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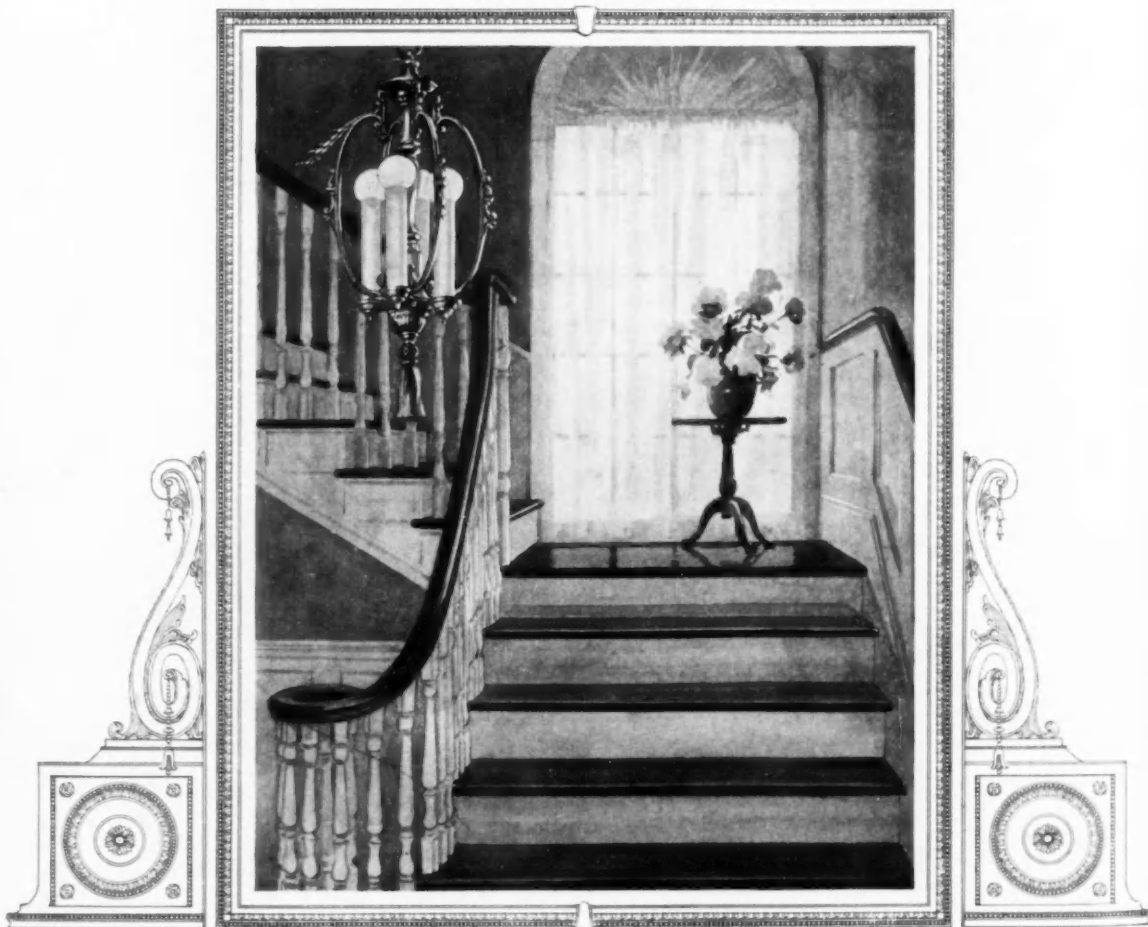
*The*  
ARCHITECTURAL  
RECORD



OCTOBER 1924

# Riddle

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# The ARCHITECTURAL RECORD

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## The FUNCTIONS *and* PLAN-TYPES of COMMUNITY BUILDINGS

By

*Dwight H. Perkins  
and Howell Taylor*

THE TITLE OF THIS PAPER has been carefully chosen by the Editor of THE ARCHITECTURAL RECORD. It limits it to consideration of the practical uses of community buildings and the manner in which their requirements have been provided for. The title is interesting because of what it excludes; namely, architectural design or style. While community buildings have developed a recognizable individuality, it is too early to write about the most appropriate style of architecture for them. It is, also, too early to discuss the style of architecture of existing buildings because, even that is as varied as the places and architects concerned and, further, no permanent or distinctive style has been adopted by existing community buildings, nor is it reasonable to suppose a particular architectural design will become peculiar to community buildings.

Nearly every building erected, except the single family residence, might be regarded as a community building. Certainly stores, where numbers of people are served by merchants; railway stations, where travelers are accommodated; hotels, where guests by the hundred are entertained by unknown hosts; these are all community buildings. Nevertheless, when the Editor chose this title, he had a type of building in mind; one that is more or less commonly recognized. It is apparent he was thinking of buildings designed for purposes similar to those provided for by public or semi-public club houses, in which the membership is democratic and local, as for example the park recreation building or the privately maintained settlement house.

The authors' conception of a community building is that it is one which provides inspiration and opportunities for

the development of the higher life of the people. It is distinguished from the merely utilitarian factory, where the products are material, in that a user of such a building and its facilities, may be a healthier, a wiser or a better man or woman. It is the outcome of recognition of the principle that no person can reach his highest development alone, but that such development comes through communion with his fellows. It proceeds on the premise that what is good for the whole is good for the individual, and vice versa.

If the term "social settlement" were used, the meaning would be reasonably clear and the readers' understanding fairly uniform. Social settlements in Chicago are Hull House, Chicago Commons, Northwestern University Settlement, Chicago University Settlement and forty or fifty others of similar nature. People have become actual residents among those to whom they extend fraternal, neighborly relations. In response to the need buildings have grown which include club rooms, eating rooms, gymnasiums, auditoriums, recreational facilities, social rooms, neighborhood theatres, kindergartens, schools, libraries, in fact, facilities to provide for the educational and recreational needs of the locality.

It soon became apparent that the opportunities for good far outran the range of private funds. The playground, at first inadequate, grew to be the neighborhood small park and later the playground in conjunction with the school. Park boards, and school boards as taxing agencies, as custodians of public property and as administrators in the interests of public education and recreation, gradually came to realize that their duties had increased. From controlling large parks and boulevards for beauty first and recreation second, they came to consider recreation as primarily important. The idea took root and developed that there should be playground facilities within walking distance of all homes so that children in our large cities might be provided for everywhere. Space was purchased at great cost and as soon as land was provided for

the small playground, the need of recreation buildings became apparent and imperative. In one city alone the result was some seventy-five playgrounds and small parks with simple or elaborate buildings, including gymnasiums and natatoriums, indoor and out, for both sexes, library centers, lunch rooms, club rooms, assembly halls, athletic facilities, all as illustrated by such parks and buildings as may be seen at Sherman and Ogden Parks on the south side of Chicago, of Eckhardt and Kosziusko Parks on the west side, and Seward, Hamlin and similar parks on the north side.

A study of the plans will show that these buildings were duplicating largely the work and facilities of the social settlements. The duplication cannot be regarded as a waste, however, because all these agencies combined have not yet provided facilities equal to the requirements.

The park and school boards have the advantage of deriving their support and the authority which they exercise in the administration of these centers from the people themselves. There is no element of charity in the park recreation center. Recreation is given the most liberal interpretation. The people may do anything they wish except discuss politics and religion. Even with this restriction, it is not at all difficult to discuss education which is so inspiring as to be almost religious, and it is quite common to have discussions on civic matters which unavoidably affect in a proper and beneficial way public and political questions.

Social settlements and park recreation buildings, from the beginning have included assembly halls. Twenty years ago they were rarely included in schools; now they are essential to the complete school. The same is true of the gymnasium and with their advent came the idea of public possession and use by the parents at any time not conflicting with school use by the children. The night school has long made use of class rooms in schools, now it is expanding to make use of the shops, laboratories, libraries, social halls and rooms for music and for public speaking

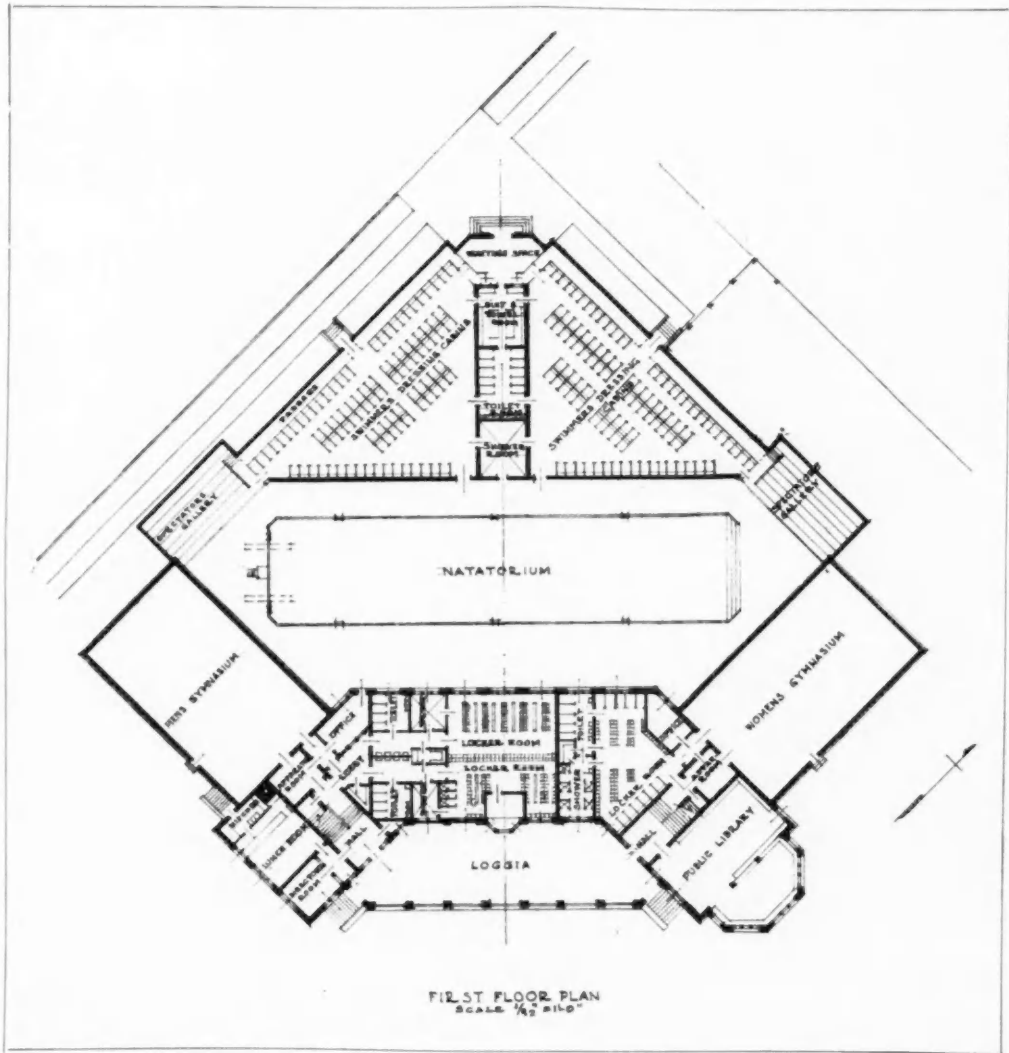
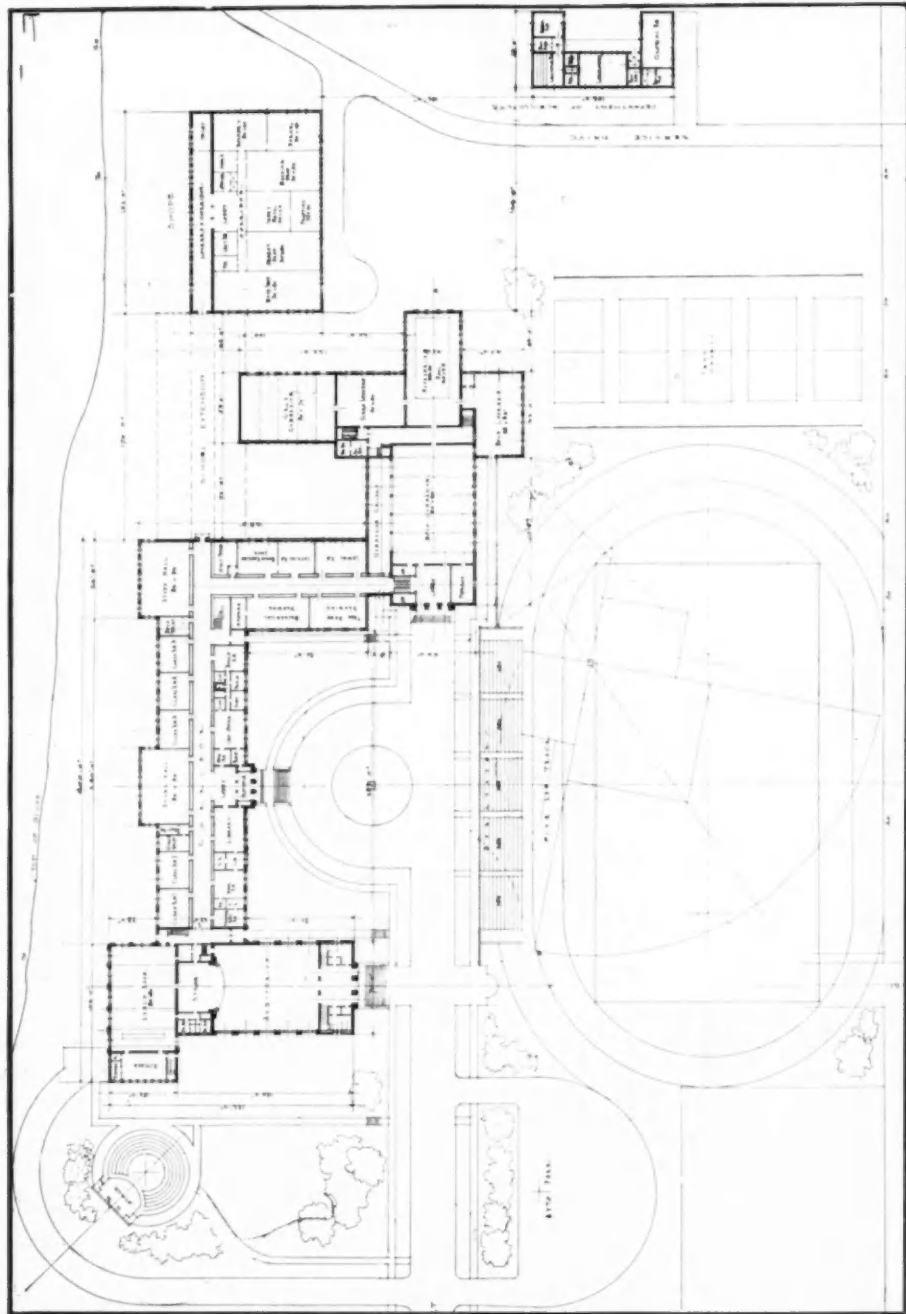


Fig. 1  
 First Floor Plan  
 HAMLIN PARK RECREATION CENTRE, CHICAGO, ILLINOIS  
 Perkins, Fellows & Hamilton, Architects



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Fig. 2  
 GROUP PLAN FOR PROPOSED HIGH SCHOOL BUILDING, MANITOWOC, WISCONSIN  
 Perkins, Fellows & Hamilton, Architects

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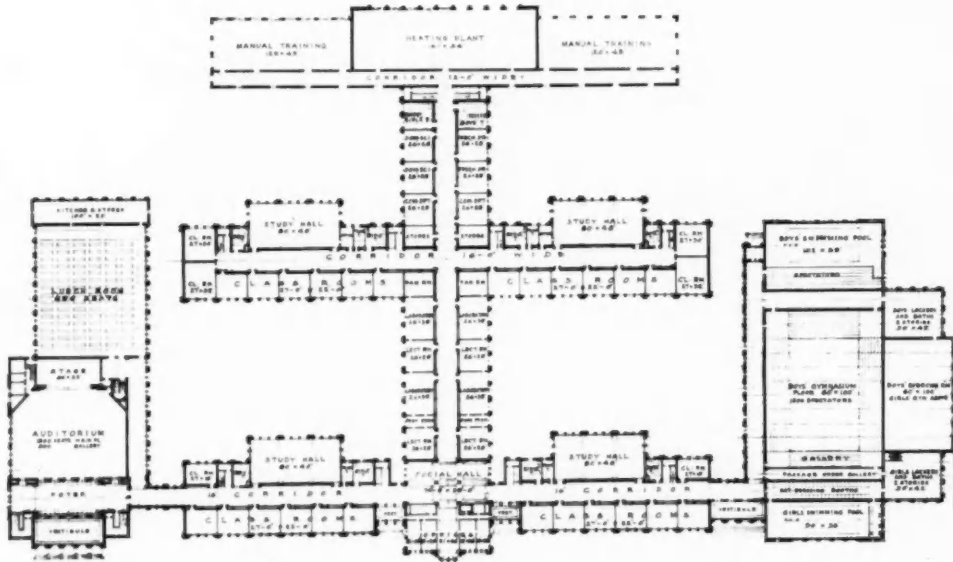


Fig. 3  
 First Floor Plan  
 PROPOSED HIGH SCHOOL FOR EVANSTON, ILLINOIS  
 Perkins, Fellows & Hamilton, Architects

as well as the more commonly appreciated assembly halls and gymnasiums.

Another department in our schools beginning with the simple rest room, equipped only with a couch and toilet, has now expanded and become the headquarters for the school nurse and the examining physician, the oculist, aurist and dentist.

In the last two decades, the public has recognized so rapidly the value of co-operative or municipal provision for recreational and social service, and with it increased educational advantages for adults, that the demands for such service have become practically elemental in every community,—accordingly, in any survey of community buildings it is well to state the program of features which these demands have established as a means of ready reference in studying the accompanying plans:

- Assembly hall and stage.
- Gymnasiums for men and women.
- Swimming facilities for men and women.

Lunch room, banquet hall or restaurant.

Club rooms.

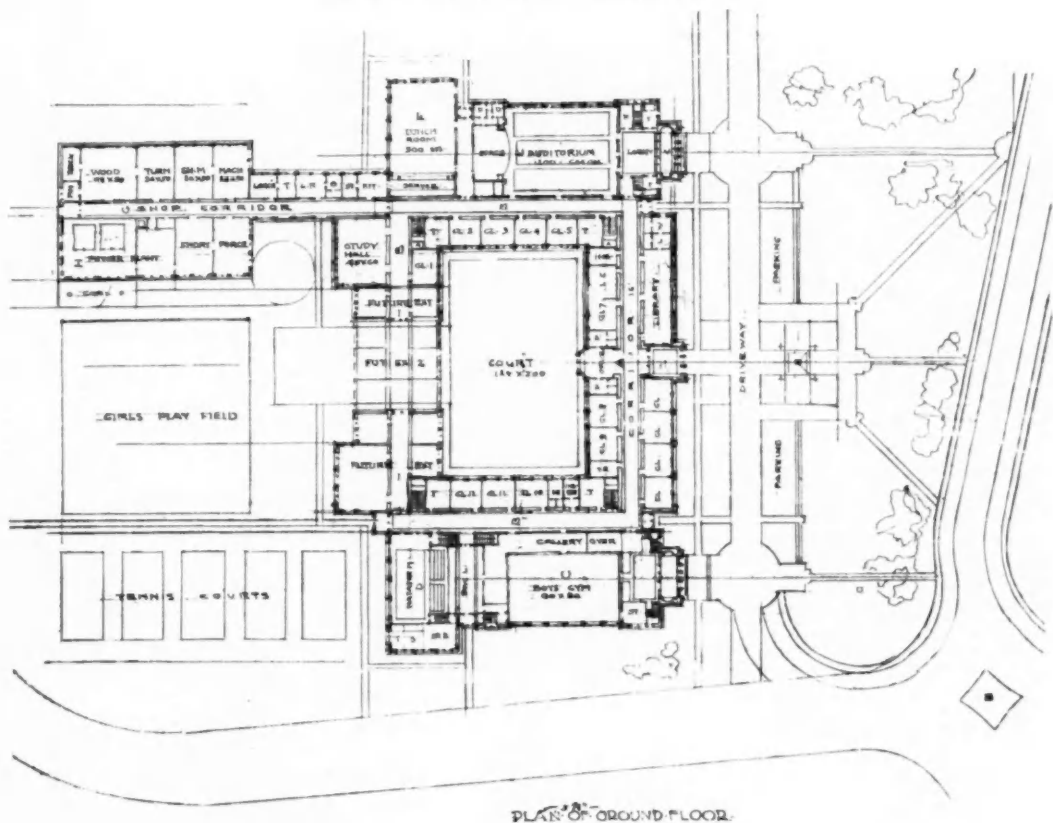
Library.

Committee rooms.

Class rooms.

Laboratories and shops.

Many buildings combine several of these features,—the gymnasium is often convertible for assembly or banquet purposes, the library may be a corner of the club room, committee and class rooms may be one and the same, and the men and women may use the swimming pool on alternate days, but small or backward is the community indeed where there is not included each item in the above list, be it ever so primitive or make-shift. In many a small city the Y. M. C. A. offers the only gymnasium and swimming pool, and a Carnegie building, the library, club rooms and assembly hall. In a southern Michigan city the change from horse-drawn to motorized fire trucks left an unused engine house which immediately became a community building. The



PLAN OF GROUND FLOOR.

Fig. 4

Plan of Ground Floor

COMPOSITION STUDY OF ARRANGEMENT OF HIGH SCHOOL, RACINE, WISCONSIN

Perkins, Fellows & Hamilton, Architects

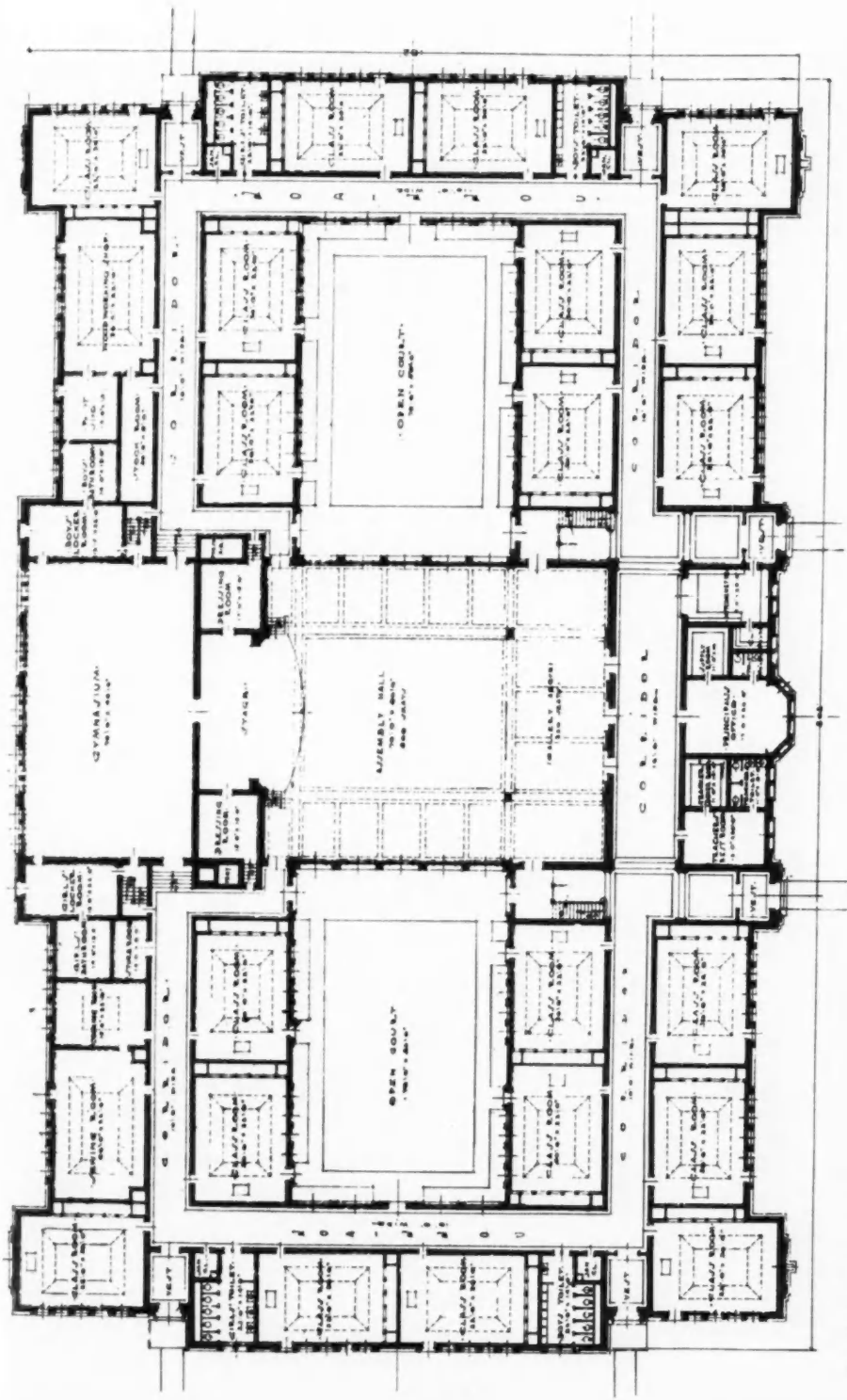
Methodist church of an Indiana town has recently promoted and built a large addition to its building as a community center which provides gymnasium, assembly hall, pool, etc., for general use. Housing these elemental features is a matter of expediency, however, and upon the institution which fulfills all the requirements most logically, will undoubtedly fall the honor of becoming the ultimate community center.

That the expanded school now seems to include all features of the ideal community building is indicative of an economic development of considerable importance. The free public school has come to stay and the scope of its activi-

ties is constantly widening—its buildings must exist by established law. With this in mind, how natural it is that an institution which is looked upon as so great an agency for good in the child's life is now made to provide for the father's and mother's recreation and educational advancement as well, thus centering the family and community interests.

In studying the illustrations, it is evident that definite economic causes are responsible for the planning of schools as our typical community center buildings. Park buildings will remain for several years, but their uses are coming nearer and nearer to that of the expanded school.

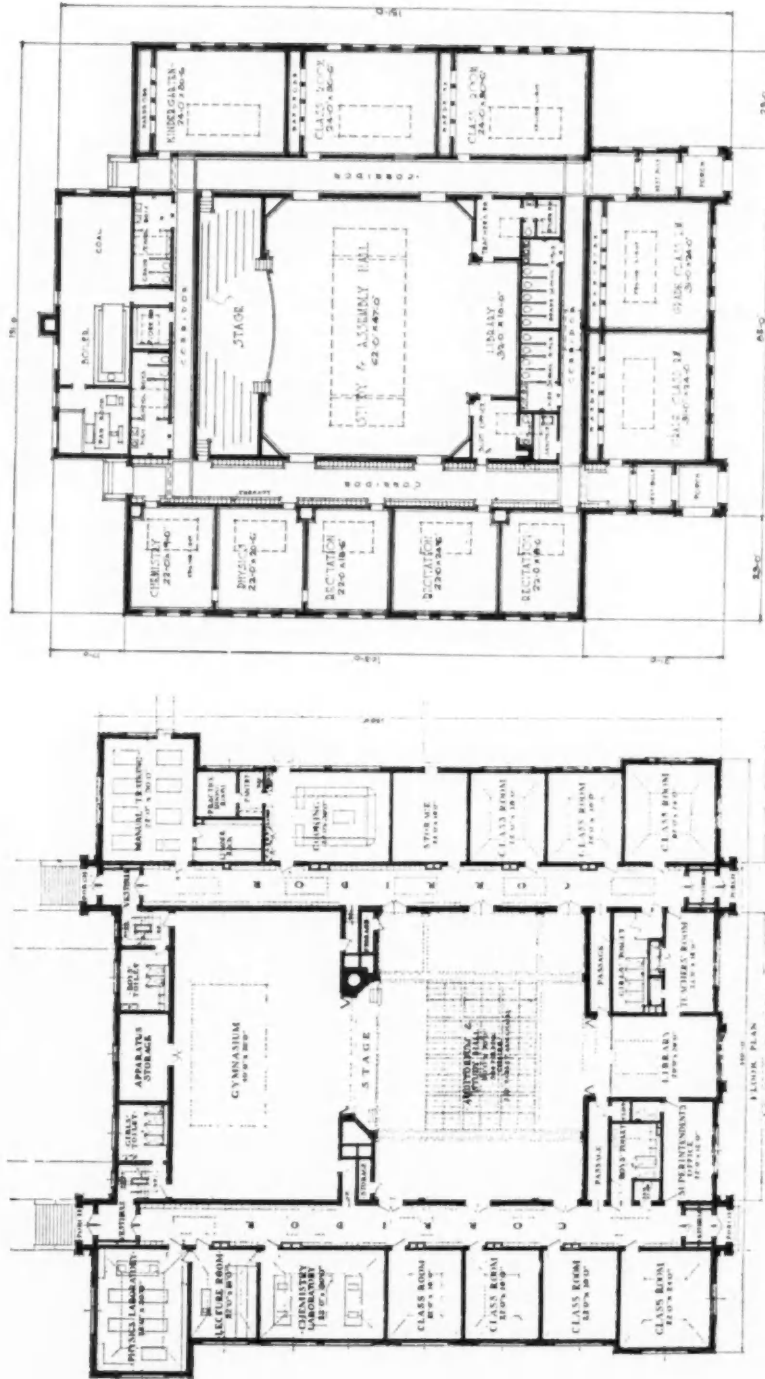
Compare, for instance, the Hamlin



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Fig. 5  
Main Floor Plan  
SKOKIE SCHOOL, WINNETKA, ILLINOIS  
Perkins, Fellows & Hamilton, Architects

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FIG. 6

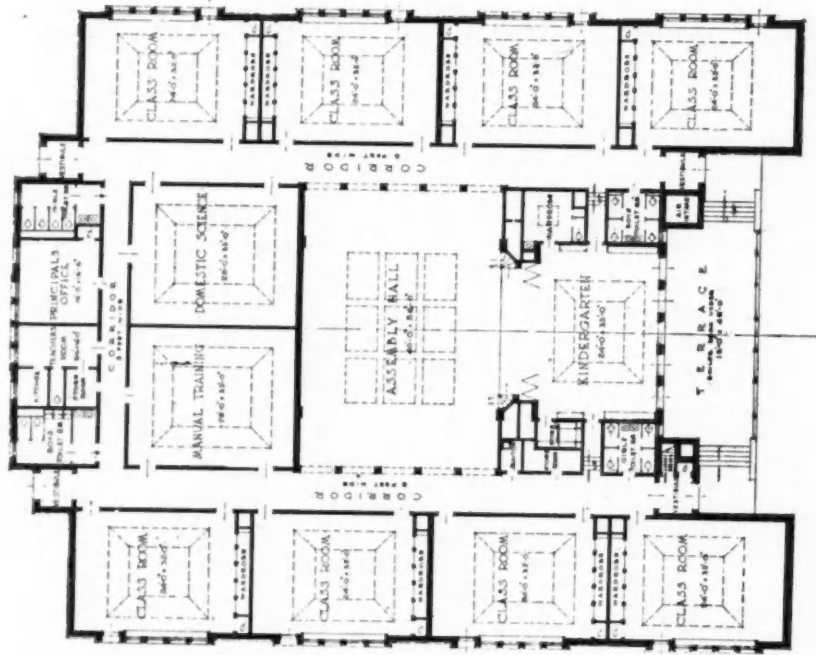
HIGH SCHOOL, DANVILLE, KENTUCKY

FIG. 7

HOLLY HIGH AND ELEMENTARY SCHOOL, HOLLY, MICHIGAN

Perkins, Fellows & Hamilton, Architects

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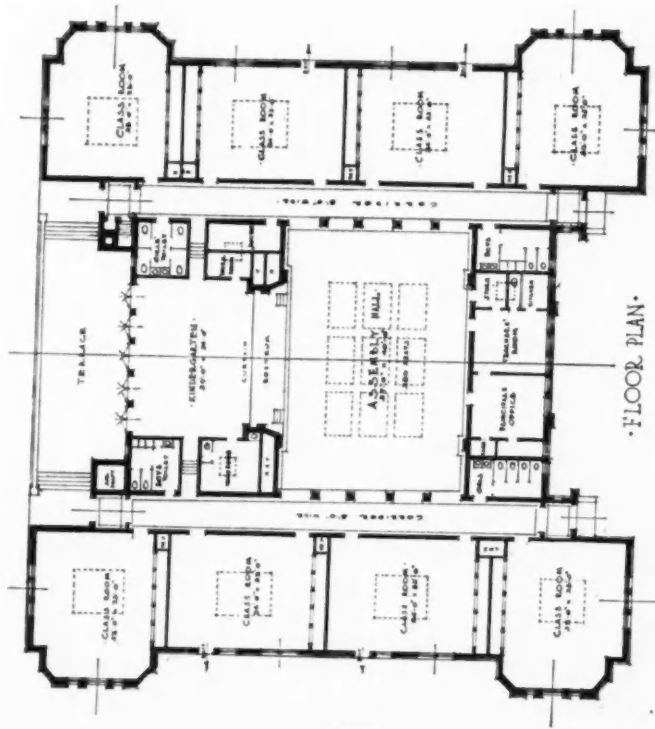


