods, which still exist, show the simple carving of the stone worker and the rough supporting corbels which furnished the inspiration for many great mantelpieces of later days, in which the forms are identical.

The decorative treatment of the fireplace grew with man's knowledge of the building arts, and in the ancient buildings preserved to our day the chimneypieces represent every phase of architecture, and as a group of single features they form a remarkably complete record of the development and decline of the various historic styles.

The age of the Renaissance of arts and letters, however, is the great period in the history of architecture in which the decorative treatment of interiors rose to the highest plane. The movement was widespread, and this period produced apartments in Italy, France, and England which have yet to be equaled in beauty or splendor. Under the direction of the great Renaissance architects of these countries the fireplace assumed its monumental proportions and treatment. The choicest marbles, wood carving, painting, and sculpture were produced and gathered together to adorn them.

The eighteenth century in England produced a group of architects, following Inigo Jones and Sir Christopher Wren, who have left a heritage in beautiful interiors the value of which is impossible to overestimate. These men include such artists as James Gibbs, Sir William Chambers, and the celebrated brothers, Robert and James Adam. These names are closely identified with the design of mantelpieces, and the great distinction, dignity, and classical feeling that they invested in their work remain to this day unrivaled and a source of inspiration of the greatest value.

It is only natural that in a large, architecturally treated interior there should be some point of focal interest upon which the richest decoration is centered, and the fireplace has always furnished a means of the most satisfying order. In our interior architecture of to-day we have not been able to devise a better feature, notwithstanding the greater complexity of modern life, with many times the interests of earlier times. Likewise, we have but few or no conceptions of better forms than those developed in the periods of the Renaissance in Italy, France, and England, and it is to them that we naturally turn for inspiration in our own work.

The several mantelpieces illustrated on these pages show examples of the best that is being designed to-day, following in a general way the work of these schools. In this new work there is easily discernible a greater attention to the character of the detail than is evident in its prototypes. Especially true is this of the work based on the Georgian precedent; for there is almost a universal feeling among the admirers of this school that, while the mass of the old compositions was admirable and the inherent dignity and bold spirit of execution was everything to be desired, there was, still, often an element of grace and refinement lacking in their detail which, in our adaptations, we earnestly strive to impart.

The chimneypiece illustrated on this page is an excellent one of severe classic dignity that is particularly well suited to the purposes of a drawing room. The fireplace opening is framed with an extremely modest treatment of small pilasters and cornice in dark marble. The splayed sides and back of the opening are

Chimneypiece in the Drawing Room of the President's House, Columbia University, New York
McKim, Mead & White, Architects

Mantelpiece in the Trustees' Room of the New York Public Library, New York
Carrère & Hastings, Architects

covered with ornamental cast iron to protect the walls from disintegration from the heat of the fire. The large pilasters of the Ionic order are placed effectively against broad, flat surfaces of dark wood, which serve to give a simple setting to the large, gold framed mirror and to bring the chimneypiece into intimate relation with the room architecture.

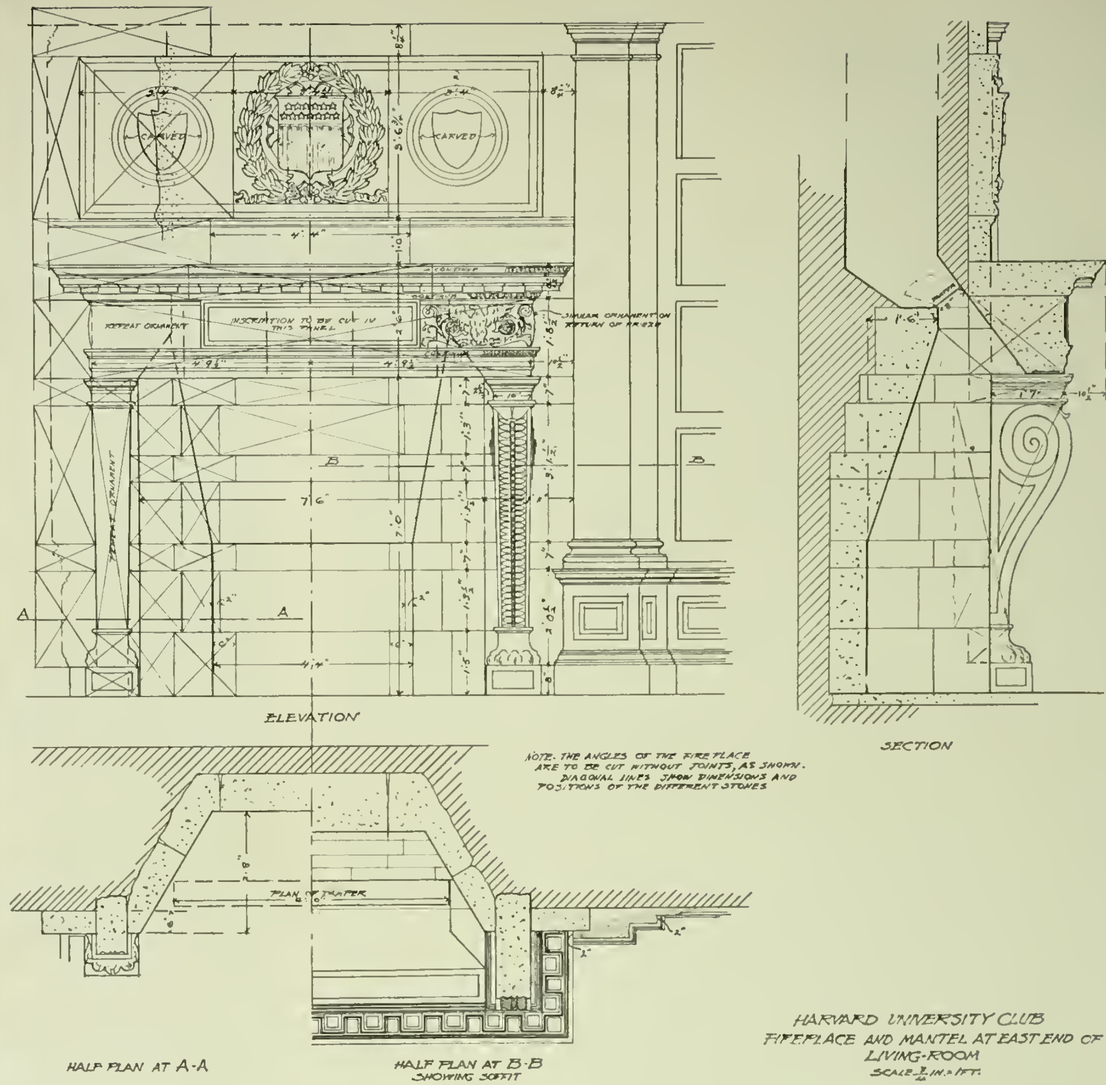
Architects of late have been inclined to strongly discourage the use of mirrors, and it is only with the revived popularity of the work of the brothers Adam that mirrors have again been introduced to any extent in well designed interiors. We all are familiar with the fantastic and altogether delightful forms which were imparted to the immense "chimney glasses," as they were known, by the brothers Adam; but there must appear to the artist who appreciates the subtle value of proportion and simple form a satisfaction in this use of silvered glass that does not obtain in the more "finicky" delicacy and refinement of the work of the Adam period.

