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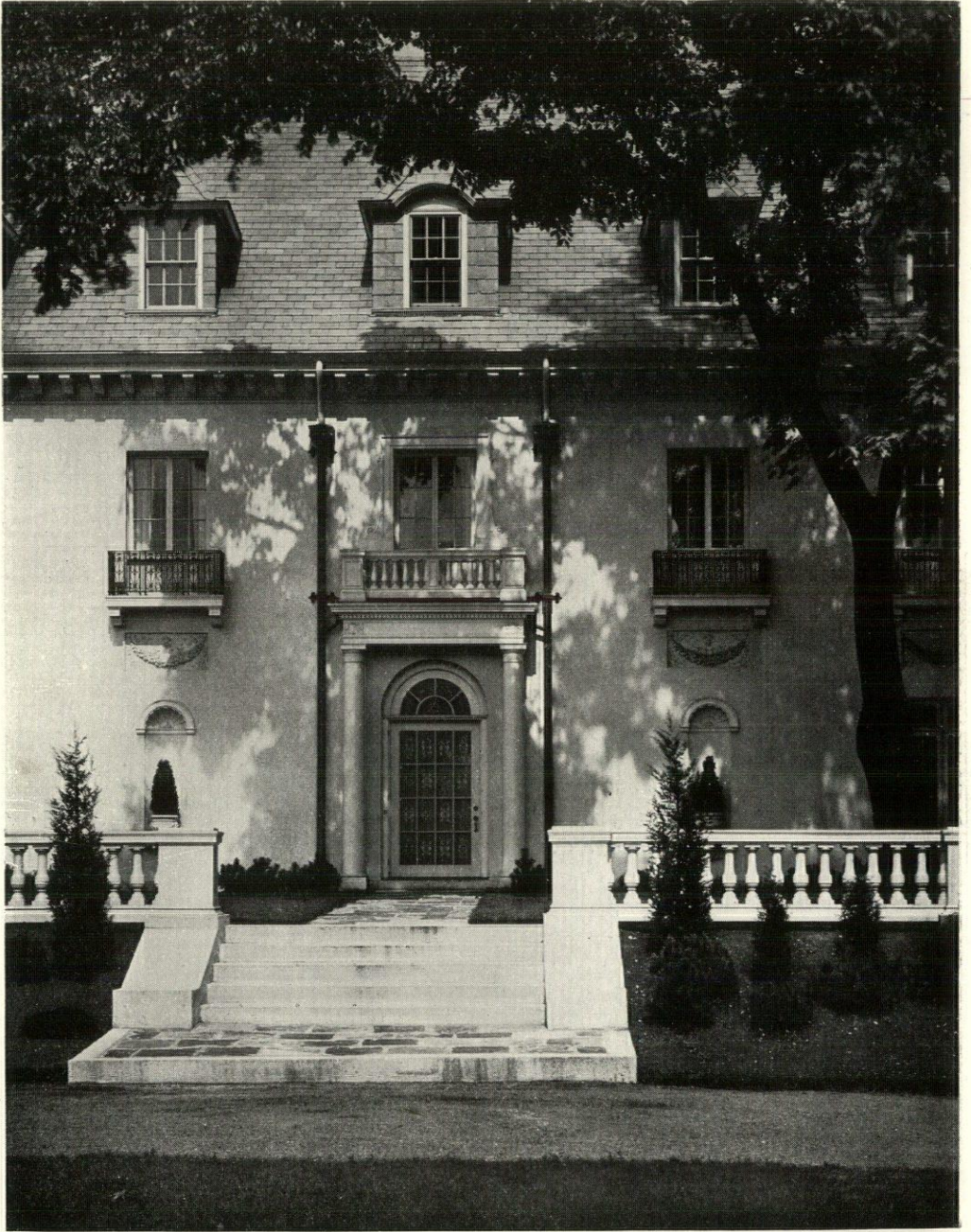
COVER—Water Color	PAGE
<i>By Leon V. Solon</i>	
THE RESIDENCE OF HENRY I. HARRIMAN, Esq., Newton, Mass. John Barnard, Architect. Arthur Shurtleff, Landscape Architect	482
<i>By Phil M. Riley</i>	
THE ENGINEERS' CLUB of Dayton, Ohio. Schenck & Williams, Archi- tects	490
<i>By Howard Dwight Smith</i>	
MODERN INDUSTRIAL PLANTS. Part VII	506
<i>By George C. Nimmons</i>	
THE SOCIAL CENTER. Part II. Philanthropic Enterprises	526
<i>By Fiske Kimball</i>	
PORTFOLIO OF CURRENT ARCHITECTURE	544
THE BASILICA OF SAINT REMY AT RHEIMS	561
<i>By Clement Heaton</i>	
THE FUTURE OF INDUSTRIAL HOUSING	567
<i>By Sylvester Baxter</i>	
NOTES AND COMMENTS	573

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ENTRANCE—RESIDENCE OF HENRY I. HARRIMAN,
ESQ., NEWTON, MASS. JOHN BARNARD, ARCHITECT.
ARTHUR SHURTLEFF, LANDSCAPE ARCHITECT.

THE ARCHITECTURAL RECORD

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The RESIDENCE of HENRY I. HARRIMAN, ESQ.
NEWTON, MASS.

JOHN BARNARD—ARCHITECT
ARTHUR SHURTLEFF, LANDSCAPE ARCHITECT



By Phil M. Riley

THE French château has a charm that Americans recognize. Its high, steeply pitched hip roof, the numerous chimneys and dormers, the large window openings with casement sashes to facilitate free circulation of air, the absence of wide extending cornices where no heavy shadows exist, and also of brilliant color, are not only eloquent in hospitable appearance but eminently well suited to ensure both summer and winter comfort throughout the structure. The French custom of contrasting much plain surface with a little rich detail and the method of concentrating such detail at the doorway and cornice line, with less at the windows, are commendable points that appeal strongly to the American sense of frankness and love of simplicity.

These pleasing and desirable features of the French château were made the determining factors in designing the residence of Henry I. Harriman, Esq., at Newton, Massachusetts. In developing the design, the architect, John Barnard, of Boston, worked constantly on the theory that art is not an invention but a growth; its object being to secure from the best precedents that which charms the eye and serves a useful purpose and adapt it to meet the particular requirements of the preconceived scheme.

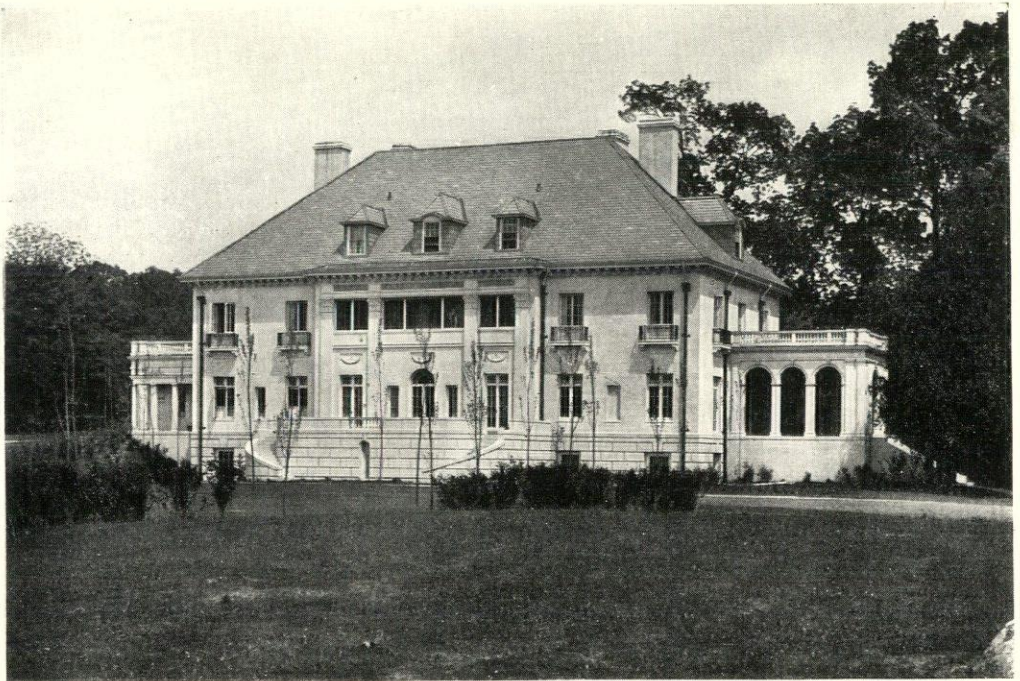
The house stands in extensive grounds upon an excellent natural location protected at one corner by a growth of trees affording a partial screen for the garage beyond and somewhat to one side in architectural accord with the house. There are broad lawns in front and

ample opportunities for the development of gardens and grounds at the rear and sides. The landscape features have been worked out by Arthur Shurtleff, of Boston, and include the seeded terrace twenty-five feet wide with classic balustrade in front of the house, and a mall with false perspective to create a more pronounced effect of distance at the rear.

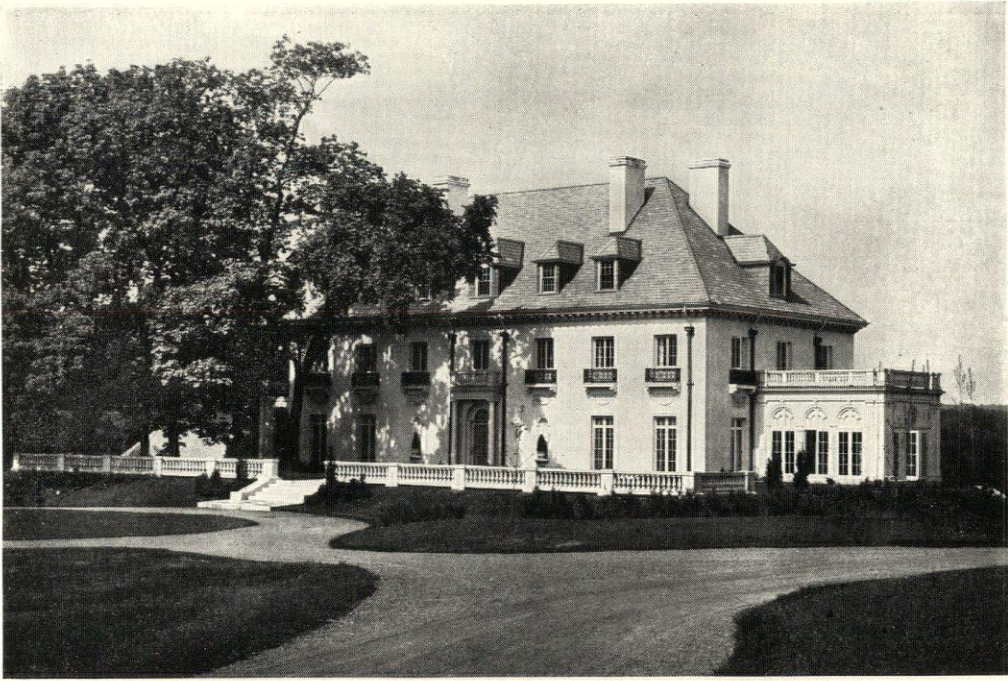
Of symmetrical arrangement with single-story loggias projecting at each end, the excellent mass and proportion of the house command attention before the detail is noticed. In general mass and contour of roof-line the structure is reminiscent of several well-known châteaux, the pitch of the roof, the dormer windows, numerous chimneys, color effect and lower level of the garden front all being typical of the best French precedents. The detail of the mouldings and other ornament, however, was developed from Italian sources in accordance with a preference by no means inconsistent. Both the Medieval and Renaissance styles originated in Italy and were brought to France by Italian

builders before they reached England. These Italian workmen excelled the French in the design and execution of ornamental detail, and as the best French detail shows this Italian influence unmistakably it was very logically thought preferable in this instance to go direct to the source in the search for prototypes for American adaptation.

Essential features of utility are depended upon chiefly to carry most of the embellishment and to enrich the *ensemble*. No ornament has been employed without a *raison d'être*. The detail throughout is notable for its restraint and nice execution. One notices with admiration the doorway with its columns, surmounting entablature and balcony; the round-headed glazed door so thoroughly in accord with the French windows of the loggias; the pleasing scale afforded by the many lights of the ranging double casement windows; the handsome wrought-iron balconies patterned after the best French work and finished in bronze-green color; the sunken cast-stone panels beneath them with



REAR VIEW—RESIDENCE OF HENRY I. HARRIMAN, ESQ., NEWTON, MASS.
John Barnard, Architect. Arthur Shurtleff, Landscape Architect.