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Fig. 9

HUBBARD WOODS SCHOOL, WINNETKA, ILLINOIS

Perkins, Fellows & Hamilton, Architects

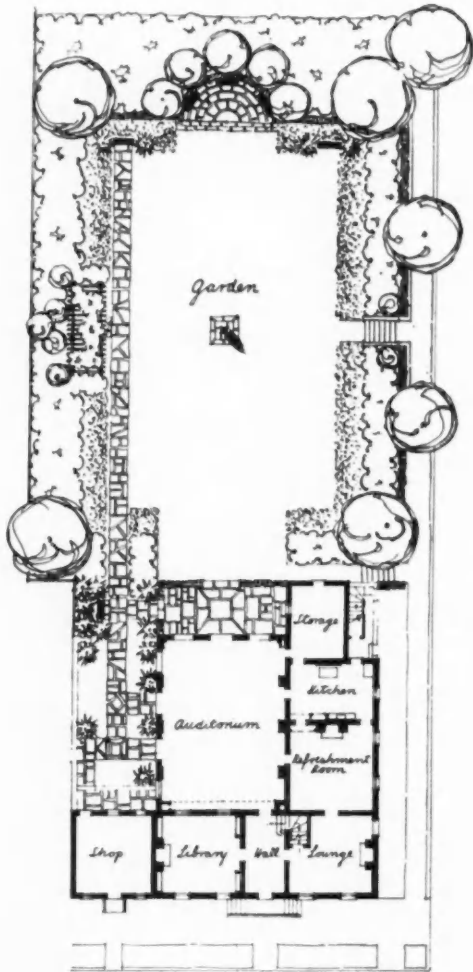


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Fig. 8

SCHOOL BUILDING, DISTRICT 75, EVANSTON, ILLINOIS

Perkins, Fellows & Hamilton, Architects



FIRST FLOOR and GARDEN PLAN

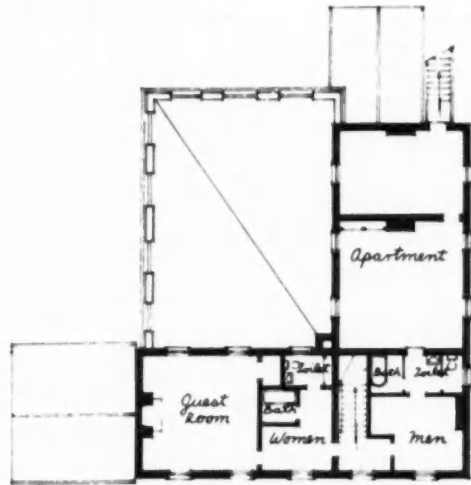


Fig. 10

BROWN-PUSEY HOUSE, ELIZABETHTOWN, KENTUCKY

Lincoln Norcott Hall, Architect

Park recreation center with Manitowoc High School, Figures 1 and 2. There is no public need met at Hamlin Park that is not also provided for at Manitowoc. A recreation center such as Hamlin Park would need an extensive equipment of class rooms, laboratories, etc., to make it a modern school plant, but Manitowoc needs nothing but a care-



SECOND FLOOR PLAN

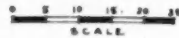


Fig. 10a

BROWN-PUSEY HOUSE, ELIZABETHTOWN, KENTUCKY

Lincoln Norcott Hall, Architect

fully organized plan of activity to become a useful recreational and educational center for the whole community.

The outdoor features of both Seward (Fig. 13) and Hamlin Parks are more extensive, perhaps, than any found in an expanded school today and the indoor features smaller, but a study of the two plans in connection with Manitowoc and Evanston High Schools is a convincing argument in favor of the high school.

Evanston High School (Fig. 3) includes all recreational features both indoors and out, besides an elaborate modern equipment for school activities. Its site has been chosen with a view to its becoming frankly a community center, for the district is not built up and there are no community buildings within a considerable distance. The arrangement of the plan is such that free use can be made of the building for many functions at the same time without conflict, or without disturbing any needs of the school organization by reason of some structural obstacle. What has been said of

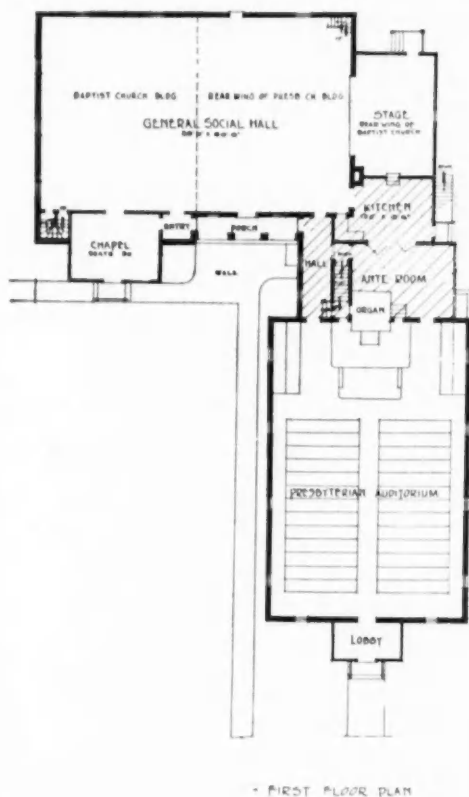


Fig. 11  
UNION CHURCH, QUINCY, MICHIGAN  
Taylor & Salisbury, Architects

the Evanston plan applies equally to Racine (Fig. 4) and Manitowoc.

Referring again to our reference program of community demands, it is evident that the Skokie School at Winnetka (Fig. 5) omits only swimming; Danville High School (Fig. 6) the same; and Holly High School, Hubbard Woods, at Winnetka, Lincolnwood at Evanston (Figs. 7, 8 and 9), omit the gymnasium as well. But they are much better adapted to becoming community centers than schools built a score of years ago. Even the most simple plan provides an assembly room with stage.

It has been most interesting to watch development of the community idea of recreation and social betterment in smaller communities and it is not surprising to

find that the same elemental demand is prevalent here as in urban districts. It is met more or less adequately in antiquated buildings; frequently depending upon some philanthropic townsman or wandering native son who comes to the rescue. In these localities there is often a gymnasium missing, or a swimming pool, a suitable assembly hall or a library, but the demand is insistent and sooner or later will be met. Brown-Pusey House (Fig. 10 and 10a), in Elizabethtown, Ky., a town of three thousand, provides an adequate building for its purpose. From an interesting background as a pre-Civil War inn, it was restored, enlarged and presented to the town by a descendant of the original owner, a fact which may contain a suggestion for disposing of many a delightful old landmark that has otherwise ceased functioning.

In this case, the auditorium and garden were added and a suite of rooms provided for a caretaker on the second floor, an element of special importance in smaller communities where the question of operating expense becomes a problem, and desirable in settlement houses where the staff of attendants must be in constant supervision. For buildings of the Brown-Pusey type, a resident caretaker acts as janitor, answers telephone calls, arranges for letting the rooms and helps to make the buildings more useful generally. In Elizabethtown and other smaller cities, ownership of the community house rests in the municipality and its control in a board of ex-officio and appointive members chosen from a number of civic clubs and other institutions.

Still another phase of the village community house development is found in the construction activity of federated churches. Union Church at Quincy, Mich., provides an interesting example. Although the building is owned by the church corporation, subscriptions for its construction were made by the public and general use of the building will be afforded village school teams and other civic bodies. The plan (Fig. 11) is simple and consists merely of a large social

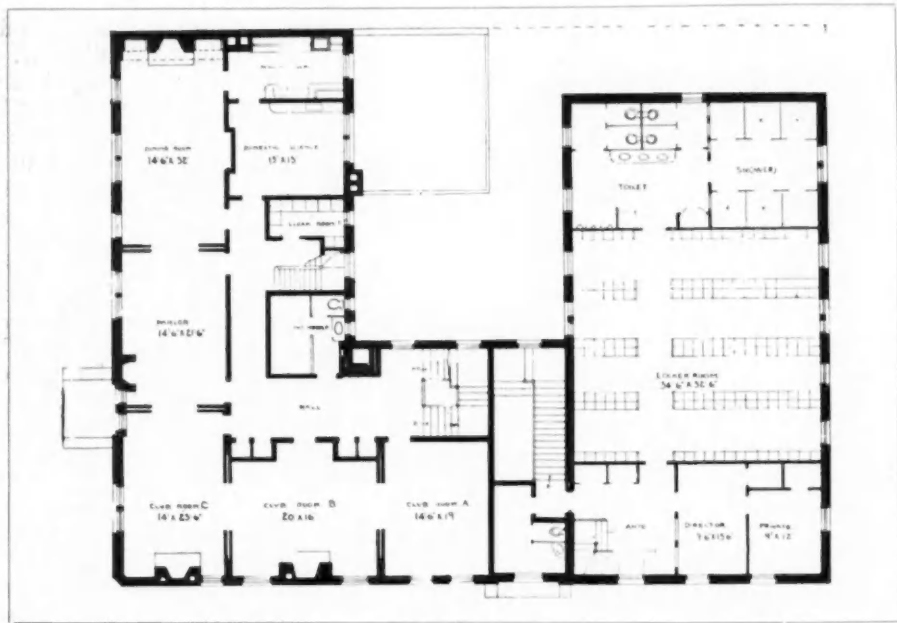


Fig. 12  
Second Floor Plan



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Fig. 12a  
Ground Floor Plan  
NORTHWESTERN UNIVERSITY SETTLEMENT, CHICAGO, ILLINOIS  
Pond & Pond, Architects





Fig. 12b  
Third Floor Plan



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Fig. 12c  
First Floor Plan  
NORTHWESTERN UNIVERSITY SETTLEMENT, CHICAGO, ILLINOIS  
Pond & Pond, Architects  
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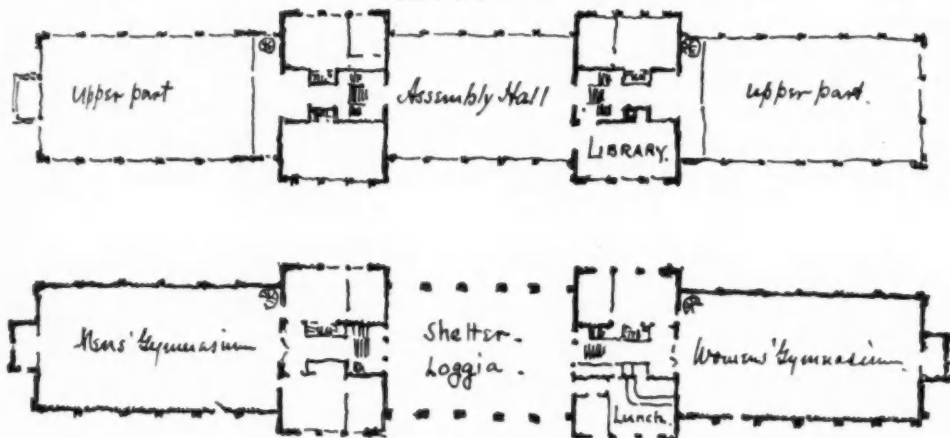


Fig. 13

SEWARD PARK, ILLINOIS

Perkins, Fellows & Hamilton, Architects

hall with balcony, suitable for assemblies or gymnasium. Showers are in the basement. With ample kitchens, service rooms and stage, every local need can be cared for, however large the gathering.

The deliberate placing of "social settlements" in localities where they are most needed, has offered a slightly different problem to the architect, for besides the educational, recreational and social features, living quarters for the attendants must be provided. In general, the plans have assumed the club aspect, and fulfill nearly all requirements in the reference program. Northwestern University Settlement (Figs. 12, 12a, b, c) lacks only a swimming pool. Its educational facilities are somewhat limited, when compared with the equipment of modern schools, but as an argument for a plan-type built

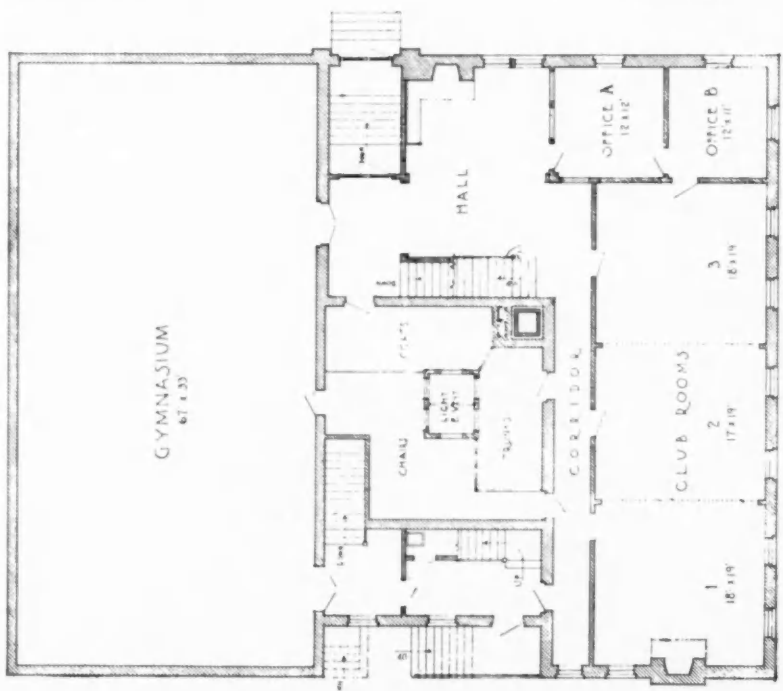
upon the reference program, it is complete. Gads Hill (Figs. 14 and 14a) is more simple and several features are omitted but it, too, is no less convincing.

It will thus be seen that the items mentioned as parts of community buildings are generally included in the high school. The high school has come to be the model community center, where its plan is comprehensive; and as the functions of boards of education are gradually increased to take over those duties now performed by park boards and voluntary community center organizations, the use of them appears to be general. For the reason that the school is democratic in support and management, it is reasonable to assume that its position and rank will be, as we have frequently stated, the dominating model community building.



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Second Floor Plan



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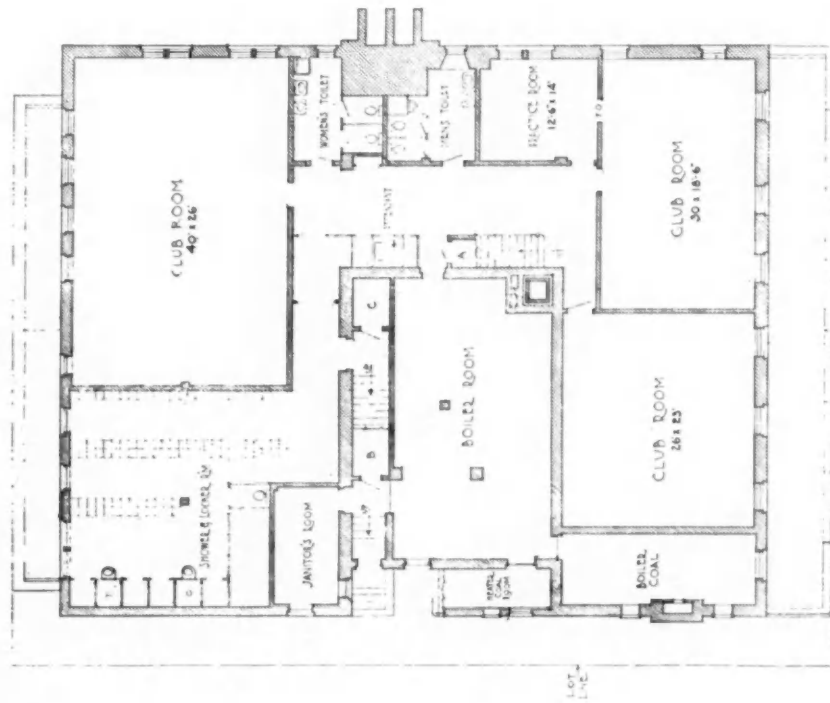
First Floor Plan

Fig. 14  
GADS HILL SETTLEMENT  
Pond & Pond, Architects



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Third Floor Plan



Basement Plan

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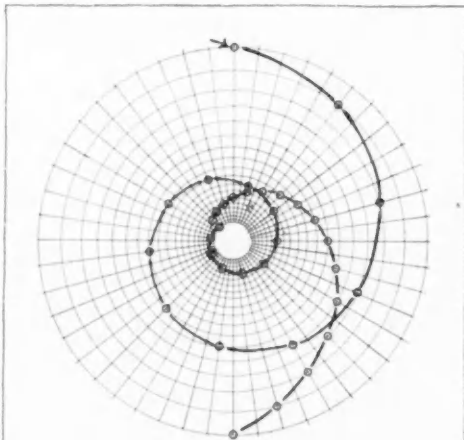
GADS HILL SETTLEMENT  
Pond & Pond, Architects

# ✓ A DISSERTATION on DYNAMIC SYMMETRY

By

Claude Bragdon, FAIA.

A GREAT DEAL has been said and written regarding the theories of proportion developed by the late Jay Hambidge, and named by him Dynamic Symmetry. But in the main these discussions have not served to clarify Mr. Hambidge's own presentation of the subject, which appears to be far from clear to the average lay mind. This may be attributed to the fact that he was himself too "near" his subject, and failed to dramatize the intellectual predicament of a person totally unskilled in mathematics. At all events the phrase most often heard on the lips of artists, when Dynamic Symmetry is mentioned, is: "I wish I knew more about it, but I haven't a mathematical mind." It is hoped that this essay and the accompanying draw-



## A METHOD FOR LAYING OUT A LOGARITHMIC SPIRAL

DIVIDE A CIRCLE INTO A MESHWORK OF SQUARES FORMED BY CONCENTRIC CIRCLES AND EQUALLY SPACED RADII—ALL LINES DRAWN THROUGH THE INTERSECTIONS WILL BE LOGARITHMIC SPIRALS IF DONE IN SOME CONSTANT MANNER.

ILLUSTRATION 1

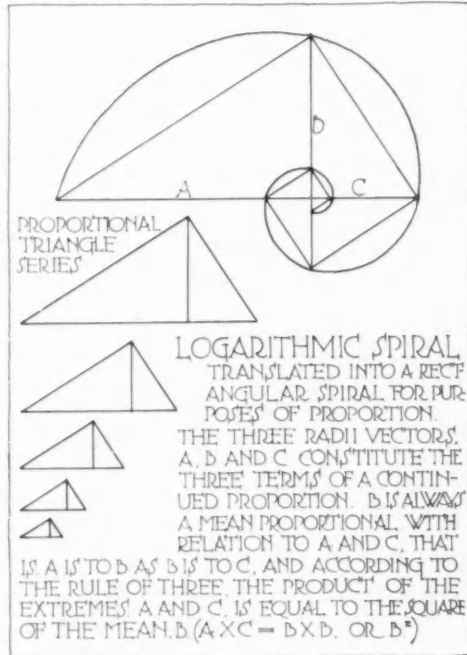
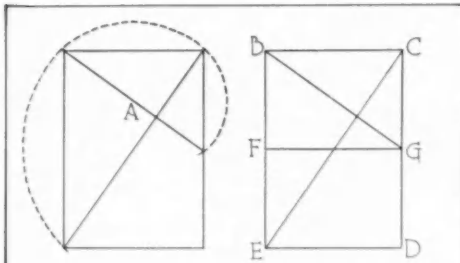


ILLUSTRATION 2

ings, prepared at the request of the editor of THE ARCHITECTURAL RECORD, may serve the useful purpose of making Mr. Hambidge's ideas more widely known and better understood.

Pattern in space, whatever its nature, submits itself to some sort of geometrical synopsis, is susceptible of being reduced to terms of number, the "universal solvent" of all forms whatsoever. But for beauty and harmony in the arts of design there must be system and selection—some governing principle—in the same way that music (the art towards which all of the other arts are said to aspire) obeys so called laws of harmony, which are essentially numerical.

Dynamic Symmetry is a theory and



THE FIRST AND MOST FUNDAMENTAL APPLICATION OF THE LOGARITHMIC SPIRAL TO THE ARTS OF DESIGN

THIS CONSISTS OF THE PLACING OF THE ANGULAR SPIRAL WITHIN A RECTANGLE WHICH MAY BE DONE BY DRAWING A DIAGONAL TO THE RECTANGLE, AND FROM ONE OF THE REMAINING CORNERS A LINE WHICH CUTS THE DIAGONAL AT RIGHT ANGLES, PRODUCED TO THE OPPOSITE SIDE OF THE RECTANGLE. SUCH A LINE (A) IS CALLED A PERPENDICULAR, AND IN ALL CASES IT IS DRAWN FROM A CORNER, AND ESTABLISHES PROPORTION WITHIN A RECTANGLE, AND IS THE DIAGONAL TO THE RECIPROCAL OF THE RECTANGLE. — FOR EXAMPLE, THE RECTANGLE BCGF IS THE RECIPROCAL OF THE RECTANGLE BCDE

ILLUSTRATION

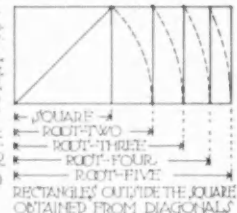
ment of this order of mathematical relations was less a discovery than a recovery. In his opinion the ancient Egyptians were under the necessity of continually re-surveying their land by reason of the annual inundation of the Nile valley, and they early discovered a practicable and simple way of establishing rectangles by rope stretching. Then, through the power which the right angle gives in the definition of ratio relationships, this method developed naturally into a system of proportion based upon areas whose mutual relations were capable of being expressed by quantitatively small numbers. The Greeks obtained this knowledge from Egypt, and aided by their Euclidian geometry they organized it into canons of proportion which they applied to all of their aesthetic problems. from the defining of the shape of a vase to the construction of a temple. Mr. Hambidge believed that this knowledge—or, more strictly, the application of it—thereafter vanished from the memory of mankind, and that its loss

canon of proportion related somewhat to the arts of space as are the laws of musical harmony to music. There are other systems, but it differs from them in this: it is not based on commensurate units whose measuring rod, so to speak, is the *line*, but it is a proportioning of *areas*, related to one another in a manner which is both subtle and simple—in what may indeed be called a *vital* way, because so in accord with certain observed phenomena of natural growth.

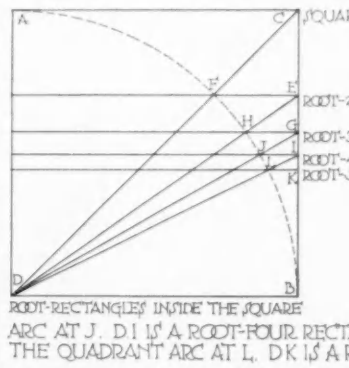
Mr. Hambidge was firm in the belief that his method of correlating the elements of a design into organic unity through the establish-

ROOT RECTANGLES—PROPERTIES and FORMATION

THERE IS AN INFINITE SERIES OF RECTANGLES POSSESSING INTERESTING PROPERTIES. FIRST, THEIR SIDES ARE DIVIDED INTO EQUAL PARTS BY THE PERPENDICULAR TO THE DIAGONAL. SECOND, THOUGH THE ENDS AND SIDES ARE INCOMMENSURABLE IN LINE THEY ARE COMMENSURABLE IN SQUARE—OF THESE "ROOT RECTANGLES" ONLY THE FIRST FOUR ARE IMPORTANT TO THE DESIGNER, AND PARTICULARLY THE FIRST AND FOURTH



THE ROOT RECTANGLES ARE DEVELOPED FROM THE SQUARE THE "SEED OR ETERNAL ROOT" BY A SIMPLE GEOMETRICAL METHOD



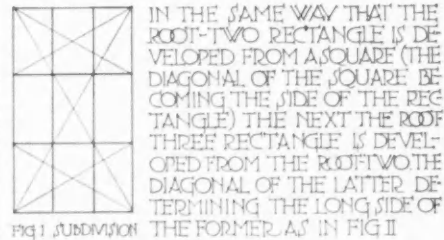
WITHIN THE SQUARE DRAW THE QUADRANT ARC A B WITH CENTER D AND RADIUS D B THE DIAGONAL OF THE SQUARE CUTS THE QUADRANT ARC AT F THROUGH F DRAW A LINE PARALLEL TO THE SIDE OF THE SQUARE THIS LINE DETERMINES A ROOT-TWO RECTANGLE AND D E IS ITS DIAGONAL A DIAGONAL TO A ROOT-TWO RECTANGLE CUTS THE QUADRANT ARC AT H G D IS A ROOT-THREE RECTANGLE THE DIAGONAL OF WHICH CUTS THE QUADRANT ARC AT J D I IS A ROOT-FOUR RECTANGLE AND ITS DIAGONAL CUTS THE QUADRANT ARC AT L D K IS A ROOT-FIVE RECTANGLE AND SO ON

ILLUSTRATION 4

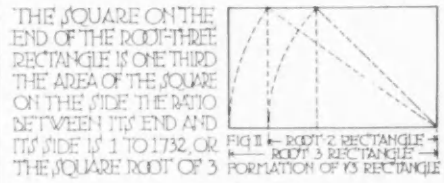
accounts, in a measure, for the anæmia of art, a robust aesthetic being impossible without this knowledge.

I have no means of knowing how much of all this is true, but I hazard the opinion that Mr. Hambidge was inclined to press his theory too far. All of the works of man have the attribute of infinity, because he is himself an infinite being; all of his works are marvellously mathematical, because mathematics is the shuttle with which he weaves his every pattern on the loom of space. Accordingly, Mr. Hambidge found wherever he looked what he looked for, his system was elastic enough to make that possible. He undoubtedly established the presence of Dynamic Symmetry as a controlling factor in the arts of Egypt and Greece, and there are sound reasons for believing that it was, as he contended, a reasoned and a conscious thing. But we should never lose sight of the fact that "the artist follows the rules without knowing them," so that from the internal evidence afforded by any work of art,

THE ROOT-THREE RECTANGLE



IN THE SAME WAY THAT THE ROOT-TWO RECTANGLE IS DEVELOPED FROM A SQUARE (THE DIAGONAL OF THE SQUARE BECOMING THE SIDE OF THE RECTANGLE) THE NEXT THE ROOT-THREE RECTANGLE IS DEVELOPED FROM THE ROOT-TWO THE DIAGONAL OF THE LATTER DETERMINING THE LONG SIDE OF THE FORMER AS IN FIG. II



THIS RECTANGLE IS DIVIDED INTO THREE EQUAL PARTS BY HORIZONTAL LINES DRAWN THROUGH THE POINTS OF INTERSECTION OF THE PERPENDICULARS AND THE SIDES IT DIVIDES ITSELF INTO SIMILAR SHAPES TO THE WHOLE WITH A RATIO OF 3 (FIG. I) LINES THROUGH THE EYES OF THE SPIRAL DIVIDE THE RECTANGLE INTO 4 EQUAL PARTS

ILLUSTRATION 6

PROPERTIES OF THE ROOT-TWO RECTANGLE

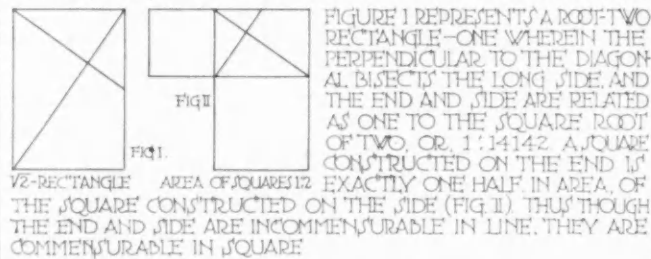


FIGURE I REPRESENTS A ROOT-TWO RECTANGLE—ONE WHEREIN THE PERPENDICULAR TO THE DIAGONAL BISECTS THE LONG SIDE, AND THE END AND SIDE ARE RELATED AS ONE TO THE SQUARE ROOT OF TWO, OR, 1:1.4142. A SQUARE CONSTRUCTED ON THE END IS EXACTLY ONE HALF IN AREA, OF THE SQUARE CONSTRUCTED ON THE SIDE (FIG. II). THUS, THOUGH THE END AND SIDE ARE INCOMMENSURABLE IN LINE, THEY ARE COMMENSURABLE IN SQUARE.

FIG. III RECTANGULAR SPIRAL SUBDIVISION BY RATIO 2

IF INSTEAD OF THE LINES COINCIDING WITH THE SPIRAL WRAPPING (FIG. IV), LINES BE DRAWN THROUGH THE EYES AT RIGHT ANGLES TO THE SIDES AND ENDS, THE RECTANGLE WILL BE DIVIDED INTO SIMILAR SHAPES TO THE WHOLE

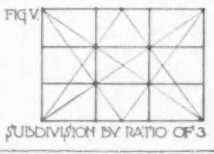


ILLUSTRATION 5

it is beyond human power to determine just what part of it is reasoned and conscious, and what was the product of the super-conscious, or cosmic self. This operates independently of the rational mind, and being of its very nature rhythmic, is numerical, so that subjectively every artist is a mathematician, whether he knows mathematics or not—the soul being, according to Pythagoras, "a self-moving number."

This fact — that a great deal of what Mr. Hambidge regards as a conscious following of set rules may have been unconscious — does not

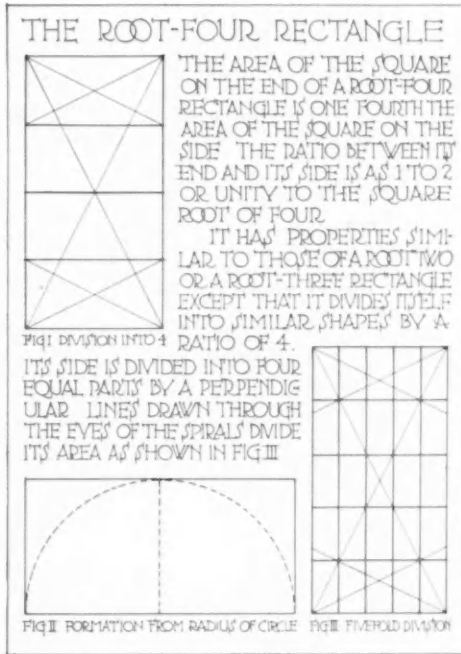


ILLUSTRATION 7

materially invalidate or even diminish the importance of his researches and discoveries. For he has convincingly demonstrated two things: first, that a great number of objects and arrangements in space in which we recognize the quality of beauty readily submit themselves to the particular order of mathematical analysis formulated in Dynamic Symmetry (particularly in the case of Greek and Egyptian architecture and sculpture); and second, that the application of these formulæ to new aesthetic problems, involving the element of design, operates as a unifying and an organizing force. This is equivalent to saying that the theory stands the pragmatic test—it works.