The mantelpiece in the New York Public Library is an excellent example of marble carving from a design based on the modern French school of architecture. This mantelpiece possesses real monumental character, since it is by the very nature of its design a monument. It is a complete unit in itself entirely independent of the room in which it is placed; it furthermore has the large scaled appearance of a monumental work and gives the effect of durability and permanency from the evidences of the skill and labor that we know were necessary to create it.

The mantelpiece in the Villard house in New York City, while not a recent piece of work, equals in general excellence anything of this order since produced in this country. It is a typical example of the sumptuous effects which the late Stanford White delighted to produce with colored marbles and rich decorations, inspired by the glory of the Italian Renaissance. The carving of the figures on the plain marble ground over the mantel and wall fountains displays the delicate low relief of which he was particularly fond — a famous example of which is to be seen in the Farragut Monument in Madison Square, New York. This decoration in the Villard house is not confined to the mantelpiece alone, but is spread over the entire room, — the ceiling, the walls, the floor receiving equal attention; but the whole effect is tempered with the great genius which he displayed in the artistic and discriminating assembling of the richest decorative adjuncts, so that the room is one harmonious whole.

There is, perhaps, in all the work which the architect is called upon to do, no single feature in which he can more easily unite architecture with the accessory arts of painting and sculpture as in the decoration of large chimneypieces. They furthermore present a delightful field for the exploitation of those personal qualities which every true artist has the desire to invest in all of his work; and with the wonderful examples which have been preserved to us from antiquity, and the very good work which architects of our own day are creating, there should be ample sources of inspiration to make creative work a great pleasure and of more frequent occurrence for even those who are not gifted with the amplest opportunities or wonderfully creative imaginations.

Mantelpiece in the Villard House, New York
McKim, Mead & White, Architects

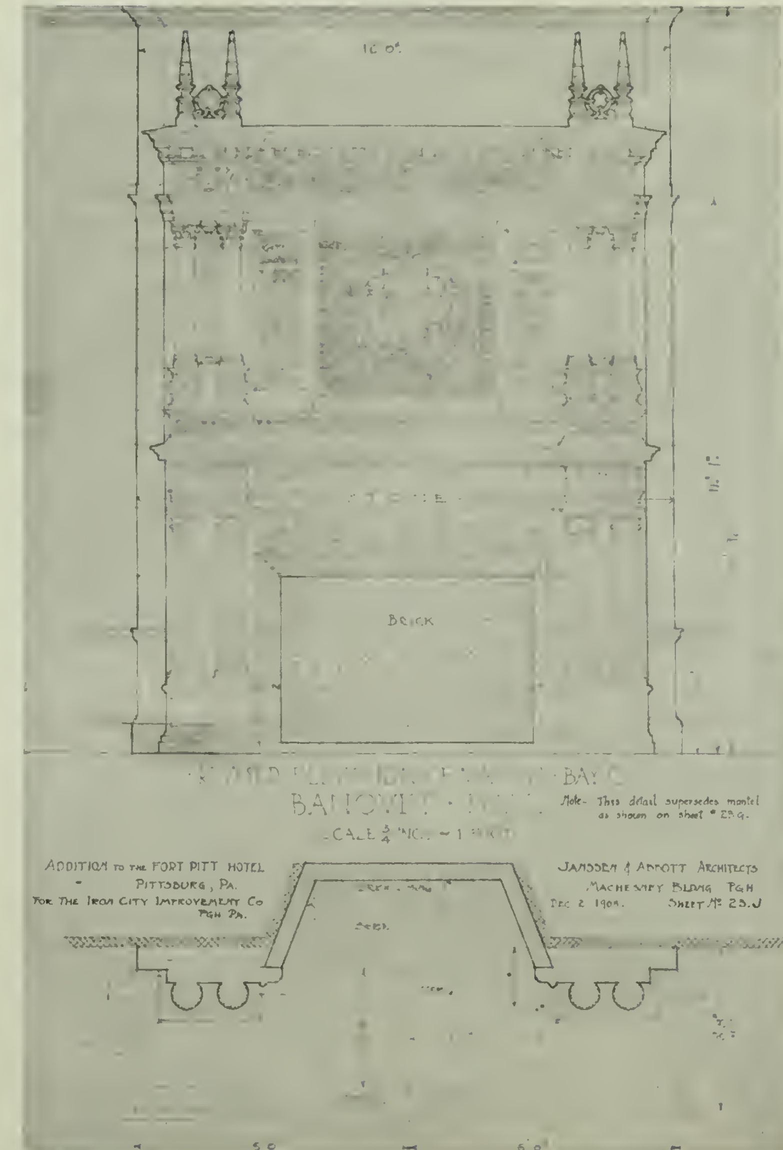


Scale of Reproduction, 1 inch = 4 feet

THIS is one of two similar mantelpieces located at the ends of a large lounging hall in Harvard Union. The walls are paneled for two-thirds of their height in dark oak, against which the mantelpieces and doorways which are of stone appear to excellent advantage. The upper third of the walls (not shown in this illustration) is constructed of the same stone specially selected for color and carefully jointed. The mantelpiece shown here is under the musician's balcony at one end of the room. It follows Italian precedent in having a very large fire opening, the height from the hearth to the under side of the entablature being seven feet. The carving is of a simple order and follows the Italian Renaissance in its detail.

MANTELPIECE IN THE LOUNGING ROOM, HARVARD UNION, CAMBRIDGE, MASS.

McKIM, MEAD & WHITE, ARCHITECTS



Scale of reproduction, 1 inch 4 feet

THIS mantelpiece is the dominating feature of a large and richly decorated Elizabethan room. It is constructed of stone, and in design follows the English mantels of the period in both proportion and detail. Wood is usually associated with this period as the constructive medium, but stone was as frequently used in the old work, the only difference in the forms being in the scale of the ornament. The use of the seal in the center panel is an interesting and suggestive application of heraldry to architectural design.

MANTELPIECE IN THE BANQUET HALL OR ENGLISH ROOM, FORT PITT HOTEL, PITTSBURGH, PA.

JANSSEN & ABBOTT, ARCHITECTS

Water Color Drawing of "The Mole"— A French Seaside Pavilion — M. Janin, Delineator

Monographs on Architectural Renderers.

BEING A SERIES OF ARTICLES ON THE ARCHITECTURAL RENDERERS OF TO-DAY, ACCOMPANIED BY CHARACTERISTIC EXAMPLES OF THEIR WORK.

XI. COMPARISON OF FRENCH, ENGLISH, AND GERMAN WORK.

IN concluding this series of articles on rendering and renderers, it has seemed almost necessary to say something, at least, about the French, English, and Germans, whose work is so interesting and so different from ours; for some it is so powerful that it has had a very great influence on the work of our men.

It is beyond question true that the men whose work has most directly influenced ours have all been French; with so great a proportion of our architects trained in Paris this must inevitably have been the case, and yet in color rendering, at least, we have apparently broken loose from the traditional ways of rendering of the French school, and the work of the men whom we have been discussing in this series of articles is far less conventional, far freer, and more liberal than that of the French renderers. Of course in what may be called strictly architectural rendering, that is, drawings of elevation or of plan, in which the shadows are cast at the angle of the diagonal of the cube, we are still following French traditions, and very properly, since neither the English nor the German renderings, either of plan or of elevation, show the technical expertness of the French in the actual laying on of washes, nor the ability to conceive the architectural drawing as a composition or pattern, as well as an exposition of facts. The great strength of the French renderers has always been in this strictly architectural work; their renderings of plans almost invariably are agreeable to look at; they form interesting patterns of lights and darks, and yet the making of this pattern is never permitted to obscure the purpose of the plan, but is composed of the various elements which form the plan, so that there is about their renderings of plans a certain modeling which throws into relief the important portions of the building, indicates the several planes (if the building is composed of more than one), and in general gives clarity to the drawing. French drawings read easily, because the French know how to indicate circulation and important elements, attracting the attention to them without suppressing elements of lesser importance which are still essential to the plan. When, however, we look at the French show drawings of exteriors, we find that much the same formula that they have used for plan has been followed — a result which is to our minds, at least, not quite so happy. Real perspective drawings rendered in colors as we know them are not the usual methods of presenting schemes for building in France; they prefer to use a conventionalized system in which the building is shown in direct elevation, while the entourage is in perspective. It is the same system which Maxfield Parrish uses in much of his work, and which the Japanese have used in much of theirs, although, of course, the terms of expression used by the French architectural draftsmen are very different from either the Japanese or those used by Parrish.