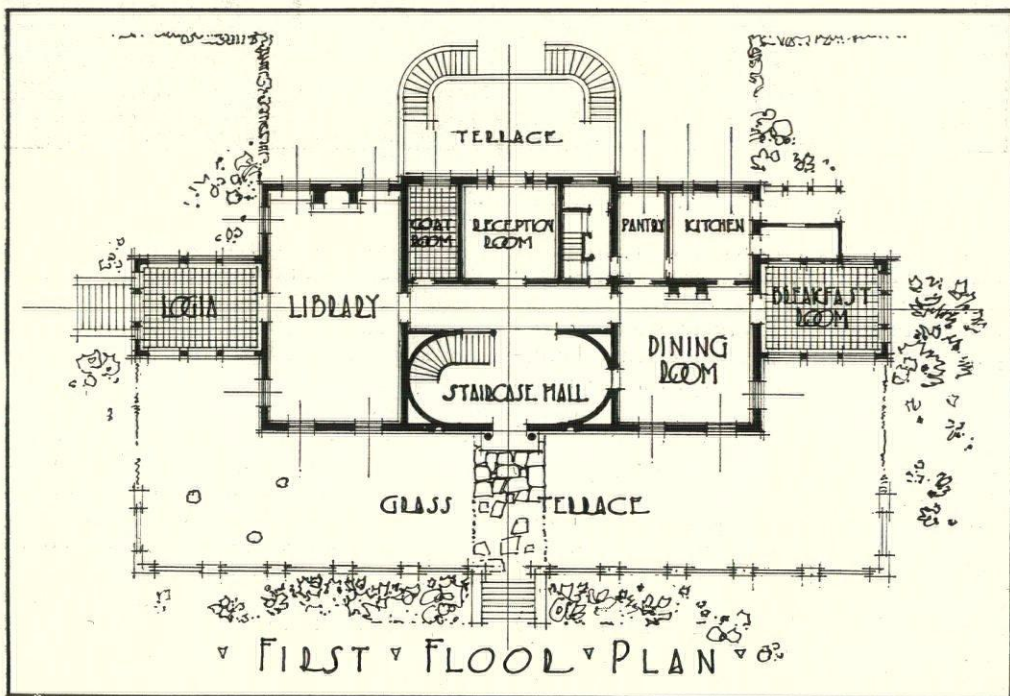
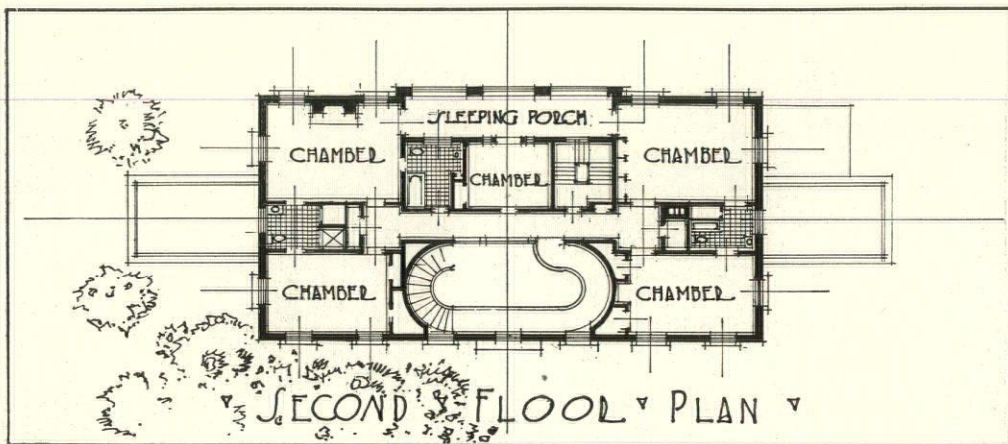
FRONT VIEW—RESIDENCE OF HENRY I. HARRIMAN, ESQ., NEWTON, MASS.
John Barnard, Architect. Arthur Shurtleff, Landscape Architect.

swags of leaves, flowers and birds of Italian character; the round cast-stone shell-like heads of the niches each side of the entrance and their shelves supported by dolphins; the classic balustrade of the terrace echoed on the roofs of the loggias; and the heavy wood cornice with beautifully hand-tooled scroll modillions. Nowhere is the detail obtrusive, yet it becomes visible and lends interest and character when looked for.

As to the general construction, the entire basement is below the grade of the front terrace, with grated areaways to admit light. The foundation below grade is of stone; and where visible in the rear, including the retaining wall of the terrace and the curved buttresses of the stairways, is of concrete, rusticated and lined off to simulate cut stone. Exterior walls above the first floor are of 10-inch hollow tile covered with stucco composed of white marble dust and cement. The inside of these walls is furred, wire lathed and plastered, while the roof covering consists of heavy green slate.

Reference to the floor plans shows a convenient and attractive arrangement of rooms with excellent axial treatment throughout the house. Delightful vistas greet the eye in four directions. From the staircase hall one looks westward through the reception room out over the rear terrace and mall to the tennis courts and an open hill beyond. In the opposite direction the doorway commands the front terrace, entrance drive and broad expanse of greensward. To the southward the terminated view is through the library and loggia, across a space later to be developed as an Italian garden and on to an evergreen hill. Through the breakfast room in the northern loggia the eye again wanders forth upon other expanses of green and away to distant trees.

First impressions are all-important, and the great staircase-hall at once evokes the admiration of every visitor for its beauty of detail and unusual arrangement, running as it does lengthwise of the house and having semicircular ends. Of generous dimensions and



FLOOR PLANS—RESIDENCE OF HENRY I. HARRIMAN,
ESQ., NEWTON, MASS. JOHN BARNARD, ARCHITECT.
ARTHUR SHURTLEFF, LANDSCAPE ARCHITECT.



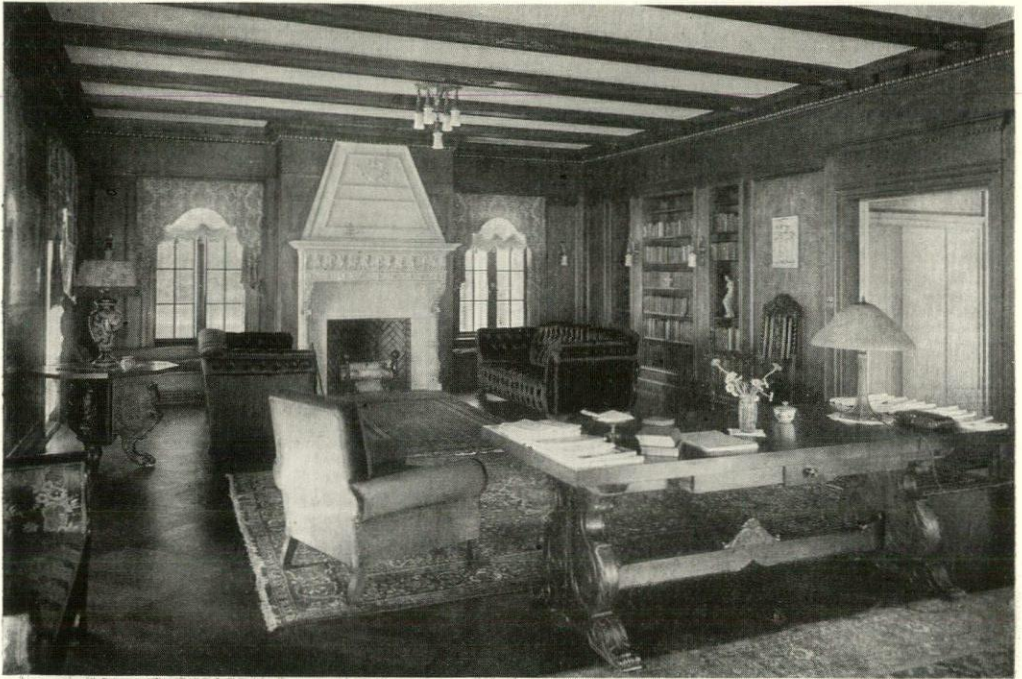
MAIN STAIRWAY—RESIDENCE OF HENRY I. HARRIMAN, ESQ., NEWTON, MASS.
John Barnard, Architect. Arthur Shurtleff, Landscape Architect.

two stories high, it is very dignified and gives the desirable effect of spaciousness. A Corinthian colonnade separates it from the hall proper and supports the second-floor hall. At the left, an easy curving stairway, with heavy classic balustrade and mahogany hand-rail, rises to a balcony extending along the front of the house, curving about the opposite end and leading to the second-floor hall, which is in effect a continuation of the balcony. Lines everywhere graceful in the extreme render the view from the balcony down through the open well one of rare charm. The staircase hall is paneled in wood up to the broad entablature at the second-floor level with its handsome enriched mouldings and painted in shades of cream. Pilasters occur under the beams supporting the balcony which are also ornamented with enriched mouldings and a scroll at the end. Above are plastered walls with a Dutch metal finish applied in squares and surmounted by a heavy ornamental plaster cornice and frieze at the ceiling.

On axis with the entrance and rear

terrace doors, a round-headed arch gives access from the hall to the reception room, centrally located at the rear of the house with a generous coat room at the left and a service hall and stairway at the right, both being reached through doors in the main hall. The reception room has a delicate plaster cornice and canvas wainscot paneled off with wood mouldings and painted in two tones of French gray. Arches in the plaster of the north and south walls correspond with the entrance arch and French window opening on to the terrace and give symmetry to the room.

The spacious library, extending entirely across the southern end of the house, is in reality a living room as well. In its heavy wood trim with walls entirely paneled up, its beamed ceiling, great marble chimneypiece, floors laid in diagonal squares, and its rich, warm color scheme throughout, this room retains much of the Medieval spirit of the old French châteaux while obviously modern in every refinement and convenience of the present day. Here two



LIBRARY—RESIDENCE OF HENRY I. HARRIMAN, ESQ., NEWTON, MASS.
John Barnard, Architect. Arthur Shurtleff, Landscape Architect.

comfortable lounges before the fireplace provide the very center of home life close to the hearthstone. All standing finish is of walnut, waxed, varnished to set and rubbed to a dull finish, English walnut being used for the panels and American walnut for the mouldings. The detail of the ornamental cornice and beams has been picked out in gold and color. A dark, rich brown is the prevailing color of the wood, and the hangings at the windows of dark, cool variegated pattern offset the warmth of the room and preserve a color balance. The chimneypiece is of cream color and a copy of one in the Ducal Palace at Venice, all appearance of newness being avoided by shades of tan wiped in around the detail. The plaster of the ceiling matches the tone of the chimneypiece.

Done in the Louis XII manner, the dining room suggests the French chateau rather more than the other rooms and is less severe and dignified. It has canvas covered walls of warm champagne color with wood mouldings form-

ing panels which are of a lighter shade. The elaborate Corinthian entablature with its fine-scale detail exquisitely drawn is lighter still and the ceiling with its dainty plaster border almost white. The large Chinese rug of buff and blue determined the color scheme, the hangings at the French windows also picking up a shade in the rug. Thus the deepest and most intense colors are at the windows or at the bottom of the room where the light is strongest.

The northern loggia opening off the dining room, with its round-headed arches on three sides closed by French windows, has been utilized as a light and cheerful breakfast room. One arch leads to the pantry adjoining and so has mirrors divided like the glass of the other windows. Delightful little built-in china closets occupy the spaces each side of the entrance from the dining-room. In fact, symmetry throughout is the key to a good restful design. Above a blue tiled floor the plastered walls are painted old rose, while a charming papered

frieze of trellis design in black and old rose with birds, leaves, etc., lends brightness and individuality.

All of the basement space not required for the heating plant, laundry and various storage purposes, and so often wasted in large houses, has been finished off for billiard and play rooms, which are reached by steps leading down from the hall under the main staircase. They adjoin and are virtually one except for the difference of two steps in floor level. By utilizing the heavy mill construction of the first floor with its 8 by 12 hard pine beams and 3-inch planks, both planed, a pleasing low beamed ceiling somewhat Medieval in spirit is provided. The wood is finished in dark brown with dull gold on the under side of the beams to avoid too somber effect. Rough plaster walls furnish a good background for tapestries, and the fireplace of Weymouth seam-face stone accords well with the other features. The floor of the billiard room is of red tile, while the play room has a wood floor for dancing. French windows open out at grade.

The sleeping-porch deserves particular attention as one of the most important successes of the house. This modern requirement of healthful living often taxes the resourcefulness of the architect to the utmost in order to harmonize outward appearance and interior arrangement with the requirements of the client and the limitations of style and construction. A considerable degree of privacy is desirable and the design and construction should be such as to attract little attention. In the present instance a recessed balcony under the main roof with screens fixed in the spaces between the pilasters of the rear elevation solves the problem in a simple and effective manner which lends interest to the fenestration of this façade. Translucent glass in the frieze ensures ample light in the adjoining rooms.

Altogether this is a residence of beauty and distinction that will outlive passing fancies in style. It is a home of which the owner will not tire, and an artistic achievement in which the architect will not cease to take a just pride.



DINING ROOM—RESIDENCE OF HENRY I. HARRIMAN, ESQ., NEWTON, MASS.
John Barnard, Architect. Arthur Shurtleff, Landscape Architect.

The ENGINEERS' CLUB of DAYTON

SCHENCK & WILLIAMS
ARCHITECTS

By Howard Dwight Smith

THE story of the Engineers' Club of Dayton is a story of men, of ideas and of accomplishments before it is a story of architecture. Architecture is at its best when it forms a proper and adequate background for human activities and when it reflects these activities effectively. In this club are combined so many features of a certain interesting form of human activities that we are attracted by the story of its organization as well as by the architecture which houses it.

The City of Dayton has come to have the reputation of being a city of pioneers in civic, social and religious work as well as in industry. To catalogue the pioneers in its industrial operations would be to list a large proportion of the men who are behind the enterprises of this "City of a Thousand Factories." Foremost in such a list would appear the familiar names of such men as John H. Patterson, to whom the world owes the development of the cash register, and E. A. Deeds, for a long time Mr. Patterson's business associate, but later and more recently interested in airplane development. Such a list would also contain the names of scientific inventors like the Wright brothers, who have made Dayton the cradle of American aviation, and of Charles F. Kettering, the moving spirit of Delco. These names are mentioned by way of introduction simply to show that there has existed in Dayton a sort of atmosphere of creative endeavor and of scientific research to which a very large proportion of the community's reputation may be attributed. In the commission form of city government, with a civil engineer as its city manager, Dayton was a pioneer.