In my effort to discover what is truly significant and fundamental in aesthetics I early learned that the visible derives from the invisible, the complex from the simple, and that there exist certain archetypal forms which may be called *generic*, because to them entire orders of phenomena, superficially dissimilar and unrelated, can be referred.

It is not surprising therefore, that

when Mr. Hambidge told me that he had derived his Dynamic Symmetry from the logarithmic spiral, I became a convert to his theory without a struggle, for the logarithmic spiral is of all geometrical forms the most ubiquitous, the one from which it is least possible to escape. Indeed, if modern astronomy is right in regarding nebulae as stellar systems like our own, this spiral—the shape which certain nebulae assume—may be the very pattern of the cosmos itself.

What is the logarithmic spiral? It has been called the "constant angle" spiral, and this describes it very well. For example, if the captain of a ship were to head her in a certain direction, at a given angle with the equator, his starting point, and keep right on, without changing his course, the path of the vessel on the surface of the world-sphere would be a logarithmic spiral. The course the water takes as it runs out of your bath tub describes this curve; also a coin, rolling on the floor. Close your hand, and your finger tips will have traced a logarithmic spiral, by reason of the proportionate

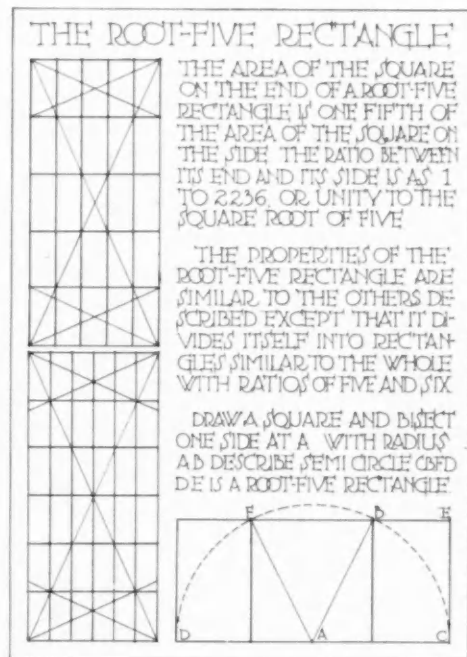


ILLUSTRATION 8



diminishment in the articulations of the fingers. It is perhaps most clearly shown in the nautilus shell and the ram's horn, being the result of a process of continual proportionate growth. Conceive of it as a cone coiled upon itself—a shell is such a rolled-up cone.

Now this curve, the logarithmic spiral,\* is one in which the law of proportion is inherent, but this is made evident, and available for aesthetic uses, only by the translation of the curved form into an angular one. This is easily achieved in the manner shown in Illustration 2. The resultant figure, suggestive of a Greek fret yields a double series of lines in continued proportion, each line bearing the same relation to its predecessor as the one following bears to it. Examine this figure with a view to its interesting mathematical relations. These are important because in a composition determined by Dynamic Symmetry it is their *felt presence* which gives an inner satisfaction, impossible to analyze or define, due doubtless to some obscure correlation between mathematical truth and formal beauty.

This rectangular triangle and its perpendicular—a series of which constitute the figure under discussion—derived thus directly from the logarithmic spiral, is of Dynamic Symmetry the fundamental and fecundating form. Although rectangles possessing certain properties constitute the subject-matter of Dynamic Symmetry, it

### THE RECTANGLE OF THE WHIRLING SQUARES

WHAT IS KNOWN AS "NORMAL PHYLLOTAXIS," OR LEAF DISTRIBUTION IN PLANTS IS REPRESENTED BY A CURIOUS SYSTEM OF NUMBERS WHICH ARE KNOWN AS A SUMMATION SERIES, SO CALLED BECAUSE THE SUCCEEDING TERMS, BEGINNING WITH THE LOWEST WHOLE NUMBER ARE OBTAINED BY ADDING TOGETHER THE TWO PRECEDING TERMS

THUS: 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ETC.  
THIS PRODUCES A CERTAIN RATIO, 1.618, WHICH IS OBTAINED BY DIVIDING ANY ONE TERM OF THE SUMMATION SERIES BY ITS PREDECESSOR.

THIS RATIO OF 1.618 IS USED WITH UNITY TO FORM A RECTANGLE WHICH IS DIVIDED BY A DIAGONAL AND A PERPENDICULAR TO THE DIAGONAL AS IN ROOT RECTANGLES (FIG 1). B D IS A SQUARE; B C IS THE LINE WHICH CREATES SIMILAR FIGURES TO THE WHOLE WE MAY CALL THIS "THE RECTANGLE OF THE WHIRLING SQUARES" BECAUSE ITS CONTINUED RECIPROCAL CUT OFF SQUARES 1, 2, 3, 4, 5, ETC (FIG 2), ARE SQUARES WHIRLING AROUND THE POLE O.

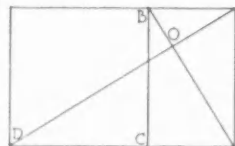


FIG 1 DIVISION OF THE RECTANGLE

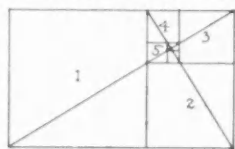


FIG 2 THE WHIRLING SQUARES

THE AREA OF A ROOT-FIVE RECTANGLE IS EQUAL TO THE AREA OF A WHIRLING SQUARE RECTANGLE PLUS ITS RECIPROCAL, I.E. IT EQUALS ONE WHIRLING SQUARE RECTANGLE HORIZONTAL PLUS ONE PERPENDICULAR FOR THE RATIO 1.618 FROM 2.236, OR THE SQUARE ROOT OF 5. LEAVES 618

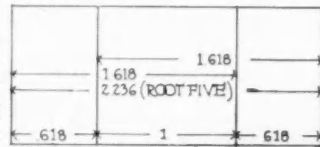


FIG 3, SHOWING THE RELATION BETWEEN A ROOT-FIVE AND A WHIRLING SQUARE RECTANGLE

ILLUSTRATION 9

should be constantly borne in mind that the sides and diagonals of these rectangles, together with the perpendiculars to the diagonals, form rectangular triangles. These are the translation into angular form of Nature's most fundamental and ubiquitous curve. Mr. Hambidge's lack of sufficient insistence upon this fact is the reason for my insistence upon it here. Immersed in a forest of "root rectangles," "reciprocals" and "whirling squares," one is in danger of not seeing the wood for the trees. But with this admonition, we may now proceed to the consideration of the rectangles themselves.

The rectangles employed in Dynamic Symmetry are derived from the logarithmic spiral in the manner shown in

arranged in radial series, in geometrical progression, all lines which are drawn through the points of intersection in any constant manner are logarithmic spirals." Any spiral desired is described by connecting the selected points of intersection: as for example, every circle with every fifth radius, every third radius with every fifth circle, or by plotting any of the other numberless lines which respect this order of progression.

\*A simple and useful method of laying out a logarithmic spiral is shown in illustration 1. It is from Dr. A. H. Church's work, *The Relation of Phyllotaxis to Mechanical Laws*, and is as follows: "Describe a large circle, then, draw with the same center, a series of concentric circles, making, with the radii, a meshwork of squares, as near as can be judged by the eye. In this circular network of squares,

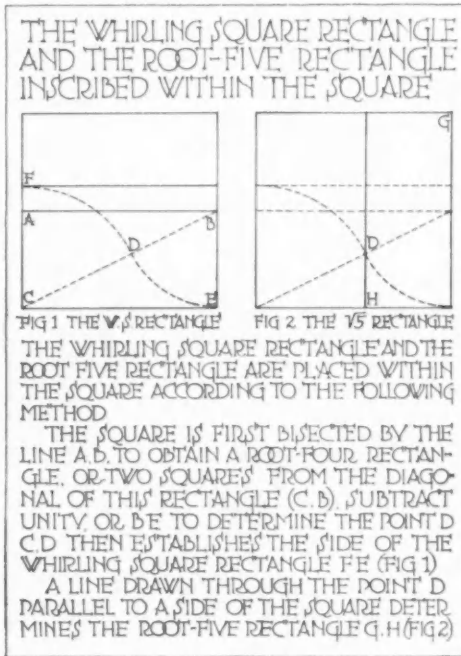


ILLUSTRATION 10

Illustration 3. Their development from the square is shown in Illustration 4. They are called "root" rectangles for the following reason: the lines which respectively represent the end and the side of such a rectangle are in general incommensurable with one another—"irrational" as it is called; but though they cannot be measured by the same *linear* unit, the square constructed on the end and that constructed on the side are commensurable *in area*, the square on the end being one-half, one-third, one-fourth and one-fifth of that on the side. Therefore the relation between the end and the side can be expressed as unity to the square root of two, of three, of four and of five—hence the expression a "root-two," "root-three," "root-four" and "root-five" rectangle. Such rectangles constitute an infinite series but Dynamic Symmetry does not make use of any beyond the fourth, the ratio between the side and end of which is as unity to the square root of five. Their properties may be studied in Illustrations 5, 6, 7 and 8.

All root rectangles have the following properties in common. The squares on their sides are commensurable with one another, being expressed by the ratios 1:2, 1:3, 1:4 and 1:5. The perpendicular to the diagonal is itself the diagonal to a reciprocal shape to the whole, which, repeated within the rectangle exhausts its area without a remainder. Lines drawn parallel to the sides of the rectangle through the intersections of the web of lines formed by the two diagonals and their perpendiculars sub-divide the area uniformly into similar shapes to the whole.

In addition to the four root-rectangles, Dynamic Symmetry makes use of another, the rectangle of the whirling squares [Illustration 9]. This is in a sense a derivative from the root-five rectangle, to which it is closely related—since the area of a root five rectangle is equal to the area of a whirling square rectangle plus its reciprocal. [Fig. 3, Illustration 9.] The peculiarity of the whirling square rectangle, from which it derives its name, consists in its division into squares,

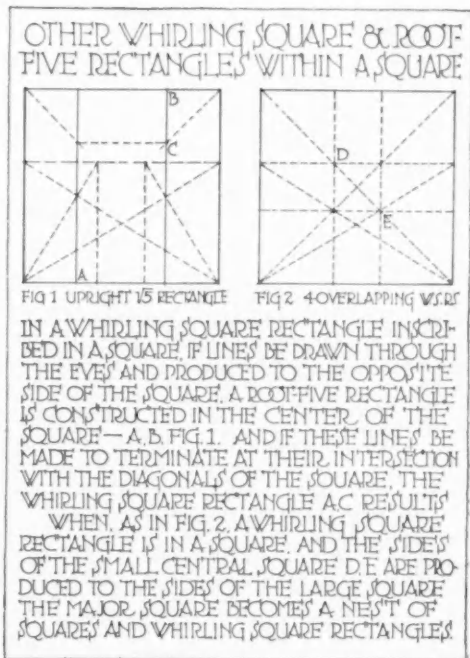


ILLUSTRATION 11

whirling, so to speak, around a pole which is the eye of the spiral. This is by reason of the fact that the continued reciprocals of the whirling square rectangle cut off squares. But the most interesting fact about this rectangle is that the ratio between its end and its side—1 : 1.618—is the ratio between any two adjoining terms of a converging summation series—so called because each succeeding term of the system is obtained by adding the two preceding terms. This ratio expresses the important fact in the growth of plants known as phyllotaxis, or leaf distribution. The significance of this is clear: if the whirling square rectangle and its subdivisions, representing this ratio, be used as a determining factor in design, certain laws and relations which are operative in nature, are carried by these means into art.

The most obvious and simple way to draw all the rectangles of Dynamic Symmetry is with a right angle and a decimally divided scale, preferably one divided into millimeters,\* but this method, though convenient, is the one least calculated to bring out and fix in the memory the properties of the several rectangles and their relationship to one another. In order to master the principles of Dynamic Symmetry as well as its practice, a better way—at least in the beginning—is to develop the rectangles after a manner which will relate them to one another as part of an infinite series beginning with the square, having common properties and intricate inter-relations of the most interesting sort.

This is easily accomplished. The diagonal of each succeeding rectangle, starting with the square, determines the long side of the next: that is, the diagonal of a square, revolved downward until it coincides with the base, will form the long side of a root-two rectangle whose short side is the side of the square. The diagonal of the root-two rectangle, similarly revolved, yields the long side of the root-three rectangle, and so on. All

\*The ratios between the ends and sides of the various rectangles are as follows: root-two, 1 : 1.4142; root-three, 1 : 1.732; root-four, 1 : 2; root-five, 1 : 2.236; whirling square, 1 : 1.618.

"THE APPLICATION OF AREAS"  
ROOT-2 RECTANGLE & SQUARE

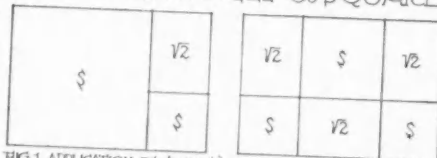


FIG 1 APPLICATION OF SQUARE ON END OF  $\sqrt{2}$  RECTANGLE TO AREA  
FIG 2 APPLICATION OF TWO OVERLAPPING SQUARES TO AREA  
RECTANGULAR AREAS MAY BE EXHAUSTED BY THE APPLICATION OF OTHER AREAS, AND THE RESULTANT PROPORTIONAL PARTS USED AS ELEMENTS OF DESIGN THUS:

THE SQUARE ON THE END OF A ROOT-TWO RECTANGLE, APPLIED TO ITS AREA, "FALLS SHORT" AND THE PART LEFT OVER IS COMPOSED OF A SQUARE AND A ROOT-TWO RECTANGLE (FIG 1) IF THE SAME SQUARE BE APPLIED TO THE OTHER END, SO AS TO OVERLAP THE FIRST SQUARE, THE AREA IS DIVIDED INTO THREE SQUARES AND THREE ROOT-TWO RECTANGLES (FIG 2) IF THE SQUARE ON THE SIDE OF A ROOT-TWO RECTANGLE BE APPLIED, THE "EXCESS" IS TWO SQUARES AND ONE ROOT-TWO RECTANGLE

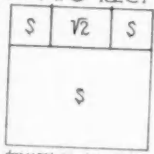


ILLUSTRATION 12

this is indicated in the upper figure of Illustration 4, the lower one showing the method of developing the root-rectangles inside the square. The root-four rectangle, being exactly two squares, is established by a single semi-circular swing of the compasses, and there is a method of drawing a root-five rectangle which is only one degree less simple, and yields, at the same time, the whirling square rectangle. This is shown in Illustration 8. Another method of establishing these root-five and the whirling square rectangles within the square is shown in Illustration 10.

There are other rectangles used in Dynamic Symmetry, but they are in some sort resultants from those already enumerated and described, made by "subtracting" one from another, as it were, or by a process of combination. Such, for example, is the square-plus-a-root-five rectangle, which, according to Mr. Hambidge determined the proportions of the Parthenon and many other Greek designs. For a description of these de-

rivative rectangles, and for the detailed application of Dynamic Symmetry to design, the interested reader is referred to Mr. Hambidge's books. The idea of that application is as follows:

Design, in the last analysis, is purely a matter of space subdivision, and as such is all compounded of mathematical relations. If these relations are *orderly*, based on some law, and law-abiding, as opposed to the merely fortuitous and accidental, it makes for beauty. Now Dynamic Symmetry, which is a system of inter-related rectangles possessing common properties, and all referable to a single generic figure, based upon an important mathematical law, provides what

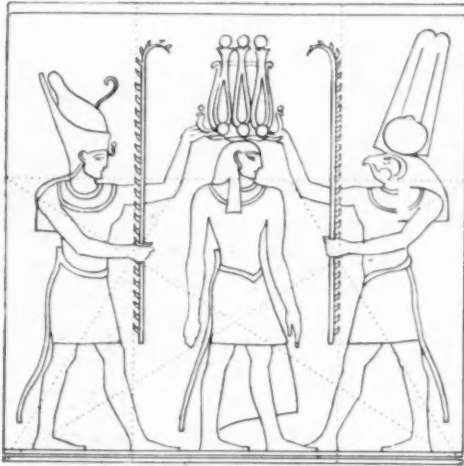


ILLUSTRATION 13

[From *Dynamic Symmetry; the Greek Vase*, by Jay Hambidge.]

might be called a *warp*—stretched threads on which it is possible to weave any design whatsoever; but this *woof*, or pattern, conforming, as it needs must, to a groundwork which is orderly and geometrical, will be subtly acted upon thereby, the mathematics will “show through,” not as number—to the mind—but as beauty to the eye.

Illustration 13, taken from Mr. Hambidge's book, *Dynamic Symmetry*, is an example. It represents a bas-relief from Egypt. A square is defined by bars cut out of the stone at the top and bottom of the composition, and its area is *dynamically* divided by means of a whirling

square rectangle placed horizontally, and an upright root-five rectangle (established by drawing lines vertically through the eyes of the whirling square rectangle, and prolonging them until they meet the top and bottom lines of the square). The web of lines formed by the diagonals and perpendiculars of the whirling square rectangle and the vertical sides of the root-five rectangle coincides in a most ingenious way with the design, determining the main elements of the composition.

Now though the application of these principles is infinitely various, the general method of their application, once understood, is clear at a glance, so it is unnecessary to multiply examples. It is the theory, rather than the practice, with which this essay is concerned. It occurred to me, in casting about for a few more illustrations, that instead of taking these from *Dynamic Symmetry* or *The Diagonal* (a magazine devoted to the same order of research), it would be vastly more amusing to test the theory by applying it to the work of artists who used it not at all.

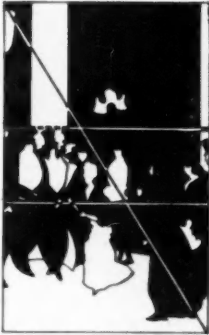
On the walls of my room are five drawings and prints which are there for no other reason than that they satisfy my sense of color and design. To what extent will they submit themselves to analysis along the lines of Dynamic Symmetry?

I select for my experiment a pen drawing by Aubrey Beardsley entitled *Lady Gold's Escort* [Illustration 14]; a Japanese color print by Hokusai representing a waterfall [Illustration 15]; and a water color sketch for a setting for *The Idle Inn* from the hand of Robert Edmund Jones [Illustration 16]. Now Beardsley and Hokusai could never have heard of Dynamic Symmetry, and though Jones probably has, that he did not consciously apply it to this particular drawing I am sure.

Is it not highly significant, therefore, that every one of these three drawings, chosen in this way, proves to be, in its main dimensions, one of the rectangles of Dynamic Symmetry, and that the subdivision of their areas by means of diagonals, perpendiculars and the like yields, in every case, a clearly traceable

relation between this geometrical web and the lines and masses of the composition itself?

The Beardsley Drawing [Illustration 14] proves to be a whirling square rectangle; the square is repeated top and bottom, and the area included in the overlapping of the squares so clearly defined that given the clue, the geometry is apparent without the aid of the guiding lines. Into this area practically all of the interest of the drawing is concentrated—the heads and torsos



"LADY GOLD'S ESCORT"  
WHIRLING SQUARE RECT-  
ANGLE WITH REPEATING  
SQUARES THEIR OVERLAP-  
PING DEFINED BY THE  
HATS HEADS AND SHIRT-  
FRONTS OF THE FIGURES

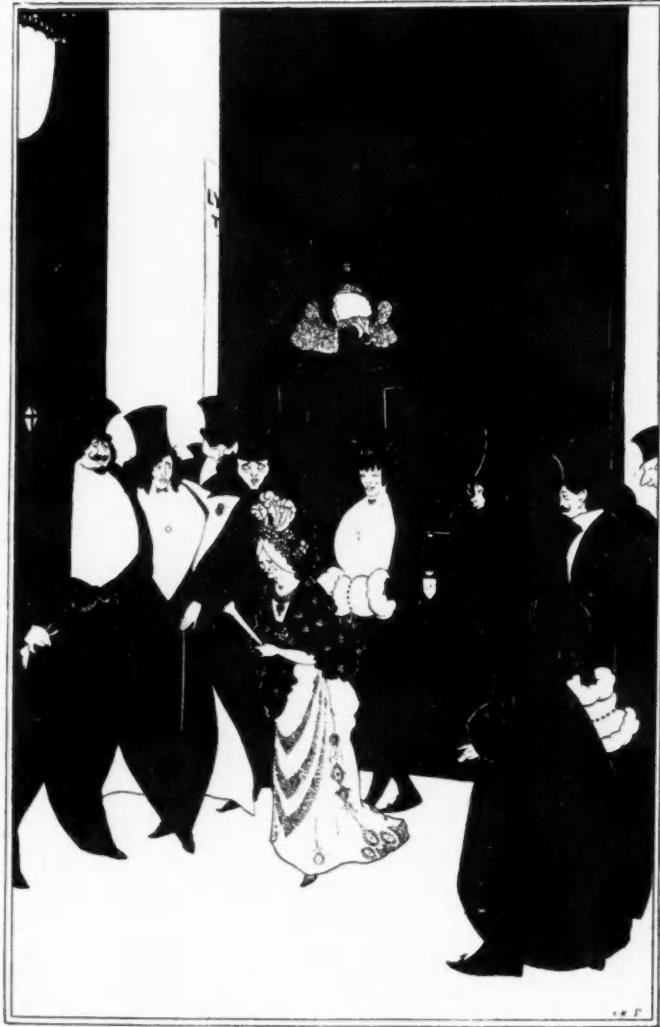


ILLUSTRATION 14

of nine out of ten figures. One diagonal and its perpendicular is traceable as well.

The Hokusai print [Illustration 15] is a root-two rectangle, with both diagonals well defined, particularly in the lower half of their length, by the alignment of the house roofs, and the central figure on the bridge—the one with a burden. The vertical line of the waterfall serves to define a root-five rectangle co-extensive in its length with the root-two.

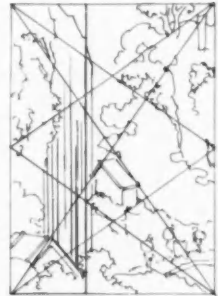
The Idle Inn design [Illustration 16] is a double square, hence a root-four

rectangle, the diagonal emphasized in the strongest manner by the lines of the gateway and fence, and even more by the obliquely directed cloud-forms against which the whole is defined. The intersecting perpendiculars to the diagonals, at the right of the picture, establish the projection of the building on that side as exactly as though consciously arrived at by these means, while a line drawn through the eye of the spiral on the left marks the upright to the sweep of the well.



ILLUSTRATION 15

The conclusion to be drawn from all this is expressed in the phrase already quoted: "The artist follows the rules without knowing them." Subjectively he is both arithmetician and geometer. The question then naturally arises: why *have* rules then, and what gain is there in knowing them? To this there is an effective answer suggested by a sister art. The natural born musician will instinctively obey the great generic laws which govern music, but this does not permit him safely to dispense with a knowledge of musical harmony, for without this knowledge he would do a deal of unnecessary fumbling around, and his ignorance might forever bar him from



"THE WATERFALL"—A ROOT-TWO RECTANGLE THE DIAGONALS WELL DEFINED BY THE ROOFS OF THE HOUSES ETC. ALSO, A VERTICAL, ROOT-FIVE RECTANGLE

achieving certain things which he might not otherwise accomplish. Dynamic Symmetry is to the arts of space what the science of harmony is to music: in the creative field, it is of little value, but on the technical side—as an aid to expression—it is valuable.

Let me attempt to demonstrate this by means of a final example. Suppose I have a conception for a setting for Lord Dunsany's one act play, *The Glittering Gate*,

and I want to put my idea in the form of a drawing. The general image is perfectly clear in my mind, but this does not tell me just where, on the sheet, the great

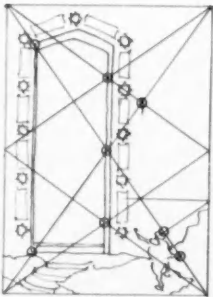


"THE IDLE INN"—ROOT-FOUR RECTANGLE WITH DIAGONALS STRONGLY EMPHASIZED AND FLANKING MASS ON RIGHT COINCIDENT WITH PERPENDICULARS



ILLUSTRATION 16

opening in the wall would look best, nor does it help me to establish the height of this opening in relation to its width. Therefore I call to my aid Dynamic Symmetry with the result shown in Illustration 17. Of the essential rightness of the space relations arrived at by these means the reader must be the judge, but if that rightness be conceded, the worth of the system by whose aid the result was achieved is an inevitable corollary.



"THE GLITTERING GATE"  
A RECTANGULAR  
INTERSECTIONS OF DIAG-  
ONALS AND PERPENDICULARS  
DETERMINING ELEMENTS

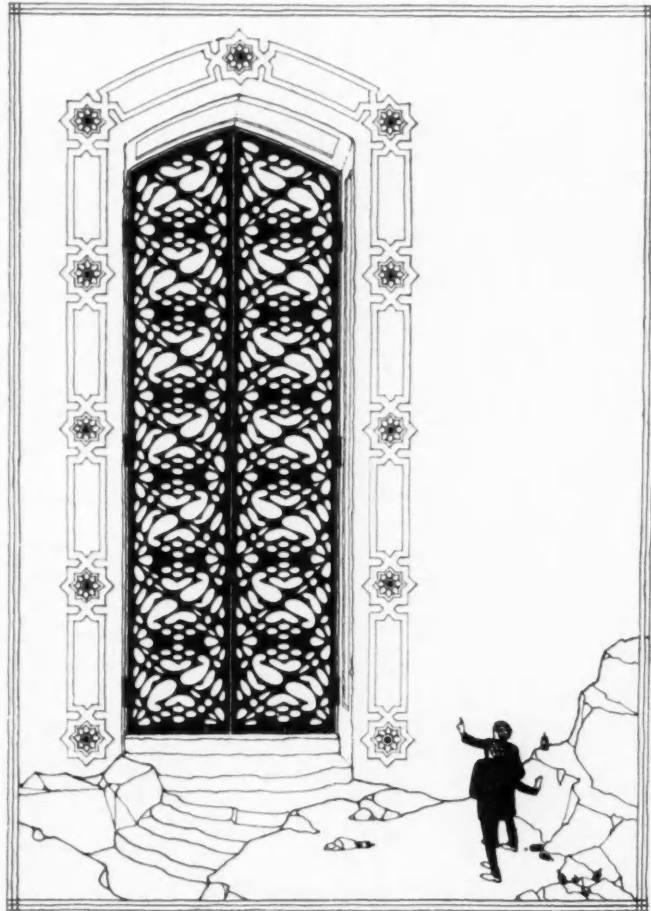


ILLUSTRATION 17

[From the Theatre Arts Monthly, August, 1924]

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By  
*A Lawrence Kocher*

## Part III

AN ARCHITECT OF Chicago in submitting titles of some seventy-odd volumes remarks that "if the student absorbs the spirit of the enclosed list he has a pretty substantial start." This recalls, in contrast, the classic advice of Lord Chesterfield who in 1749 advised his son at Vicenza to "employ three or four days in learning the Five Orders of Architecture and you may know all that you need to know."

There remains to be considered the enumeration of works, sponsored by architectural firms, which were submitted with little or no comment.

MR. HARVEY W. CORBETT

- Phillips & Bolton—The Gardens of Italy.
- Triggs—The Art of Garden Design in Italy.
- Letarouilly—L'Edifices de Rome Moderne.
- D'Espouy—Fragments d'Architecture Antique.
- Prentice—Renaissance Architecture in Spain.
  - The Grand Prix de Rome.
- Gaudet—Eléments et Théorie de l'Architecture.
- Fletcher—History of Architecture.
- Anderson—The Renaissance in Italy.
- Anderson & Spiers—The Architecture of Greece & Rome.
- Latham—In English Homes.
- Lowell—Italian Villas and Farmhouses.
- Pugin—Examples of Gothic Architecture.
  - Monograph of the work of McKim, Mead & White.
  - The Work of Charles Platt.
  - The Georgian Period.

MR. HOWARD VAN DOREN SHAW

- Maspero—The Dawn of Civilization.
- Perrot & Chipiez—History of Art in Ancient Egypt.

Prisse d'Avennes—Histoire de l'Art Egyptien. 2 vol.

Rawlinson—History of Ancient Egypt. 2 vol.

Perrot & Chipiez—History of Art in Chaldæa & Assyria, Persia, Phrygia and Judea. 5 vol.

Anderson & Spiers—The Architecture of Greece and Rome.

D'Espouy—Fragments d'Architecture Antique.

Fergusson—The Parthenon.

Gardner—Hand Book of Greek Sculpture.

Frazer—Pausanias's Description of Greece. 6 vol.

Mauch—Die Architectonischen Ordnungen der Griechen.

Middleton—Plans and Drawings of Athenian Buildings.

Penrose—An Investigation of the Principles of Athenian Architecture.

Choisy—L'Art de Bâtir Chez les Romains.

Gusman—La Villa Impériale de Tibur.

Viollet-le-Duc—Rational Building.

Lanciani—Ancient Rome in the Light of Recent Discoveries.

Piranesi—Antichità Romane.

Choisy—L'Art de Bâtir Chez les Byzantins.

Lethaby—Church of Sancta Sophia, Constantinople.

Pugin—Architectural Antiquities of Normandy.

Pugin—Examples of Gothic Architecture.

Pugin—Specimens of Gothic Architecture.

Paley—Gothic Mouldings.

Viollet-le-Duc—Dictionnaire de l'Architecture.

Cummings—A History of Architecture in Italy from the Time of Constantine to the Dawn of the Renaissance.



- Strack—Ziegelbauwerke des Mittelalters und der Renaissance in Italien.  
—Monumentos Arquitectonicos de Espana.
- Anderson (W. J.)—The Architecture of the Italian Renaissance.
- Geymüller—Die Architektur der Renaissance in Toscana.
- Raschdorff—Toscana.
- Reinhardt—Genua.
- Letarouilly—Edifices de Rome Moderne. 3 vol.
- Letarouilly—Le Vatican et la Basilique de Saint Pierre de Rome.
- Daly—Motifs Historiques d'Architecture et de Sculpture.
- Prentice—Renaissance Architecture and Ornament in Spain.
- Gotch—Architecture of the Renaissance in England.
- Gotch—Early Renaissance Architecture in England.
- Nash—Mansions of England in the Olden Times.
- Tanner—English Interior Woodwork.
- Adam (R. & J.)—Works in Architecture.
- Adam (R. & J.)—Decorative Work of Architecture.
- Belcher & Macartney—Later Renaissance Architecture in England.
- Blomfield—History of Renaissance Architecture in England.
- Stratton—Life, Work and Influence of Sir Christopher Wren.
- Taylor—Towers and Steeples designed by Sir Christopher Wren.
- Triggs & Tanner—Some Architectural Works of Inigo Jones.
- Triggs—Formal Garden in England and Scotland.
- Macartney—The Practical Exemplar of Architecture.
- Garner & Stratton—Domestic Architecture of England During the Tudor Period.
- Favier—Versailles et les Trianons.
- Murphy—English and Scottish Wrought Iron.  
—The Works of Charles Platt; Introduction by R. Cortissoz.
- McKim, Mead & White—(Monograph)  
—Georgian Period.
- Bankart—The Art of the Plasterer.
- Francis Bond—The Cathedrals of England & Wales.
- Gertrude Jekyll—Garden Ornaments.
- Lutyens, E. L.—Houses and Gardens.
- March Phillipps—Art and Environment.  
MR. ROBERT D. KOHN
- Guadet—Principles of Architecture.
- American Institute of Architects—Significance of the Fine Arts.
- March Phillipps—Art and Environment.
- Cram—Walled Towns.
- Bond—Gothic Architecture.
- Fromentin—Maitres d'autrefois (translated).
- For picture books:  
Sculpture of Chartres Cathedral.
- Kunst des Ostens (German Publications)  
Chinese  
Indian Sculptures.
- Illustrated works on the Flemish painters  
—Van Eyck.  
—Memling.
- The third, fourth and fifth books have been suggested to me by others: I do not know them myself. I used to enjoy reading Viollet-le-Duc, but he can only be had in French.\* Then, too, Irvine Babbitts 'The New Laokoon' was one of my favorites, but my younger associates say that it is too philosophic for a student."
- MR. WALTER KILHAM
- Symonds, J. A.—Renaissance in Italy.  
—The Fine Arts.  
—The Age of the Despots.
- Hugo, Victor—Bell Ringer of Notre Dame (Especially the chapters on Gothic Architecture).
- Vasari—Lives of the Painters.
- Viollet-le-Duc—Dictionnaire Raisonné (Chapters on Construction & Cathedrals).
- Ruskin, John—Seven Lamps of Architecture.
- Norton, Chas. E.—Church Building in the Middle Ages.
- Adams, Henry—Mont Saint Michel and Chartres.