Sketch of a Monumental Showcase
M. Janin, Delineator

The result is that a certain amount of familiarity with architectural forms is necessary to understand exactly what they are driving at, and a certain amount of acquaintance with their method is necessary before they can be fully understood or appreciated. The same thing is true of Japanese prints: on first sight they appear confused and distorted; we have to learn the cipher before we can understand the drawing; but the best of the French renderings, even if they do not instantly appeal to us as correct naturalistic representations of facts as they are to be, do appeal through the loveliness of their color and agreeable composition.

The Frenchman, as a rule, does not devote any great amount of time to his renderings of exteriors; he prefers to study his plan and to develop the rendering of that, knowing that in France, at least, much more stress is laid upon excellence of plan than upon excellence of elevation, assuming it to be an axiom that any good plan is capable of a good elevation — a thing which is, perhaps, not true, as the present decadence of French architecture would indicate.

Pen and Ink Drawing of an English Country House
Andrew N. Prentice, Architect and Delineator

The methods employed in French rendering, then, are those which are conducive to rapidity of execution; single washes are used as far as possible, and it is very seldom that a drawing is laboriously built up of wash after wash, and tone after tone, as is the method used by some Americans. Chinese white is very sparingly introduced; guache drawings, so frequent in our American work, are there practically never seen; the result is that the French drawings have a lightness, airiness, and freedom which is distinctive. One feels that the surroundings have been put in largely for good measure, and without much regard for reality; it is the building which is made to count, which is important, and which is worked over. In this country and in England, too, our renderings lead us to believe that it is the building *in the setting* which is important to show in perspective.

The French view point being what it is, there have naturally no men arisen to any special eminence in perspective rendering. We all know the names of a half dozen or dozen Americans who are distingnished in this line; most of us can name an equal number of Englishmen, and at least a few Germans; but there are very few of us who can name any Frenchman distinguished purely for his perspective rendering. We know the names of many men who can make exquisite renderings of elevations or of plans; but it is for these men that France is famous, and not for architectural artists. Therefore the drawings, which have been chosen to illustrate the French style, bear no especially distinguished names, although the drawings themselves are capable and even brilliant. The drawing of the little private bath establishment (by Lefort) has much the quality of an old French tapestry, and that of the "Mole" is a very spirited little seascape; the show case (by Janin) can hardly be surpassed as a sketch; but they represent very highly specialized ways of working — any ways which are unusual outside of France.

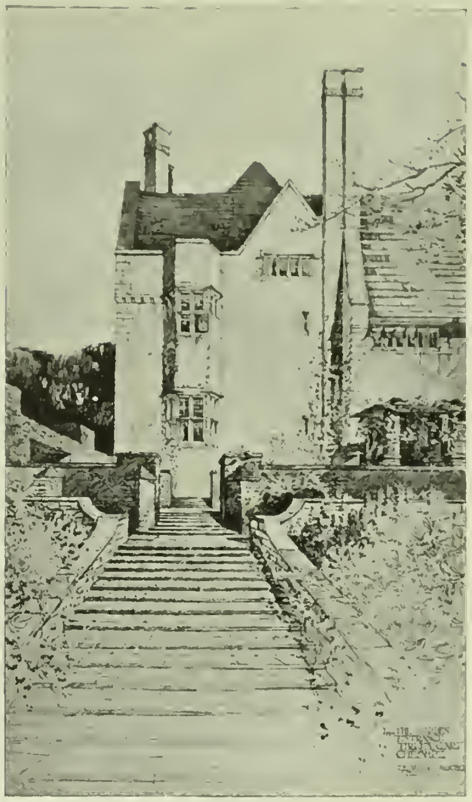
With the Englishmen we feel on more familiar grounds; their work is entirely comparable to ours, since they have looked at renderings in much the same way. Their drawings are intended to show to the non-technical client the probable appearance of the building when completed. All drawing, that is, the representation of solid objects in one plane, must be more or less conventional; but since all of us from our earliest childhood have been accustomed to this convention, we have forgotten that it is one, and we can understand drawings of architecture which are not strictly speaking architectural drawings. It is such drawings as these which they have in England principally developed, and the men who make them constitute the most interesting class of English renderers. By comparison with the work in this country, the English are more inclined to the use of black and white; at the average architectural exhibitions here probably nine-tenths of the show drawings are in color; while at the English exhibitions certainly half, and perhaps three-quarters of their renderings, are in pen or pencil.

Yet when they actually come to the use of water colors,

Water Color Drawing of a Private Bathing Establishment in France — M. Lefort, Delineator such men as Eggers and Long are not the superiors of the best of the Englishmen; Henry Wilson, C. A. Voysey, Baillie Scott, Edgar Wood, A. N. Prentice, and others are extraordinarily facile in the use of color, and probably for sheer power and ability there is no one either in this country or in Europe that is quite Henry Wilson's equal. Jules Guerin produces the sturdy quality of his drawings by neglecting detail; Henry Wilson includes it, and achieves the same power: his drawings are never finicky in spite of their elaboration, and the solidity and strength of his design is emphasized by his extraordinarily brilliant color and the magnificence of his drawing. It is probable that his style is particularly sympathetic to the type of design he prefers; but even allowing for this, it is impossible to deny his possession of perfect mastery of his art.

The work of Voysey, Baillie Scott, and Edgar Wood has much resemblance; they with some of their imitators constitute a school or class of rendering which is not paralleled in this country. No black and white reproductions do their work justice, and even color reproductions fail to fully express their quality. All three men use color with the utmost facility, and their drawings of objects, which in themselves are not part of the architecture, — trees, flowers, and shrubs on the exterior, and furniture, rugs, and decorations in the interior, — are perhaps as interesting as the rendering of the architecture itself. These men think more fully of the finished scheme than we do; they depend more upon color than we do and less upon form. Their renderings, therefore, are especially interesting because they show how essential color is to the complete scheme, and their suggestions for color decoration, as in the drawing of Edgar Wood's reproduced herewith, are intensely interesting, not alone because of the forms of the ornament, but because of the exquisite color scheme employed.

It may be well here to turn aside from the general discussion of renderings and take up this individual one for a moment, since the points notable in this particular rendering are those characteristic of most color work of these men. The brickwork around the fireplace is red, the color spots on the tiles are blue, and the running ornament over the arch and above the wainscot is orange, red, and green — about the colors of a nasturtium bed; the wainscot is greenish oak; the figures over the mantel are of blue, purple, green, and red; the beamed ceiling is gray and the floor of a grayish oak; the long rug, which is an essential feature of the architectural scheme, is full of interesting color, and the wall surfaces are shown to be of pale sand finished plaster. Now these things are not suggested in this drawing, they are insisted on, and one feels that when the work is executed they should be carried out in their entirety in order to truly develop the scheme.