That form of city government is no longer an experiment, but is recognized as a distinct step forward in political economics. Also the realization of extensive flood prevention plans at Dayton marks the first practical solution of stream control as applied to an entire watershed.

It is natural that such a community should be a fertile field for the inception of an organization of high ideals in engineering association, and that men of ideas and of action should want to meet in other spheres than those of business alone, and to enjoy each others company, to exchange thoughts and to discuss ideas of current or common interest. The embodiment of this spirit in a tangible form is the Engineers' Club at Dayton. When the new home of the club was opened, in February, 1918, the program of the day's exercises contained this foreword:

"The Engineers' Club of Dayton is dedicated to:

"The dissemination of truth,

"The promotion of useful education and civic righteousness,

"The fostering of good fellowship among Miami Valley engineers,

"The professional advancement of its members,

"The inspiration and encouragement of the younger men,

"The making of a technical city where creative endeavor finds reward."

The organization of the club goes back to the beginning of 1914, but its rapid growth led to two things. First, it was "recognized that a meeting place, permitting the fearless and thorough discussion of engineering problems, coupled with the fostering of good fellowship

and the inspiration and encouragement of the younger men, is quite worth while, and will confer lasting benefits upon the entire Miami Valley." And second it was natural that men in the engineering profession from other communities, from far and wide, should be attracted to such an organization to exchange opinions and to share experiences. The Engineers' Club felt that it would be quite fitting to provide a place which could be considered the professional headquarters for all such transient talent.

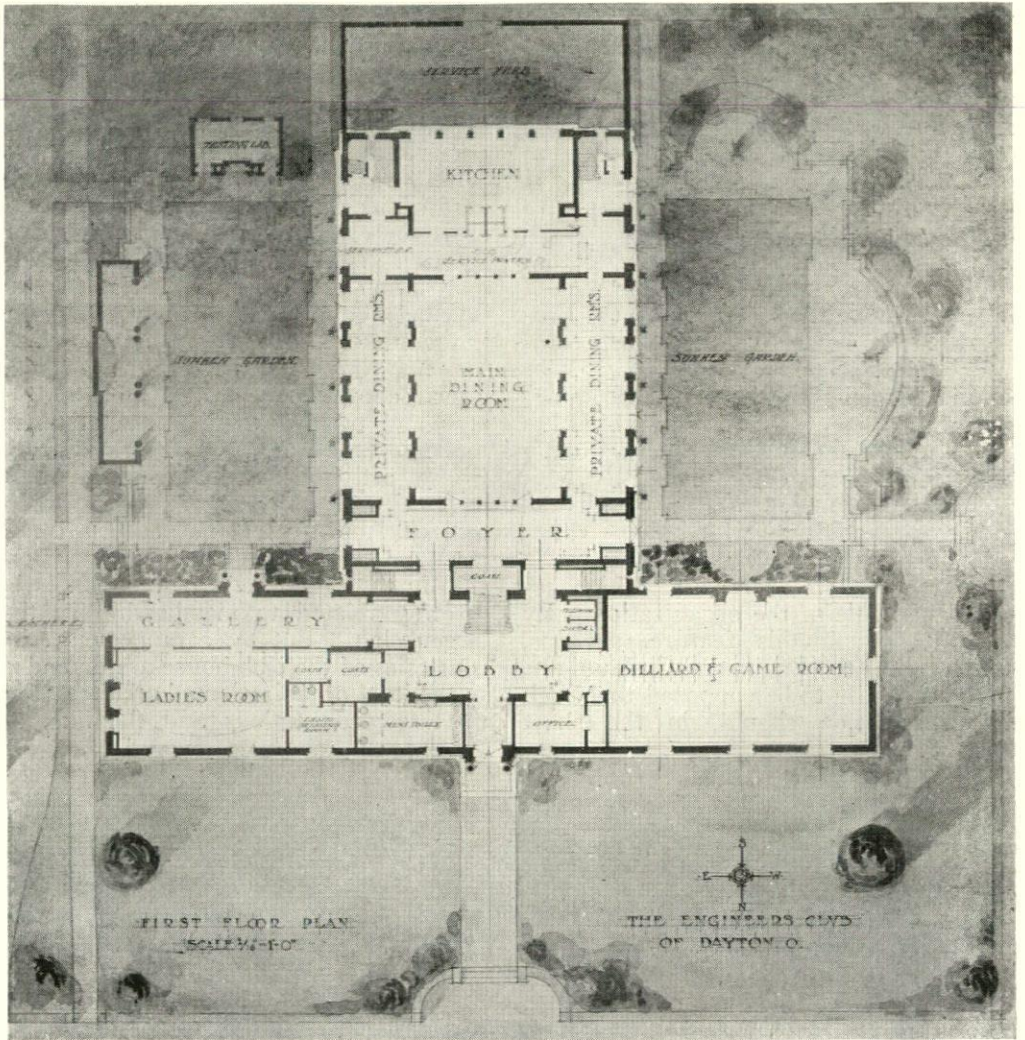
With a generous desire to accommodate these two ideas, and as real pioneers in the movement, two prominent, public-spirited engineers, closely identified with the organization, as well as with the industrial activities which have been previously mentioned, made it possible to erect the new club house which became the home of the organization early in 1918. It is this feature, perhaps, which makes the Engineers' Club unique, for it is hardly to be supposed that such an organization should, in the short

space of three years, be in a position to finance a large building project from a treasury recruited from ordinary sources.

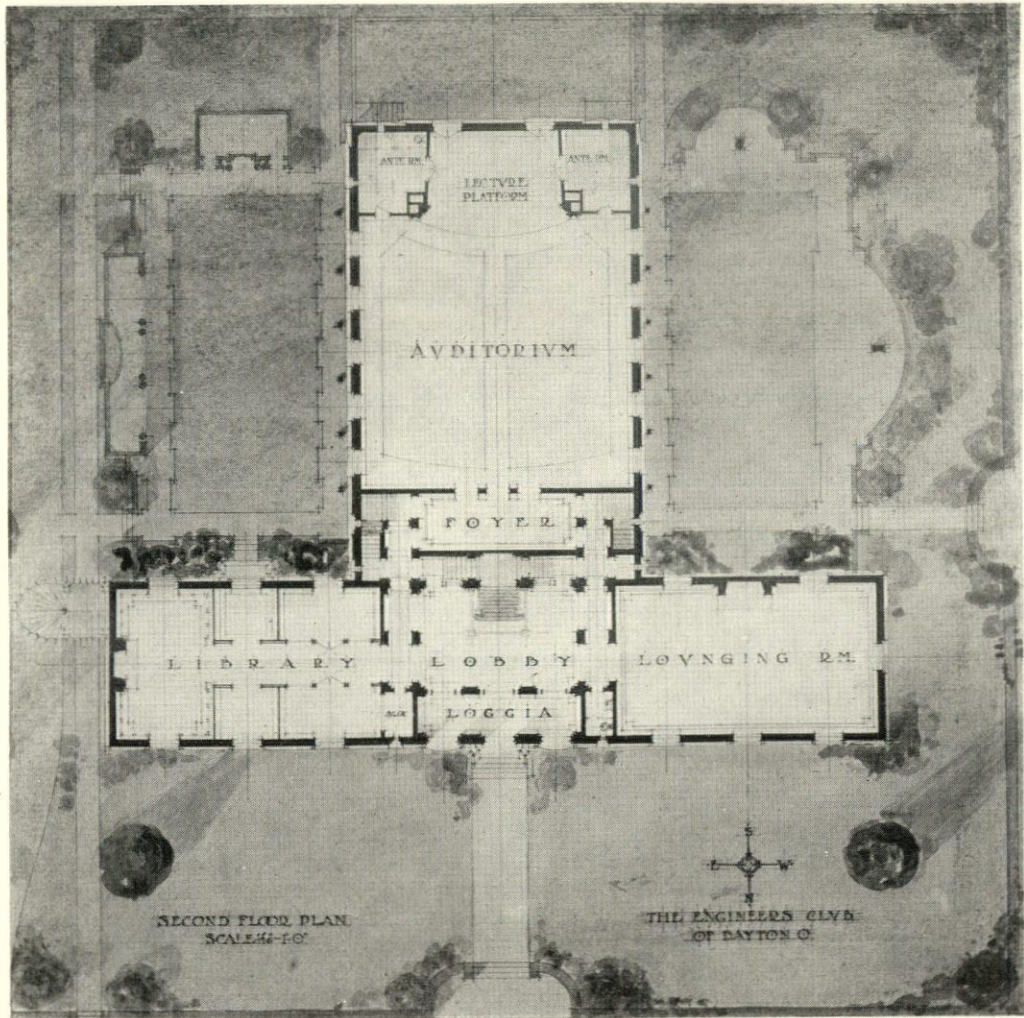
All of this is of interest to architects and to the profession of architecture for the reason that in the broadmindedness of its constitution this club recognizes the close relationship which exists between architects and engineers. This recognition extends to the point of embracing architecture and architects within the influence of the six ideals to which the club has been dedicated, as mentioned above. Architects, their assistants and their draftsmen are assumed to be included in the category of men whose activities are correlated. The local organization of the American Institute of Architects is not absorbed nor even merged in the club, and membership in the architects' organization is in no way related to membership in the larger club. But by arrangement, the courtesies of the club house are extended to the local organization of architects for meetings, conventions and the like, as



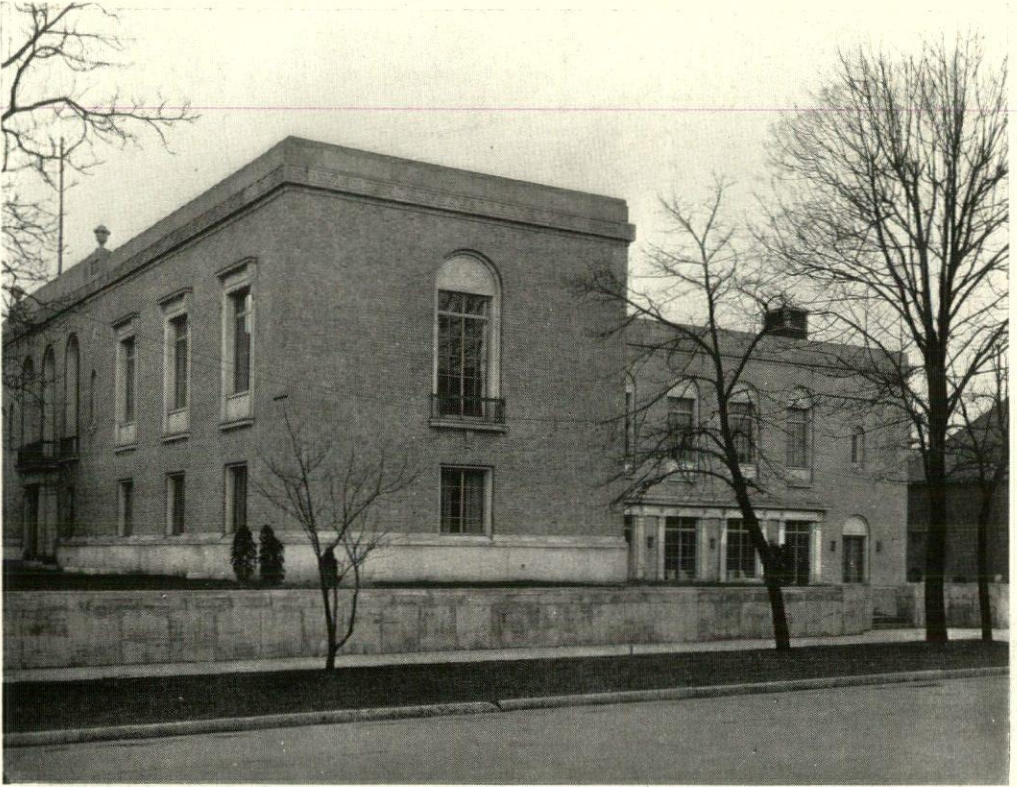
PERSPECTIVE VIEW—ENGINEERS' CLUB OF DAYTON.
Schenk & Williams, Architects.



FIRST FLOOR PLAN—ENGINEERS' CLUB OF DAYTON. SCHENCK & WILLIAMS, ARCHITECTS.



SECOND FLOOR PLAN—ENGINEERS' CLUB OF DAYTON. SCHENCK & WILLIAMS, ARCHITECTS.



END OF THE WEST WING AND THE AUDITORIUM UNIT—ENGINEERS' CLUB OF DAYTON.
Schenck & Williams, Architects.

well as to the local organizations of various national technical associations and societies.

This idea of a parent organization fostering a small organization of architects is not unique in Dayton, and it is quite possible that it was first put into successful operation elsewhere. There is probably no other instance, however, of an organization of architects being fortunate enough to enjoy the hospitality of a club which is supported financially as well as fostered in scientific activities by a group of eminent engineers. This is of considerable interest in these times of restive discussions and expression of opinions in the current press on the subject of co-operation between architects and engineers. So much of this discussion has been unjustifiably disparaging to the architect that it is inspiring to see that there are evidences of healthy association and of cooperation in such high places.

Taking advantage, therefore, of these happy circumstances, the club placed on its new building committee one of its architect members, Mr. Harry J. Williams, an associate of the American Institute of Architects. The firm in which he is associated with Mr. Harry I. Schenck, also a member of the Institute, was entrusted with the commission of building the new club house, and how well they have succeeded in their efforts these few paragraphs and the accompanying illustrations are intended to show. The feeling of responsibility entertained by these architects must have been very great, for in a measure they were their own clients and at the same time it became their duty to study how best to serve their friends and associates in the judicious expenditure of the funds placed at their disposal. There was the incentive to produce the best of which they were capable; coupled with a ready sympathy for conditions and for the



MAIN ENTRANCE LOGGIA—ENGINEERS' CLUB OF DAYTON. SCHENCK & WILLIAMS, ARCHITECTS.