\*Translations are available in older libraries of Viollet-le-Duc; Discourses on Architecture. Boston, 1875, Rational Building. A translation of the article, "Construction," in the Dictionnaire Raisonné de l'Architecture Française, by G. M. Huss, N. Y., 1896. How to Build a House, London, 1874.

"For a very modern book the 'Life of D. H. Burnham' by Charles Moore is an extremely inspiring work for the modern architect."

ROBERT D. FARQUHAR

Fauré, Elie—History of Art (Translated into English, or in French).  
 Letarouilly—Edifices de Rome Moderne.  
 D'Espouy—Fragments d'Architecture. 3 vol.  
 Gromort—Choix de Plans de Grandes Compositions.  
 Gromort—Eléments d'Architecture Classique.  
 Blondel—Architecture Française. 4 vol.  
 Durand, J. N. L. (Venice, 1833)—The Grand Durand—Recueil des Edifices de tout genre.  
 Deshaîrs, Leon—Le Château de Maisons (Maisons Lefitte) Calavas, Editeur.  
 Eggimann, Ch.—L'Architecture et la Decoration aux Palais du Louvre et des Tuileries. 2 vol.  
 Pfnor—Château d'Anet.  
 Guadet, J.—Eléments et Théorie de l'Architecture.  
 Ward, W. H.—French Renaissance. 2 vol.  
 Blomfield, R.—A History of French Architecture, 1494-1661.  
 Crane—Farm Houses—Manor Houses—Small Churches in Normandy and Brittany.  
 Coffin, Polhemus, & Worthington—Small French Buildings.  
 Buehlmann—Architektur des Klassischen Altertums.  
 Haupt—Palast-Architektur, 5 or 6 vols. on Cities in Italy.  
 Phillips & Bolton—Gardens of Italy.  
 Whittlesey—Architecture of Northern Spain.  
 Whittlesey—Architecture of Southern Spain.  
 Goodyear—Greek Refinements.  
 Eberlein—Details of Architecture in Tuscany.  
 Eberlein—Villas of Florence and Tuscany.  
 Ricci (Directed by)—Italia Artistica (82 or more small volumes sold separately).  
 Lowell, Guy—Italian Villas and Farm Houses.

—More Italian Villas.  
 Byne & Stapley—Spanish Interiors and Furniture. 4 vols.  
 Gusman, P.—L'Art Decoratif de Rome. 3 vols.  
 Porter—Lombard Architecture.  
 Garner & Stratton—Domestic Architecture of England during the Tudor Period.  
 Belcher & Macartney—Later Renaissance. 2 vols.  
 Richardson & Gill—London Houses from 1660 to 1820.  
 English Country Life—Gardens, Old and New.

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Kidder—Architects' & Builders' Handbook.  
 Ware—The American Vignola.  
 Magonigle—Architectural Rendering & Wash.  
 McGoodwin—Shades and Shadows.  
 Lubschez—Perspective.  
 D'Espouy—Monuments d'Antique.  
 D'Espouy—Fragments d'Architecture Antique.  
 Macartney—The Practical Exemplar of Architecture.  
 Sweet's Catalog.  
 Belcher & Macartney—Later Renaissance Architecture in England.  
 Letarouilly—Edifices de Rome Moderne.  
 Pugin—Examples of Gothic Architecture.  
 Guadet—Eléments et Théorie d'Architecture.  
 Latham—In English Homes.  
 English Country Life—Gardens, Old and New.  
 Triggs—The Art of Garden Design in Italy.  
 Haupt, Reinhardt & Raschdorff—Palast Architektur von ober Italien.  
 Myers—Handbook of Ornament.  
 —Grand Prix de Rome.  
 Harvard—Histoire et Philosophie des Styles.  
 Murphy—English & Scottish Wrought Iron Work.  
 Cescinsky—English Furniture of the 18th Century.  
 Garner & Stratton—Domestic Architec-

ture of England during the Tudor Period.

—The Georgian Period.

Racinet—History of Ornament.

Weaver—Memorials & Monuments.

"For Guadet — *Eléments et Théorie d'Architecture*, the text of which is in the French language, there might be substituted 'The Significance of the Fine Arts,' American Institute of Architects."

MR. RALPH ADAMS CRAM

Certain books worth reading.

Adams, Henry—\*Mont St. Michel and Chartres.

Taylor, H. O.—\*The Mediæval Mind.

Walsh, Jas. J.—The Thirteenth, Greatest of Centuries.

Cram, Ralph A.—\*The Substance of Gothic.

Chesterton, G. K.—A Short History of England.

Thorndike, Lynn—History of Mediæval Europe.

Cram, Ralph A.—Heart of Europe.

Government and Politics.

Faguet, Emile—\*The Cult of Incompetence.

Pobyedonostseff—Reflections of a Russian Statesman.

Ludovici, A. M.—A Defense of Aristocracy.

—Criticism of "Civilization."

Figgis, J. N.—\*Civilization at the Cross Roads.

Carpenter, Edw.—Civilization, Its Cause and Cure.

Chesterton, G. K.—\*What's Wrong with the World.

Wallace, A. R.—Social Environment and Moral Progress.

Cram, Ralph Adams—\*The Nemesis of Mediocrity.

Ferrero, G.—\*Europe's Fateful Hour.

The Industrial Problem

Belloc, Hilaire—The Servile State.

Penty, A. J.—\*Old Worlds for New.

Hobson, J. A.—Democracy After the War.

Kropotkin (Prince)—Mutual Aid.

Penty, A. J.—Restoration of the Guild System.

Mann, Sievers, Cox—\*The Real Democracy.

Morris, Wm.—Signs of Change.

Chesterton, G. K.—Utopia of Usurers.

Art

Phillipps, March L.—\*Form and Colour.

Diehl, Ch.—Manuel d'Art Byzantine.

Cram, Ralph Adams—The Ministry of Art.

Porter, A. K.—Beyond Architecture.

Bond, F. B.—The Gate of Remembrance.

The War

Phillipps, March L.—\*Europe Unbound.

Figgis, J. N.—The Will to Freedom.

Chesterton, G. K.—The Crimes of England.

Chesterton, Cecil—The Prussian Hath Said in His Heart.

Thayer, Wm. R.—The Collapse of Superman.

Herrick, Robert—The World Decision.

Real Literature

Brown, Sir Thomas—Religio Medici.

Gissing, Geo.—The Private Papers of Henry Ryecroft.

Carmichael, M.—\*The Life of John Wm. Walshe.

Chesterton, G. K.—The Victorian Age in Literature.

Arnold, Matthew—Culture and Anarchy.

Carmichael, M.—The Solitaries of the Sambuca.

Murray, Gilbert—The Plays of Euripides.

Religion

Chesterton, G. K.—\*Orthodoxy.

Baudrillart, A.—Catholic Church, Renaissance and Protestantism.

Gasquet, F. A.—\*Henry VIII and the English Monasteries.

Cram, Ralph Adams—The Great Thousand Years.

Fiction (and more than fiction)

Chesterton, G. K.—\*The Napoleon of Notting Hill.

Belloc, Hilaire—Emanuel Burden.

Oldmeadow, Ernest—\*Antonio.

Benson, Hugh—\*Lord of the World.

Chesterton, G. K.—\*The Man Who Was Thursday.

THE ARCHITECTURAL RECORD.

Childers, Erskine—The Riddle of the Sands.  
Thorne, Guy—When It Was Dark.  
Morris, William—A Dream of John Ball.  
Chesterton, G. K.—The Flying Inn.  
Stephens, James—The Crock of Gold.  
McKenna, Stephen—\*Sonia.

Supplementary List

Penty, Arthur J.—\*A Guildman's Interpretation of History.  
Petrie, Flinders—The Revolutions of Civilization.  
Hubbard, A. J.—The Fate of Empires.  
White, Bouck—The Free City.  
Peck, W. G. (English Methodist Minister)—\*From Chaos to Catholicism.  
Pond, I. K.—The Meaning of Architecture.

\*NOTE—Some of these books, particularly "Reflection of a Russian Statesman," "Lord of the World," "The Free City," "Penguin Island," and "The Defence of Aristocracy" must be read with reservations, but each contains much matter of value.

Books marked with an asterisk are especially recommended.  
R. A. C.

Worringer, W.—\*Form Problems of the Gothic.  
Hobson, S. G.—Guild Problems in War and Peace.  
Hilaire Belloc—Europe and the Faith.  
Adams, Henry—\*Degradation of the Democratic Dogma.  
Hilaire Belloc—The Path to Rome.  
Adams, Henry—The Education of Henry Adams.  
Graham, Stephen—\*Priest of the Ideal.  
France, Anatole—Penguin Island.  
Cram, Ralph Adams—Gold, Frankincense & Myrrh.

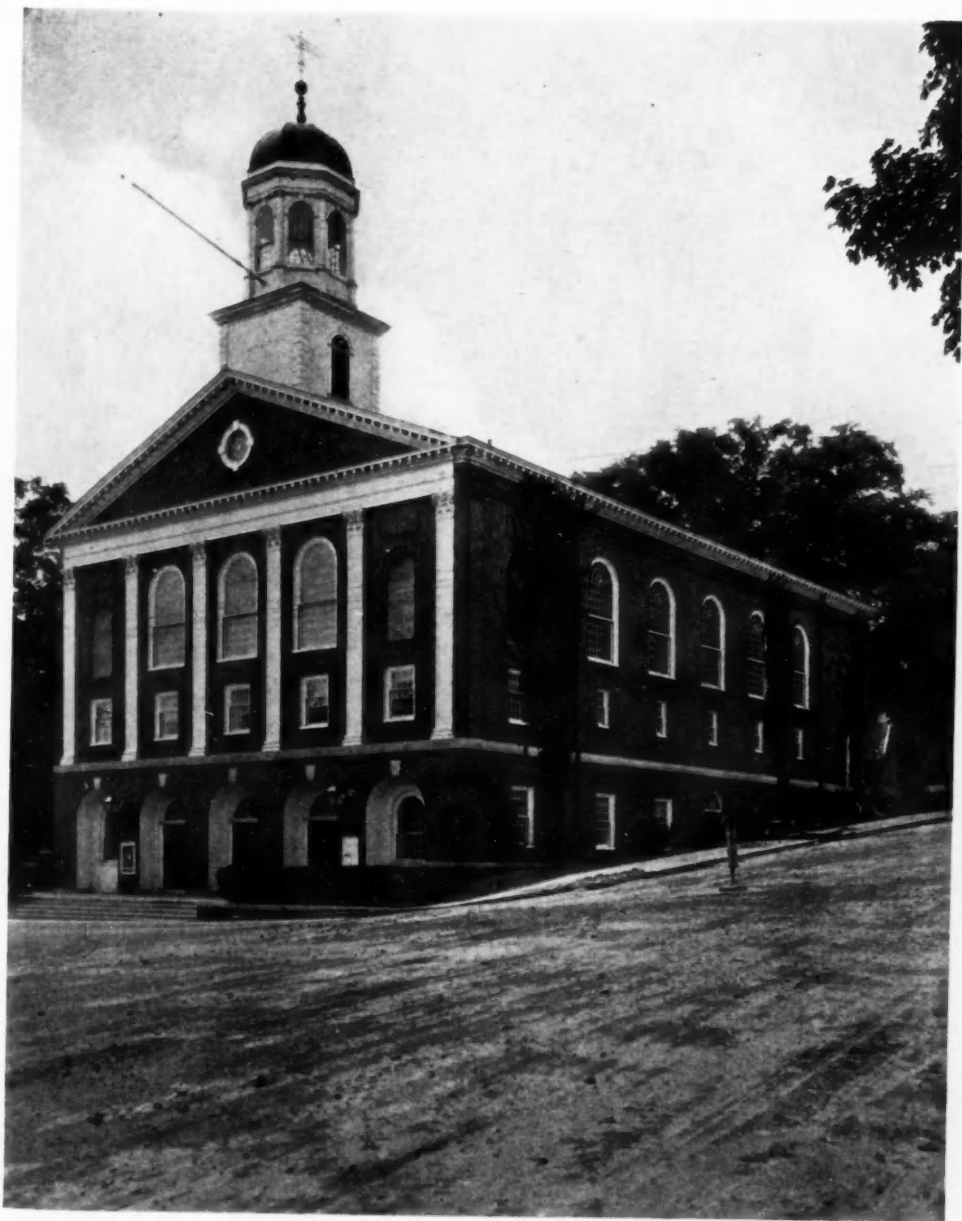
Second Supplementary List

Bell, Bernard Iddings—Right and Wrong After the War.  
Bull, Paul B.—The Sacramental Principle.  
Ireland, Alleyn—Democracy and the Human Relations.  
Meiklejohn, Alexander—The Liberal College.  
Tawney, R. H.—The Acquisitive Society.



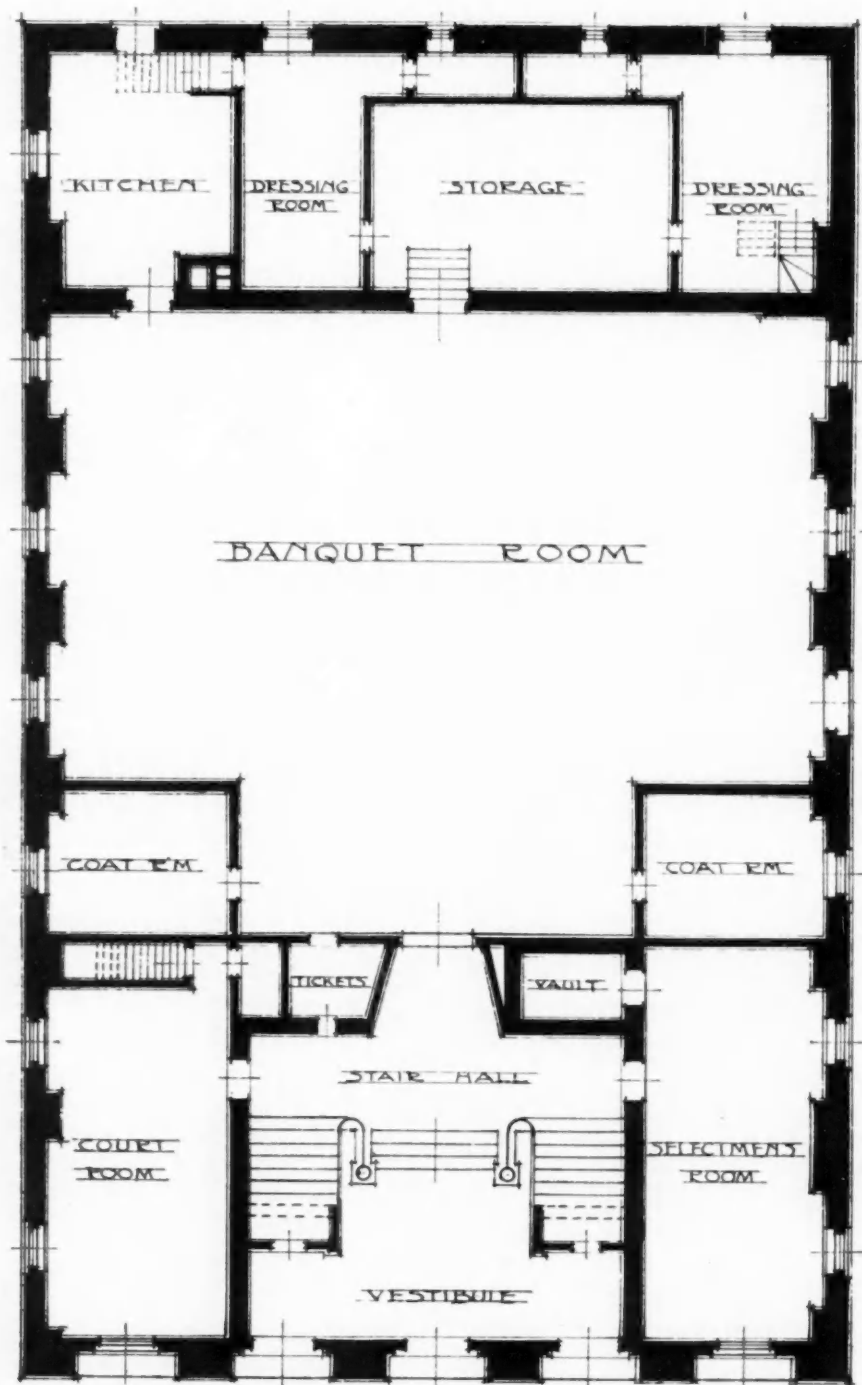
OLD MANOR HOUSE, STANTON, GLOUCESTERSHIRE, ENGLAND

P O R T F O L I O  
C V R R E N T · A R C H I T E C T V R E

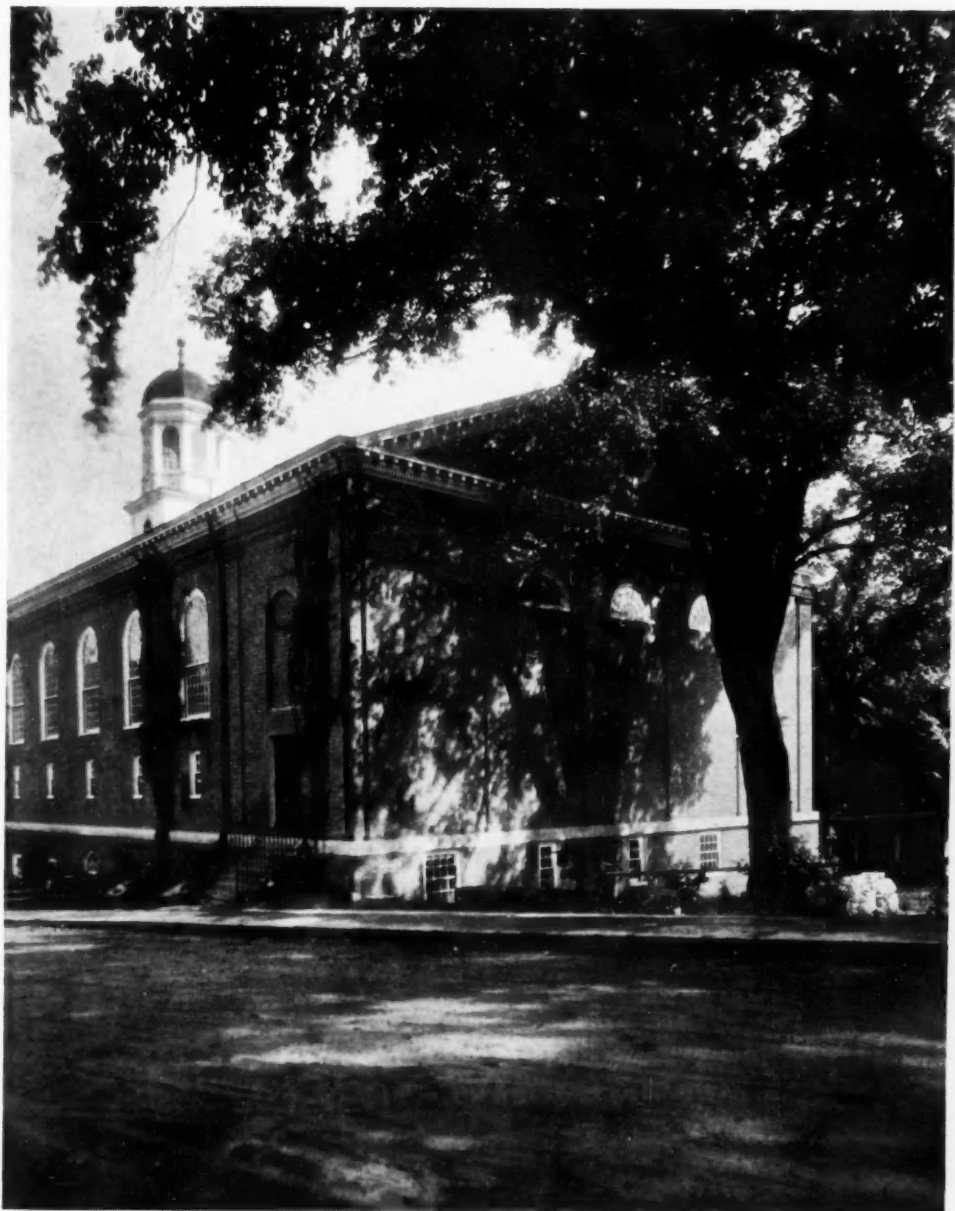


Front View

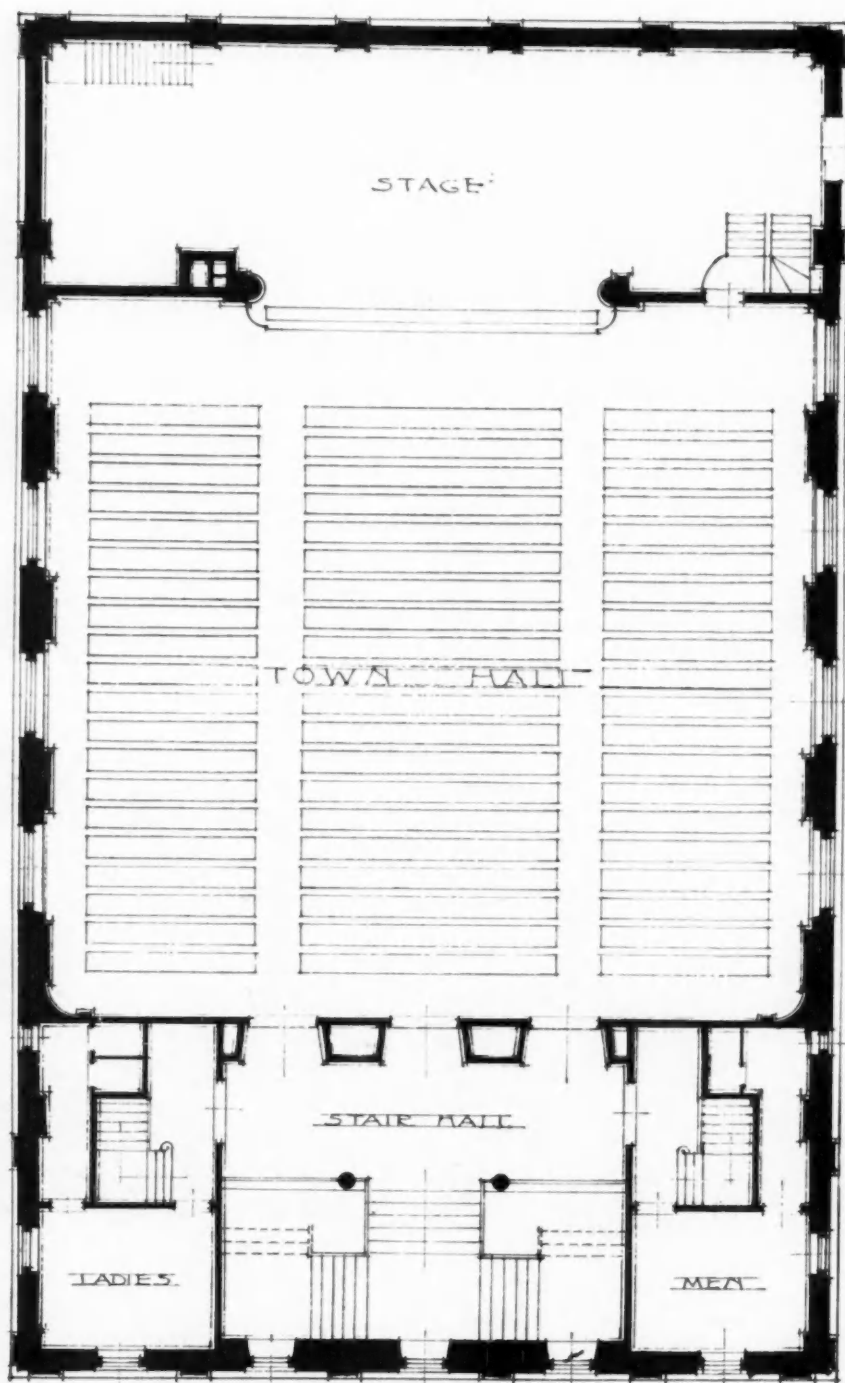
THE TOWN HOUSE, PETERBOROUGH, NEW HAMPSHIRE  
Little & Russell, Architects



First Floor Plan  
 THE TOWN HOUSE, PETERBOROUGH, NEW HAMPSHIRE  
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 [322]



Rear View  
THE TOWN HOUSE, PETERBOROUGH, NEW HAMPSHIRE.  
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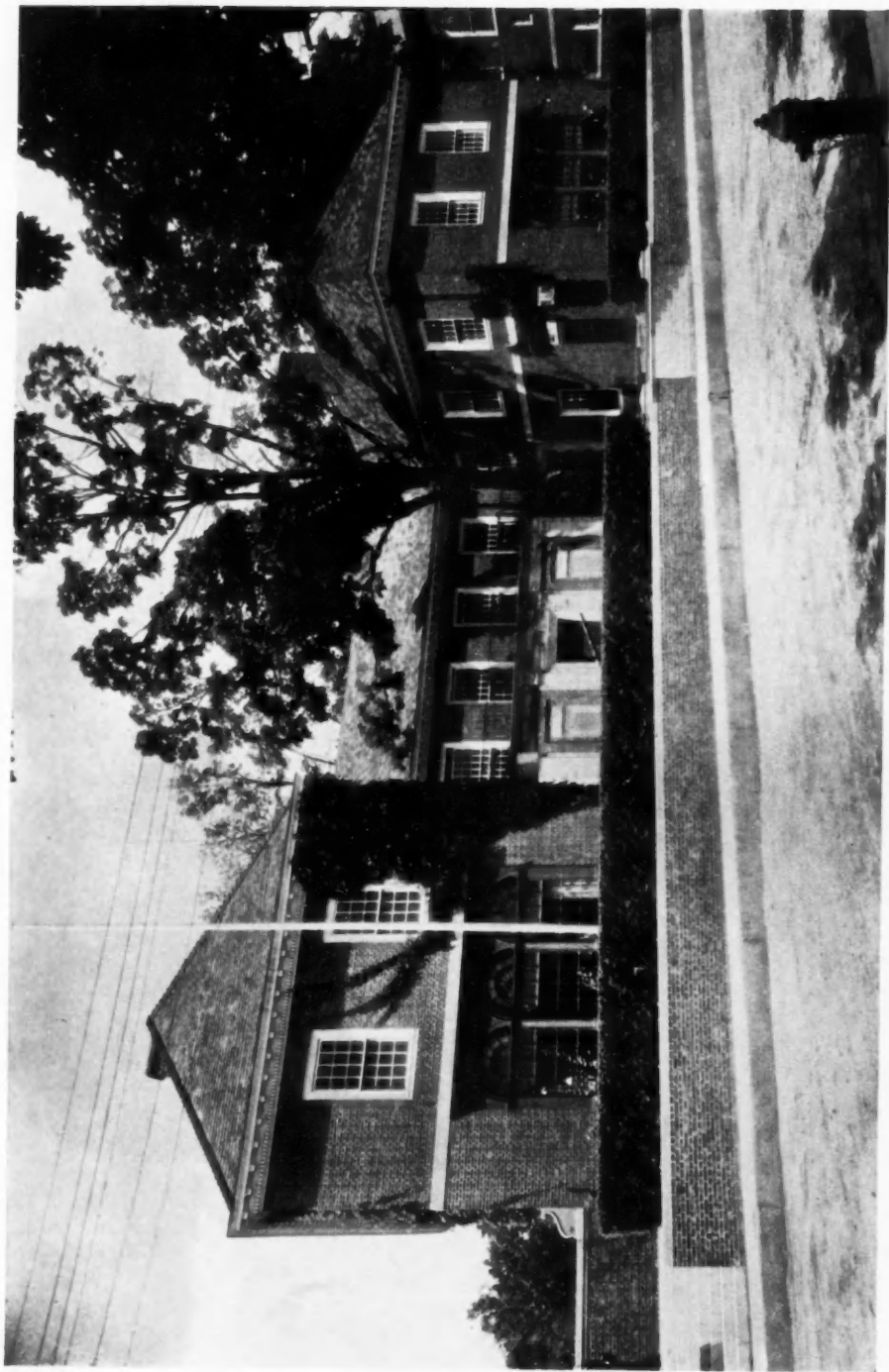
Second Floor Plan  
THE TOWN HOUSE, PETERBOROUGH, NEW HAMPSHIRE  
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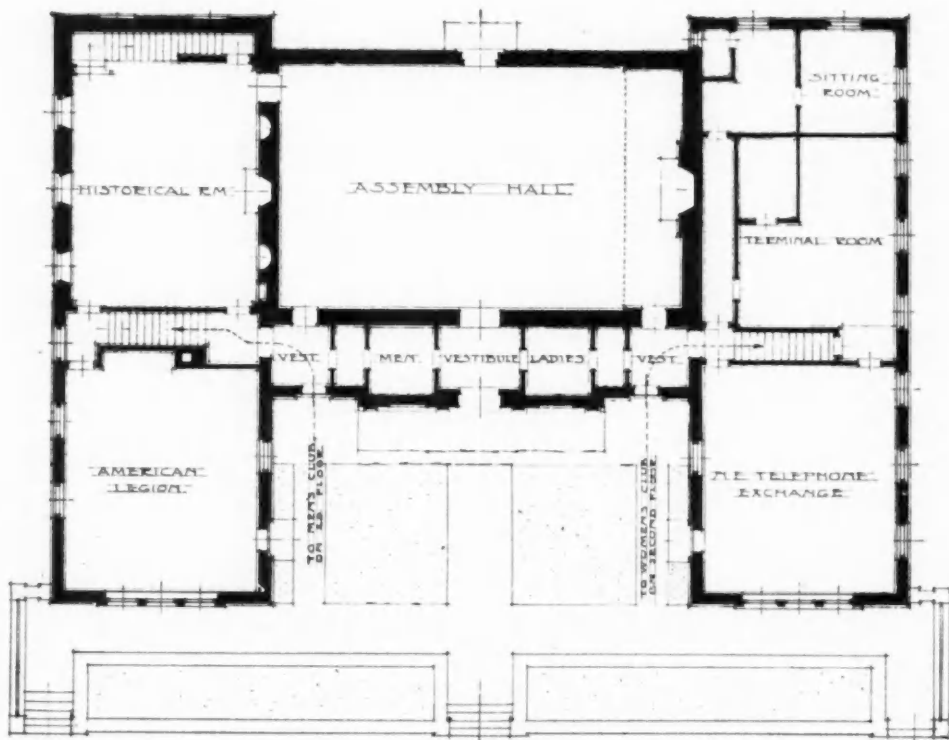