Pencil Drawing of Garden Entrance to Country House in Cheshire
C. E. Mallows, Architect and Delineator

The English renderers are indeed so many that reference can be made to but a few: Mr. Jessop Hardwick uses an interesting combination of ink and water color, drawing his architecture in ink and tinting his plain surfaces with heavy settling washes — a method very different from Wood and Baillie Scott and others, who lose the drawing in the color.

The other usual type of English rendering has perhaps been made most familiar to us through Prentice's wonderful book on Spanish architecture, and in Prentice and Mallows the English have two of the most beautiful pencil draftsmen that have ever lived. It seems hardly possible that so many different tones can be obtained in a single drawing as we find in theirs; the suave, cool quality of surface, and the finish and precision of their work, is very different from the sketchy methods which American draftsmen employ.

Water Color Drawing of an English Country House Interior
Edgar Wood, Architect and Delineator

The work of the German and Austrian renderers is not as familiar to us as that of the English, probably because German architecture is less sympathetic to our taste, and we therefore see fewer of the German magazines. Like the English, they use water color and black and white, with equal freedom, and not infrequently their drawings are line drawings with the flat surfaces washed in.

One thing which

strikes us as interesting about their methods is that for large structures they are apt to use line drawings; while for small ones, and especially for interiors, they generally make water color studies, and we will very often find the same men equally facile in the two mediums. A certain part of the men have in rendering apparently taken their cue from the English; but some of them prefer to work in a more mechanical way, which is well illustrated by one of the extreme examples, — the living room designed and rendered by Max Benirschke of Dusseldorf, which is, of course, of extreme modern character, both in architecture and in color. A not dissimilar drawing is that of the concourse of the station at Karlsruhe, designed by Prof. Herman Billing and Wilhelm Vittali, a very simply rendered pen and ink drawing with light washes over certain parts of it.

Water Color Drawing of German Railway Station Concourse
Professor Herman Billing and Wilhelm Vittali, Architects
Professor Herman Billing, Delineator

The work of Prof. Wilhelm Kreis of Dresden is of a much more sketchy and pictorial character and has, perhaps, been influenced by the drawings of Otto Rieth, one of the most superb draftsmen who ever lived — a man of extraordinary fertility of invention and of really stupendous imagination. Of course we are all familiar with the drawings of his wonderful, gigantesque, and fantastic compositions; visualized Poe stories, which have never been equaled in conception and hardly in drawing since the time of Piranesi's engravings.

Water Color Drawing of German Residence Interior
Max Benirschke, Architect and Delineator

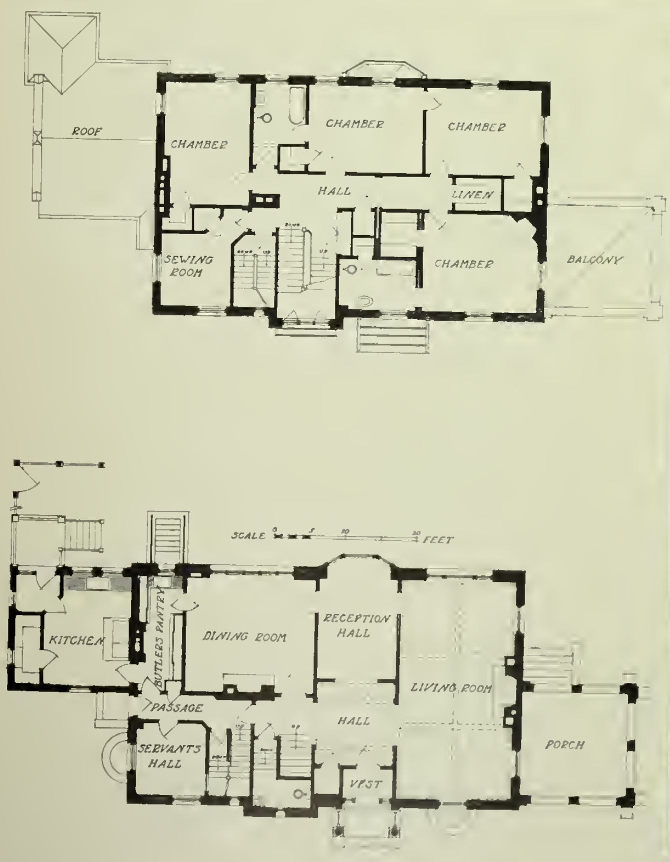
Hans Heller of Darmstadt does quiet, simple renderings suggestive of the Englishmen Voysey and Wood. This is true also of F. W. Yochen of Mainz, and the work of Professor Grenander of Berlin is evidently influenced by the English school. Prof. Fritz Schumacher of Dresden uses pen and ink in a free and interesting manner, and Richard Schmitt of Darmstadt obtains a quality in his renderings of exteriors very little different from those of Prentice's water colors.

German rendering is as a whole not very unlike English, although the architecture of the subjects is so radically different that we are not apt to think of them as having much kinship; but the German renderings, which are distinctly German and uninfluenced by the work of other countries, are evidently products of the modern art movement which has apparently found its soundest foothold among artists in Germany.

A wider acquaintance with the work of foreign renderers will very greatly benefit our draftsmen, since the sun has by no means risen and set exclusively over America, and we have, perhaps, in the past learnt from the French, without taking into account the equally valuable lessons which the English and Germans offer us.

Architects, too, may profit from a study of the careful manner in which the latter artists consider their color schemes. Some of the German drawings are particularly resplendent in colors, which, although differing widely from those that our most daring architects are willing to suggest, are nevertheless very effective and artistic, and indicate in perhaps a more detailed manner, the exact color tones to be had in the finished building than do similar American ones.

Water Color Drawing of Maternity Hospital, Dresden
Karl Hirschmann, Architect
Maler Paul Ricken, Delineator

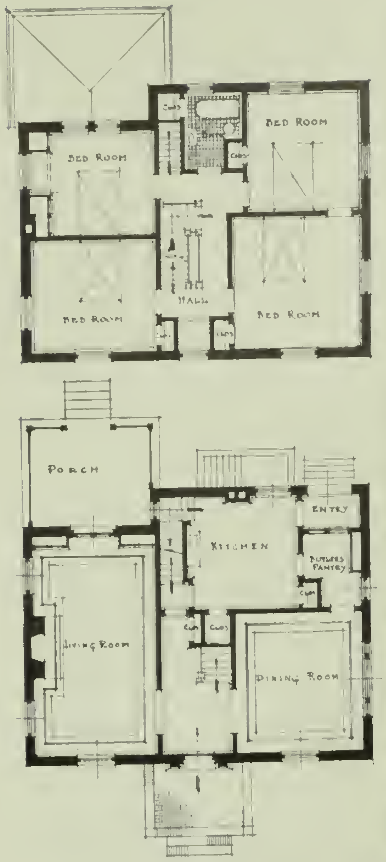


FLOOR PLANS

ENTRANCE DETAIL

HOUSE OF E. L. HARTPENCE, ESQ., NEW HAVEN, CONN.

CADY & GREGORY, ARCHITECTS



FLOOR PLANS

STREET FRONT

STREET FRONT

FLOOR PLANS

TWO SMALL HOUSES IN ST. LOUIS, MO.

ROTH & STUDY, ARCHITECTS

The Heating and Ventilation of Offices and Banking Rooms.