FIRST FLOOR LOBBY—ENGINEERS' CLUB OF DAYTON.
Schenck & Williams, Architects.

proper and efficient solution of the problems which were presented.

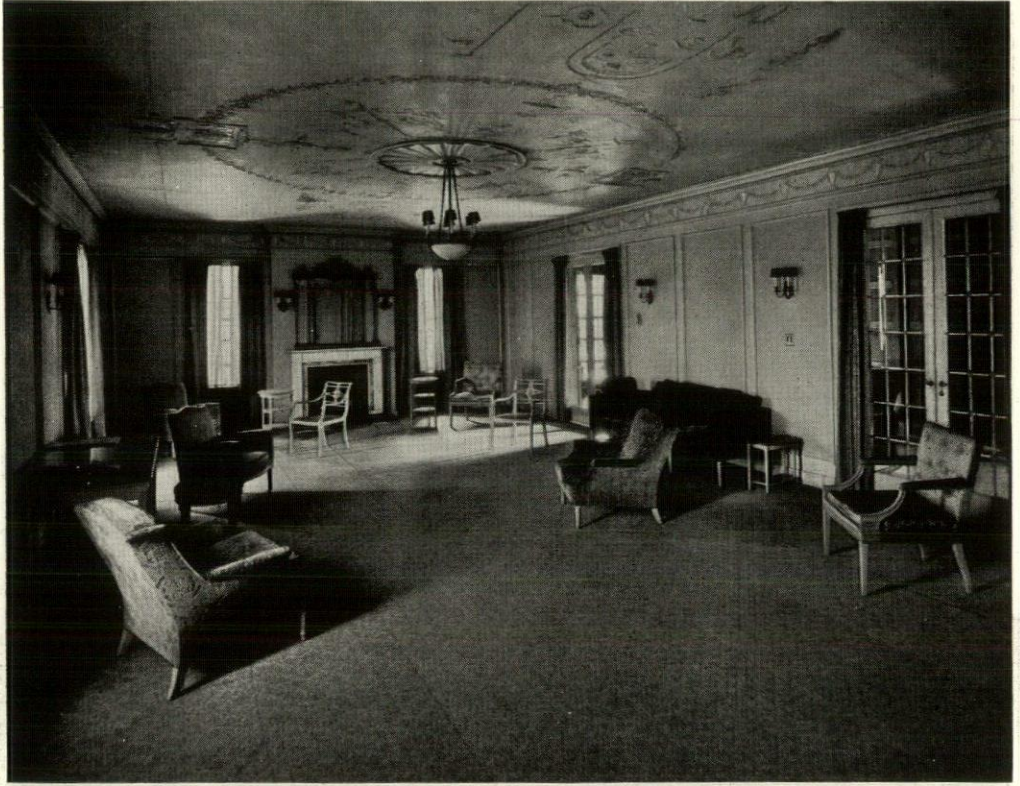
One hardly knows whether to discuss the exterior of the building or its plan first. Perhaps the plan might well be examined first, for it is here that the analysis and solution of the problems are logically met first. From what has been said above as to the motives and sentiments which led to the reorganization of the club—and, in fact, from the fundamental principles underlying most organizations of this sort—it may easily be understood that the architectural problem presents two phases. One which facilitates scientific discussion, stimulating the mentality of its members and their associates, and one which has to do with the ministrations to the physical man, of social and friendly intercourse, of relaxation and enjoyment.

The largest element in the plan, the

auditorium with its accessories, meets the first phase of the problem, and the four other principal plan units, the lounge, the billiard and game room, the dining room and the library have been designated to meet the second phase of the problem. These five elements, with the adjuncts in the way of lobbies, stairs, corridors, coat rooms and offices solve the problem, and from strictly an engineering point of view might have been sufficient to fulfill all needs. Bearing in mind that some one has said that "an engineer is one who can conceive, design and execute a material thing in an economical and efficient manner," it may have been the logical thing to have stopped when these five elements had been most conveniently joined together and properly served by adjunct circulation, stairs, etc. But happily to these essentials have been added some niceties which make the building an aristocrat



FIRST FLOOR "LONG GALLERY"—ENGINEERS' CLUB
OF DAYTON. SCHENCK & WILLIAMS, ARCHITECTS.



LADIES' ROOM—ENGINEERS' CLUB OF DAYTON.
Schenck & Williams, Architects.

whose helpful influence on the busy workaday engineers of a bustling middle western city is not fully realized at first glance. A ladies' room, a "long gallery," a loggia, private dining rooms, and emergency accommodations for out of town visitors (there are no general dormitory facilities) are some of those niceties which add to the practicability as well as to the distinction of the club's home.

The logical arrangement of the plan leaves little to be desired. There has not been any necessity for crowding on the lot and the architects have chosen to use an inverted T-shaped plan which has given an abundance of light in every portion of the building. It is particularly to be noted that in spite of the fact that there are seven separate and distinct outside entrances, not including the French casements in the private dining rooms, there is no waste space in the circulation in the building. The two

largest parts of the building, the auditorium and the dining rooms, with the kitchen service, occupy the vertical bar of the inverted T plan. The rest of the rooms and the main stairs and lobbies are in the cross bar of the T. The grade entrances into the foyer at the dining room have very conveniently divided the circulation into the building at the busy noon hour, for instance. An objection to this arrangement might be raised by one used to metropolitan ways and customs, because a door attendant is not enabled to keep an accurate line on the constantly changing list of his patrons during a busy hour of the day. But it may be said in defense that such a custom is hardly necessary here, for by some peculiar method, perhaps by an attribute of "breezy westernness," the presence of any given member is easily known.

The site upon which the building is

erected has a north frontage on Monument Avenue, a boulevard-like thoroughfare which at this point overlooks a narrow strip of public park along the bank of the Miami River. It is to this side that there is the most openness, and on this side are the views and vistas. Advantage is taken of this in placing a long façade to the north. All the important rooms except the two largest, the auditorium and the dining room, share these views and this openness. The open loggia over the main entrance is specially well placed.

The entire exterior mass is a logical and straightforward expression of the plan. Seventeenth and eighteenth century English architecture is plainly reflected by most parts of the outside, and the building may be placed, at least from superficial appearances, in the general style known as Georgian. The blocklike

mass of the projecting wings and the flat decorated band which does duty as a cornice are undoubtedly inspired, perhaps remotely so, by the end pavilion of the Radcliffe Observatory at Oxford. The small order used at the front entrance and along the lateral façades of the dining room is even more closely allied to the columns and entablature found in that charming old country seat at "Bowood" in Wiltshire.

These two Georgian precedents have had their influence on the design of the Engineers' Club perchance through their contemporary interpretation in the large country residence completed some three years since at Woodbury, Long Island, illustrated in the architectural press about that time. A certain eighteenth century urban effect is given to the Engineers' Club, however, by the use of gray-buff brick, a little rough and in tone not un-



FIRST FLOOR FOYER BETWEEN THE LOBBY AND THE MAIN DINING ROOM—ENGINEERS' CLUB OF DAYTON.

Schenck & Williams, Architects.

like the row of Georgian fronts in Portland Square, London. The trim is buff Bedford limestone, a product so easily obtained in these parts as to be considered almost a local building material.

External expression of the dining room has been manifested by the grouping of the large French windows within a pilaster order treatment and facing each of its open sides upon a garden. The level of the grass and walks in these garden areas has been lowered effectively to relieve what would otherwise have appeared to be weighted down or depressed into the ground by the auditorium walls above, remembering that the mean level of the auditorium floor is quite a bit lower than that of the rest of the second floor.

The character and refinement of the exterior ironwork, the numerous balconies and the porte-cochère of the east entrance are quite "Adam," and the low

standing lamps are reminiscent, in height at least, if not in size and shape, of the English coach lanterns which were hung on low posts or iron brackets beside the gateways, on the doorways or along the roadways of the old estates.

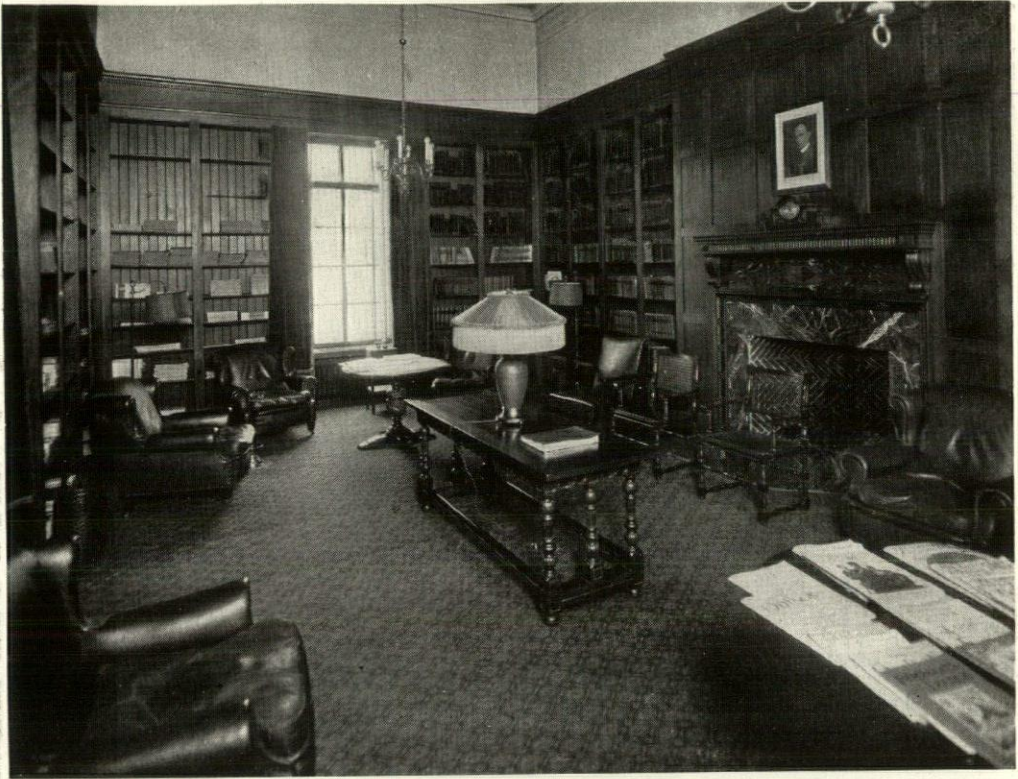
Once one passes through the front door the idea of the Georgian style and of the eighteenth century is supplanted by the forms and fancies of an older and earlier day. Beyond the simple vestibule one is confronted in the lobby with the first run of stairs, of Tudor or Elizabethan design not unlike the old example in Blickling Hall, Norfolkshire. This strikes the note of most of the interior. With the exception of the ladies' room, of which more will be said presently, and of the auditorium, which quite rightly is treated plainly, the rooms are finished and decorated after the fashions and with the forms and ideas of that



MAIN DINING ROOM—ENGINEERS' CLUB OF DAYTON.
Schenk & Williams, Architects.



SECOND FLOOR LOBBY—ENGINEERS' CLUB OF
DAYTON. SCHENCK & WILLIAMS, ARCHITECTS.



READING ROOM ON THE SECOND FLOOR—THE PHOTOGRAPH OVER THE MANTEL IS THAT OF WILBUR WRIGHT—ENGINEERS' CLUB OF DAYTON.
Schenck & Williams, Architects.

general period between Gothic and Classic in England known as Tudor. That period was a vigorous one of transition and produced many fine examples of domestic architecture which have inspired a great many of our efforts in America.

There need be no dispute with the architects for dressing up the interior in Tudor style while the exterior of the building speaks of a later time. More are they to be commended if, by the use of soft dark stained wainscots and panelings, rough plaster walls, geometric pattern and beam ceilings, they are able to create a feeling of inviting "homeliness" and attractiveness. And it may be said, too, that engineers are quite as susceptible as the rest of the public to the call of the current fad for "Old English" ideas and forms and atmosphere. Where the designers have adhered most closely to their precedent

have they been most successful. The plaster ceilings in geometric patterns excel their attempts at heavy plaster beaming.

Conveniently disposed about the lobby are the simple club accessories, a coat room, a men's room, an office and telephone booths. To the west, or right from the entrance, is the billiard and game room, accommodating four tables and serving conveniently as an auxiliary lounge and smoking room. It is a low room and no attempt has been made to give it an appearance of height. From the opposite end and from the corner of the lobby opens the "long gallery," a convenient name, around which there are associated certain historic sentiments. What Tudor manor house did not have its long gallery with long views and vistas, and tapestries and unending successions of patterned ceilings? While this long gallery in the Engineers' Club

serves as a means of circulation connecting the carriage entrance with the lobby, still, as in the old houses, it is of generous width, and when provided with chairs and seats it serves also as a waiting space, for conversation or informal conference. It is usually referred to at the club itself as the "visitors' gallery."

Off from this long gallery opens the ladies' room, appropriately secluded from the general activities of the club. Strange as it may seem, this room, dressed up in an entirely different style from all the rest of the interior, is the gem of the building. Departing from Tudor and Elizabethan, the architects have expressed themselves in the refined and genteel style of the Adam Brothers, a style of low relief and classic forms, with an applied or painted finish. This room has been executed with commendable consistency and the rectangular leadings of the large French casements are quite in keeping here. Not dissimilar in general character is the dining room foyer; more severe, however, than the ladies' room and treated with hard plaster wall surfaces with few lines and little decoration, much after the fashion of the severe entrance halls of the eighteenth century London houses of which we have spoken before. This dining room foyer is on a level with the dining room itself, five steps below the general level of the first floor, which permits of added ceiling height in the dining room and in the auditorium above.