Stair Hall  
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Architectural  
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Front View  
HISTORICAL SOCIETY BUILDING, PETERBOROUGH, NEW HAMPSHIRE  
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First Floor Plan  
 HISTORICAL SOCIETY BUILDING, PETERBOROUGH, NEW HAMPSHIRE  
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Corner Detail



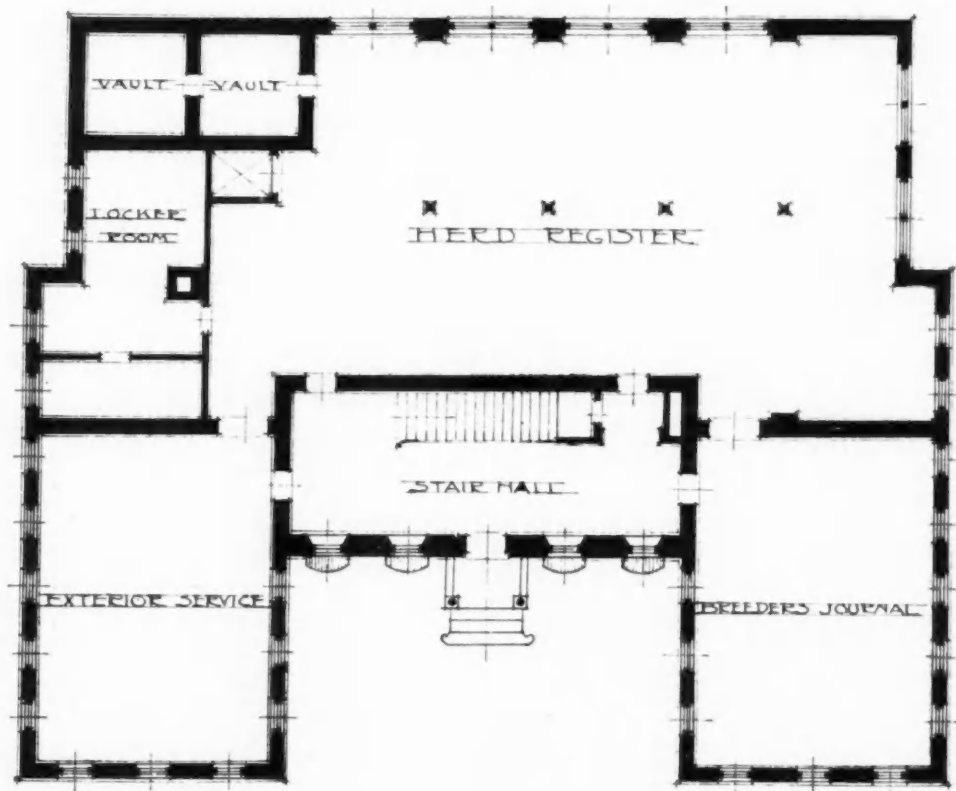
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HISTORICAL SOCIETY BUILDING, PETERBOROUGH, NEW HAMPSHIRE  
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Front View  
AMERICAN GUERNEY CATTLE CLUB, PETERBOROUGH, NEW HAMPSHIRE  
Little & Russell, Architects



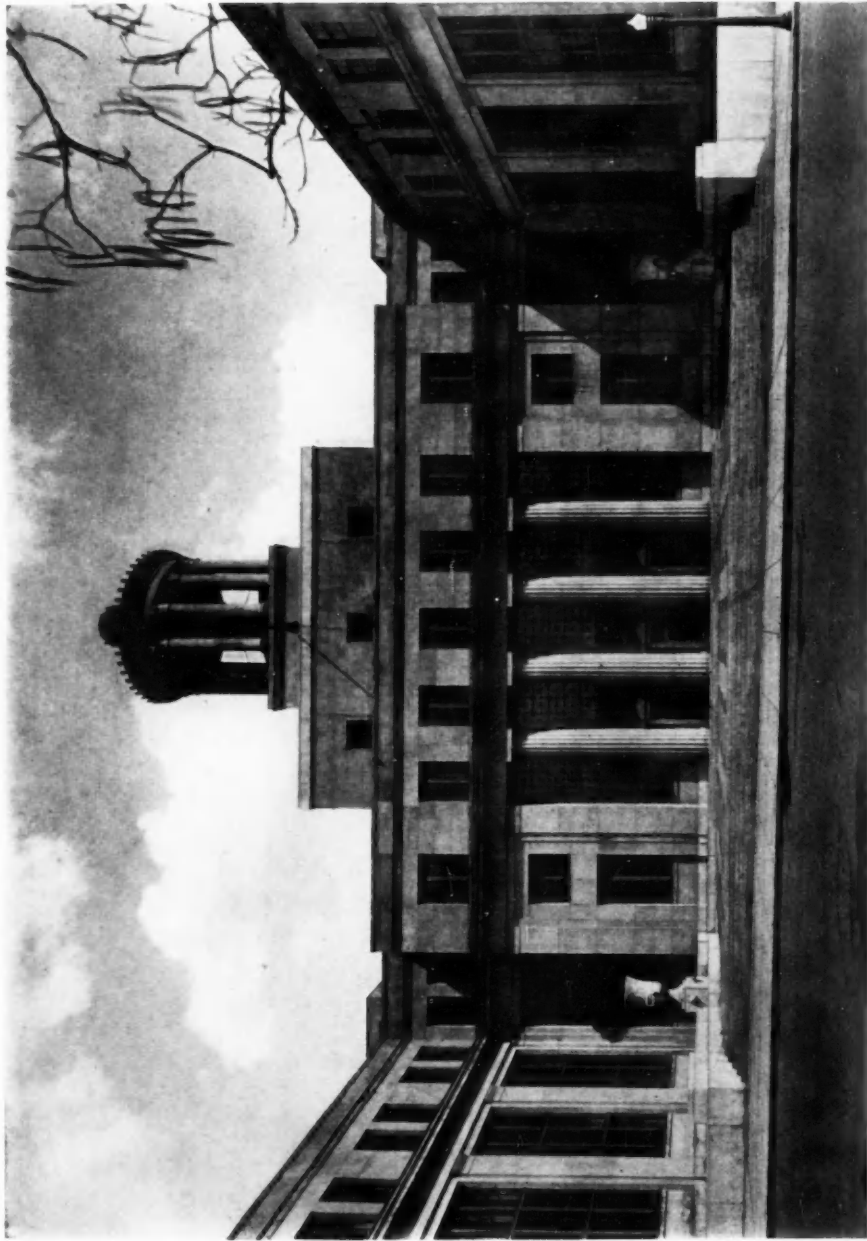
First Floor Plan  
AMERICAN GUERNSEY CATTLE CLUB, PETERBOROUGH, NEW HAMPSHIRE  
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Entrance Detail  
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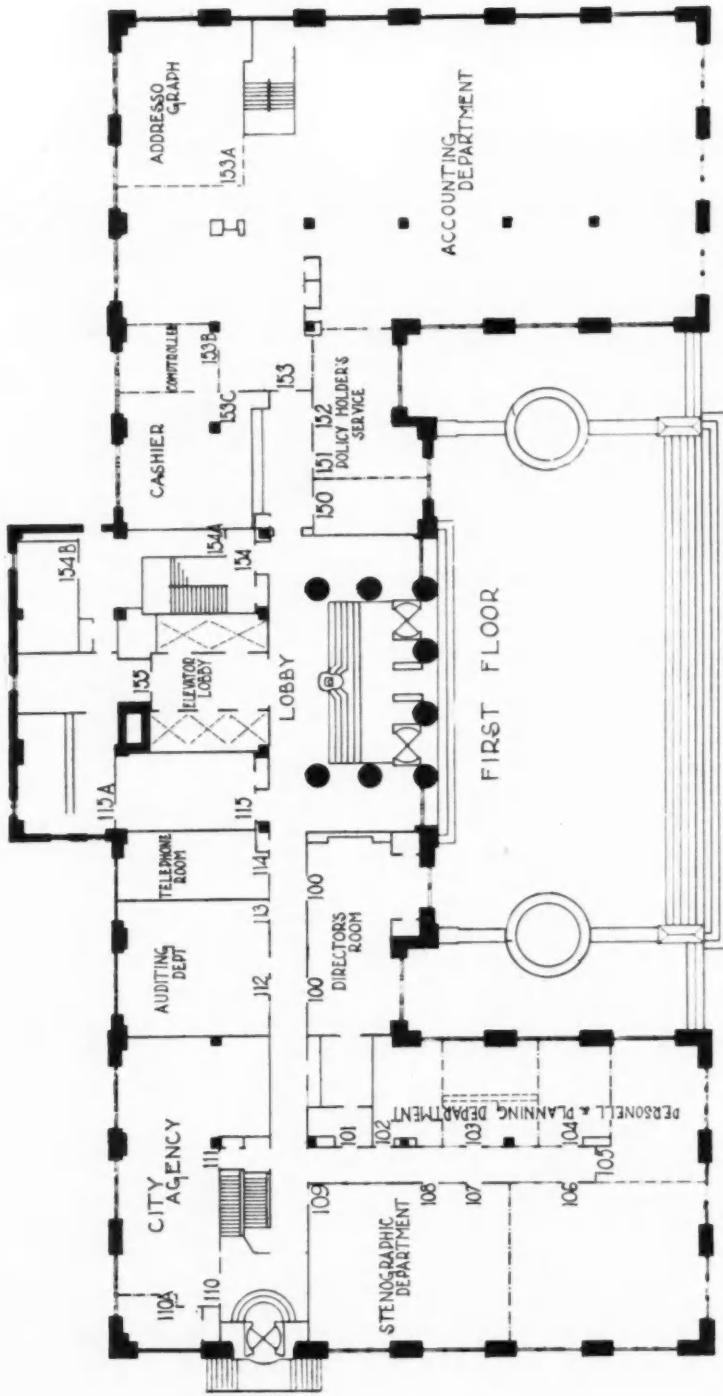


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✓ Entrance Façade  
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Benjamin W. Morris, Architect

Thomas H. Ellett,  
Associated Architect (Design)

John F. Bacon,  
Associated Architect (Construction)



First Floor Plan  
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 Benjamin W. Morris, Architect

Thomas H. Ellett,  
 Associated Architect (Design)

John F. Bacon,  
 Associated Architect (Construction)

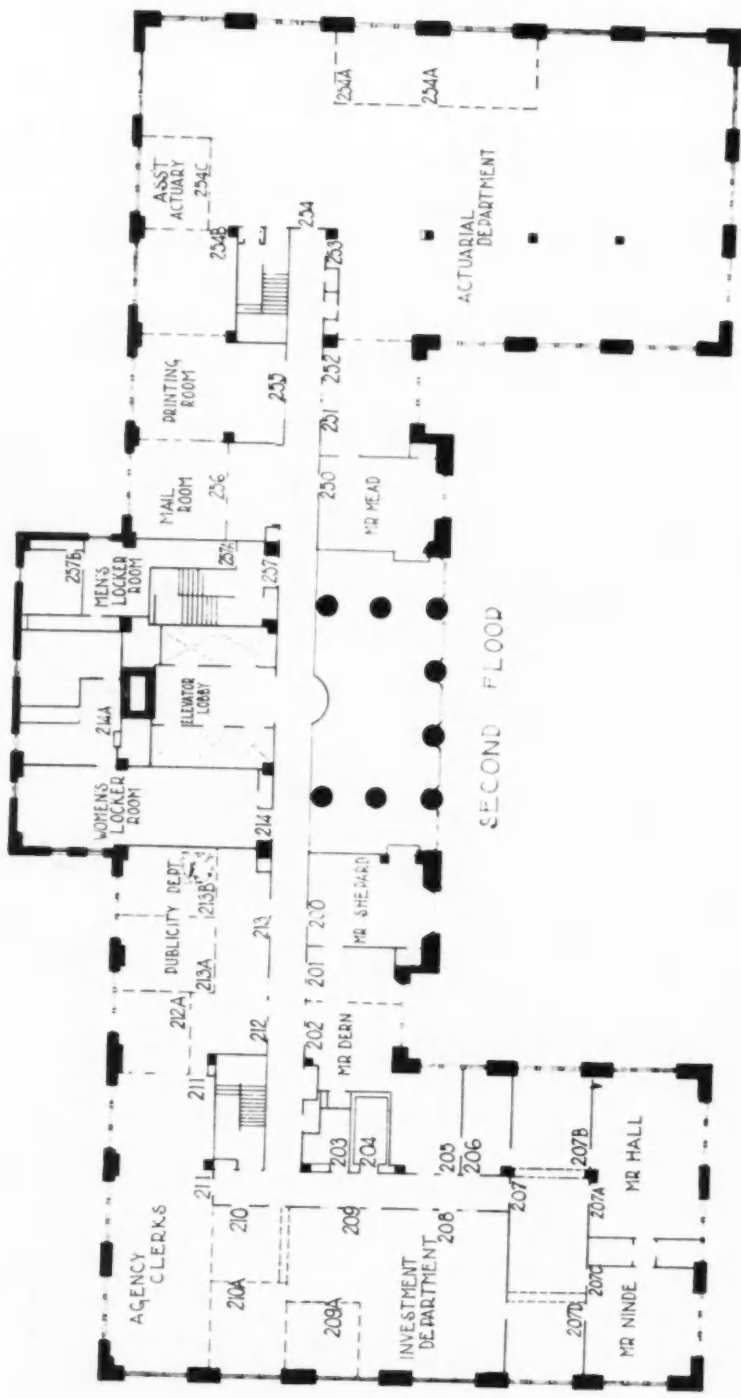


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Second Floor Plan  
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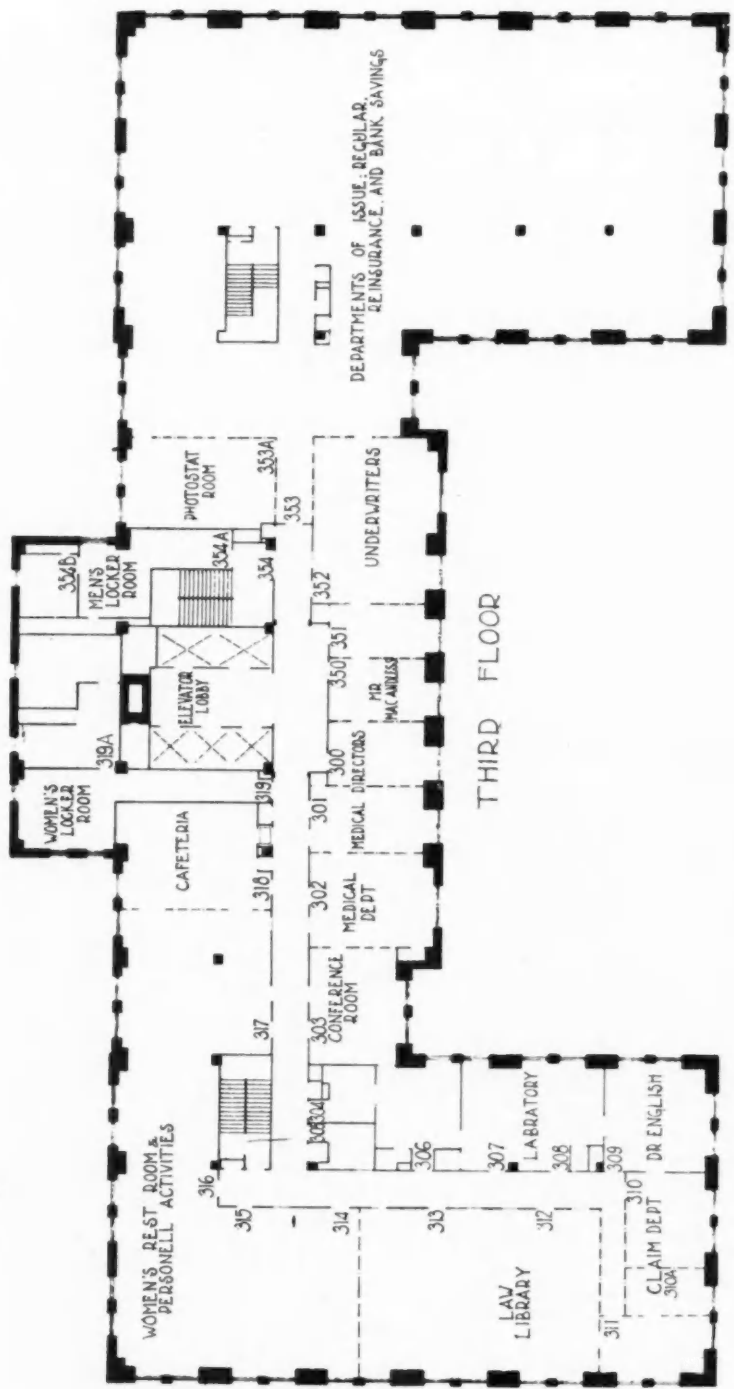
Detail

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THIRD FLOOR

Third Floor Plan  
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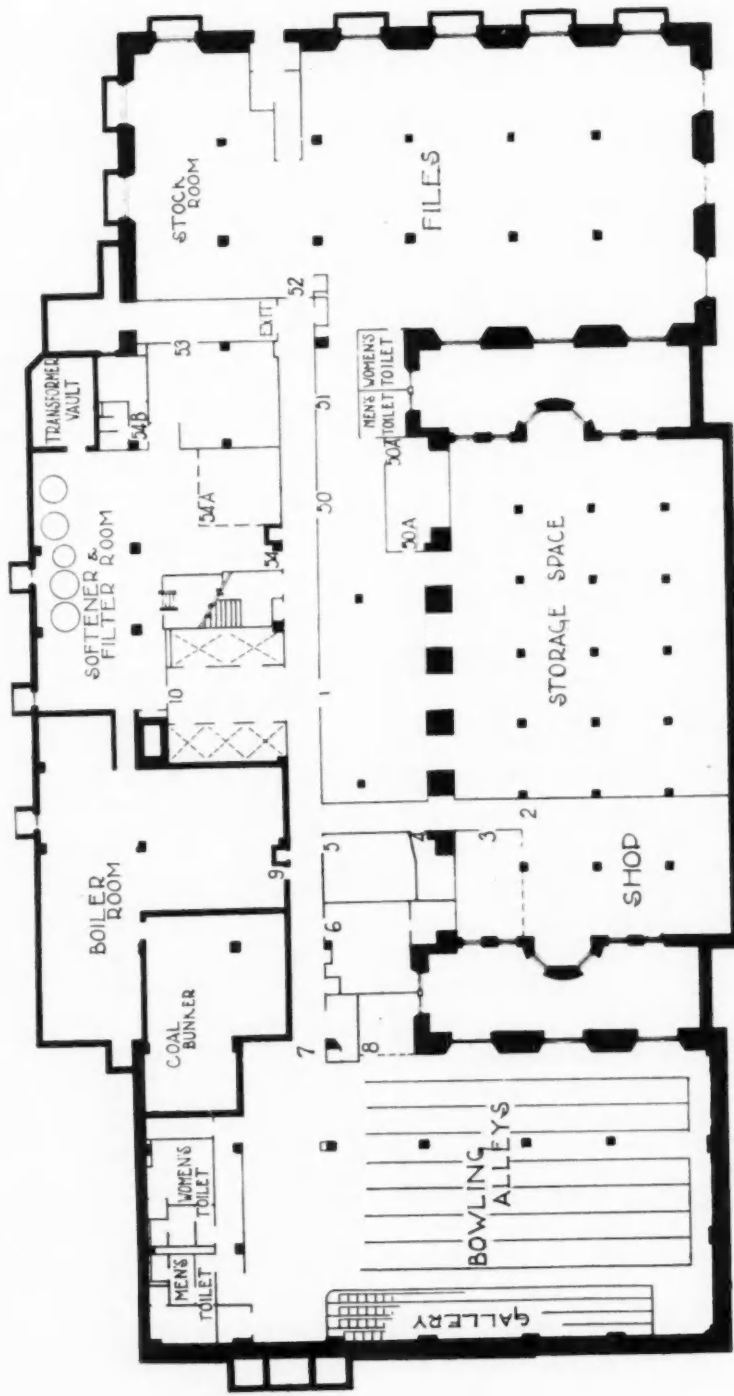
Entrance Detail

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Basement Floor Plan  
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John F. Bacon,  
 Associated Architect (Construction)

Thomas H. Ellett,  
 Associated Architect (Design)



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Lobby

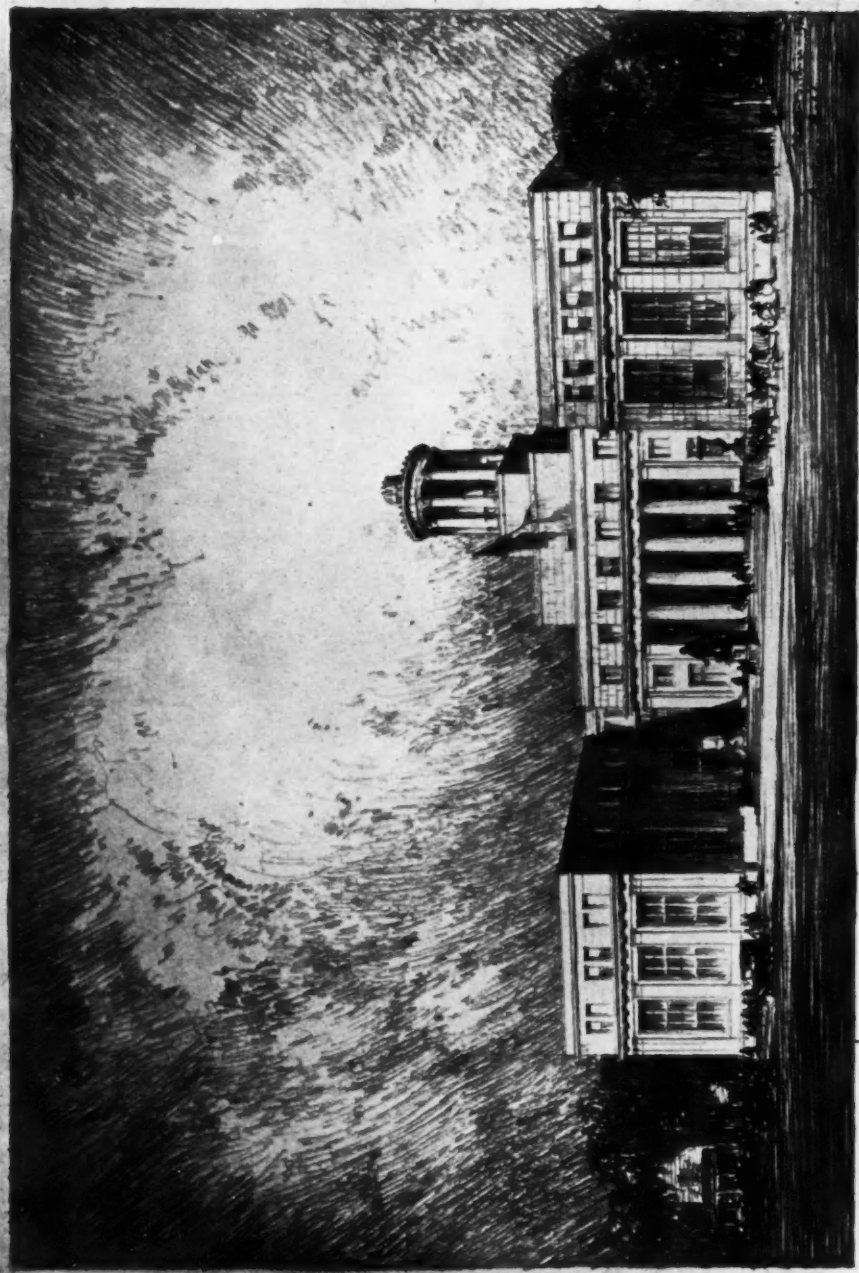
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Perspective of First Construction  
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John F. Bacon,  
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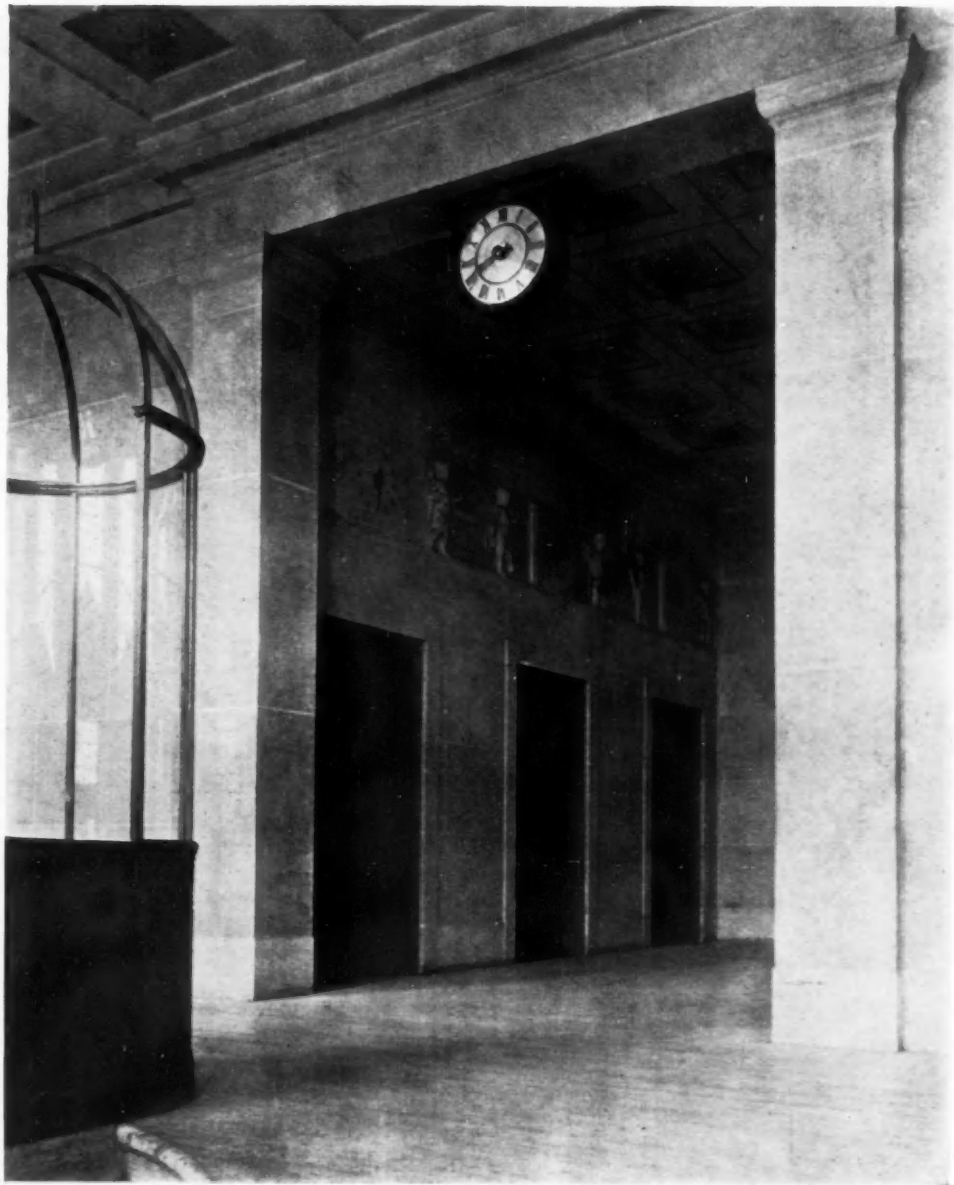


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Perspective of Completed Building  
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Elevator Lobby

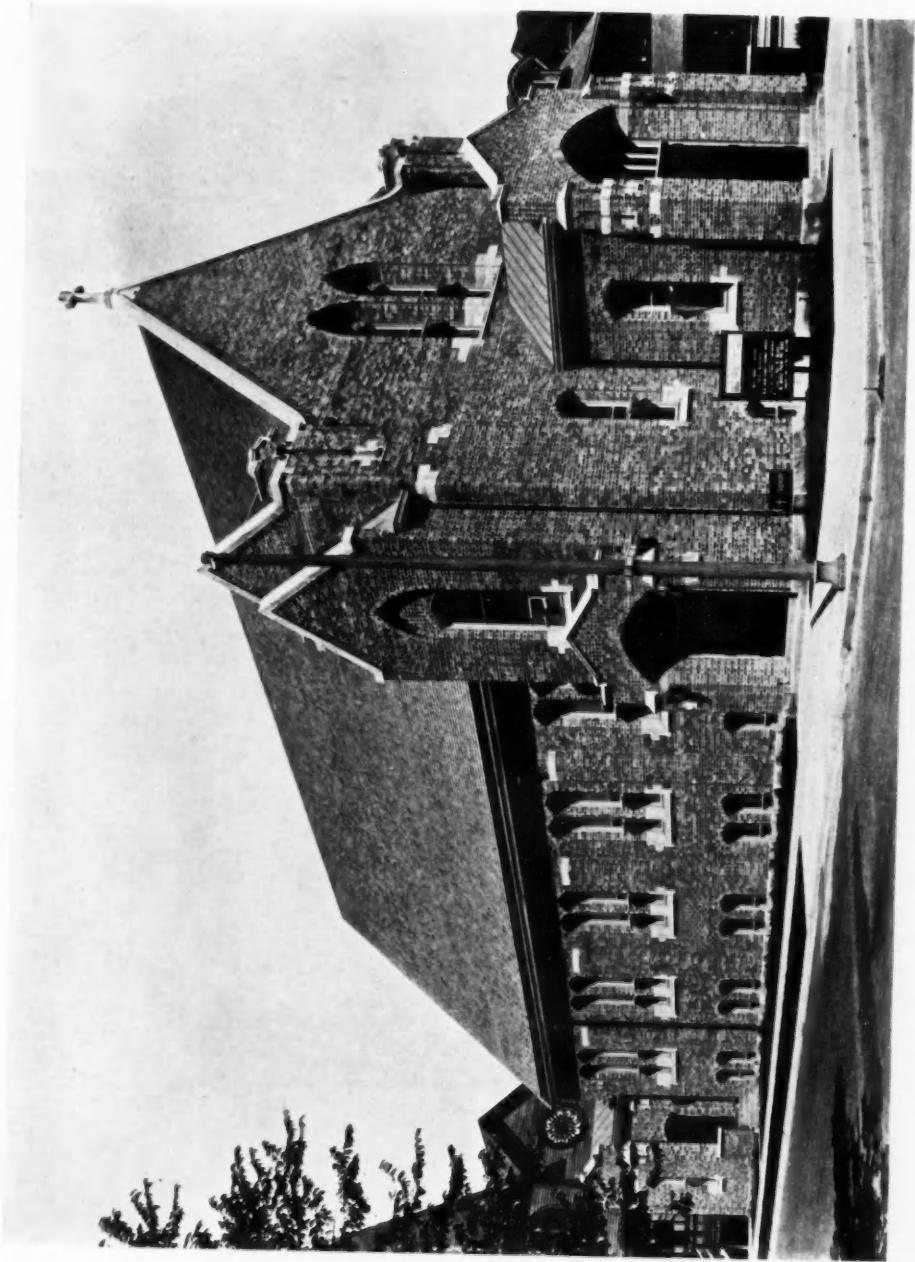
LINCOLN NATIONAL LIFE INSURANCE BUILDING, FORT WAYNE, INDIANA

Benjamin W. Morris, Architect

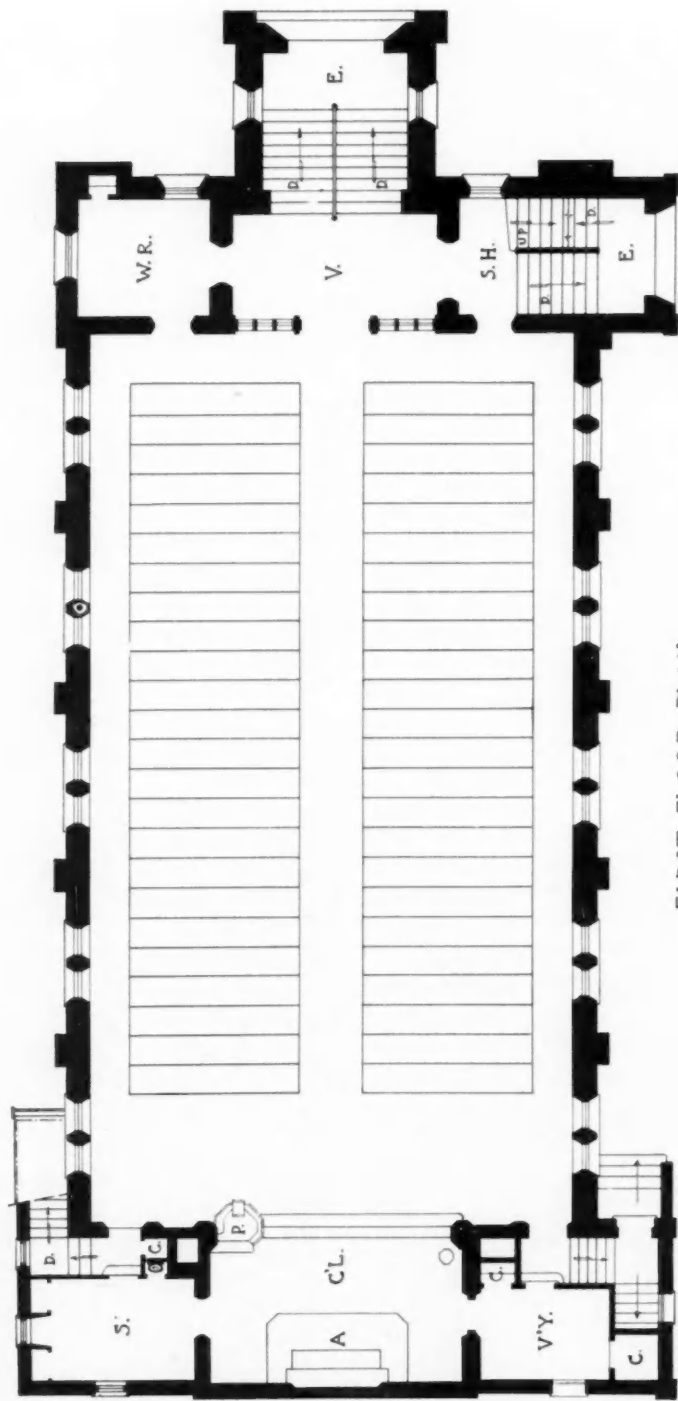
Thomas H. Ellett,  
Associated Architect (Design)

John F. Bacon,  
Associated Architect (Construction)





Façade  
LAYTON PARK LUTHERAN CHURCH, MILWAUKEE, WISCONSIN  
Brust & Philipp, Architects



FIRST FLOOR PLAN.