By CHARLES L. HUBBARD.

THE modern office building usually consists of three sections: the basement, or sub-basement, containing the mechanical plant; the street floor, devoted to banking rooms, with suites of private offices above; and the remainder of the building made up of small rooms arranged in a similar manner upon each floor.

Methods of Heating. The upper section is commonly warmed by direct radiation, it not being practicable to combine heating and ventilation in buildings of this kind, owing to the large number of rooms and the necessity of individual temperature regulation in each. The banking rooms and private offices are generally provided with ventilation, and the heating is usually done by means of hot air, supplemented by direct radiators where needed. When a ventilating fan supplies more than one room, it is customary to raise the temperature of the entering air to 72 or 74 degrees at the main heater, and provide the additional heat either by direct radiators or secondary stacks placed at the bases of the various flues, thus giving to each room an independent means of temperature control. In buildings of small size, indirect gravity heaters are often used for warming the banking rooms, although not so effective as a fan system.

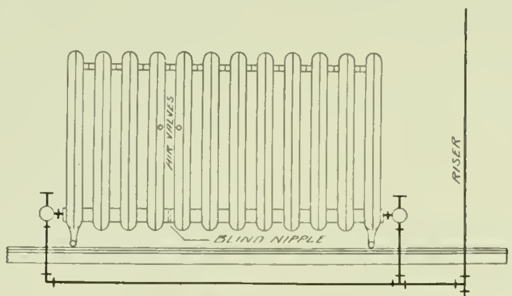


Fig. I.

Location of Radiators. In the smaller rooms of the upper section the radiators are generally placed beneath the windows for the following reasons:

First, it is the coldest part of the room, and this arrangement serves to prevent down-drafts caused by the large glass exposure and the inleakage of air around the sashes. Second, the partitions are often changed to suit tenants, and with the radiators in this location there will be no interference, whatever the arrangement of the rooms. Third, it simplifies the running of supply and return risers, making the layout practically the same on each floor. There may be instances, however, where it is desirable to keep the windows free, in which case the radiators may be set against the side walls, or partitions, without interfering with their effectiveness to any great extent.

In steam heated rooms having two or more windows it is best to divide the radiating surface, placing a unit beneath each window. This arrangement makes it possible to proportion the heating capacity to the outside temperature by shutting off one or more of the radiators in mild weather.

In small rooms, where a single radiator is used, the same result may be secured by dividing it into two separately valved sections and connecting with the riser as shown in Fig. I. This, in effect, gives two independent radiators having the appearance of only one. It can be used, however, only with a single-pipe connection; but as this method is widely used in low-pressure gravity heating, it may be employed in a large number of cases. Vacuum and hot water systems, requiring the two-pipe connection, have other means of regulation, so the divided radiator is not required in cases of this kind.

Entrances and corridors may be warmed either by direct or indirect radiation. A good arrangement for this purpose is to conceal the heaters by grille work and force warm air through them by connecting with the fan system. This serves to supply fresh air to the corridors and also reduces the radiating surface by increasing its efficiency. The larger part, if not all, of the corridor radiation may be placed on the first floor. These rooms have but little, if any, outside exposure, and the stairways and elevator shafts act as flues for carrying the heat to the upper stories. In special cases, where there is considerable outside glass exposure, it may be necessary to supplement this with a small amount of direct radiation suitably distributed on the various floors. But, in general, the first arrangement will provide ample heat and is more simple to install. When a fan is used in connection with this work, provision should be made for gravity rotation through the heaters at night when the fan is shut down.

Miscellaneous rooms, such as lunch rooms, barber shops, toilet rooms, basement storage rooms, etc., are usually heated by direct radiation, located according to the positions of the risers and the general arrangement of the fixtures.

Skylights may be warmed by carrying coils of pipe around the enclosed chamber between the two sashes.

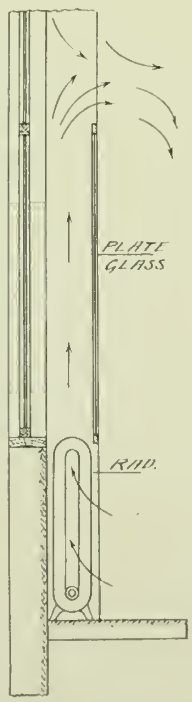


Fig. II.

Radiator Shields. Cold down-drafts in front of high windows in banking rooms and similar locations are often difficult to overcome with ordinary direct radiators. In cases of this kind good results may be obtained by the use of plate glass shields as shown in Fig. II. These form a flue which delivers a current of warm air at a sufficient height to break up or deflect the downward movement of cool air before it reaches those sitting below. Other methods of overcoming down-drafts are considered under ventilation.

Types of Radiation. The various forms of castiron sectional radiation are used almost exclusively in this class of work. Direct radiators should be of plain pattern and chosen with reference to the positions they are to occupy. A certain relation should be maintained between the height and length in order to give a symmetrical appearance, and two-column radiators are somewhat more efficient, for a given surface, than deeper ones. Where the space below the windows is limited, low radiators of special design are often required.

Modern fireproof building construction makes it necessary to carry the run-outs to the radiators above the floor. When they are located at some distance from the risers, it will be advisable, in gravity systems, to use radiators having extra high legs in order to secure sufficient pitch for proper drainage. When a "return-line" vacuum system is employed, this precaution is not necessary, as the suction in the return will keep the risers clear of condensation.

Wall radiators are especially adapted to the warming of toilet rooms and lavatories because they leave the floors free for easy cleaning or flushing.

Stacks for indirect gravity heating, and supplementary heaters for use with fan systems, are best made up of pin radiation or sections of similar form.

Room Temperature. All offices and banking rooms should be warmed to a uniform temperature of 70 degrees in the coldest weather. Although a corridor temperature of 60 degrees or less is ample for the comfort of those entering or leaving a building, it is best to maintain a temperature approximating that of the offices on account of those passing through to other rooms, toilets, etc., without extra clothing. Toilet rooms containing lavatories or bathing facilities should be warmed to 70 degrees, while in those of a semi-public nature, used by people dressed for the street, a temperature of 55 to 60 degrees is sufficient.

Private toilets usually have little, if any, outside exposure and are not commonly provided with heat.

The minimum outside temperature upon which the capacity of a plant should be based will depend upon the geographical location of the building. The United States Government, in the design of its Federal buildings for northern cities, bases its calculations for heating capacity upon the lowest recorded temperature in the past ten years, while for southern cities, the lowest recorded temperature + 10 degrees is taken.

Although it is very important that an office building be properly warmed at all times, it hardly seems necessary to provide a plant of sufficient capacity for the exceptional low records which occur only once in several years. In New England and the middle states a minimum temperature ranging from -10 degrees to 0 is commonly assumed.

When it is desired to provide against possible low records, the ducts may be so arranged as to allow of the air being rotated within the building, thus sacrificing ventilation for additional heat, temporarily. Dampers or doors should be provided so that by closing off the outside supply, air may be drawn through corridors and stairways, passed through the main heater, and delivered again into the lower corridor at a comparatively high temperature. This is much more economical, both in cost of installation and operation, than to increase the direct radiation throughout the building. When the building is once thoroughly warmed, a well planned system should be able to maintain a comfortable temperature, even with the outside conditions considerably more severe than those for which the plant was originally designed.