The main portion of the dining room is approximately twenty-eight feet wide by forty-five feet long, and is flanked by side aisles of small private dining rooms in such a way that the whole can be thrown together more or less easily for the occasional accommodation of large parties. For everyday use this arrangement in plan is quite satisfactory, for one may take one's choice as the mood inspires to mingle with one's fellows or to sit secluded and unhindered or unchallenged by friends. The usual club convenience of having accommodations for private parties by members should not be overlooked in passing.

In the second floor of the building the

disposition of units is almost identical with that of the first. The main lobby has its counterpart in another of the same dimensions and the dining room foyer of the floor below becomes the auditorium foyer above. The game room is echoed by the lounge, a room of the same area but of greater ceiling height. In the east wing the library group of rooms is superimposed over the ladies' room and the visitors' gallery.

The upper lobby, like the dining room foyer, is executed in stonelike plaster, or "Caen stone," which has judiciously been left unscored by false stone joints. Perhaps no other material has been subjected to more use in imitation of another material than the so-called "Caen stone" or hard plasters. Hard plaster or stonelike walls have their definite place in interior design, particularly appropriate in vestibules, halls, corridors and the like, but their use in good design need not be disguised by the addition of false jointings or otherwise. Happily this has not been done in the Engineers' Club.

The second floor lobby opens on to the loggia, which overlooks the park and the Miami River at a point almost opposite one of the centers of flood prevention activities, the confluence of the Mad River with the Miami.

Axial with the unobstructed portion of the lobby are the library and the lounge. The term library is applied to a group of rooms housing the nucleus of a technical collection. The principal room of this group is the reading room, comfortably furnished and embellished by a large mantelpiece. The four other rooms of the group are like alcoves whose walls are lined with book shelves. These alcoves can suitably be used for intensive study or may be appropriated for private conferences without interfering with the usual and normal functions of other club rooms.

The lounge at the opposite end of the lobby occupies the area of the entire west wing, measuring some thirty by fifty feet. Here is a large room, quite informally furnished, with the dominating idea of making it all that the name implies, a room for lounging, for a mo-



LOUNGE—ENGINEERS' CLUB OF DAYTON.
Schenck & Williams, Architects.

mentary slackening of the energies. In the great space embraced by the wainscoted walls and the oak beamed ceiling and in the presence of the almost overpowering mantel, one seeking rest may lose oneself in a secluded cushioned corner, or muse before the fireplace, or find diversion in music.

As a club house the features described above have been, and are now, affording quite ample and satisfactory service in every respect, and it is to these parts of the building that the members look for their daily accommodation and enjoyment. But the feature of the building which does most toward the "dissemination of truth," the inspiration of its members and the extension of its influence along educational lines is its auditorium. Its platform is the center of an open forum from which discussions have been led, lectures delivered, experiments performed and demonstrations

made, dealing with a great variety of subjects and problems of the engineering and industrial world. Of its general properties as an auditorium all that need be said is that its seating capacity is about four hundred and fifty on a floor area of approximately fifty-five feet square. It is provided with a permanent fireproof projection booth concealed within the rear wall, and the exacting and punctillious fire code of the Ohio State Board of Health is amply complied with by the four minor fireproof stairways, one at each corner of the room.

The acoustics in the auditorium are good, as is usually the case in square low rooms with ceilings which are somewhat broken up by beams, but the special feature of the room, in keeping with the other appointments of the building, is the provision on the stage of all the facilities necessary for any sort of experi-

ment or demonstration. There are water and gas connections, steam, and compressed air and electricity for any form of light or power.

The completeness of the special equipment on the stage to a certain extent is a measure of the equipment throughout the building. With so many technical interests represented on the roll of membership, it is only natural to find that all sorts of forms and devices are included in the construction of the building. The steam heating plant and a ventilating system represents the last word among heating engineers, with valves, regulators and devices applied here and there which do almost everything connected with the system except deliver coal to the bunkers, and open and close the windows. Those members whose business slogan is "do it electrically" have seen to it that the electric equipment has not been slighted. Of the lighting fixtures it must be said to their credit that they are not conspicuous, but fit in effectively with the general scheme of things.

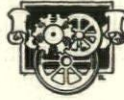
The housing of a club of the reputation and influence of the Dayton Engi-

neers in a building which is architecturally appropriate, is a credit to the club and to the architects. The sphere of its influence measures quite well with that of a club as large and as well established, as, for instance, the Engineers' Club of New York, whose commodious quarters are in West Fortieth Street. The Dayton Club is an inspiration to communities smaller than the metropolis, but equal to it in enthusiasm and possibilities.

The appreciation evinced by the rank and file of the club for the "energy, thoughtfulness and generosity" of their esteemed leaders, Colonel Deeds and Mr. Kettering, in making possible the erection and equipment of the building has been recorded on a bronze tablet which has been placed in a frame on the second floor lobby beside the stair well railing. This tablet expresses the sentiment that the building was erected as an expression of interest in scientific research and devotion to the cause of truth, "that through it not only this but future generations shall be uplifted and moved to greater endeavors." Good architecture is a fitting background for such sentiments as these.



MODERN INDUSTRIAL PLANTS



By George C. Nimmons

Part VII.

SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

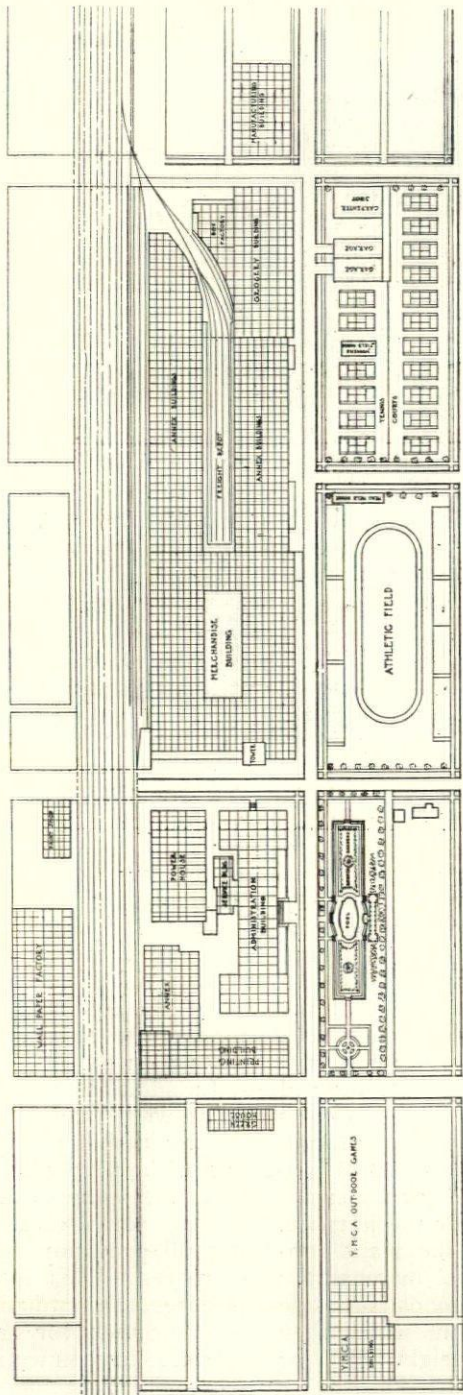
THE success and importance attained by commercial and industrial concerns is measured, first, by the wealth which they accumulate and distribute and, next, by the usefulness of the products which they supply. But the character of the policies and business methods by which their success is achieved is also of importance and concern to the public. The leaders in industry and commerce set precedents and fix standards which the mass of smaller concerns follow more or less. If the policies and business methods yield satisfactory profits and, at the same time, insure equitable treatment of customers and employes, clean, wholesome and attractive buildings and grounds, then communities, cities, and indeed the country as a whole are benefited.

It has been demonstrated beyond question of doubt that considerate and generous treatment of employes and the building of attractive industrial plants are in no way a hindrance to success on account of the additional investment which they may require; on the contrary, they have often proved to be an essential part of the means by which the success was attained. A model plant is in reality the "master tool" for the workmen; and the proper treatment of employes by the installation and maintenance of welfare work, as discussed in the preceding articles, reduces the turnover of labor and improves the personnel of the workmen.

The outlook for the future of American industry and commerce is promising, largely for the reason that the policy adopted for the conduct of their business by a large number of industrial leaders has in recent years been shaped so as to include a "square deal" for the employe and the best that architecture can provide in the way of buildings and grounds, specially designed and constructed to suit each particular business and to reduce to a minimum the cost of production and the handling of goods.

Among such concerns are Sears, Roebuck & Co., whose main plant is the principal subject of this article. Their business consists of supplying all kinds of merchandise to customers who order by mail from the firm's catalogues, which illustrate and describe the articles for sale. The principal catalogue is a book of over 1,200 pages. The goods sold include every conceivable kind of merchandise of a city department store and other things besides. Many of the goods are manufactured by the company, which operates ten shoe factories, a stove factory with a capacity of 200,000 stoves annually, and factories for pianos, wall paper, cameras, paint, buggies, wagons, agricultural machinery, etc., mostly in other cities than Chicago, and maintains extensive branch plants in Kansas City, Seattle, and Dallas.

The main plant in Chicago consists of a group of buildings on the west side of the city on a tract of land about two



MAIN PLANT OF SEARS ROEBUCK & CO

GEORGE C. NIMMONS & COMPANY
ARCHITECTS OF ADDITIONS TO ORIGINAL PLANT

NIMMONS & FELLOWS
ARCHITECTS OF ORIGINAL PLANT



GENERAL VIEW OF SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.

George C. Nimmons & Company, Architects of Additions to Original Plant.

blocks wide and half a mile long, which was selected as the most available site nearest the center of the homes of their employes, with good transportation and plenty of room for expansion and development of the out-door features of the grounds illustrated in the present article.

The erection of this great plant furnished an opportunity of designing and planning a plant specially adapted to this particular business, on vacant ground with plenty of room and no obstacles to interfere with whatever arrangement and design seemed best for the purpose.

The requirements for the plant consisted, first, of a great merchandise building in which the goods for sale should be stored and from which they should be shipped by freight, mail or express.

The second requirement was an administration building, where the orders

for goods and other correspondence would be received and where would be located the administrative departments and offices.

The third essential was a printing plant, where catalogues and printed matter were to be produced for distribution among customers.

In addition to these three essentials, there were many other requirements to be provided for to complete the working out of the plans; and, furthermore, there was one important requisite of the original plans which is of interest, namely, full provision for welfare work for employes. This included, among other features, the outdoor recreation and athletic grounds for employes which were planned in connection with the laying out and arrangement of the main plant.

One of the most important matters considered at first was that of making

ample provision for the growth of the business. The amount of business done in 1905, when the plant was built, was about \$50,000,000 a year. When the plans for the buildings were being determined no one imagined that the business would grow to its present size of about \$200,000,000 gross sales shown by the last year's statement; nevertheless generous allowance was made for future growth, in the way of building foundations strong enough to carry additional stories and spaces for additions to buildings. If these provisions for growth had not been unusually generous and if the mechanical handling of goods had not been developed to its present state of efficiency, the business would have outgrown the plant soon after it was completed.

By reference to the plan it will be seen that the Merchandise Building, where the goods are stored, is the large building with the tower on the right, extending about 1,200 feet in its long

dimension and consisting of two parts: first, the part built around a hollow square, in the center of which is the shipping room, and, second, the "U" shaped part of the building marked "Annexes," where the railroad tracks come in. These are the freight tracks, where forty cars can be placed at one time inside of the building with a large skylight roof over them, closing them in from bad weather. The annexes of this building were originally only three stories high, but since then they have all been carried up to nine stories in height.

The Administration Building is the five-story building in the illustration that fronts the sunken garden. This was originally two stories high above the basement. It contains the administrative departments and offices and also the restaurants and lunch rooms where as many as 12,000 lunches have been served during the noon hour.

The Printing Building is at the left of the main group and it has received



SUNKEN GARDEN IN FRONT OF THE ADMINISTRATION BUILDING OF SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.

George C. Nimmons & Company, Architects of Additions to Original Plant.



PRINTING BUILDING—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.
Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

two additional stories since it was built. Its present annual output is 65,000,000 catalogues, sales books and other printed matter.

The power, heat and light for the plant are all provided for in a separate power house, where the fuel and ashes are handled mechanically and where there are four direct connected generators with a capacity of 4,000 horse power and a 2,000-horse power steam turbine with its generator. There is a complete system of underground tunnels for pipes, wires, etc., that extend from the power house to all the principal buildings. Martin C. Schwab was the mechanical engineer for this work.

In addition to these main buildings are the following separate buildings as shown by the plan: The grocery department, the wall paper, paint and box factories, manufacturing building No. 1, the garages, field houses for men and

women, the Y. M. C. A. building and the apartment building for the chief of police and the fire marshal, an engine house and a garage house.

Probably the best way to give an idea of the manner in which the business of the firm is done and, at the same time, show the principal requirements for which the buildings were erected, is to follow the course of a letter received from a customer in which there is an order for goods.