- Key
- P Pulpit
  - V.Y. Vestry
  - V Vestible
  - S.H. Stair Hall

- E Entry
- N Nave
- S Sanctuary

- A Altar
- C Closet
- C'L. Chancel

LAYTON PARK LUTHERAN CHURCH, MILWAUKEE, WISCONSIN  
 Brust & Philipp, Architects



View Toward Altar



View Toward Entrance

LAYTON PARK LUTHERAN CHURCH, MILWAUKEE, WISCONSIN  
Brust & Philipp, Architects

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# LOW RENTAL HOUSING

## COMMUNITY PLANNING AND THE UNIT SUBURBAN GROUP APARTMENT

By

*Frank Chouteau Brown*

ON CROWDED, expensive city property the apartment building has been proved the only economical means for providing housing accommodations on an adequate, commensurate scale. In any country location where land values are negligible, the apartment is not the natural and best living accommodation, except, as we showed last month, for taking care of the very small family and upon the lowest possible cost basis. In such locations, the semi-detached single house, or the semi-detached two-story tenement, often becomes an allowable and valuable low cost housing, especially adaptable to milling towns, either north or south.

But what about the suburb, the smaller community closely related to and more or less socially and economically dependent upon the larger city? Or what is to be done in the smaller city where the pressure of conditions has not as yet assumed the force of the larger metropolis? Here again the apartment, but in a less restricted fashion, should offer a readily available means of lowering housing costs, if properly designed and administered.

Although the land values of the city are greater, apartment house development is likely to retain the same proportionate relation to that in the suburb, because the scale of the whole operation is proportionately adapted to the entirely different set of controlling conditions.

This proportionate relationship was gone into somewhat last month, and probably at sufficient length for our present purpose. Yet, we in America are hampered in outlook because we have become

too much accustomed to what has "always been done" and are often entirely blinded to possibilities apparent to an eye coming more freshly to view our particular problems.

How have most of our cities and suburbs been developed? What have been the motives dominating city and town planning? From the more exclusive "Back Bays" and "Murray Hills" to the "North Ends" and "East Sides" with most of the diverse classes of property lying between, we will find the land was originally secured in large blocks, and laid out and built up by realty "operators" and speculative builders, whose entire interests have always been the purely selfish ones of putting as little money in and getting as much out, and as quickly, as possible.

The lots have been as constricted as could be managed, the streets as near together and as straight as possible, the buildings as cheaply built and as commonplace as could be devised, and then the sales made as rapidly and at as high a price as the traffic would stand. This process can only be successfully executed provided certain underlying conditions are understood and made use of by the operators concerned.

First, the land is selected from the expanding districts, or from the districts beside or between streets already assured as business or residential thoroughfares. The use made of the property is not generally the wisest and best, but almost always the most obvious. If stores have been previously successful in that locality, more are built, even though there may be enough

already. If dwellings of a particular type have been taken up quickly, then others, it must follow, will be erected on the adjoining property. Often, a more discriminating judgment, one concerned with the needs of the whole community, would decide that a more permanent arrangement might be effected, perhaps of combining stores, dwellings, and offices, as well as factories, on some parts of the land thus being forced into use by the public. The selfish ends of the developing operators would often thus be best served, and also the necessity to dispose of the property quickly, quite aside from the probably limited means of the builder—for a short term of idleness after completion will frequently eat up a large slice of the estimated profit on the whole venture. Such considerations will generally cause the reduction of the size of the lot and the cost of the building to a point where the operators will feel fairly well assured, merely because of the mathematically larger buying public that can then be interested, that they will thus be able to quickly dispose of the whole investment.

It is these considerations that have developed so many of our American cities and their suburbs in ugly, cheap, and often inappropriate ways. After the property is once disposed of, it means a large expenditure for upkeep by the new owners, and a rapidly depreciating investment, both in appearance and actual value, and, generally, another large waste in its partial or entire rebuilding, when the character of that part of the city changes a little later. Consequently, a considerable part of the economic loss entailed falls upon the subsequent holders of the property, as well as all the citizens of the community who have been cheated out of its fair valuation and a long term return upon stable taxable values.

Most developments actually fail to make any eventual profit to the operators, generally because of the length of time necessary to conclude the operation, during which period the taxes, interest, and other carrying charges of the unsold portion are likely to have eaten up all the estimated profit that might otherwise

have been made had the operation been handled fully and at one time, or in several definite sections.

Many others fail because of unnecessarily heavy expenses encountered in developing a property; for instance, laying straight streets over rolling landscapes, or continuing to build conventional and unsalable constructions in locations where they will be neither as acceptable nor as economical as other, better-planned types. Even yet it remains a fact that far too large a proportion of city building of this kind is done without the advice of the landscape architect or city planner on the one hand, or a properly trained and experienced architect on the other. Far too much of it also is done by uneducated, untrained operators and builders, with too little capital to operate economically, and with too narrow an outlook.

So much for the venture of the individual. Have we been any more successful in experimenting by means of the operating company or corporation, the municipality or the government? With the first parties to this query we have already dealt and it would appear that, thus far, not much has been done in that way to provide encouragement. But, as a matter of fact, we may have been unjust to the several well managed and effective limited-dividend companies that have already accomplished most of what has been done in this country to cope with the problem of supplying good standard low-cost housing. Included in this group would certainly be the "City and Suburban Homes Company," "Open Stair Dwellings Company," and others, whose work in New York and vicinity is already well known. These very companies are now practically helpless when confronted by the increasing costs of property and building, and the many new laws and limitations surrounding operations of this type, and they too will be more and more handicapped.

We have also seen that not much has been done in this country by either city or state, to ameliorate these conditions, although here too there remains something to be told. The Government, also,

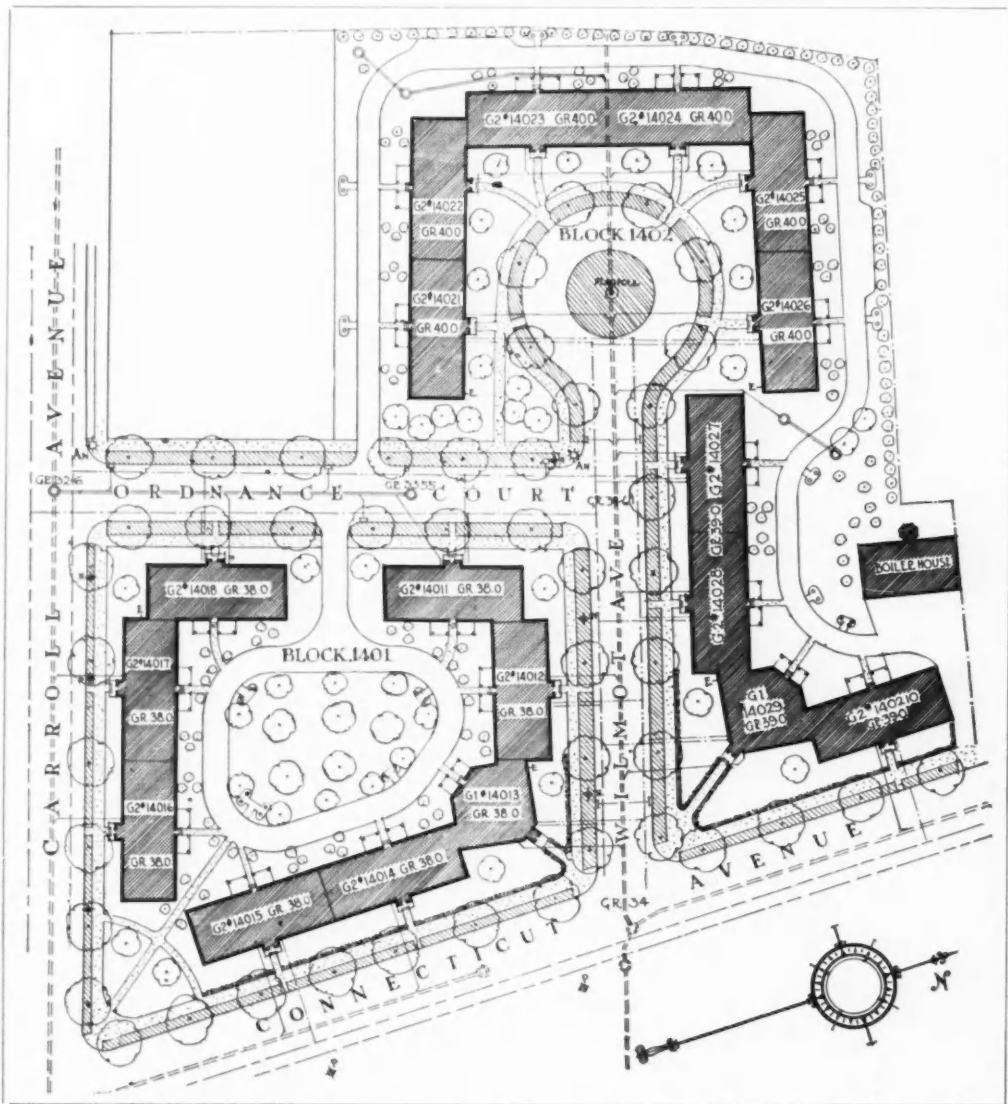


Fig. 31  
 PLOT PLAN—CONNECTICUT AVENUE DEVELOPMENT, BRIDGEPORT, CONN.  
 R. Clipston Sturgis, Architect  
 Arthur A. Shurtleff, Town Planner

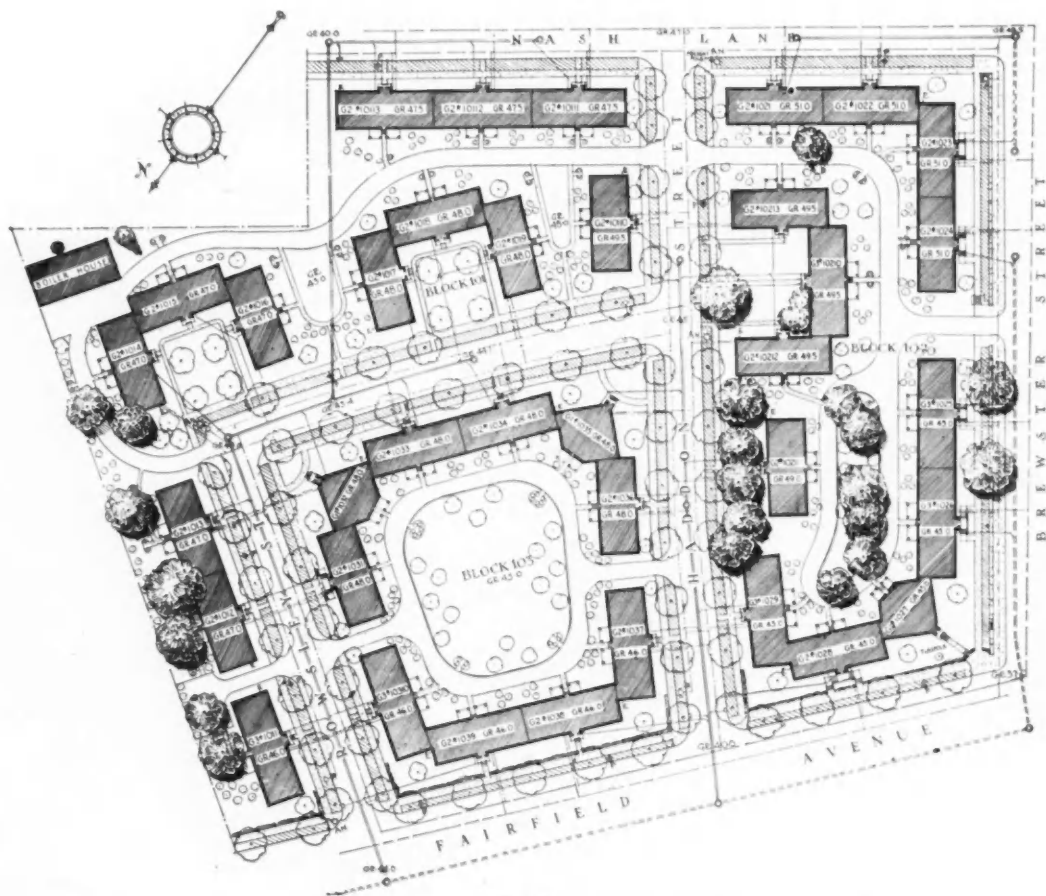


Fig. 32  
 PLOT PLAN—BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
 R. Clipston Sturgis, Architect  
 Arthur A. Shurtleff, Town Planner

has been mentioned, and here the record would have been entirely blank but for what was done, or attempted, as a war measure, a few years ago.

Once again we have little that can be pointed out with great pride, or that can help us in facing the economic situation. It is true we accomplished a great deal in a short time, at a few important locations, but with a waste and extravagance on the one hand, and a lack of understanding and knowledge on the other that has not been realized yet. Only when we turn to these records in the endeavor to find some help in the present instance, do we realize the true extent of our loss.

We might have found in this work much of value and advantage in dealing with the problem, for these ventures of the Government were made in various sections of the country, and on a scale that had hardly before been attempted by private enterprises.

But the hit-or-miss manner in which the Government undertook to meet the matter of housing its war workers was no more wasteful nor ill-conducted than the manner in which it squandered money on other useless, and even harmful, war measures.

The results which showed that some war housing ventures turned out satisfac-



torily in planning and arrangement while others proved unadaptable to their purpose, were due to the accidental manner in which the contracts were let. Some houses were built to meet actual conditions; some were not; some were designed to produce an attractive community group, some as decidedly were not; depending largely on the interest and enthusiasm of those in control. Some are laid out as squarely and rectangularly as our most perfect examples of the "gridiron" plan. Others have been given as charming and irregular contours as opportunity allowed; and again at the whim of those concerned rather than from any settled policy on the part of the Government. Therefore, we are utterly unable to derive any economic advantage from these experiments; they have all been accomplished without leaving us a basis of cost or practical experience. Especially do we fail to find any help in discovering the solution of the housing of the low-paid laboring classes.

Throughout the war the Government ruthlessly worked on the established policy of ignoring the conditions under which unskilled labor lived. It was concerned merely with catering to the demands of the higher paid groups; the lower paid laborers always came from somewhere, in sufficient numbers when needed. It neither cared where they lived, nor how. Government housing provides us with few suggestions in regard to the tenement or apartment type of plan.

We found for illustration two months ago a type of apartment for the better class of labor required in Government ship building at Newport News, that covered about 50 per cent. of the area required for each unit, and that unit was apportioned on the scale possible of adoption for the suburban site, where land values are on a more modest basis.

This month we illustrate another type of Government war housing, for a still better class of workers; an arrangement of apartment buildings grouped in an unusual manner to meet even a more difficult set of conditions than usually confronts a development of this sort. In some ways it more nearly meets the community conditions generally found surrounding

the land improvement attempted by the real estate operator, only its method of development was here established by more skilled advice than is usually called in by the developing builder, and with interesting and suggestive results.

Two different sized plots of ground (Figs. 31 and 32) are concerned in this experiment, both representative of such large estates as are frequently encountered in the suburbs of any growing city and are constantly being absorbed into the developing community, but generally only at the expense of the appearance of the neighborhood, as new streets are run through the property and its old trees are cut down in the strange interests of "progress" and business growth.

In this instance, the Government got possession of several different tracts of land in Bridgeport, Conn. In the smaller, known as the Connecticut Avenue tract, (Figs. 31 and 33), the boundaries were so circumscribed that the designer had no opportunity to do anything out of the ordinary. He nevertheless succeeded in obtaining two different groupings of units around an irregular "Courtyard," and an "L" shaped unit, utilized to balance the entrance to the property from the principal bounding avenue. The second area known as "Black Rock," (Figs. 32, 34, 35, 36, 37 and 38), while larger, is still too circumscribed for the best and freest treatment. It appears from the records of these developments that neither plot required any great amount of grading, or distinctive variations in development, but one of them contained a number of well grown shade trees, and, to a considerable extent, the successful treatment of this group is dependent upon the manner in which these old trees have broken the severe lines of the architectural arrangement, while the companion tract, lacking these trees in the first instance, appears in the photographic views as bare and uninteresting by contrast. Both plot plans (Figs. 31 and 32) show that new planting was to aid in the final values of these properties, but up to the time these views had been taken the actual growth of the new trees had not been sufficient to add any great visual interest.

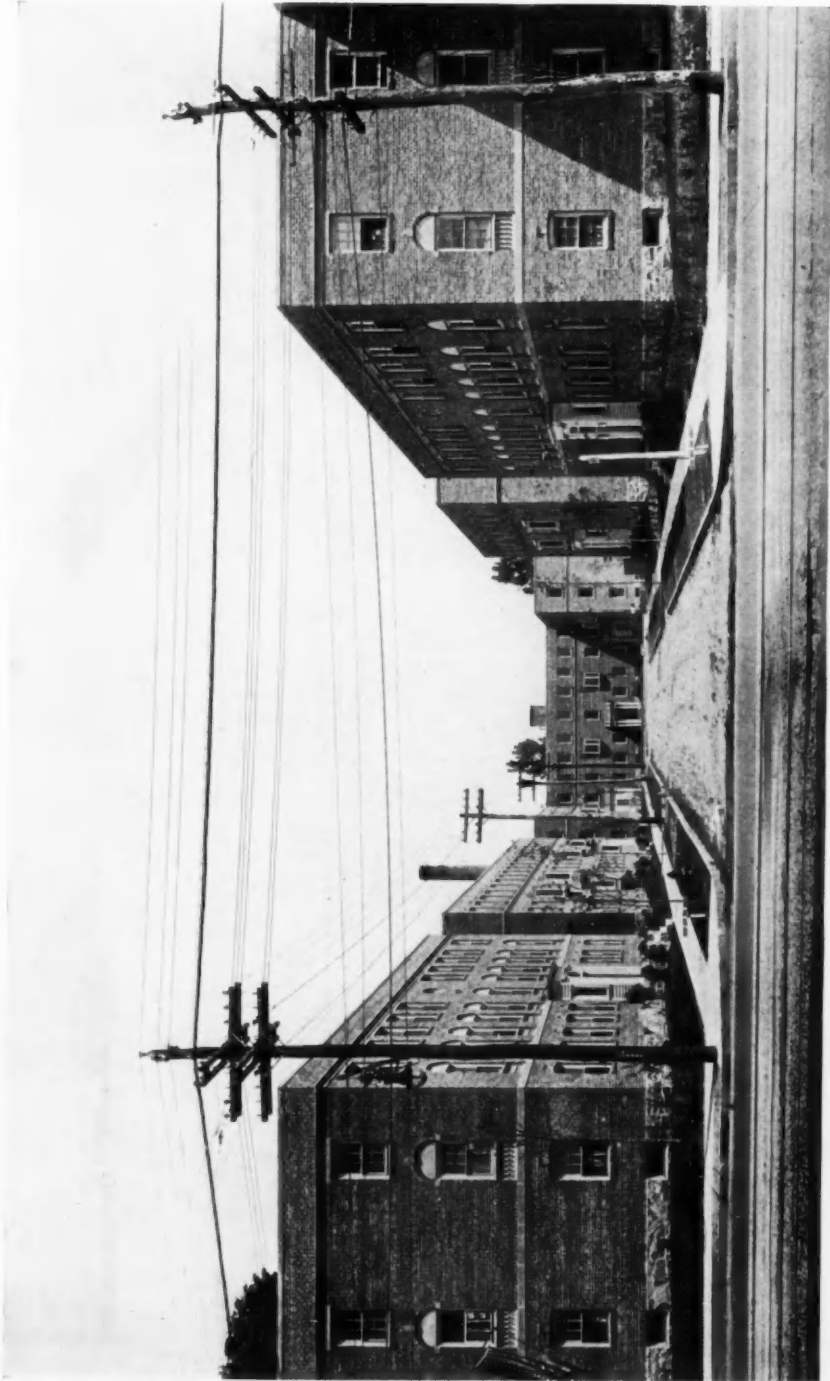


*The Architectural Record*

Fig. 33

INNER COURTYARD—CONNECTICUT AVENUE DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
R. Clipston Sturgis, Architect

October, 1924



*The Architectural Record*

**Fig. 34**

View down Rowsley Street  
BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
R. Clippston Sturgis, Architect

October, 1924

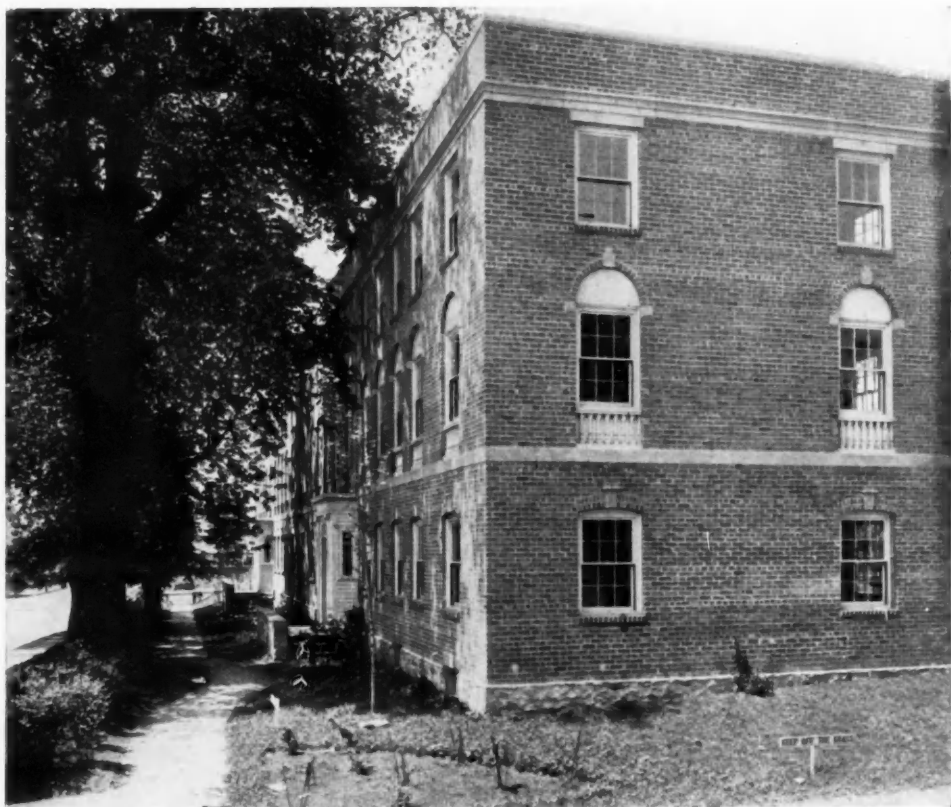


Fig. 35  
Apartments on Brewster Street  
BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
R. Clipston Sturgis, Architect

The Black Rock development is also more interesting because of the utilization of the natural contour of the land, especially on the street frontages. That is, while the Connecticut Avenue community is limited by a smaller area to two courtyards and a "half-courtyard" in the shape of the "L" at the right of the entrance roadway, the arrangement of units in the Black Rock plot is much better calculated to add variety to all the street vistas, in one instance, by placing the residential unit at an irregular distance from the street. Who can doubt but that the comparative coolness and restfulness given these apartments (Figs. 35 and 37) in summer, with freedom from dust and dirt, would make them more appreciated

by the tenants; a feeling amplified by the fact that in both cases these apartments benefit from the old trees retained in the inner service court that appears to such advantage in the view shown in Fig. 36.

Most of the value of these particular examples lies in their better plan arrangement by units, the "city planning" science that has been utilized in arranging these plot plan layouts. Yet this is the very part that is so often entirely ignored. In all the long list of "mill villages" for instance, has advantage ever been taken of the contour of the land in planning a housing layout? If so, it has succeeded in escaping public attention. New England, in a long list of Corporation Housing developments, from Lowell, founded



Fig. 36

Inner Service Courtyard back of Brewster Street  
BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
R. Clipston Sturgis, Architect

in 1820, to Shawsheen Village, founded by the American Woolen Company near Andover, Mass., nearly one hundred years later, shows no notable recognition of the possibilities of this factor. In many cases considerable expense has been undertaken to destroy the natural charm of irregularities and to force the landscape to conform to the more costly monotonies of the rectangular "gridiron" plan.

In Europe, however, for some years it has been recognized that the irregular advancing and setting back of dwelling units from a uniform street or building line is a distinct advantage, both in bringing sunlight and air to adjoining dwellings and in increasing the beauty of the building. It also lessens the monotony resulting from building a large group of structures

from similar plans and with similar materials.

The "Black Rock" plan, (Fig. 32), shows us how this element can be consistently introduced into even a small development, and it is possible that even here it could have been improved further by the use of some more consistent outline than the large rectangular courtyard found in "Block No. 103." Probably the fact that a greater number of families could be accommodated at this point in the plan, made for the introduction of a courtyard block, whereas if the area of the plot had been greater, it would not have been necessary to restrict the plan at this one point.

The use made of the land in these smaller community areas at Bridgeport is



*The Architectural Record*

Fig. 37  
View in Forecourt, "E" Shaped Apartment Unit  
BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
R. Clipston Sturgis, Architect

October, 1924



*The Architectural Record*

Fig. 38  
Corner of Apartment Group, showing Three-Room Apartments  
BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
R. Clipston Sturgis, Architect

October, 1924

in many ways of more assistance to the ordinary real estate improvement project that most of the other Government experiments. And for the first time in this series, has it been possible to indicate something of the importance of relating the new science of "City planning" to such dwelling projects, a matter that can otherwise only be illustrated by turning to foreign examples. In any locality where land costs are not too excessive, and where plots of ground of sufficient areas are still available in the old estates prevalent in every growing American suburb, some such improvement scheme could be adopted to great advantage.

And now we may turn to the architectural scheme on which these housing units have been based. The problem was to combine three, four and five-room apartments, in as uniform a method of treatment as was possible, without undue expenditure for changes in dimension and structure or design, and yet to maintain an effect of harmonious architectural variety about the entire area. To effect this, the architects first studied the problem of the apartment until they had arrived at a perfectly acceptable and economical "unit" of plan, at least as far as the four room apartment type (Fig. 39), the unit principally used, was concerned. A unit double in width was established, as well as the interrelation of these units with each other, particularly at right angles, both projecting and retiring from the principal street front. The result was the "E" and "L" shaped units, of which the entire development, and the courtyards of outer and inner types, are composed.

The five-room apartment (Fig. 40) was merely a lengthened four-room unit, without changing in any way the structural dimensions upon which the framing of these units was based. In all ways it conforms to the main architectural details adaptable to the four-room type, with the same staircase, pantry, kitchen and bathroom arrangements and details, demonstrating the advantages of "standardization" in finish, and in construction shapes.

Only the three-room apartments (Fig.

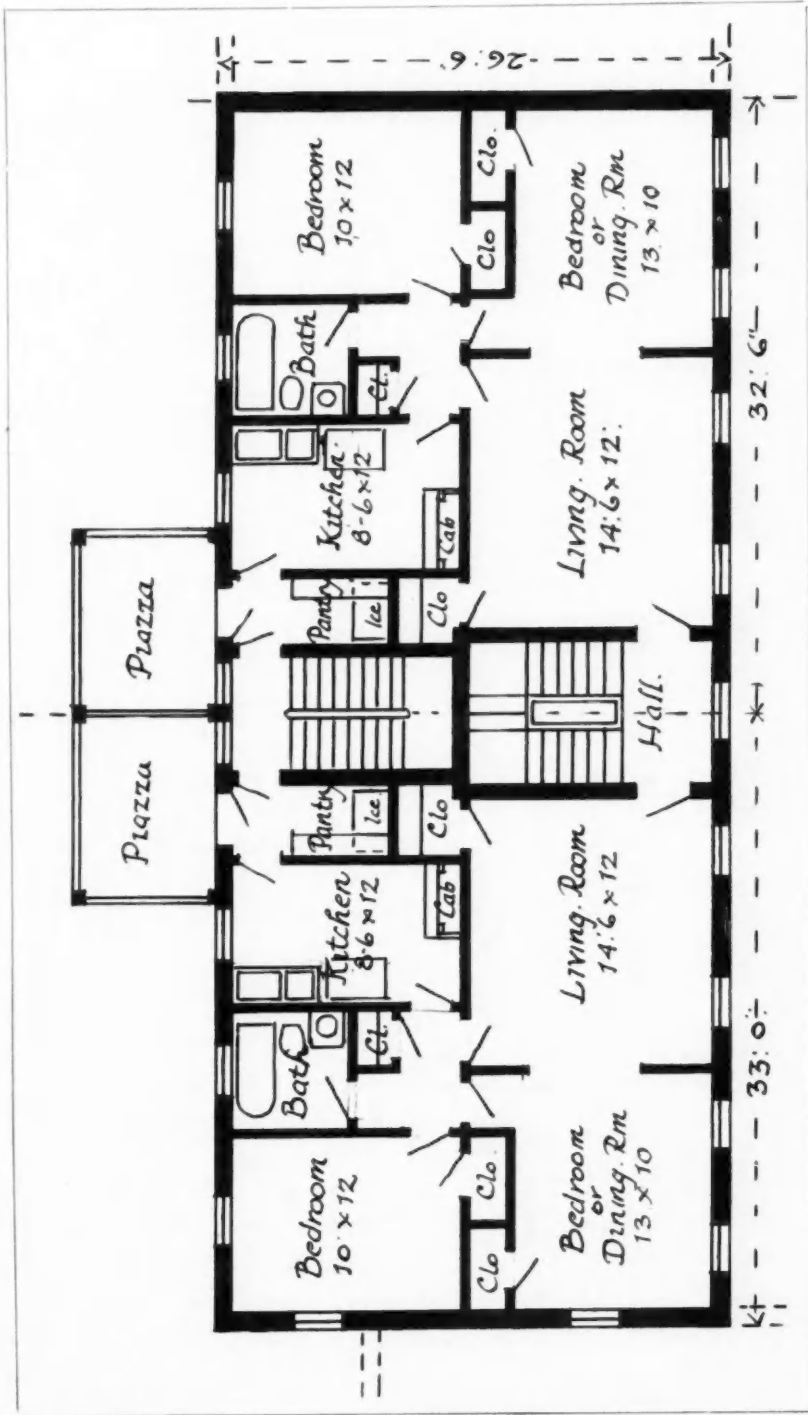
41) are distinctly a different plan-type, and here the reason was the obvious desire to have only a few units of this smaller size, and at the same time break up the angularity of the block corners, particularly in the rectangular "courtyard" plans, thus introducing a pleasing element of irregularity into the hardest and most irreconcilably rectilinear of the architectural forms adopted for the whole project. The result appears in Fig. 38. This recessed or "set-back" corner also increases the range of visibility at the intersecting streets.