Systems of Heating. Both steam and hot water are employed in this class of work. When the former is used, it may be circulated under a low pressure, returning the condensation to the receiving tank by gravity, or a vacuum system may be employed. In combined power and heating plants using the former arrangement, the pipes should be of such size that the steam will circulate freely through all parts of the radiating system with a pressure not exceeding two pounds, in order that the back-pressure on the engines shall not be materially increased over that when exhausting into the atmosphere. Gravity circulation is adapted to buildings of small and medium size, requires no special devices in the way of return valves, vacuum pumps, or exhausters, and also permits of the single-pipe connection.

In larger buildings the circulation is apt to be sluggish, especially when steam is first turned on, and higher pressures are required unless the pipe sizes are considerably increased. In plants of this kind, using exhaust steam, it is usually best to employ a type of vacuum system which accelerates the circulation without increasing the pressure, does away with air valves, and makes possible a certain amount of temperature regulation by using graduated valves at the supply end of the radiators.

Hot-water heating, under forced circulation, is adapted to the same class of buildings as the vacuum steam system. The exhaust is utilized in a tubular heater, without back pressure, and the water is forced through pipes of moderate size by means of a circulating pump. In the "vacuo" system, so called, the heater is made to take the place of a condenser, either wholly or partially, thus adding to the power or economy of the engines. By circulating the water at different temperatures, according to outside conditions, a certain amount of general temperature regulation is available which is under the direct charge of the engineer, thus adding materially to the economy of operation.

Temperature Control. In the best class of work, and whenever funds are available, the heating system should be equipped with automatic temperature regulation. This is important, not only as regards the comfort and health of the occupants, but also reduces the cost of fuel, unless there is a surplus of exhaust steam available for all heating purposes.

The methods of temperature control previously mentioned are of much advantage so far as they go, but are only makeshifts when compared with an efficient system of automatic regulation. Devices dependent upon the attention of the occupants are likely to be neglected, and temperature control is usually attempted by opening and closing windows, resulting in disagreeable drafts and waste of heat.

Whatever the system of heating and ventilation, it is a most excellent plan to open the windows for a short time occasionally and flush out the room with fresh air, but it is not a good idea to sit in a draft or to remain in an overheated room for any length of time.

Piping Arrangements. When the lower floors are used for banking rooms or similar purposes, it is desirable to eliminate all steam and return piping leading to the upper part of the building. This can best be done by supplying the first-floor radiators from a separate up-feed system, and the remainder of the building from an independent line, preferably on the down-feed plan. This applies equally to low-pressure steam, vacuum systems, and hot water. While high buildings are often heated with the up-feed system, the down-feed permits of smaller and fewer pipes through the lower stories. It also has the advantage of causing the steam and condensation within the risers to flow in the same direction, which is of much importance, especially with single-pipe radiator connections.

An important matter to be considered in this class of work is the expansion of the risers. This may be provided for either by loops and swivels or by slip joints placed six or eight stories apart. Expansion loops require less care when once installed, but are rather difficult to conceal with the modern fireproof construction. Slip joints, on the other hand, are easily installed and concealed, but are more likely to bind or leak. However, with the low pressures carried in work of this kind, the slip joint seems to give good satisfaction and is quite generally used in the best class of work.

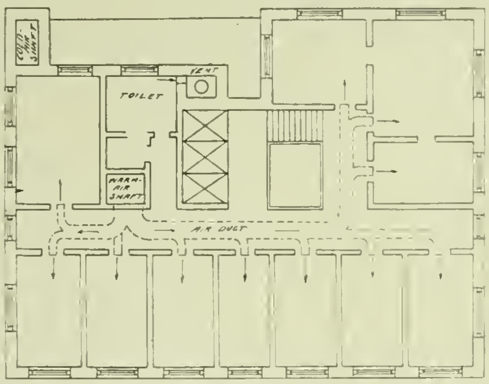


Fig. III.

Ventilation. It has already been stated that ventilation is not usually provided for all floors in buildings of this type. There are instances, however, where the owners desire to have the entire building ventilated, or at least a considerable portion of it. When this is done, the arrangement shown in Fig. III is usually employed. This consists of a main flue, centrally located, and extending to the ceiling of the uppermost story to be ventilated. Horizontal ducts connect with this vertical shaft at each ceiling of sufficient size to supply the entire story. These ducts are concealed by a false ceiling, or furring, at the upper part of the corridor and deliver fresh air to the rooms through registers usually placed over the doors.

Sometimes the furred-in space around the duct is utilized for exhaust ventilation, being connected with a fan located upon the roof. This general arrangement is shown in Fig. IV. The usual plan, however, is to simply supply fresh air to the smaller rooms and depend upon leakage for exhaust ventilation.

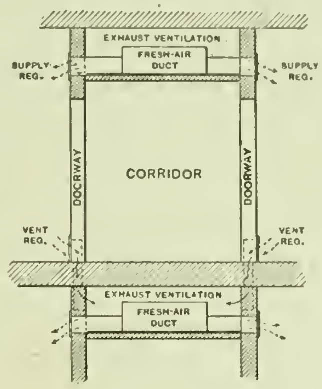


Fig. IV.

Heat is commonly furnished by direct radiation independently of the ventilating system which supplies air at 2 to 4 degrees above the normal temperature of the room.

Sometimes the double duct arrangement is employed for limited sections of a building where the rooms are elaborately finished and it is desired to eliminate all direct radiation. The hot air is carried below the tempered air, as shown in Fig. V, and the two mixed in the right proportion by a graduated damper thermostatically operated.

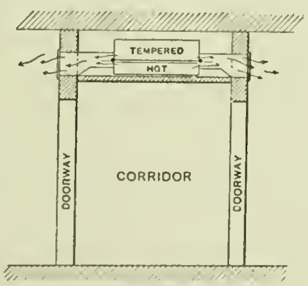


Fig. V.

Ventilation of Banking Rooms. The best results are obtained in rooms of this kind by the use of fans, both for supply and exhaust. The location of these will depend somewhat upon the arrangement of the building. Ordinarily the supply outfit is placed in the basement, although in some cases it may seem best to locate it above the rooms, and discharge the air into flues leading downward. Vent flues from the first floor are usually gathered at the basement ceiling and connected with an exhauster discharging into a special shaft leading to the top of the building. There are various ways of admitting the warm air to the main banking room. If the system is to be used for heating only, and not for cooling in the summer time, it is a good plan to bring in a considerable proportion of the warm air through long narrow slots in the window sills, and through elevated registers in or near the outer wall. A certain amount should also be supplied to the public space by means of grilles along the inner wall or through centrally located columns.

Exhaust ventilation should be through grilles or registers placed near the floor, part in the base of the counter and part in both outer and inner walls, if the room is of considerable width. In long narrow rooms the fresh air is often brought in through a series of registers, about 8 feet from the floor, located in the outer wall, and the exhaust taken off through openings near the floor along the opposite side of the room. An examination of the plans of a considerable number of the latest installations of this kind shows quite a variation in treatment as to the location of air inlets and outlets. Much seems to depend upon the available space for flues, and the only general rule followed appears to be the admission of air at an elevation of 7 or 8 feet and its removal at or near the floor. In several of the plans examined, the larger proportion of both supply and vent registers were located along the same wall. When a washer or other cooling device is used, and the air is admitted in summer at a temperature considerably below that of the room, a somewhat different flue arrangement must be provided than noted above. Ordinarily the space along the outer walls, next the windows, is occupied by desks, and if the cooler air were admitted in the usual manner, it would at once fall upon the heads of those sitting below.