When the letter arrives in the Administration Building, it is opened, together with others, by grinding its edge on a machine. Its contents are divided, the remittance going one way after auditing and the order going to a clerk, who enters a record of it and then makes out a separate ticket for each department handling the goods called for by the order. These tickets, to which are attached the shipping labels or freight or

express receipts, are then sent from the Administration Building through pneumatic tubes over to the proper departments in the Merchandise Building, where the goods called for are selected, checked and wrapped, with the tickets to identify them attached. Each ticket calling for goods always has marked on it the particular time at which the articles called for are to arrive down in the shipping room on the second floor. When the time arrives, or rather just before that, the article or package of goods is placed on a traveling belt conveyor, which takes the articles along to a great steel spiral chute, about eight feet in diameter, that extends on down to the sorting division on the third floor. The goods come down this chute and slide out on another belt conveyor, which carries them along to the sorting division. Here are many clerks, and traveling belt conveyors apparently moving in every direction. When the package

which we have been following arrives before a certain clerk, he takes it off the incoming belt and places it on the belt which is headed in the direction of the particular section of the shipping department where our package is to be packed. When it arrives at this section it is placed in a basket on a rack, where it waits till all the other articles ordered by our customer have arrived. When the last article has arrived in the basket to complete the order, the basket is taken out of the rack and placed on a declining gravity slide on which it slides down from this balcony elevation to the packer. The packer takes the goods out of the basket, puts them on the counter in front of him and immediately decides what kind and size of a box he will pack them in. He calls out a number indicating this, and someone up above hands him down the box of his choice. After the goods are boxed and labeled they are placed on another belt, which takes



VIEW OF ATHLETIC FIELD IN FRONT OF THE MERCHANDISE BUILDING ON THE LAST FIELD DAY—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.

George C. Nimmons & Company, Architects of Additions to Original Plant.

them away for shipment. The package may be shipped by freight, mail or express; if by parcel post the package is weighed, stamped and conveyed to a bin where other packages going to the same locality are accumulated to be sent over the same railroad or route.

The Government has a post office in the plant, where all the postal duties are attended to, thereby doing away with the necessity of sending all of this matter through the Chicago Post Office. As the business done is equivalent approximately to that of a city of about 150,000 inhabitants, the Chicago Post Office is relieved of a great deal of work. The express companies also have their representatives at the plant, which enables them to handle their shipments directly to the railroads.

While only one spiral chute was referred to as a means of conveying the goods down to the shipping room, there are really six of them located at convenient points in the Merchandise Building. Five of these chutes have three planes in them so that three different streams of goods can go down at once.

Articles which are too large and heavy to come down the spiral chutes are stored in the annex buildings, where they are taken down on trucks by the elevators and loaded into the cars ready

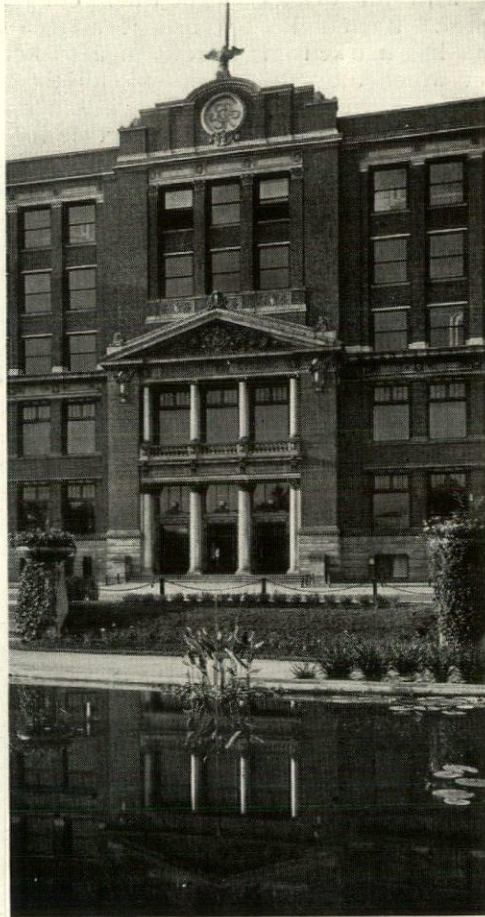
to receive them in the freight depot.

It will be noticed from the plan that all of this outgoing movement of goods takes place from the center of these buildings outwards. This is arranged

so as to have as little interference as possible with the incoming supplies to replenish shipments. All of the railroad tracks on which incoming goods arrive are on the outside of the buildings. Wagon and truck spaces are also provided at several places around the outside of the buildings.

In this way an enormous amount of merchandise is handled promptly in and out of the buildings. During some seasons of the year the orders of a single day may exceed 100,000, which at their average of ten articles to an order means the handling of over 1,000,000 articles in a day. An interesting feature of any business which grows to the size of this one is the problem of handling it, controlling it without confusion and on an economical basis

of cost. Aside from proper business management and control, there is also the necessity of the right application of mechanical methods of handling goods in buildings and quarters that are specially made to suit the purpose. One who has inspected a highly organized and scientifically run industrial institution of this kind can readily picture the chaos and



VIEW OF ENTRANCE TO ADMINISTRATION BUILDING ACROSS THE POND OF THE SUNKEN GARDEN—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

confusion that would result if it were run by hand in a building unsuited for the purpose. The undertaking could not possibly succeed.

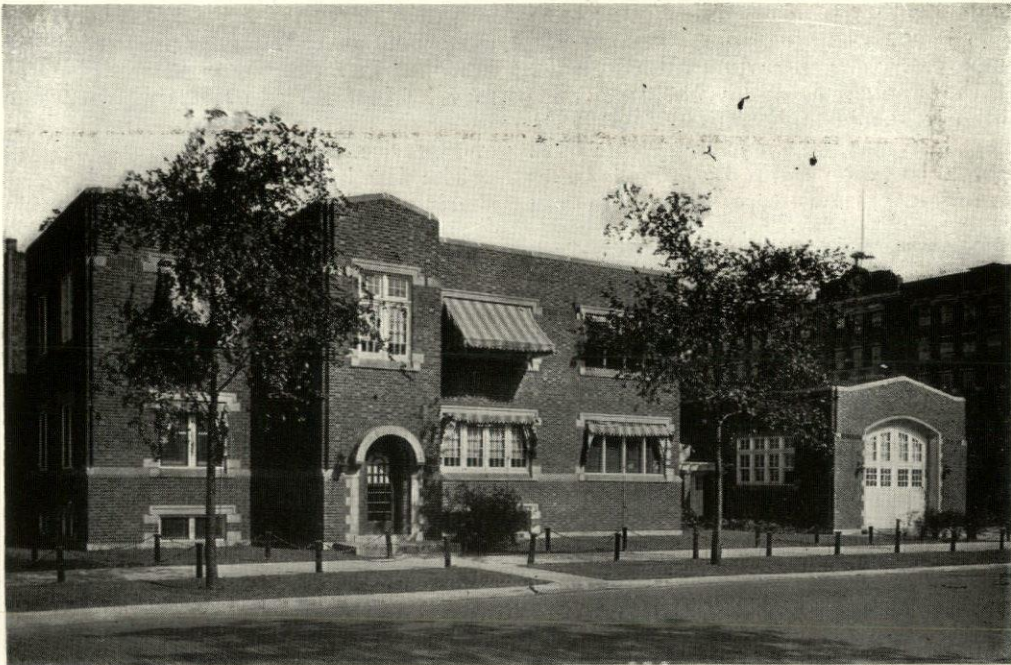
The other outstanding features of Sears, Roebuck & Co.'s plant are those related to welfare work for employes. The employes last year averaged about 16,000 at the main plant, and about 20,000 at the factories and branches.

Ever since the firm was established, welfare work for employes has had a prominent place in the policy adopted for the conduct of the business. At the main plant, the important features of this work are the generous provisions for outdoor recreation, amusement and athletics, a Y. M. C. A. building equipped not only with a gymnasium and a swimming pool, but with all the usual social and educational facilities, sanitary and attractive locker and coat rooms, lavatories, toilets and rest rooms throughout the plant, extensive lunch rooms, a complete hospital, and a very effective system of profit sharing.

The outdoor attractions for the employes during the periods between work hours consist of an extensive sunken garden in front of the Administration Building and of grounds for games and athletic sports.

The sunken garden is a formal park with a pool and fountain and with a dense planting of trees and shrubbery along the back to screen off the view of the adjoining unattractive property. In the center of the garden is a pergola with shady seats overlooking the pool, which is full of fish and a good variety of aquatic plants. Long paths traverse the garden east and west, along which a succession of the best sorts of garden flowers are transplanted from the greenhouse on the grounds.

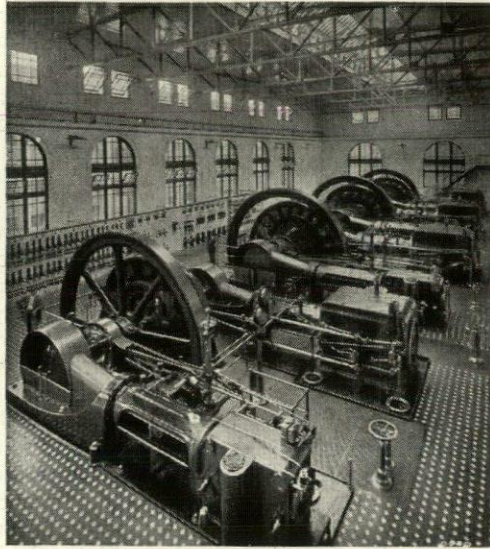
In the two blocks west of the garden are the athletic fields, opposite the Merchandise Building and its annexes. In the first block are the main baseball ground, numerous places for indoor baseball, a large running track and grounds for outdoor field sports. In this block



APARTMENT BUILDING FOR FIRE MARSHAL AND CHIEF OF POLICE—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

is also the men's field house, containing lockers, dressing rooms, shower baths and toilet facilities. In the next block are the tennis courts, which have been made quite a feature of the sports on account of their popularity. The courts are kept in the best possible condition and have resulted in developing some champions of considerable reputation. The women's field house, with lockers and complete accommodations, is situated in this block. Series of games and occasional championship tournaments are held, together with concerts by the band which has been organized among the employes. The important athletic event is the annual field day, held in mid-summer. Our illustration shows the meet last year, at which the Jackie band and a battalion from the Great Lakes Training Station were present to add



ENGINE ROOM—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

interest to the athletic contests. There were 25,000 people on the bleachers.

The lunching facilities consist of a café for the officers and heads of departments, a visitors' restaurant and cafeterias, restaurants and lunch counters for employes. On account of the great number of employes at lunch they are divided into three shifts and dismissed from their work at different times so as to avoid overcrowding the lunching places. Employes have their choice of the kind of lunch preferred in each case, and the cafeterias have proved to be the most popular. In connection with the lunching facilities there is a large sanitary kitchen. The price for lunches is based on the absolute cost of the food and service.

The firm has adopted a plan of profit-sharing which has received favorable



MAIL OPENING DEPARTMENT—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



INDEX ROUTING DEPARTMENT—SEARS, ROEBUCK & CO'S PLANT, CHICAGO.

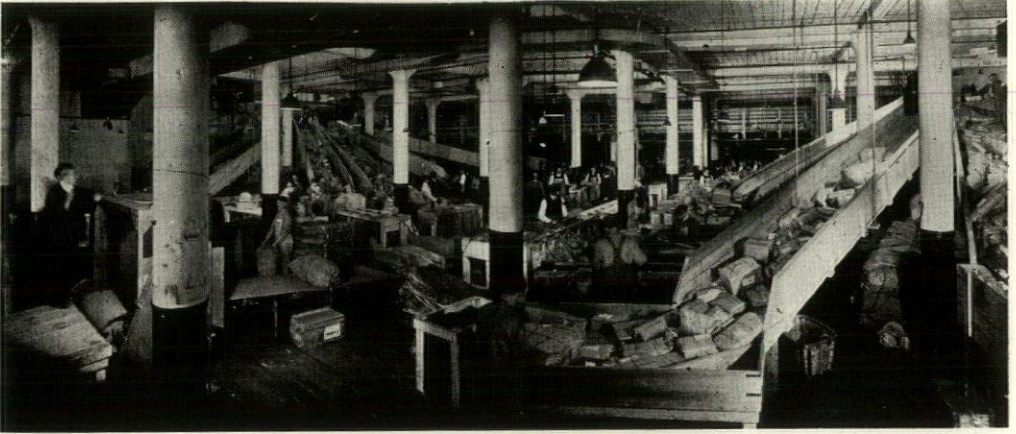


CORRESPONDENCE DEPARTMENT—SEARS, ROEBUCK & CO'S PLANT, CHICAGO.