Both parcels of land were so laid out with new streets as to provide a series of buildings containing uniformly arranged apartments of different sizes. Each group was heated by a large central plant, and located directly on or immediately off important thoroughfares; both also so arranged as to have a set of communicating service driveways in the rear of the apartments.

In the smaller plot there are a total of 16 double units of four-room apartments, each unit containing six apartments, or 96 in all, arranged in two courtyards and an "L" or "half-courtyard" group. The two double units of three-room apartments occur on each angle of the principal entrance to the plot, include twelve apartments of that size, and are recessed so as to give a certain openness of effect at this entrance, and allow a broader outlook toward the principal street from anywhere within the group. By reference to Fig. 31, the arrangement of the whole and of the various units will at once be made clear.

The larger development at Black Rock, contains in all twenty-seven double four-room units, five double five-room units and two double three-room units, a total of two hundred and four apartments in all. Their group arrangement will again be clear after reference to Fig. 32, and the appearance of both sections is well shown in Figs. 33 to 38 inclusive. The three floor plans, showing the different arrangements of the three types of plan "units" (Figs. 39, 40 and 41) should tell the rest of the story. They show three simple and convenient dispositions of the





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Fig. 39.

PLAN OF FOUR-ROOM, DOUBLE WIDTH APARTMENT BUILDING, BRIDGEPORT, CONNECTICUT  
R. Clippston Sturgis, Architect

The Architectural Record

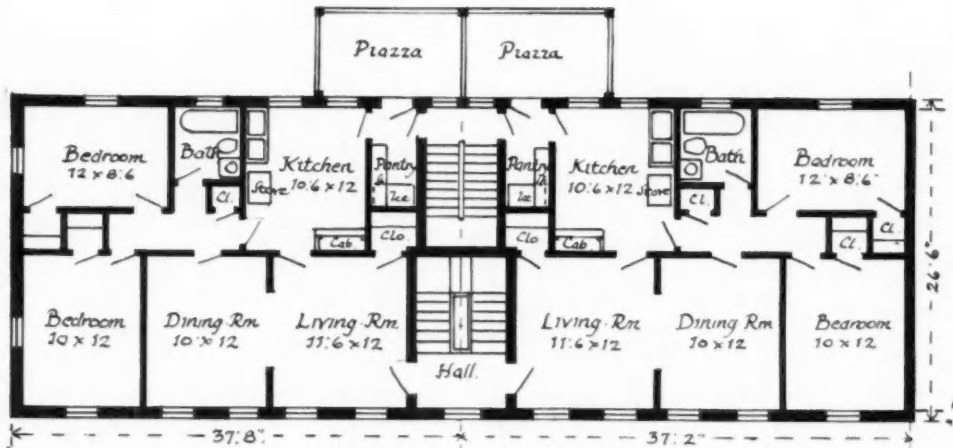


Fig. 40

Plan of Five-Room Apartments, Double Width Unit  
 BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
 R. Clipston Sturgis, Architect

essential contents for a living apartment, with front and back stairs (the latter inclosed within brick firewalls) small kitchen, bath and pantry, with an outdoor piazza at the rear. As a matter of fact, these apartments are in arrangement and design, a type that would ordinarily appeal to workers above the laboring class, if built in a suburb or location where the surroundings would attract a better class, and to that extent, at least, would be likely to pass easily out of the "low cost housing" into the "investment" class of improved property.

The repetition of the same elements tends to hold down the construction costs, while all appearance of monotony on the exteriors has been skillfully avoided by the varied groupings of the different units, and by certain simple architectural variations in details. These variations are apparent in the pictures, in the different types of entrances, the slightly different handling of windows and cornices, and the gradual simplifying of the architectural details from the buildings fronting on the important boundary streets (Figs. 34 and 38) to the inner and more secluded portions of the property.

We are unfortunately unable to give

any information of value as to the actual comparative costs of construction and rental from these Government experiments, because of the way in which they were carried on. It is only possible to state the areas covered by the three types of plan employed. The three-room apartment (Fig. 41) covers 669 square feet, or 1238 to the whole unit; the four-room apartment (Fig. 39) 860 square feet, or 1720 to the unit, and the five-room apartment (Fig. 40) 976 square feet, or 1952 to the unit. From these figures and the information that the apartments are now renting for from \$35 to \$50 a month, it may be possible to obtain an idea as to their financial appeal as an investment proposition, once the local cost of their construction has been estimated.

Last month an attempt was made to show the relationship of property of this type to land values in the usual American community of the grade that is here being considered. To apply it more directly to one of the "E" shaped groups appearing in Fig. 32, for instance, containing 18 four-room apartments in three stories of height, it would probably work out to cost about \$84,000 for construction on land upwards of \$6,000 to \$10,000 in value.

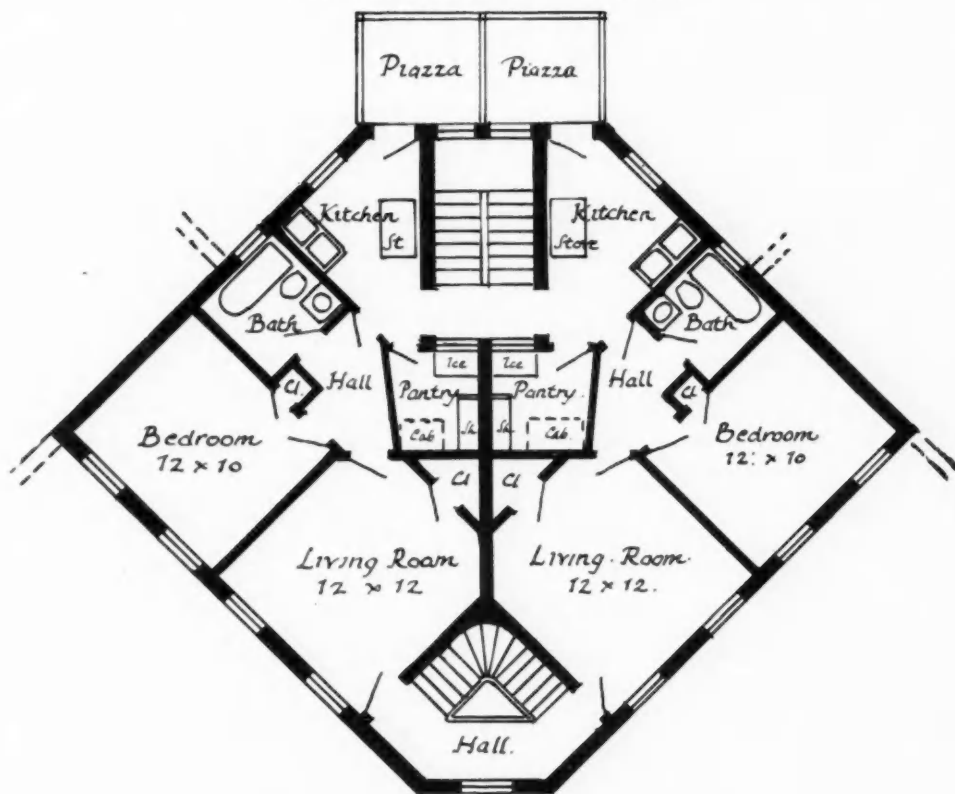


Fig. 41

Plan of Three-Room Apartments, Double Corner Units  
 BLACK ROCK DEVELOPMENT, BRIDGEPORT, CONNECTICUT  
 R. Clipston Sturgis, Architect

The income figured at \$10 a room, would run about \$45 a month per apartment, or \$9,720 a year, a little more than 10% gross on the investment. The structure would cover about 50% of the land area, and with 72 rooms in the "E" group, would cost about \$1,200 a room, or \$1,300 a room including the land.

This illustrates its approximate financial basis, which would of course vary in detail in the different communities. For workingmen's housing only, it might be possible still further to decrease the initial cost of construction by reducing somewhat the sizes of the rooms and the areas covered by the buildings.

Last month we discussed the most economical type of individual village mul-

tiple dwelling, the four-family semi-detached tenement, and found it at once the cheapest and most satisfactory type that has yet been developed to suit conditions in the smaller villages of the country.

But there are other localities, nearer to our centers of population, where the problem of finding decently modern accommodations for low-rental housing is much more difficult of solution, and these are the suburbs where the living standards are high enough to generally affect the value of real estate and building. Under such conditions we can commend some such solution as is instanced by the types of apartment dwellings that have been described this month.

## BRITISH INTERIOR DECORATION-FLOORS

By  
*Albert E. Bullock*

WITH ANY SCHEME of interior decoration the limitations in cost usually necessitate confining one's treatment to the walls, windows and fireplaces only. It is to be deplored that such is the invariable use in English examples, when upon reflection it will be admitted that no scheme can be really complete which does not embrace also both the ceiling and the floor.

Unfortunately we have in England so few examples of good parquet flooring and so many modern types of wood-block floors that recourse has to be had to early French ones from the Louvre and Versailles in order to eke out the paucity of English invention in this respect.

The history of the marble floor in the hall of the Queen's House at Greenwich Hospital, of which a scale drawing is here depicted, and the record of its making coinciding with the date of the erection of the house in 1639 is an interesting fact. From its form in taking up the main lines of the ceiling beams it is obvious that the whole room was designed at one time by Inigo Jones.

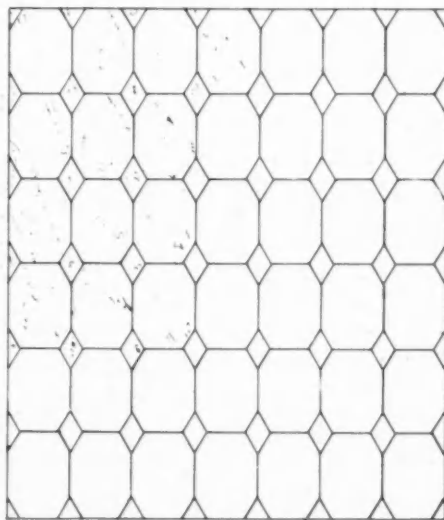
We have fewer authentic types in subsequent years to depend upon, but the common or simpler ones with large squares of white marble or stone flags having small black squares or diamond shaped pieces at their intersections with occasional variations in the contiguous octagonal and hexagonal patterns, typify the designs adopted in late Tudor days for leaded lights. An example of hexagonal stone paving exists on one of the landings of the main staircase at Hampton Court Palace in the wing Talman or Wren designed, and the simpler paving of the vaulted loggia to the inner Court there, is worthy of passing notice.

There are, too, many different types of

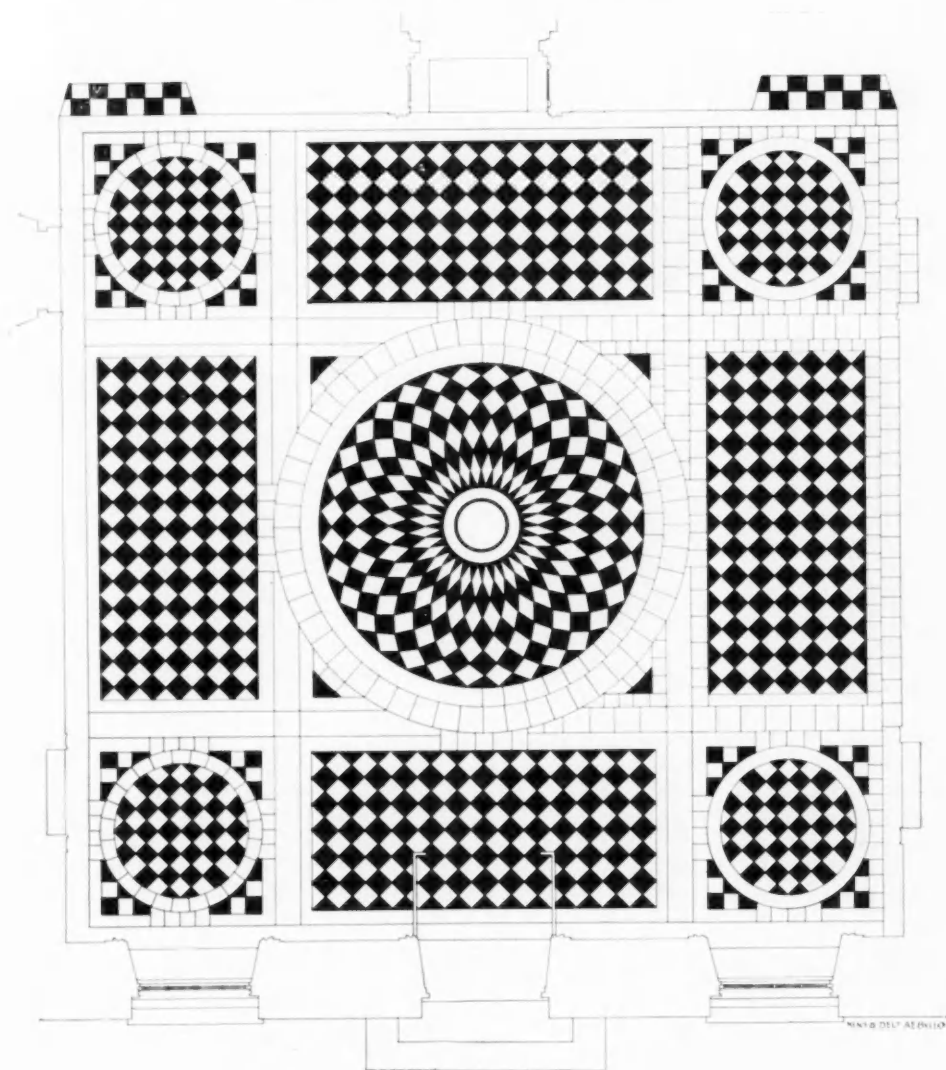
marble paving within the chancel arch in churches, but they are for the most part modern and adapted from Italian sources.

The most elaborate of the early nineteenth century designs consists in that given from the paving to the Ionic porch and centre aisle of Stuart's Chapel at Greenwich Hospital. This example is most perfectly worked from an intricate pattern, and well preserved, while there is a certain reserve in the treatment of the cream and black slabs which exhibits a rhythm at once bold and suitable to the materials adopted.

The marble paving in front of the altar in St. Paul's Cathedral is an obvious plagiarism from Italy and as such can hardly be termed a national design, although it contains interesting lines and suggests a variety of possible alternatives which



Pattern of Paving to Main Stairs Landing  
HAMPTON COURT PALACE



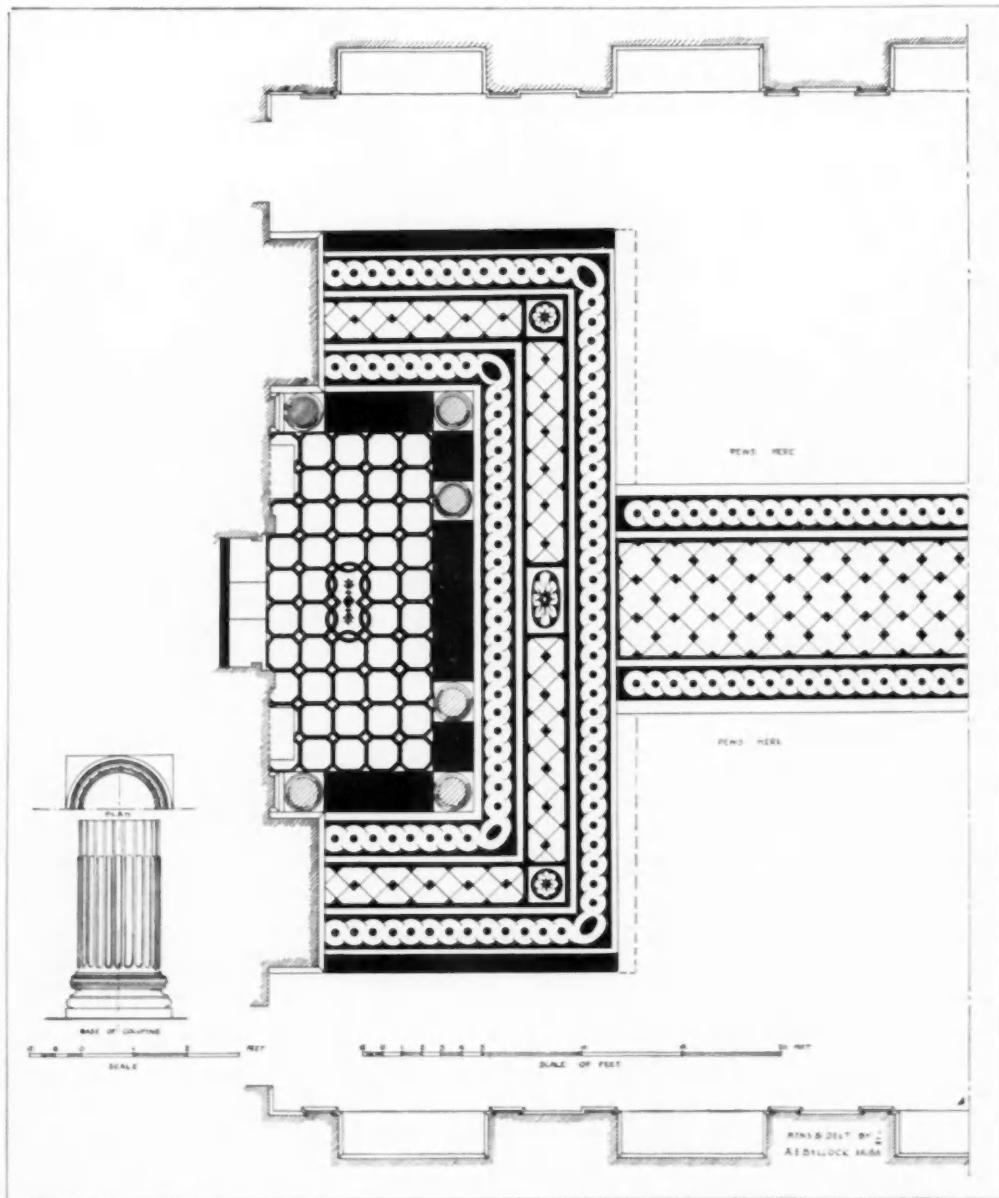
Detail of Marble Floor  
THE QUEEN'S HOUSE, GREENWICH HOSPITAL, LONDON  
Inigo Jones, Architect

might be based upon the theme as carried out.

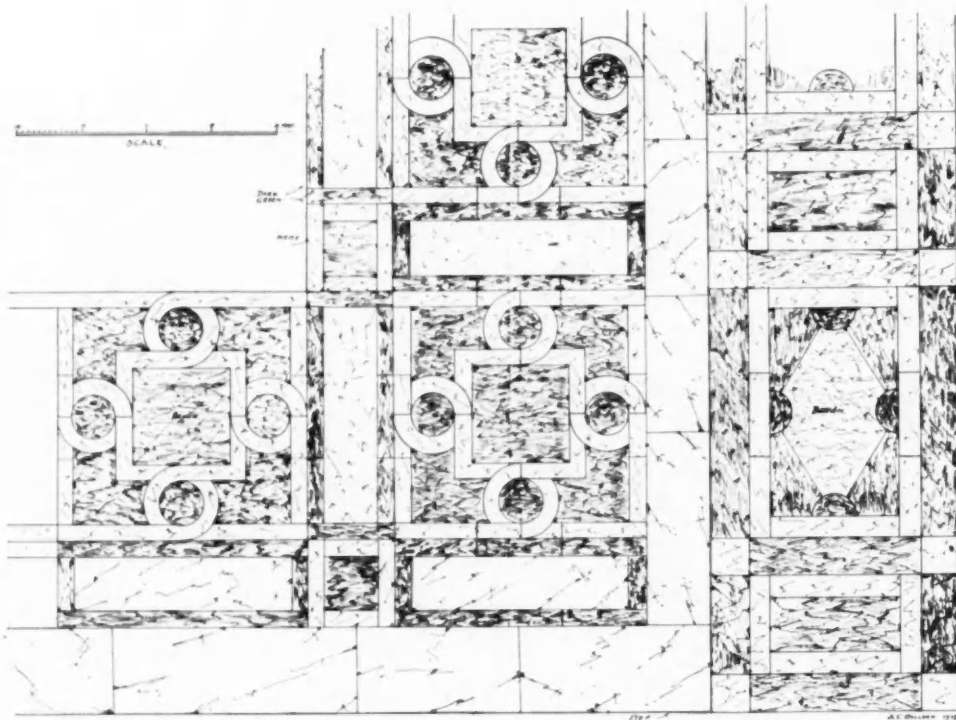
If we turn for a moment to the early French patterns it will be easily conceived that their simple lines have been the origin of many a variation familiar to those whose interest in wood-block flooring has been arrested. Although the exact patterns are rare in England it is

obvious that attempts to copy them in some of the larger mansions of the country, were somewhat numerous.

The elaborate inlays of vari-coloured woods in the upper exhibition rooms of the Louvre are more modern than the Le Brun Galleries and therefore form an interesting comparison with the earlier designs, illustrating the possibilities as



Marble Paving in Entrance and Nave, with Details  
 THE CHAPEL, GREENWICH HOSPITAL, LONDON



MARBLE PAVING OF ALTAR, ST. PAUL'S CATHEDRAL, LONDON

well as the limitations of the material.

It was perhaps natural that the perfection obtained by French craftsmen in parquetry for furniture during the Boulle period, should exhibit itself in a certain skill in the design of parquet floors and for this reason we find very few châteaux in many widely scattered districts without some good examples of this work.

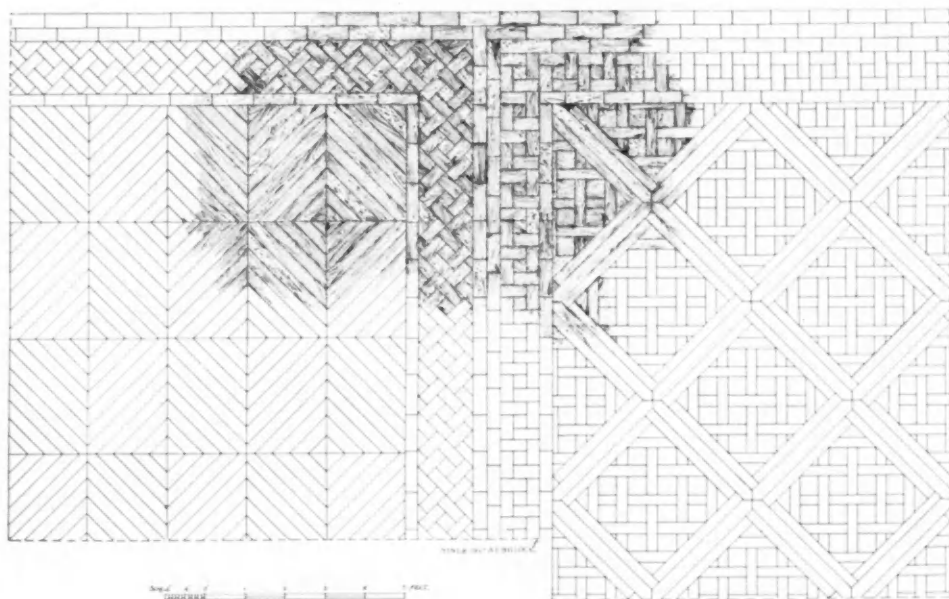
Inlays both in panelling and furniture were common in the early periods in England, as witness the work at the Inlaid Chamber from Sizergh Castle and the many "grandfather" clocks with elaborate inlays culminating in the fulness of the style known as "Seaweed" marquetry. The Dutch excelled in inlays of many varieties in cabinets, chairs, settees and tables.

In the William and Mary period in England the panelling of walls followed several different patterns, the panels to

overmantels receiving chief attention, as at Hampton Court Palace and the state rooms at Chatsworth.

At Belton House the decoration consists of carvings to the panelling and elaborate ceilings to the main staircase and chapel. The hall and saloon are, however, paved with black and white marble squares and there exists a room with a parquet executed from a design by the present Lord Brownlow, made from a Dutch formal garden, which can hardly be said to be a satisfactory source from which to cull ideas in designs for parquet flooring; nevertheless it has one compensation, that of originality.

An interesting example of early English parquet floor, (formerly existing in Northumberland House, London), has been relaid in a private house at New Barnet named Monkenhurst. This is an oak floor consisting of squares placed



PARQUET FLOOR IN THE SALLE DE GLACE, PETIT TRIANON, VERSAILLES

diagonally with a conventional pattern placed within a circle in each square. The border is probably a copy of the original. Northumberland House is attributed to a Dutchman named Bernard Janssens and if the floor was part of his design it may be dated about 1625, or of the period of James I to Charles I.

The paving of the floor of the family chapel at Whitley-Beaumont, near Huddersfield, Yorkshire, is formed of marble slabs of octagonal form interspaced with small black squares placed on the diagonal.

The ordinary chessboard pattern of regular squares of white and black marble, with its many variations in size and angle of direction hardly needs illustration.

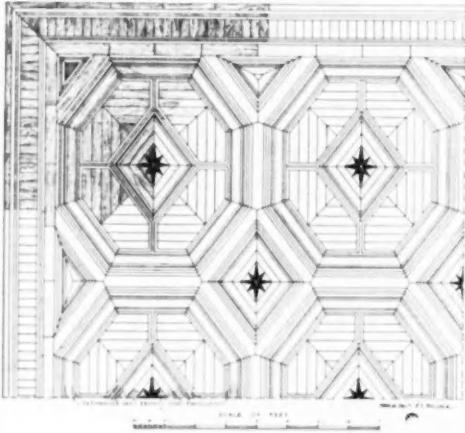
With paving tiles a number of patterns are given in the published catalogues of manufacturers. The small squares and triangles lend themselves readily to the formation of intricate patterns for hearths and fire cheeks but they will never entirely take the place of the more dignified treatment of marble even for this purpose,

although on economic grounds, they form a branch of building material which as a substitute is a serious rival.

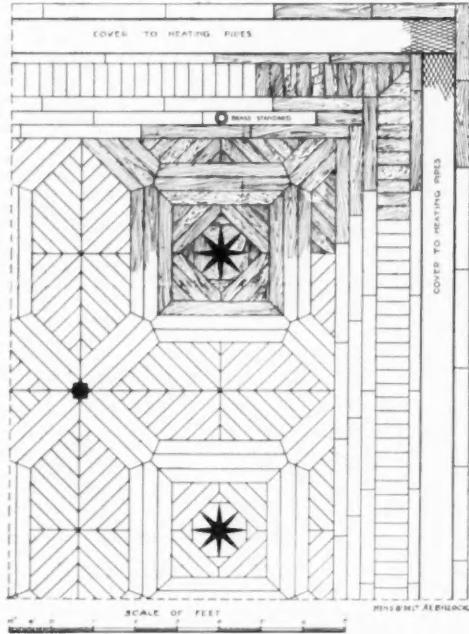
The necessity of cheapening initial outlay in floor coverings has given an impetus to other substitutes in rubber stampings and linoleums. These latter have been successfully exploited by the Staines Linoleum Company, Ltd., who have a great variety of patterns in imitation of marble floors, parquet inlays and even carpets and mattings. These have the advantage of being easily removed and when polished, of presenting a finish similar to the prototype. Beyond these advantages they are not to be preferred as a permanent flooring.

During the latter half of the last century a tendency toward the introduction of mosaics is observable in various examples of paving executed from about the year 1880. One of the more notable examples is in the paving surrounding the altar at Chichester Cathedral and that adjoining, comprising the choir aisles. There are three distinct patterns. The diamond shaped border and contiguous

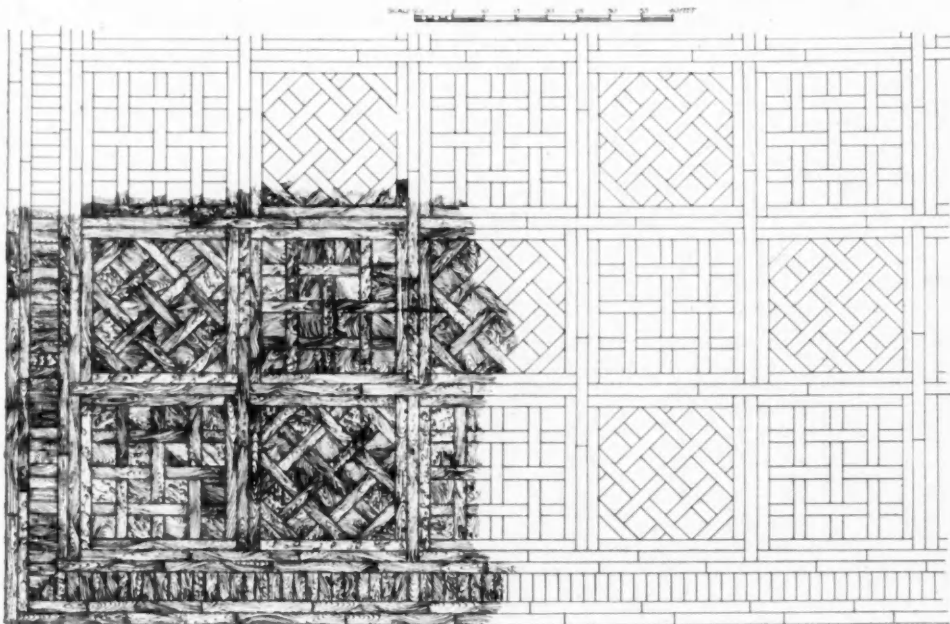


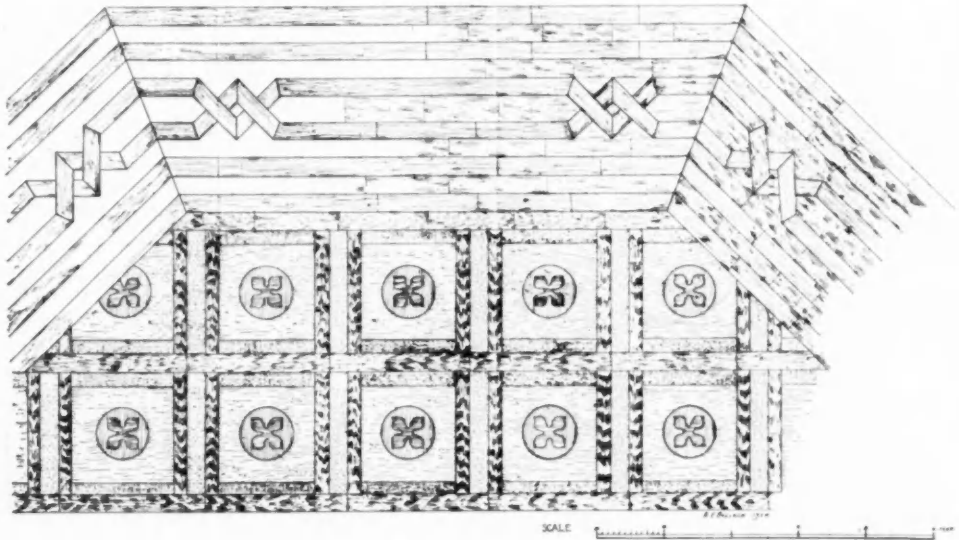


Rich Parquet Inlay  
THE LOUVRE, PARIS



SALON CARRE, PARIS





PARQUET FLOOR FROM NORTHUMBERLAND HOUSE, LONDON

triangles and diagonal squares render a pleasing play of fancy and variation in design. The contrast in tones between the different squares being very slight, suggests a delicate finish, the marbles being of a generally even tone of grey-green with occasional slabs resembling alabaster or onyx which, however, are not good wearing stones for paving purposes.