With systems of this kind the air should be introduced along the inner walls, or at the opposite side of the public space, and exhausted at the outer walls after having become diffused and raised to the normal temperature of the room. This arrangement works equally well with warm air, provided direct radiators and shields are placed in the windows as shown in Fig. II. Whatever the method of ventilation, a sufficient number of direct radiators, or rotation heaters, should be provided to warm the room to a comfortable temperature when the fans are not running.

In general, we may say that the air should be heated to about 72 or 74 degrees at the fan, and delivered to the room partly at this temperature and partly at a higher temperature by passing through re-heaters beneath the window flues, these being available as rotation heaters, when the fan is not running, by the manipulation of switch dampers.

Private offices may be heated by direct radiation, either encased or exposed, or by re-heaters at the bases of the supply flues. Sometimes direct radiators are screened and the air supply brought in back of them.

Volume of Air Supplied. When the probable number of occupants is known, it is best to proportion the air supply upon this basis, allowing at least 40 cubic feet per minute each. When this information is not available, a certain number of changes per hour may be provided. Under ordinary conditions from four to five changes should be furnished in the smaller rooms of an office building and from three to four in banking rooms. If the rooms are very high, the number of changes may be reduced.

In a building recently erected, a banking room 58 feet in height was satisfactorily ventilated with two changes per hour. When designing a ventilating equipment for rooms of this type, the exhaust system need have a capacity only about 0.6 to 0.7 that of the supply system, as a considerable amount of air will find its way out by leakage.

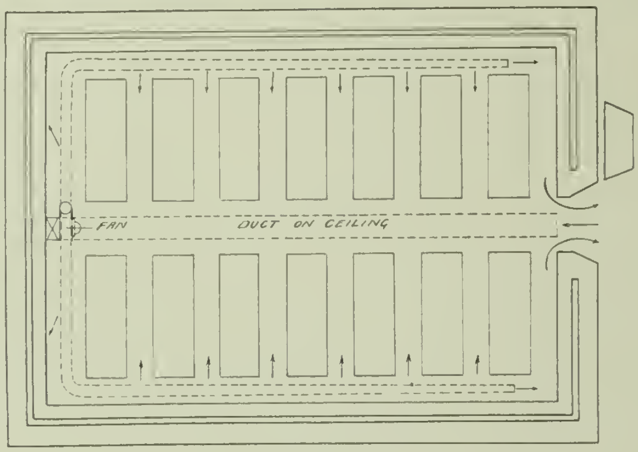


Fig. VI.

Vault Ventilation. Safety deposit and storage vaults require special treatment, because, when closed at night, there must be no access through air ducts.

There are various ways of overcoming this difficulty, one of which is shown in Fig. VI. In this case a small centrifugal fan is supported upon the wall at the rear of the vault and arranged by means of a shallow ceiling duct to draw air from the upper part of the doorway. This air being taken from a well ventilated corridor, and therefore of good quality, is delivered at several points in the rear and along the sides of the vault and passes out under a slight pressure through the lower part of the doorway. Another plan is to omit the special fan and connect with the regular ventilating system by means of a removable sleeve, which is disconnected at night when the doors are closed.

Ventilation of Special Rooms. Exhaust ventilation is provided for toilets, kitchens, lunch rooms, etc., by means of separate fans, in order to make them independent of the banking rooms. Whenever a room is likely to contain smoke or unpleasant odors, the flow of air should be outward, hence a supply is usually drawn from the corridors and discharged outboard, instead of being furnished by a special supply fan under pressure.

Rooms of the above type require from five to six changes per hour under average conditions, and often more in special cases.

Air Washing and Cooling. Air washers are now generally included in the ventilating equipment of all buildings of this type, both on account of the more healthful quality of the air supply and for protecting the building and its contents against injury from soot and dust. These devices are easily equipped for humidity control and may be used for air cooling in the summer.

The amount of cooling effect will depend somewhat upon local conditions and may be increased by taking the spray water from the city mains or deep wells. In some cases a refrigerating plant is installed, and brine or other cooling medium circulated through the heating coils.

Under ordinary conditions, a well-ventilated room may easily be kept 10 degrees lower than the outside temperature.

Announcement of Two Competitions.

DESIGN FOR FOUR-STORY APARTMENT HOUSE AND DEVELOPMENT OF LOT AT SALEM, MASS.

A CONSIDERABLE sum of money has been set aside by the Salem authorities to assist in various ways those who are desirous to rebuild in the burnt district. This fund is in the hands of trustees constituting what is known as the Salem Rebuilding Trust. Desiring to improve in the most comprehensive manner a certain tract of land within the burnt district, the Salem Rebuilding Trust invites architects generally throughout the country to participate in two competitions,—one to secure the maximum housing possibilities on the lot, the second to secure sketch plans for a four-story apartment house.

Two prizes of $100 and $75 will be offered to the designs placed respectively first and second in each.

The plans will be judged by the Trust, with the assistance of C. H. Blackall, Advisory Architect to the Salem Rebuilding Commission.

Architects who care to take part in these competitions are requested to communicate at once with the Salem Rebuilding Trust, Peabody Building, Salem, Mass.

DESIGN FOR A "MADE IN DETROIT, U. S. A.," TRADE MARK, CONDUCTED BY DETROIT BOARD OF COMMERCE.

IN AN effort to give definite form to the "Made in the U. S. A." movement, which has started sporadically in various parts of the United States and in various industries, the Detroit Board of Commerce offers a prize of $500 for the best "Made in Detroit, U. S. A.," trade mark submitted by an American designer. It is the purpose of this contest to secure a trade mark which shall represent American goods both in home and foreign markets; to secure a trade mark which shall be suitable for use on all classes of American products. It is the earnest desire of the Detroit Board of Commerce that a design for the "Made in U. S. A." trade mark be submitted by every prominent American architect and designer. Any person born in the United States, or at the time of this contest a naturalized citizen of the United States, shall be eligible to compete. All designs must be submitted on or before February 25, 1915. Any person intending to compete is requested to signify his intention. Further information and rules covering the competition may be obtained by addressing the "Made in Detroit, U. S. A.," Committee, Detroit Board of Commerce, Detroit, Mich.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

Has the Tide Turned?

By ROGER W. BABSON.

SINCE the notable improvement in sentiment which has taken place in the last few weeks, as a result of the re-opening of Stock Exchanges and other favorable factors, I am often asked if the tide has really turned? There is no one who needs to forecast business conditions more than the architect. Owing to the time which must elapse between the preparation of plans and the actual construction of a building, it is very necessary for the architect to know what future conditions are going to be. When it comes to big operations the business man's idea of the difference between a good architect and the poor architect is that the former anticipates conditions and the other does not. Ex-President Walker of the Massachusetts Institute of Technology, who was the leading economist of his day, said to me once, "The difference between a successful architect and an unsuccessful one, is that the former can tell a quarter from a half dollar, while the latter can only distinguish a strut from a tie."

Since my recent trip to Washington I have been in a very optimistic frame of mind, and feel confident that the tide is turned in favor of lower money rates, more construction, better sales, and that this will soon result in a greater demand for building material. My reasons for optimism I will give briefly. Our exports are increasing at a much more rapid rate than our imports. This is not only dissipating the awkward situation in which our bankers and business men found themselves at the outbreak of the war, but if continued will lay up for us a great credit abroad. Then again, the new Federal Reserve law has begun operations. Few people realize what a large amount of funds this law will release. Whatever the ultimate results of the law may be, the immediate effects will be to loosen money and reduce rates. This must of necessity give an impetus to business, and especially construction and development work. In a personal interview which I had with John Skelton Williams, comptroller of the currency, he not only emphasized the benefit that this new law would be to business men, but assured me that his office would do everything possible to help manufacturers and merchants who are willing to continue operations and "keep the water going over the wheels," as he expressed it. The desire of the Government is now to help business in every way, and this attitude cannot help but improve conditions.