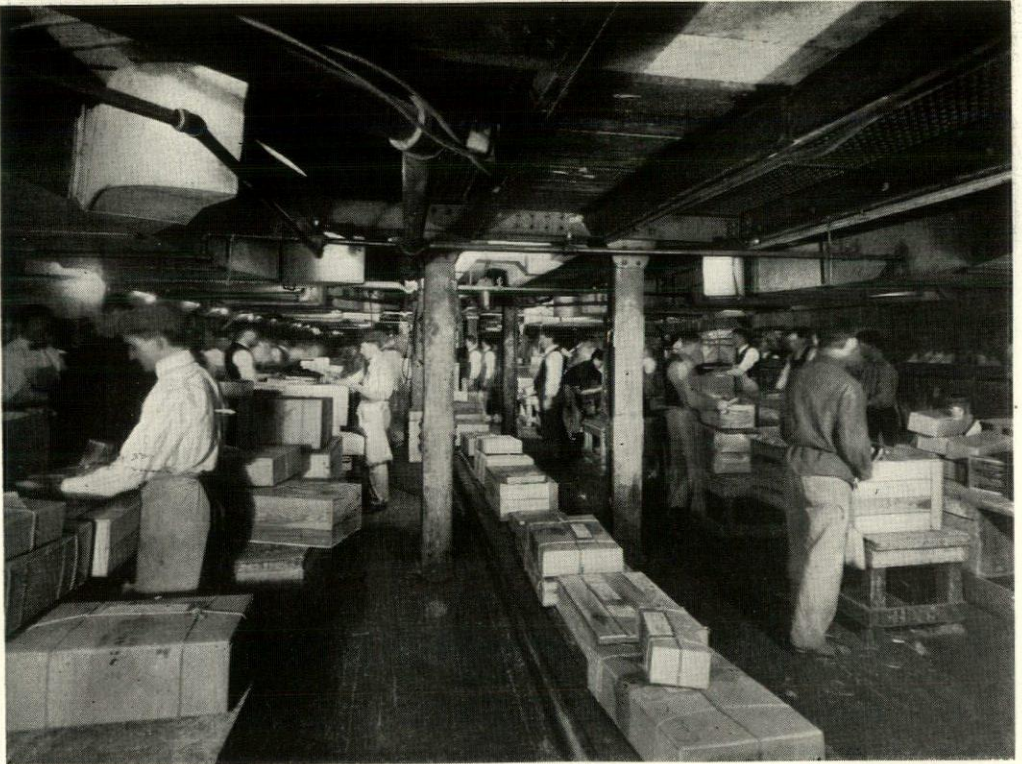


SORTING AND ASSEMBLING DEPARTMENT—ARTICLES ARE BEING SORTED AND ASSEMBLED PREPARATORY TO THEIR DELIVERY TO THE SHIPPING ROOM—SEARS, ROEBUCK & CO'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



POSTAL DEPARTMENT, SHOWING PACKAGES ARRIVING FOR SHIPMENT BY PARCEL POST—
SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.
Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



FREIGHT PACKING DEPARTMENT—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.
Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



A TYPICAL ALCOVE IN THE MERCHANDISE BUILDING, SHOWING HOW THE FORWARD STOCK OF GOODS IS KEPT READY FOR SHIPMENT—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

comment by experts on the subject. The plan is called "The Employees Saving and Profit-Sharing Pension Fund." Any employe who has been with the company three years can deposit 5 per cent. of his salary not exceeding \$150 per annum, to which fund the firm will add 5 per cent. of the firm's net earnings each year without deducting therefrom dividends to the stockholders. While joining the fund is voluntary on the part of the employe, 92.4 per cent. of all eligible employes have already enrolled. They now have 20,000 shares of common stock of the company to their credit in the fund, in addition to 60,000 shares which they already own, making 80,000 shares, which is more than 10 per cent. of the company's common stock.

Under the terms of the plan a participant may withdraw his accumulated savings and profits any time after ten

years. An exception, however, to this rule is made in behalf of the women who leave their employment for the purpose of getting married. They can withdraw their savings and profits after five years' service. In case of death the relatives or estate of any participant will receive the savings and profits, no matter what the length of service may have been.

An exception is also made in behalf of all employes entering the war service. These men not only get their positions back when released from service, but also re-enter the fund without penalty or loss. Employes withdrawing from the fund under other conditions not above described receive the amount of their own deposits made, with interest at 5 per cent. compounded. The fund of the employes is invested in the stock of the company, and it has already acquired since its establishment in July, 1916,



GATHERING AND BINDING MACHINES OF THE PRINTING DEPARTMENT—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

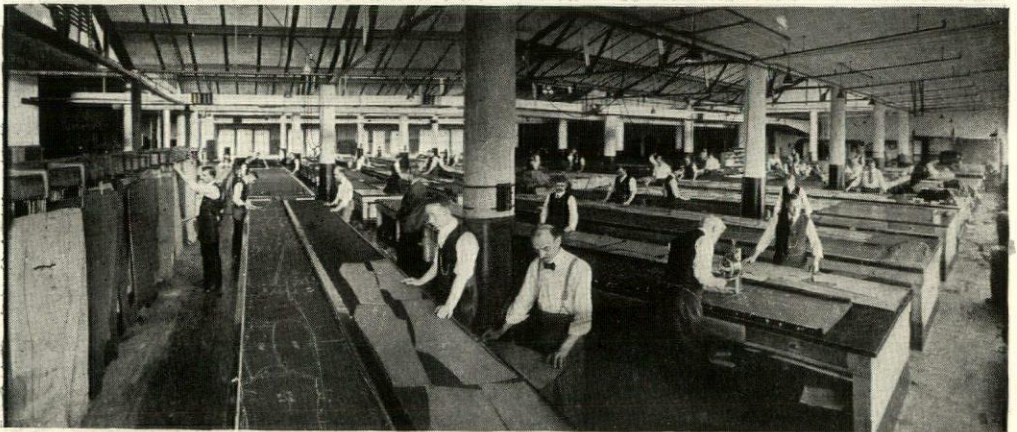
Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

20,000 shares of stock. As this fund increases it is likely that in the course of time a majority of the stock will belong to the employees or to those who have been employees and allowed their shares to remain as stock with the fund.

The first year when the fund was established the company paid into it approximately \$412,000; the second year, \$905,000, and this last year approximately \$1,000,000.

As examples of the results of this fund to date the following instances are

given: An employe earning \$15 a week, after saving 5 per cent. of his salary, plus the calculated profits on the stock, at the end of five years would have \$901.22; in ten years, \$2,648.55, and in twenty years, \$11,426.56. At the end of ten years a man getting \$20 a week would have approximately \$3,500, and at the end of twenty years about \$15,000; while the man getting \$25 a week at the end of twenty years would have to his credit approximately \$20,000. For the last three years the amount contributed by the firm for every dollar



CLOTHING DEPARTMENT, SHOWING THE CUTTING OF CLOTH FROM PATTERNS IN THE MANUFACTURE OF CLOTHING—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

saved by an employe has varied each year from \$3.02 to \$3.26.

In addition to this system of profit-sharing the company maintains another plan of paying all employes who have been with them five years a check for 5 per cent. of their annual salary on the fifth anniversary of their employment. On the sixth anniversary 6 per cent., and so on up to the tenth anniversary of their employment, when they receive 10 per cent. of the salary, and thereafter the same rate as long as they are employed by the company.

The Medical Department is organized under the direction of a doctor in charge, who has eight assistant doctors that spend part of their time at the plant, and thirteen nurses, who divide their time between the work in the doctors' offices and visiting the homes of employes. There is also a clerical force of twelve, including stenographers, record clerks

and file clerks. For the use of this force there is a complete modern hospital in the top of the Merchandise Building, having eighteen rooms, among which are the reception hall, men's and women's examining rooms, private examining rooms, rest rooms, dental offices, laboratories, dispensary, surgical dressing rooms and a room for the clerical force.

The extent and nature of the work carried on may be illustrated by the report of last year:

Examinations	34,138
Medical cases	33,881
Surgical cases	62,817
Dental cases	1,109
Nurses' visits	6,437

Total138,382

The organization and method of conducting the work is divided among the following five departments:



ONE OF THE CAFETERIAS IN SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



VIEW OF LUNCH COUNTER IN SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.

George C. Nimmons & Company, Architects of Additions to Original Plant.

1. Medical Supervision
 - a—Before employment
 - b—After employment
2. Surgical Supervision
 - a—Where employer is responsible
 - b—Where employer is not responsible.
3. Dental Supervision
 - a—Before employment
 - b—After employment
4. Sanitary Supervision
5. Medical Welfare Work

Medical Supervision:

- a—Before employment.

Every applicant is given a thorough physical examination before he is put to work. The object of this is threefold:

1. To protect the applicant from doing work which is not compatible with his physical condition; in other words, to endeavor to fit the job to the individual as nearly as possible.

2. To protect employes from the

necessity of working with fellow employes who have communicable diseases.

3. To protect the employer from having in his employ one who may be a source of liability because of some physical defect.

The last two conditions are the only ones which justify rejection, and the percentage of rejections is comparatively small.

- b—After employment.

It is their rule to re-examine the employes at least once a year. This is done by what is known as Department Examinations. Every employe is called to the doctor's office and given a thorough examination, and is advised as to his physical condition. Wherever it is indicated, he is recalled at more frequent intervals, until his physical condition is satisfactory.

Needless to say, those employes who are subjected to work which is likely to

cause occupational disease are given an examination once a month.

Medical treatment is given for minor ailments. Whenever necessary, the patient is referred to his own physician for further treatment. In a few cases, where family conditions are such that the patient cannot receive proper care at home, he is sent to the hospital. Immediate attention to minor ailments prevents many serious complications.

Employees have free access to the doctor's office, and whenever necessary may come for advice and examination. They must report here for a pass home on account of illness, and they must also report here for a pass to return to work after absence because of illness. In this way many communicable diseases are found in their incipiency and proper treatment is immediately started.

The work of the nurses is of great importance. When an employe is absent three days or more, a nurse is sent to the

home. If the patient is ill, she gives bedside care and helps in any other way she sees fit. If the patient has no medical care and it is evident that he should have, the nurse sees to it that he gets proper attention at once. This close contact with the patient in his home is of exceedingly great value in preventive medicine. Instruction in hygiene is tactfully given, and in this way the entire family benefits.

Surgical Supervision:

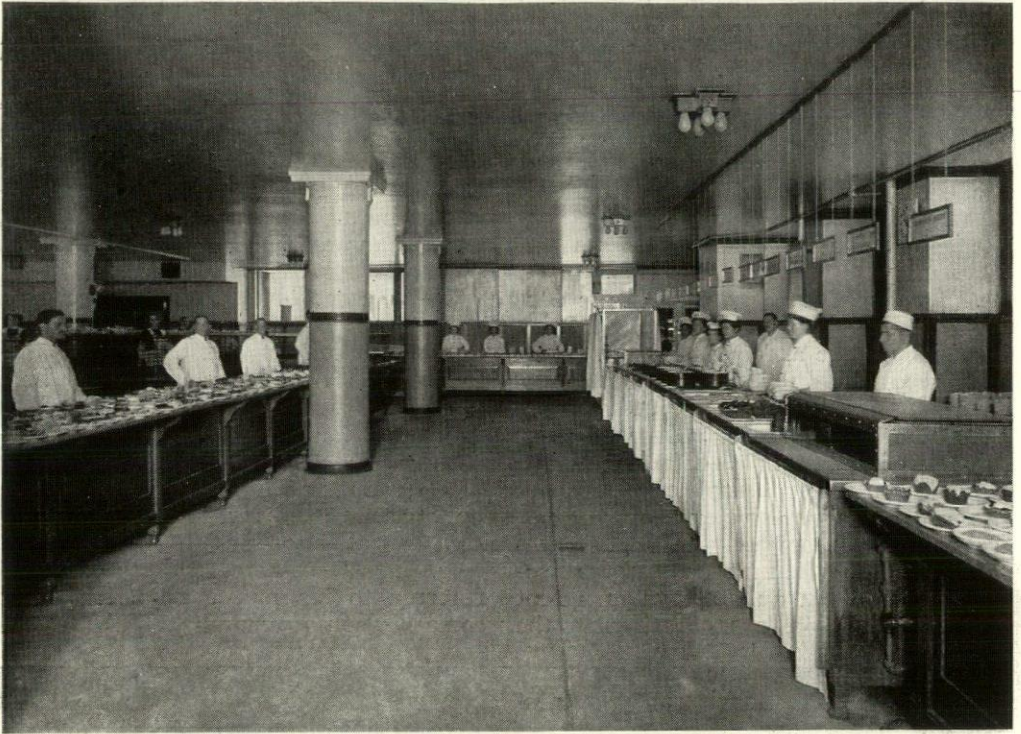
a—All cases which are house accidents are entirely taken care of by this office. All minor accidents must report at once to the doctor's office. Much has been done in preventive surgery. Immediate attention means the same here as in medicine.

b—As to the injured cases which are not house injuries, if a few dressings will keep the patient on the job, they are taken care of. Where necessary, the patient is referred to his family physician or to some surgeon of reputation.



GRILL ROOM—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



FOOD COUNTERS IN ONE OF THE CAFETERIAS OF SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.

Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.

Dental Supervision:

a—Before employment.

Whenever the examining physician finds evidence of diseased teeth, the applicant is referred to the dentist, who makes a careful examination and advises the patient.

b—After employment.

It is the purpose to have every employe receive the benefit of a careful dental examination. This is done by department examinations. Any minor work is done by the dentist, such as temporary treatment of a toothache or cleaning the teeth. The greater part of this work is educational.

Sanitary Supervision:

Regular inspection is made of the toilets, wash rooms, drinking fountains, cuspidor service, etc. Ventilation, lighting, disinfection and fumigation also come under supervision. In this con-

nection the close co-operation of the Engineering and Safety First Departments is secured.

Educational Work:

Dependence is largely placed on the personal contact with the employe. A few minutes' talk with the employe after his examination, or advice when he seeks it, seems to sink in deeper than lectures. Here again the work of the nurses in the homes is of great value.

There are also bulletin boards on which are posted Safety First and Health Bulletins.

Medical Welfare Work:

This consists largely in seeing that the patient has proper medical attention, also in adjusting minor complaints on the part of the employe in helping him to fit into the particular job which he has been employed to fill. The medical force is in a position which results some times in re-

ceiving confidential information from employees that no other department could receive that often gives an opportunity for good advice and the straightening out of difficulties which might otherwise make trouble if not attended to.

In concluding this brief description of Sears, Roebuck & Co.'s plant it will be of interest to give some information as to the extra cost incurred through the ornate architectural treatment of the buildings and grounds.