Mosaics were definitely brought into general use by Bently when erecting Westminster Cathedral near Victoria Station, London, where many Italian types are to be observed.

The revival of the use of inlays in panelling has obtained in recent years, especially in the principal hotels as the Adelphi at Liverpool and for the decoration of staterooms on yachts and steamboats as well as in the Pullman cars of the principal railways of England. In some instances the type of design is good, having a tendency to Greek principles of variation of the honeysuckle pattern in some of the more recent carriages on the London, Brighton & South Coast Railway. The veneers used are bird's-eye maple, mahogany, satinwood, rosewood and oak which being highly polished present an effective appearance in

the necessarily small compartments.

The advantage of inlays in comparison with mouldings and carving where clear lines are essential is obvious but the shining finish of the flat surfaces is rarely so effective as a well designed and proportioned period room.

With small rooms, passages and bath rooms rubber tiling is the most convenient form of flooring as it is sanitary and warm to the feet. The Austrian mastic formed cement and sawdust floor which is executed on the principle of cloisonné enamelled ware has been used to some extent in recent years on account of its cheapness and easy application but it lacks the possibility of receiving a high polish and is therefore placed at a disadvantage where floors are required for dancing or exhibiting fine examples of period furniture, the reflections of which so enhance the setting on polished surfaces.

It is hoped the illustrations here given will be found useful as representative examples of various types of floor coverings and lead others to practice that general observance of detail which has been rightly deemed the forerunner of originality in design.

# ORIGIN of CHRISTIAN CHURCH ART

*New Facts and Principles of  
Research by Josef Strzygowski*

By  
*Charles H. Moore*

THE THESIS OF THIS book\* may be shortly stated as follows: Students of Christian art have hitherto wandered in the dark in search of origins and filiations of styles, in consequence of making Rome their point of departure, whereas, in truth, these origins belong to the East.

The author starts with a summary "of the condition of research based on a consideration of regional, historical and cultural influences," which he thinks "brings us to the following conclusions": "Hitherto the study of Christian art has been almost exclusively in the hands of archaeologists. Of these, one group, the specifically Christian, made the Catacombs its starting-point. Its members believed that they could solve the problem of origin by the help of the oldest Roman monuments, the underground mural paintings, the sarcophagi, and the timber-roofed basilicas. In recent years a second group, that of the classical archaeologists, has turned its attention to Christian monuments, just as classical philologists have directed theirs to patristic literature. A third group, not far removed from the last, attaches significance to Byzantine Hellenism, and thinks to have discovered in this the creative spirit and guiding principle of development." "For the specialist who applies the comparative method in the artistic field Christianity rises against a background of other faiths" (pp. 15, 16.) "The problem today concerns the Aryan spirit in East and West, its assimilation of religions which had grown up on Semitic ground. . . . Just as Christianity took final shape among the Western Aryans, so did Islam among the Aryans of the East. The subject of the present book is limited to the period between Christ and Mo-

ammed. But in this period Christian art itself was penetrated by the East Aryan spirit; its whole development towards its approaching ascendancy in Europe is only intelligible if we grasp this hitherto neglected fact." (p. 20).

But it is a mistake to suppose that the fact of Eastern influence on western art has been neglected. It has been frankly recognized; but the precise character and extent of it have not been clearly understood, because the subject has been approached too superficially on the one hand, and too much from the point of view of speculative scholarship, on the other—in both cases without competent understanding and comparison of the monuments. Correct understanding of "regional, historical, and cultural influences" is well so far as it goes, but alone it cannot solve the problems of architectural origins. These demand knowledge of the monuments of a kind that has yet rarely prevailed among writers.

The monuments require to be studied with an eye to structure as the primary formative principle of a style for structure shows the distinctive nature of a style, and gives a solid basis for judgment as to origins and filiations. The writer of this book does not appear to have sufficiently realized this, as I think we shall see. He also makes affirmations of architectural precedence that cannot be justified, particularly in respect to the barrel-vault and the dome. For example, he says (p. 22): "I am disposed to ascribe the origin of the barrel-vault . . . to Persian Mesopotamia, that of the dome to Iran." But is there any ground for belief that barrel-vaulting arose in Eastern church building: did not such vaulting prevail in the West in im-

\*Oxford University Press, 1923. \$12.

perial Roman times? And when we come to barrel-vaulted church building in the West, have we any reason to suppose that it was derived from Eastern sources, when we know that in Southern Gaul, where these churches are found, there were, and still are, many Roman remains of such vaulting? We know that this region had long been the seat of a brilliant Roman civilization, and that Roman culture prevailed here far into mediaeval times. What, under such conditions, would be more natural than that the church builders of the locality should adopt the form of vault which they had before their eyes in the ancient monuments; and how, on any other supposition, can it be explained why the barrel-vaulted churches of Gaul are confined to the South? As for the dome, its Eastern origin need not be questioned, though it was never, I believe, developed in the East into anything that can be called architecture, until the time of Justinian when in Constantinople—where the Greek genius was dominant—it became the leading feature of the greatest architectural monument of the early middle ages, the Church of Saint Sophia.

The author gives little information as to the structure of the primitive Eastern dome and its support, and his remarks respecting it are often conjectural as well as obscure. For example, on page 59 he says: "The dome over a square is a form which seems to have been developed from wooden construction after Aryan immigration into Iran." But the only support offered for this guess is that of "their method of roofing wooden houses with short beams laid across the corners," so that when this "was reproduced in sundried brick, a corbelled dome rose from four squinches at the corners of the square, leaving a lozenge-shaped opening at the top." It is hard to find intelligible meaning in this. What is there in wooden construction to give rise to a dome, and how could the circular base of a dome be adjusted to a lozenge-shaped opening? Again, on the same page, he remarks: "The dome seems at first to have been set upon the four walls by the

help of squinches, when, however, the quatrefoil plan was introduced, and the solid walls pierced by arches, the spherical pendentive came in." Is it meant that the pendentive was developed in Iran before the great work in Constantinople was accomplished, and that thus the credit of producing this most important feature of dome construction over a square area belongs to Iran? Then, too, the writer fails to inform us how the Eastern domes were made secure against thrust—a matter which affects fundamentally their architectural character, since if thrusts are met by encircling abutments—the only effective method—the outline of the whole structure is materially affected. The illustrations of exteriors given in the book are of buildings posterior to the date of St. Sophia, and the domes are enclosed within drums which, together with the roofs, completely conceal them from external view. But were not the early domes of the East quite uncovered, and if so how were they made secure on any considerable scale? It should be realized that the great unbuttressed domes of the Renaissance are precariously tied in with binding chains. Were such chains employed in the early domes of the East? However this may be, it is clear that resort to such means is not compatible with sound building in stone masonry, and therefore no such extraneous devices find place in creative art. It may be remarked here that the number of creative styles hitherto produced in the world is small, and in consequence, students of mediaeval architecture are grievously confused by the vast multiplicity of so-called styles, in all parts of Europe, which are of a more or less spurious nature. The racial confusion of the middle ages, with its inevitable predominance of intellectual and artistic mediocrity, is naturally reflected in the architecture. It should be realized that creative styles are few, and are distinguished first by structural consistency; but the great bulk of mediaeval building is wanting in rational construction. The first care of the student should be to distinguish between what is consistent in

structure and what is not so. In searching for creative origins, this consistency of structure should be a primary consideration, and should be kept always in mind. Without this no study of regional, historical, or cultural matters can lead to just conclusions respecting architecture and filiations of styles.

In his discussion of what he calls the "vaulted-basilica" (p. 86), this lack of structural discrimination is further manifest. There is no propriety in calling a vaulted church a basilica. A basilican church is essentially and exclusively a thin-walled edifice covered by a timber roof, save for the apse, which has a semi-dome on a small scale, and in some cases, groined vaults over the aisles. It cannot carry high vaulting, but only a trussed timber roof—which has no great weight and exerts no thrusts. It is true that what is called the basilica of Constantine, in the Roman Forum, is vaulted, with ponderous walls and abutments to support the vaulting. These features, however, take it out of the true basilican category, and make it architecturally something radically different. But the writer appears to regard any building with a long nave, whether timber-roofed or vaulted, as a basilica. It should be obvious that this deprives the term basilica of any definite meaning and creates confusion. Thus, on page 183, we are told that "the Hellenistic timber-roofed basilica . . . began in the course of time to yield to the pressure of Eastern communities, while the vault, gradually advancing westwards, first profoundly modified the long church, and ultimately, after a thousand years, sealed its triumph with the dome of St. Peter's." Thus the author appears to regard the modern Church of St. Peter's as a basilican structure, dome and all. He seems also to consider Gothic architecture as a derivation from the "vaulted basilica," for he says, (p. 72) that "when the long naved church was imposed upon Armenia in the fifth century the dome was added, and a type produced which bore in itself the seeds of Christian northern art in Europe (Gothic)." And speaking of the

cathedral of Ani, of which he gives an illustration facing page 71, he says: "It is a delight, in a church earlier than A.D. 1000, to see the builder . . . carrying Armenian art so logically . . . past Romanesque to Gothic." What is shown in this building gives no intelligible meaning to this language, and no attempt is made to explain it.

It is necessary here, for the sake of clearness, to say a few words on the terms Romanesque and Gothic as applied to mediaeval architecture. Both terms have been hitherto employed so loosely that they have carried no definite meanings. No discussions involving the use of these terms can lead to just conclusions until some proper common understanding concerning them is reached. It may well be questioned whether either of them is appropriate, but if used at all, it ought to be with precise significance as to the architectural character to be understood respectively.

In writings on mediaeval architecture thus far, the term Romanesque connotes little more than post-basilican building with round arches. It has not been recognized that of the many varieties of round-arched architecture of Western Europe, only one has a distinctive character based on structural principles that contain seeds of further development, namely, the so-called Lombard Romanesque of the eleventh century. This is a vaulted architecture, in which the vault has a new character and is a development out of the domical groined vault of the Byzantine craftsmen. The Byzantine groined vault gave the initiative in progressive vault construction by departing from the Roman principle of intersecting cylindrical surfaces, in which the groin arch has of necessity an elliptical curve, and making the curve of the groin semi-circular, thus lifting its crown to a higher level than that reached by the arches on the sides of the vault and giving it the domical form. In taking over this Byzantine innovation, the Lombard builders made, at the same time, far-reaching additions which brought into being, in rudimentary form, an organic system of which

the Gothic style of the Ile-de-France is, as to structure, but the ultimate development. The Lombard innovations consisted in introducing salient ribs to strengthen the groins, and a similar rib on each side of the vault compartment, while upright supports, the principal ones starting from the pavement—one for each vault rib—gave a complete internal skeleton. This organic Lombard system is exemplified in the nave of the church of St. Ambrogio of Milan, which remains virtually intact from the eleventh century. The perfected system (the French Gothic) culminates in the nave of Amiens. This final development consisted in functional and beautifying improvements in every part—in reshaping and readjustment of the vault ribs and their supporting shafts, in the creation of an external buttress system answering to the internal parts, and finally to the virtual elimination of walls—now no longer needed—so that the entire fabric became an open skeleton sustaining the vaults, as at Reims and Amiens. We cannot here discuss the conditions which produced, in Lombardy the beginnings, and in the Ile-de-France the full development, of architecture so radically different from any that the world had seen before. It is enough at present to note the facts.

To return to Mr. Strzygowski's thesis, it should be clear on comparison that what he calls a vaulted basilica, namely, a long naved and barrel-vaulted building with a dome, contains no germs of an organic structure such as I have briefly described. Such buildings are of necessity heavy walled structures that contribute nothing toward the formation of either the organic Romanesque of the Lombards or the Gothic of the Ile-de-France. It is important, however, to bear in mind that the initial principle of the Lombard and the French developments, came from the domical groined vault of the Byzantine East, while the further creative innovations were wrought entirely by the builders of the West.

The many conflicting notions respecting the mediaeval architectures of Western Europe that find expression in books, are

a natural result of the loose nomenclature and erroneous classifications of styles that were hastily adopted by the early writers of the last century who were ill-equipped for their task. A discriminating survey of the whole field cannot fail to make it clear that the architecture of the middle ages presents a tangled mixture of, for the most part, more or less spurious styles, out of which emerge the creative types that I have named. The idea that Romanesque and Gothic are generic types of building that prevailed over all Western Europe, from the twelfth to the fifteenth centuries, is a fallacy that more attentive observation and comparison of the monuments cannot fail to dispel.

Before leaving this part of the subject, a word must be said about the theory that the Scandinavian wooden buildings contributed to the formation of the Gothic style, as our author maintains that it did, saying (p. 187): "It was only in the north of Europe that fresh creative energy survived to produce, in the twelfth century, that flower of Christian art which we call Gothic." And he adds: "This art developed in the north of France out of a lost wooden architecture, just as Armenian construction was derived from vanished Iranian buildings of unburnt bricks." The notion that Gothic architecture was developed out of wooden construction has no foundation in fact, because it is impossible. For nothing of the principle of any stone building can be embodied in a timber frame. The timber framework is held together by pinning the parts. All tendency to yield to lateral pressures is met in wood by the tension of the tie beam; but there is no tension in stone building, stability in stone is maintained of necessity wholly by compression. In his quest of origins the writer has here lost sight of fundamental principles of construction pertaining to the materials employed; there can be no question of structural filiation between wooden and stone building. As for the evolution of Gothic, we have full illustration of it in extant monuments of the Ile-de-France, and nowhere else. But the author contradicts his own theory

*THE ARCHITECTURAL RECORD.*

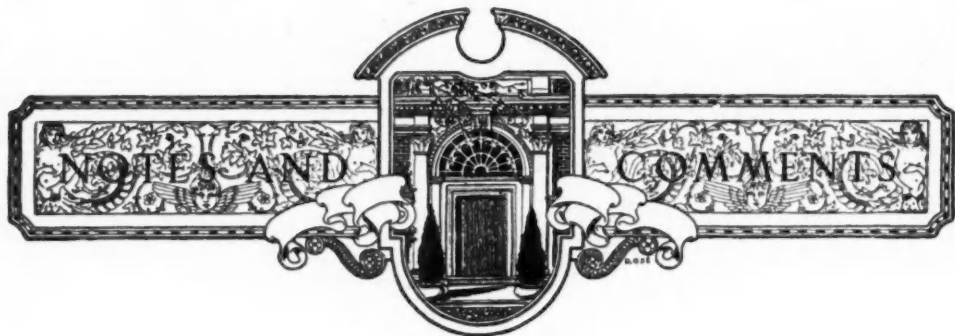
as here laid down, by his equally mistaken theory of the derivation of Gothic from the "vaulted basilica"—which he has told us, as above noticed, contains the seeds of Gothic. On page 75, he remarks: "I do not regard Christian architecture . . . in the narrow early Christian sense, but from a wider point of view, passing beyond the middle

ages to the High Renaissance." Thus the author appears to maintain that there is an architectural continuity of development from early Christian art through the middle ages to, and including, the Renaissance.

There does not appear any consistent principle drawn from the monuments, governing his conclusions.



PORCH OF A PARISH CHURCH IN KENT, ENGLAND



We suppose the historian of American domestic architecture would agree that the modern traits of our domestic building appeared some time near the year 1880. During the seventies American taste in house design was dominated by Eastlake, and the Gothic revival; and these houses were erected for people who were opposed to display and who insisted, at any expense, upon appearing to be unpretentious. But during the late seventies after business had fully recovered from the panic of 1873, the millionaire first became a prominent social fact in American life; and early in the eighties he began to demand some architectural expression both of his opulence and his increased sense of his social importance. Then it was that the palatial villa of Newport began to be built and royal châteaux broke the monotony of the brownstone fronts on upper Fifth avenue.

It may be interesting, consequently, to take a glance at the way in which an intelligent man and a good architect regarded at that time the problems and prospects of American domestic architecture. Mr. A. J. Bloor was both an intelligent man and a well-informed and conscientious architect, and in January, 1879, he contributed to the *American Art Journal* a series of articles on American dwellings, which began with some general observations on the prevailing tendencies in American taste. He asks his readers of middle age to compare the contemporary houses, both in city and country, with those whereby they were surrounded in their youth; and he declares that "such a retrospection can hardly fail to leave on the mind the impression that the community is more cultivated in its perception of the commodious, the fitting and the beautiful in the building art than it was in the last gen-

eration." In order to justify this statement Mr. Bloor undertook a comprehensive survey of the history of the American domestic architecture which we cannot reproduce here, but it is interesting to observe how clearly he foreshadowed the direction which the design of the more pretentious American houses was to take during the next twenty-five years. He states, for instance, that "among both amateurs and architects, the conviction is deepening that the so-called distinctively Gothic forms, though probably the noblest and most suitable of existing systems for the ecclesiastical purposes of Christendom and perhaps for very large enclosures of a secular kind, are by no means so well adapted for confined or moderate domestic purposes as others which lie more or less outside of mediæval prototypes," and he anticipates the reason why the tendency for almost a generation was to run in the direction of something more ornate. "No one," he says, "familiar with the grade of existing American society which has the control of very large means will assert that a self-restrained tone any longer prevails in it to an influential degree. Is it not rather the truth that our merchant princes, our large manufacturers, our money-coining miners, railway magnates and financiers of all kinds are much more disposed to emulate the expenditures of the Medici of the old Italian republics than to conform to the habits of their thrifty forefathers."

In dealing with another important aspect of his subject, Mr. Bloor was less fortunate in his outlook and judgments. American domestic architecture was for the first time on the verge of a conscious pursuit of "stylism"—of a practice, that is, of designing houses according to the spirit and the letter of particular French or Italian periods. Mr.



Bloor anticipates the probability of such a development, but he does not anticipate the extent to which stylistic legalism was subsequently to prevail. His discussion of this matter is so ingenuous and yet so well-intentioned that it is worth quoting somewhat at length.

He considers that his retrospection will convince all his readers of the desirability of dispensing with "style" in so far as it (that is the dispensing) suits them." After granting "all due reverence to the memories of the architects, kings or capitalists who together did their great works in Assyria, Egypt, Athens, Rome or medieval and Renaissance Europe," we Americans "ought not to handicap ourselves too much with the 'styles' deducible from stately structures in our homely task of considering what is suitable for our everyday purposes and exigencies here in the United States, in the way of family residences for the citizens of a republic where there is neither a peasantry nor a legal aristocracy and where the habits of what is virtually a simple homogeneous bourgeois class only differ according to the fluctuations of the money market and the strength and cultivation of the individual. We will agree to resort to classic or medieval Gothic, or in a slight degree or not at all just as it happens to hit our mood or suit constructional emergencies or aesthetical suggestions."

In frowning on stylism, Mr. Bloor was, of course, warning his readers against a weakness to which Americans were peculiarly prone. They have always shown originality and initiative in dealing with practical affairs as contrasted with timidity and imitativeness in dealing with matters of literary and plastic expression. He wished, as so many American critics have wished before and since, to persuade Americans to seek vehicles of expression which were the product of American conditions and ideals. But as it happens, architecture is a language as well as a matter of utility, and language is necessarily conventional. No people will invent languages if they can find them ready-made. The Americans who wanted to build showy, pretentious houses were bound to use the architectural language which other peoples had invented for that purpose. It was only after such houses had been domesticated on American soil that they could, as Mr. Bloor demanded, be overlooked, criticized and rejected or modified by taste born in part of local conditions and local experience.

HERBERT CROLY

## DESIGN REGISTRATION AN ASSET TO ARCHITECTS

It would be difficult to imagine a contemplated Federal statute richer in promise to the architectural profession than the Design Registration Bill. That more has not been heard of the pending measure to afford protection to original designs in art and industry is due principally to the fact that the Capper Bill was introduced too late in Congress to have a place on the Congressional calendar. The sponsors of the bill thereupon laid their plans to press the issue during the winter of 1924-25.

In some quarters the present effort to protect new and original designs against imitation and infringement has been acclaimed the first national governmental recognition of the property rights that are vested in unique forms and outlines. For years past, the patent laws of the nation have made provision for the issuance of patents upon designs and a certain number of designers have, each year, availed themselves of this form of insurance. By and large, however, the facilities for Federal certification of exclusive ownership in designs have been so little used it is not strange that many persons who have creative work at stake have remained in ignorance of their existence.

The existing design patent system is criticized as not sufficiently comprehensive but the most serious indictment against it is that the expense entailed has been prohibitive to interests that must patent many designs to secure complete protection. The high cost of patenting has been particularly discouraging to the interests that contemplate active use of only one design on a given theme or motif but wish to copyright the several obvious modifications to prevent others from taking possession of alternatives of the design that might readily induce mistake. It is because the high cost of patenting has borne much of the blame for the rising tide of design piracy we find the nominal fee for short-term registration a feature of the new system that Congress is urged to adopt.

Architects may measure their interest in this project by the broad definition of "design" which will obtain if the pending bill is enacted. The term "design" is to include any conception in relation to a manufactured project which is new and original in its actual application to or embodiment in the manufactured product either

as to pattern, shape or form, ornamentation or decoration. The phrase "surface design" is to be applicable to an original conception applied only to the surface of a manufactured product to improve its appearance. Inasmuch as the U. S. Commissioner of Patents, in considering an appeal in a trademark case, recently decided that dwelling houses were to be construed as articles of manufacture, it is assumed that no question could be raised as to the application of the Design Registration program to all sections of the architectural field.

In order to indicate some of the products for which designs are expressly recognized as registerable, the pending bill enumerates some fifteen different classes, among which are heating apparatus, textile drapings and hangings, floor and wall coverings other than textiles, furniture, art objects, lighting, plumbing and bathroom fixtures, builders' hardware and trimmings, and miscellaneous designs. The bill provides that registration of a design in one class shall not prevent registration of one of similar character embodied in or applied to other classes of manufactured products "when authorship is involved in their creation."

Not only will the initial registration make it possible to reserve all potential modifications of an innovation in design, but this minimum fee for a short term will give opportunity to appraise its probable permanency. Under the Capper Bill, exclusive right in a design is secured for a period of two years upon payment of a fee of \$2. The registrant thus obtains forthwith an option upon his design in so far as Federal credentials can attest it. At any time before the expiration of the two years he may, by payment of a fee of \$20, secure the extension of the period of protection to twenty years. The framers of the act have assumed that two years should permit determination of the virtue of a design. The short term registration has the further advantage that it affords protection to the numerous novel but short-lived designs in industry.

The pending bill makes it specifically unlawful to copy, during the term of protection any registered design unless by license of the owner. Due provision is made for the assignment of copyrights but it is stipulated that such assignment must be recorded in the U. S. Patent Office within three months after its execution. To discourage false pretense of originality the bill threatens with fine of \$500 any author or assignee of an author who shall register a

design knowing that it is not original or who shall bring suit under a certificate of registration procured for a design known to be not original.

Ample remedies are provided for the creators or owners of original designs who are subjected to trespass. By the terms of the proposed act, the U. S. Courts would have power to grant injunctions preventing infringement of any right secured by design registration and providing for recovery of profits and damages. The courts may order the destruction of all "infringing copies" of a design and all the dies, molds, plates, devices, etc.

The Design Registration Bill, as it awaits the attention of Congress, is not by any means the hasty inspiration of an individual reformer. On the contrary in its present form, it represents the fruits of several years of effort by various professional and business organizations. More especially is it the child of an association known as the Design Registration League which was organized avowedly to secure the protection essential to the development of original ideas in the art industries and kindred fields. The Capper Bill in its final form represents a composite of ideas. Various industries, dependent upon the use of artistic designs, for example the manufacturers of spare parts and repair parts for standard mechanisms, were apprehensive lest elemental restrictions upon designs would hamper them. Gradually, however, the wording of the measure was so revised and amended that "secret registration," "bulk registration" and other threatened evils are accounted impossible and virtually unanimous support has been secured.

WALDON FAWCETT

An interesting report\* has been brought out under the auspices of the Committee on Seasonal Operations in the Construction Industry, Mr. Ernest T. Trigg, President of John Lucas & Company, Chairman. The personnel of the committee consisted of well known leaders in various branches of the industry whose names are guarantee of a serious and practical investigation of the subject.

"Custom, not climate, is mainly responsible for seasonal idleness in the construction industry." This is the opening sentence of

\*Seasonal Operation in the Construction Industries: The Facts and Remedies. Report and Recommendations of a Committee of the President's Conference on Unemployment. With a foreword by Herbert Hoover. McGraw-Hill Book Co., Inc., New York. \$2.50.

the report and strikes the keynote of the whole. Many facts are presented to bear out this contention. Weather reports for some years back have been examined to show that the number of days in the winter in which construction work cannot be carried on is smaller than is generally supposed. It is brought out that there is a marked seasonal fluctuation in building operations even in southern localities where the influence of weather on winter building is practically negligible. The effect of fixed leasing dates on seasonal unemployment is also discussed. Fixed leasing dates not only cause a rush for completing structures at a given date, but they also impose heavy loads on trucking companies, telephone companies, and other utilities which are called upon to make an unusual number of installations at a particular time.

The various phases of economic waste incident to seasonal idleness are well set forth. Not only does seasonal idleness result in a reduced annual wage to labor but also in increased costs, which must be borne by every other element in the construction industry including the owners of buildings and even tenants. During the peak of construction activities, building laborers are much sought after and competent ones are difficult to find for many jobs. Whereas, in a period of comparative idleness the best mechanics can be obtained and are likely to work more efficiently. Construction companies are obliged to carry heavy overhead charges through periods of comparative idleness and these expenses must be made up in times of greater activity. Owners who start their projects in the peak month are subject to delay in completion. All these factors are added to the cost of construction in general, which ultimately is borne by the community.

The facts brought out in the report are well presented and convincing. They point the way to further investigation by local organizations seeking to remedy the existing situation.

The remedies suggested are thoroughly practical. Reports from various contractors who have carried on a large volume of winter construction have been summarized. There is a discussion of the cost of precautions against damage by cold and of the items of saving which tend to counterbalance these added costs.

Not only have certain contractors, through use of improved processes, demonstrated to their own satisfaction that winter construc-

tion is feasible, but quite a few of them have thereby managed to distribute their own activities fairly evenly through the year. Cases are cited where subcontractors have, through advertising, persuaded owners to plan repair work, repainting, etc., in off seasons.

The report makes the very important point that any widespread change in the custom of letting contracts seasonally, would have to be the result of coöperation among the various elements affected and that these various elements will be persuaded to coöperate when they see that the result aimed at will, in the long run, be profitable to each and every one of them.

This report is a very able discussion of a subject of major importance to the construction industry. It is timely and practical. There is at the present time a considerable tendency toward concerted action among the many elements that are associated in building enterprises. Any one who desires to accomplish valuable results in eliminating seasonal idleness in his own business, would do well to give this report some study and use its findings as the basis of coöperative action toward that end.

THOMAS S. HOLDEN

#### THE ROCKEFELLER GIFT TO FRENCH ARCHITECTURE

The gift of \$1,000,000 made to France by Mr. John D. Rockefeller, Jr., for the restoration of the cathedral of Reims and the palaces of Versailles and Fontainebleau easily ranks as one of the most notable public gifts of our century. This gift to France stands almost alone in being directed to the restoration of three of the greatest buildings in France, each of extraordinary historic and artistic interest, and each of which makes its own distinct appeal to the imagination. It is a new phase for bettering humanity when our philanthropists turn to making gifts that succeeding generations, as well our own, may enjoy and take delight in the great architectural constructions of former times.

It was a noble gift, a gift of quite unexampled generosity; it was made at the time it was most needed. How the devastated cathedral of Reims cried aloud for quite ordinary structural repairs, has been known to all men, since its senseless destruction by the German guns. The palaces of Versailles and Fontainebleau stand in a different class. Both had long suffered from slow decay, so much so that many Paris newspapers begged for the aid that could not be given. We

may admit—and the point needs no argument—that these great buildings are among the architectural glories of France and of the world; but with the incessant demands made upon its resources the French Republic simply could not find the funds needed for even obvious repairs.

Mr. Rockefeller has, therefore, come to the aid of art lovers as well as to France herself. And he has done much more than lay a heavy debt of glad appreciation on the French people; he has benefitted, and that deliberately and of set purpose, every lover of fine architecture, every student of architecture, every one interested in the best in art.

In his letter to M. Poincaré making his offer, Mr. Rockefeller indicated the general lines on which he desired the money used. He wished to meet the expense of a new roof for the cathedral of Reims; to restore the buildings, fountains and gardens of Versailles, and to make the urgent restorations of the buildings and gardens of Fontainebleau. On these general lines his committee of investigation, in consultation with the French authorities, have settled upon 5,000,000 francs for re-erecting the roof of the cathedral and rebuilding the tower of the Angel, which stood upon the apex of the apse; 4,000,000 francs for the repairs to Fontainebleau, and 9,000,000 francs for Versailles.

The great horror of the war of 1914-1918 was its needless destructiveness. Its destruction of human life naturally stands first among its unprecedented terrors. But with the huge fighting forces involved this was unavoidable. The German destruction of monuments of art on the Western Front was utterly without reason or military advantage.

Many of these lost monuments can never be replaced; the cathedral of Reims may never be restored to what it was in its prime; but Americans may well be proud and rejoice that one of their own countrymen has done more than the most that any one man or, indeed, any group of men, could do to preserve it so far as is now possible.

BARR FERREE

Several additions in the art faculty of the Master Institute of United Arts have just been announced, indicating the rapid growth of these departments. Among them are, in the faculty of painting and drawing, Samuel Halpert and Chester Leich; in sculpture, Albert Jaegers and Robert Laurent. Mr. Laurent recently won the Logan prize in Chicago for his wood-carving and he will give classes in this as well as in sculpture; in architecture, Alfred C. Bossom and William Virick. The departments of design have recruited Raymond Sovey for theater decoration. The work in costume design is under Gilbert Clark, renowned in this field.

As has been its previous custom, the Master Institute will unite all departments in a series of general lectures, given by some of the greatest authorities. In the field of the graphic arts, the lectures will be given by Claude Bragdon, Rockwell Kent and Dhan Gopal Mukerji.

To encourage the interrelation between art students, the Master Institute is this season also cooperating with Corona Mundi, International Art Center in the series of contests for the Alfred C. Bossom prizes for American designs. There will be six contests for the best designs based on America's indigenous art, in costume, textiles, furniture, interior decoration, architecture and music.