The railroads are sure to secure an increase in rates very soon. Up to the present time the administration has taken an indifferent attitude towards the railroads without attempting to interfere in any way with the Interstate Commerce Commission. I believe that now, however, the administration is convinced that the railroad situation is a definite factor in holding up a great many construction enterprises. In fact, a man very close to the President told me that he was convinced the railroads should have an increase and would do all he could legitimately to bring it about. Just as soon as the railroads get such an increase, they will again enter the market to buy goods which should give an impetus to many lines.

The farming community is abnormally prosperous and should continue prosperous for at least five years. Directly after the war the farmers became a little panic stricken and began contracting their purchases; but they have again begun to buy. Manufacturers and jobbers tell me that business is again getting normal in the farming districts and that, war or no war, these sections of the country are sure to be prosperous for some time to come.

The war is sure to be shorter than most people anticipate. From statistics received from the other side relative to the money and men involved, it is inconceivable that it can last very long. Every additional nation that enters the conflict hastens its end. I am not counting on any of the nations being starved out, but I do know that there is a limit to the mental strain the human beings can stand. In accordance with the fundamental law of action and reaction, the greater the intensity of any war the shorter its duration.

These reasons which I have given are fully substantiated by statistics on fundamental conditions, which show very clearly that construction is now at such an abnormally low point that it soon must begin to improve. I desire to make clear that I do not expect a return of real prosperity until there is some definite sign of peace; but I feel sure it will not be long before such signs are forthcoming. The end will come about through mediation and not through fighting the war to finish. Between now and then, however, I expect a slow but constant improvement in building lines rather than a continued decline, such as has been witnessed the past few months.

The greatest service which architects can do their clients is to urge them to build now. Owing to the depression which has been deepened by the war, prices of building materials have reached very low levels. Architects should urge their clients to take advantage of these low prices while they last. Iron and structural steel will probably not be as cheap again for a number of years, and it is quite certain that lumber will never be. Cement prices have reached a fairly stable basis, but they are at low levels now compared with what they will be two years from now. Prices of nails, of brick, in fact of every kind of building material are probably as low as they will be for a long time to come. Then again labor is cheaper, particularly unskilled labor. All of these things should be seen by the architect and pointed out to his clients. He cannot do them a greater favor at the present time. The architect who is not only a good artist but also a good business man will appeal most strongly to his clients, a large number of whom are business men themselves. Although your commissions may not be so large if your purchases are made this year, yet you will make a good friend of your client and perform a patriotic service to your country by showing your clients the great advantage to them of building at the present time.

THE Forty-Eighth Annual Convention of the American Institute of Architects, which occurred in Washington, on Wednesday, Thursday, and Friday, December 2 to 4, inclusive, was in many respects notably satisfactory.

The Convention was held at the Hotel Shoreham and was unusually well attended, there being one hundred and forty-seven of a possible one hundred and sixty delegates from the various chapters present. The delegates not only represented all sections of the country, but the interest taken by the smaller chapters in the Institute work was more manifest than at any previous convention, and in discussion and debate the national point of view rather than that of special localities was evident.

The intelligent consideration of the reports of committees was materially assisted by the distribution of printed transcripts of these reports to the delegates some weeks before the Convention, with the result that all had received an opportunity to carefully read these reports and formulate opinions upon them before being called upon to discuss their recommendations. After the reading of each report there was made a report of a committee upon the report before a vote was taken. In most cases the original reports were but slightly amended, and the business of the Convention was performed expeditiously and harmoniously. The Convention opened with the President's Address by Mr. R. Clipston Sturgis, an admirable statement of the position of the Institute in its relations to public ethics and welfare. The reports of the Treasurer, couched in such terms that a very complex set of accounts became intelligible to the delegates, and the reports of the Board of Directors and of the House Committee were adopted. The report of the Octagon Building Committee was considered. The Treasurer had already recommended the appropriation of certain sums to be transferred and loaned from the reserve fund for the purpose of making careful drawings and surveys of the Octagon Building and for its repairs and restoration, and this recommendation was adopted with his report, and the House Committee reported the employment of Mr. Glenn Brown. The report of the Building Committee practically supported and ratified the Treasurer's recommendation, tabled consideration of a new building, placed the drawings and surveys to be made in the hands of Mr. Glenn Brown, and welcomed the suggestion that these drawings should be published in book form and be placed on sale.

At the afternoon session, December 2, Mr. Cram's report on Allied Art supported the encouragement of the individual artist. Mr. Coolidge's report on Government Architecture voiced the hope that a Department of Fine Arts might be established by the Government, that mutual relations between the Government and the Institute might be encouraged, which would redound to the benefit of both. Mr. Ackerman reported at length upon Public Information, advocating still further energy in this respect, both in regard to the Institute Journal and the press, and giving a résumé of excellent work already performed. The Fire Prevention report stated progress in standardizing tests and fire regulations. Mr. Ellicott's report upon Conservation of National Reserves and Historic Monuments was somewhat amended. Mr. Wood's report upon Legislation elicited considerable discussion upon the registration of architects, the general sense of the meeting being apparently in its favor, but no further action being taken. The reports upon the International Congress of Architects, and the reports upon Town Planning and National City Planning, all indicated progress. The fact that at San Francisco the architectural exhibit was not in the Art Building was deplored. Mr. Elzner's report upon the Evolution of a Basic Building Code showed the necessity for the expenditure of so large a sum in research work that it was not considered feasible, and the committee was continued.

At the evening session Mr. Zanziger in his report on Education told of the work at the ten Collegiate Schools of Architecture and elsewhere, and recommended the award of medals in these schools, the award to be made by the Beaux Arts Society, and Professor Warren and Mr. Walker stated the extent of the art courses at Harvard.

Thursday afternoon was devoted to the report of the Committee on Competitions, the present code being finally amended only by the omission of the mention of a percentage charge, and the Committee upon the Schedule of Charges, the present schedule being amended by the statement that charges were not mandatory.

In the evening in the building of the Pan American Union the gold medal of the Institute was presented to M. Jean Louis Pascal *in absentia*, being received for him by M. Jules J. Jusserand, Ambassador from France. The President of the Institute, Mr. Sturgis, presided, and the Secretary of State, Mr. Bryan, made the most extensive speeches of the evening, as the Hon. Chas. S. Hamlin, who was to have made an address, was unfortunately absent in New York. Mr. Guy Lowell, as a former pupil of M. Pascal, spoke of him as his master, and M. Jusserand, upon receiving the medal, responded in most felicitous and heartfelt terms.

The final session upon Friday morning, December 4, was devoted to the important report upon Contracts and Specifications, and the report of the Lincoln Highway Commission. Mr. Day, in making the former report, introduced Mr. King of Philadelphia, who was legal advisor for the Master Builders, and who gave a careful account of work done in the meetings of the representatives of that body with those of the Institute. The new form of contract suggested deals especially with the submission of all disputed points, whether of owner or contractor, to arbitration, and consequent absolute equity. As adopted it is a manifest improvement over the present forms.

The report upon the Lincoln Highway gave the very satisfactory information that the relations of the Institute and the Commission were of the most cordial character, and that they were to be closely associated in the work.