All are agreed that pleasant and attractive workshops and grounds are desirable, but many have an exaggerated idea of their cost. It is usually an agreeable surprise to learn from the experience of others that the extra cost in question was comparatively low. In a previous article of this series, an example was given of an industrial plant of which two different designs were shown; one a perfectly plain utilitarian treatment of the building and the other a moderately or-

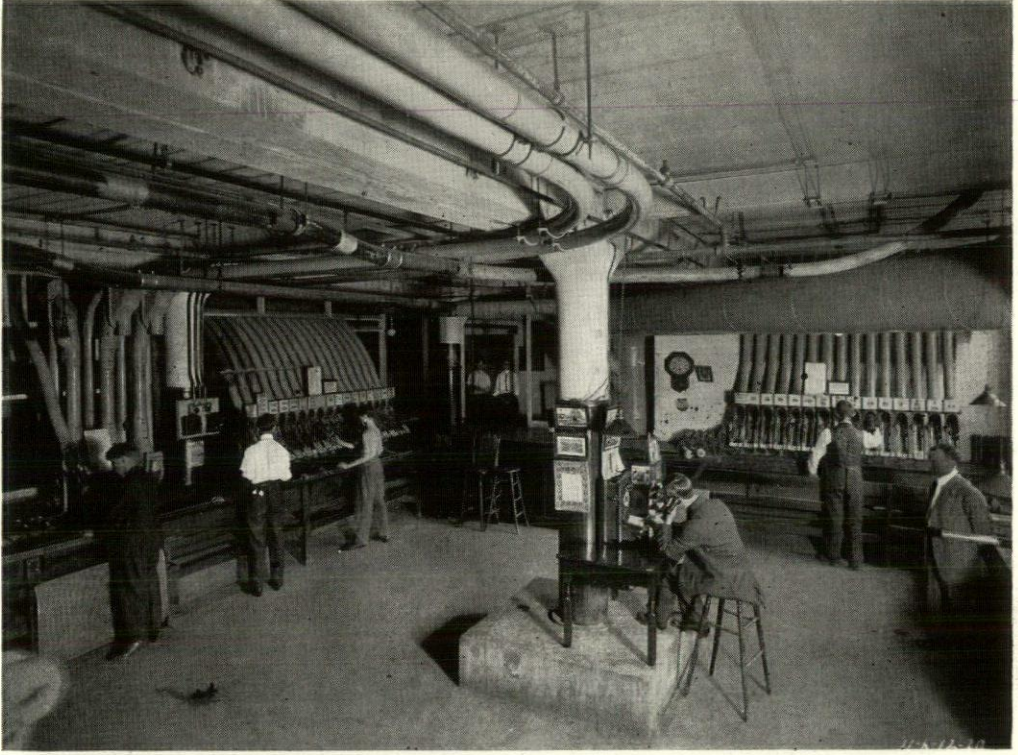
nate treatment of the building, intended to make it beautiful and attractive. On the basis of these two designs, builders' estimates were taken, and the actual difference in cost was found to be five per cent. of the total cost of the building.

The results of the experience of various architects with these problems in different cities have been secured, and they all go to establish the fact that the extra cost of what is commonly referred to as an ornamental treatment of an industrial plant does not, according to the current methods of designing plans in this way, involve an extra expense of more than five per cent. of the cost of the buildings.

In the case of Sears, Roebuck & Co.'s plant, an estimate has been made from the records of the contracts and it has been found that if the plant had been built purely as an engineering and scientific problem strictly adhering to the utilitarian requirements, by omitting the sunken garden, the athletic fields and all



TESTING LABORATORY—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.
Nimmons & Fellows, Architects of Original Plant.
George C. Nimmons & Company, Architects of Additions to Original Plant.



PNEUMATIC TUBE ROOM—SEARS, ROEBUCK & CO.'S PLANT, CHICAGO.
 Nimmons & Fellows, Architects of Original Plant.
 George C. Nimmons & Company, Architects of Additions to Original Plant.

the attractive features of the grounds, if the buildings had been faced with common brick, in box-like forms, to enclose the floor space required, and if all the terra cotta, stone work and other materials used to make them attractive had been omitted, a saving of considerably less than five per cent. of the original cost would have been made.

The chief benefits gained at Sears, Roebuck & Co.'s plant from the ornamental nature of the grounds and buildings and from the welfare work are, of course, to be looked for in their effect upon the employes.

It is difficult, of course, to give any adequate conception of the great improvement and uplift in their mental, moral and physical condition, but there is one way by which to measure the value of the results in dealing with employes: that is by the "turnover" of labor. In the previous article it was

shown that the best authorities agree that during the period previous to the declaration of war by this country, the average turnover of labor was 100 per cent. per year; that is, a concern was obliged to hire as many employes every year as was on its pay roll in order to keep the working force up to requirements. The investigation by Mr. Alexander was given, based on careful records kept at twelve typical industries in six different States; these showed a little over 100 per cent. labor turnover in a year. The statements of Prof. Roy Wilmarth Kelley, of Harvard University, and Dr. Joseph H. Willits, of the University of Pennsylvania (both authorities on the subject), were to the effect that the average turnover of labor in this country was about 100 per cent. a year. The study by Mr. Boyd Fisher, of Detroit, indicated the great extent to which this labor turnover had grown during the war. The

records of fifty-seven concerns in Detroit had shown an average labor turnover of 252 per cent. for the last year.

In the case of Sears, Roebuck & Co., the turnover of labor was not anything like as great as this amount during the war. Prior to the entry of this country into the war, when the labor turnover generally was running 100 per cent. in the industries over the country, the labor turnover at Sears, Roebuck & Co.'s plant in the year 1915 to 1916 was 57.8 per cent. On account of the necessity in their business each year of taking on a large temporary force to help out in disposing of the big rush of business at Christmas and one or two other seasons, this percentage should be reduced at least 15 or 20 per cent., in order to put it on the same basis for comparison with the other industries alluded to. This would indicate that the labor turnover at this plant was at least less than half of what it was generally over the country.

According to the leading authorities, the cost to replace an employe runs from \$25 to \$500, according to the nature of the work and the circumstances connected with it.

Assuming that the labor turnover at Sears, Roebuck & Co.'s main plant in normal times was half of what it was at the average plant generally, and that the number of employes was 16,000, then the turnover of labor must have been approximately 8,000 employes, which is 8,000 less than would be expected by applying the general rule established for such labor fluctuation. In other words,

it can fairly be assumed that by reason of the relations established with employes the firm is saved the annual expense and disadvantage of replacing 8,000 employes. This, estimated at the very conservative figure of \$50 an employe, amounts to a saving of \$400,000 a year.

It may seem difficult to accept these large figures as the cost of replacing employes, and yet the best authorities in the country who have accumulated accurate data on the subject, maintain that they are approximately correct. Assuming then that these calculations are approximately correct and that the labor turnover at Sears, Roebuck & Co., prior to the war, was running about half of what it was at other plants, generally, then this saving of \$400,000 which resulted to them in having only half as much labor turnover as other plants is one of the returns which should be credited to the well organized and well maintained welfare work of their plant. It is a sum practically saved every year that is in itself far greater than was expended in all of the welfare work instituted when the plant was originally built.

What the increase among the employes is in efficiency, in health and prolongation of life, in loyalty and in contentment and the joy of working where right treatment prevails need not be computed; its value is apparent, and serves as an example of the important share which right surroundings and right treatment of employes have in the development of American industries.

The SOCIAL CENTER

PART II

Philanthropic Enterprises

By

FISKE KIMBALL

THE inability of unskilled workers, sweated tenement dwellers, and others who most need a common meeting ground to support even a semi-endowed organization has, in the absence of civic action, thrown the task of providing decent social centers for the masses upon philanthropic agencies. Among these are many of a religious character, yet in so far as they seek to minister to a wider public than that of their own denomination—and this is almost necessarily the case when their field is among the foreign-born—the social rather than the ecclesiastical phase must dominate, and the buildings tend to conform to those of agencies without religious features.

Any wide recognition on the part of more favored classes of the need for social provisions among the poor of great cities began with Walter Besant's novel, "All Sorts and Conditions of Men," published in 1882. Its vision of a popular art gallery, concert hall, museum, and social club was realized in a wave of charitable enthusiasm which established the "People's Palace" in East London. The distrustful and disappointing reception which this received at first from its intended constituency, however, showed the danger of trying to "do something" for the poor, and of working on a preconceived notion of their needs. It emphasized that the first gift demanded was the gift of self.

It was on this idea of personal consecration on the part of educated men and

women, who should voluntarily take up their residence in the crowded quarters of cities in the hope of providing social and civic leadership that Canon Barnett in 1884 founded Toynbee Hall in Whitechapel, the first social settlement. That it met a need is shown by the rapid spread of the movement and by the multitude of settlements today. In America, where the foreign-born specially need friendly help, these settlements numbered four hundred and thirteen in 1911, and have still tended to increase. They form the principal class of social centers on a philanthropic basis.

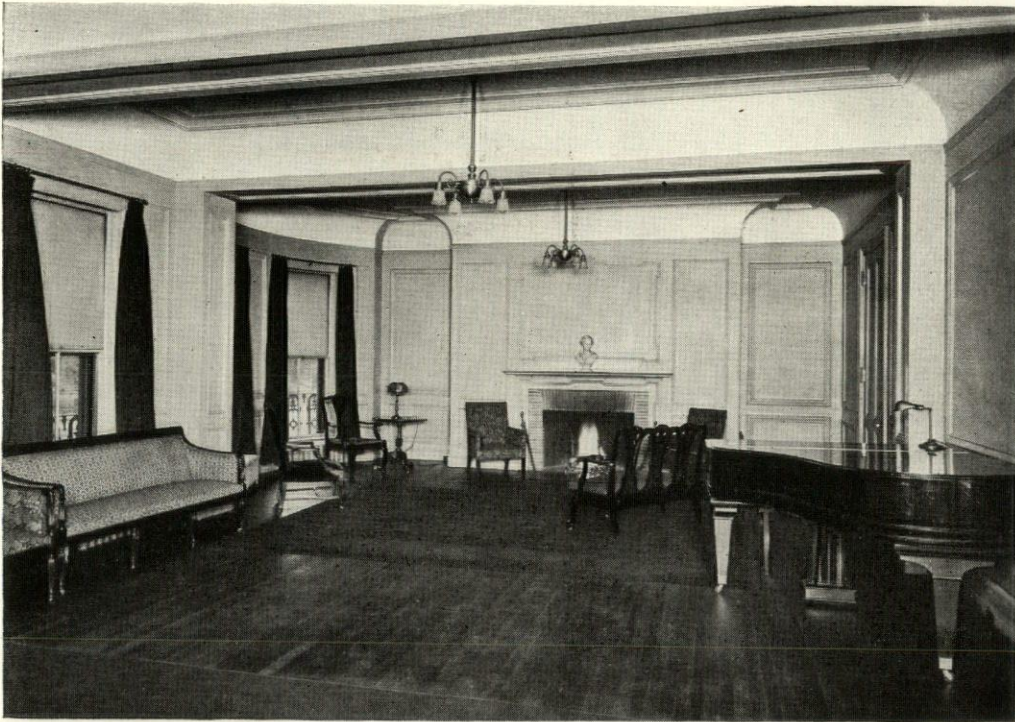
Unlike the Young Men's Christian Associations and related societies they do not have a standardized form of organization and a relatively fixed program of activities; on the contrary, they have intentionally proceeded by constant individual experiment, undertaking this activity or that as the needs of the particular neighborhood have suggested. Clubs for boys and for girls, groups for discussion of social and economic problems, conduct of game rooms, playgrounds, and gymnasiums, of kindergartens and day nurseries, of lunch and rest rooms, instruction in domestic science, handicraft, art, dancing, music, and dramatics, maintenance of district nursing and dispensary work, savings banks and legal aid, agitation for political, industrial, and housing reform, all may fall among their activities, in varying combinations. The absence of any large initial means and the necessity of

proceeding slowly to win and keep the confidence of the neighbors, moreover, has tended to keep the settlements in old buildings erected for other purposes and to discourage the formation of a uniform architectural type. The quadrangle type was adopted at Toynbee Hall on the suggestion of the English colleges from which its residents came, and was the one advocated by Mr. Allen B. Pond, in the most notable early discussion of settlement architecture, on the analogy of the missionary monastic houses. Aside from its extravagance, and ordinary impracticability under urban conditions, however, it has been rightly felt to be unsuited to the spirit of the settlement, which faces outward rather than inward and seeks to assimilate itself as closely as possible to the conditions of life in the neighborhood.

Among settlement buildings which are the result of remodelings and of gradual growth there are features which have none the less architectural interest. Thus

the assembly room at the headquarters of South End House in Boston suggests what may be done on the interior in remodeling two large old residences for settlement purposes.

No case of the sort is more notable than Hull House, the most famous of American settlements, which has grown from the single old mansion which gave its name to cover an entire city block. It is a congeries of buildings and courts, with little possibility of close coordination of units for related functions owing to the constant moving into larger quarters of this or that activity which has outgrown its accommodations. The order in which the older blocks were built is indicated by the numbers in circles on the plan, but it must be understood that not only the use of these blocks but in several cases their interior arrangements have been modified more than once. Their architectural lines also, with the story heights and scales adapted to widely different functions,



ASSEMBLY ROOM—SOUTH END HOUSE, BOSTON, MASS.
Peabody & Stearns, Architects. Misses Lois L. Howe and Manning, Associated.

could not always be unified in the formal sense, but there has resulted an absence of institutional character, and an effect of true picturesqueness—never secured but by frank adaptation to imposed conditions—which the architects assuredly would not exchange for a more banal formality.

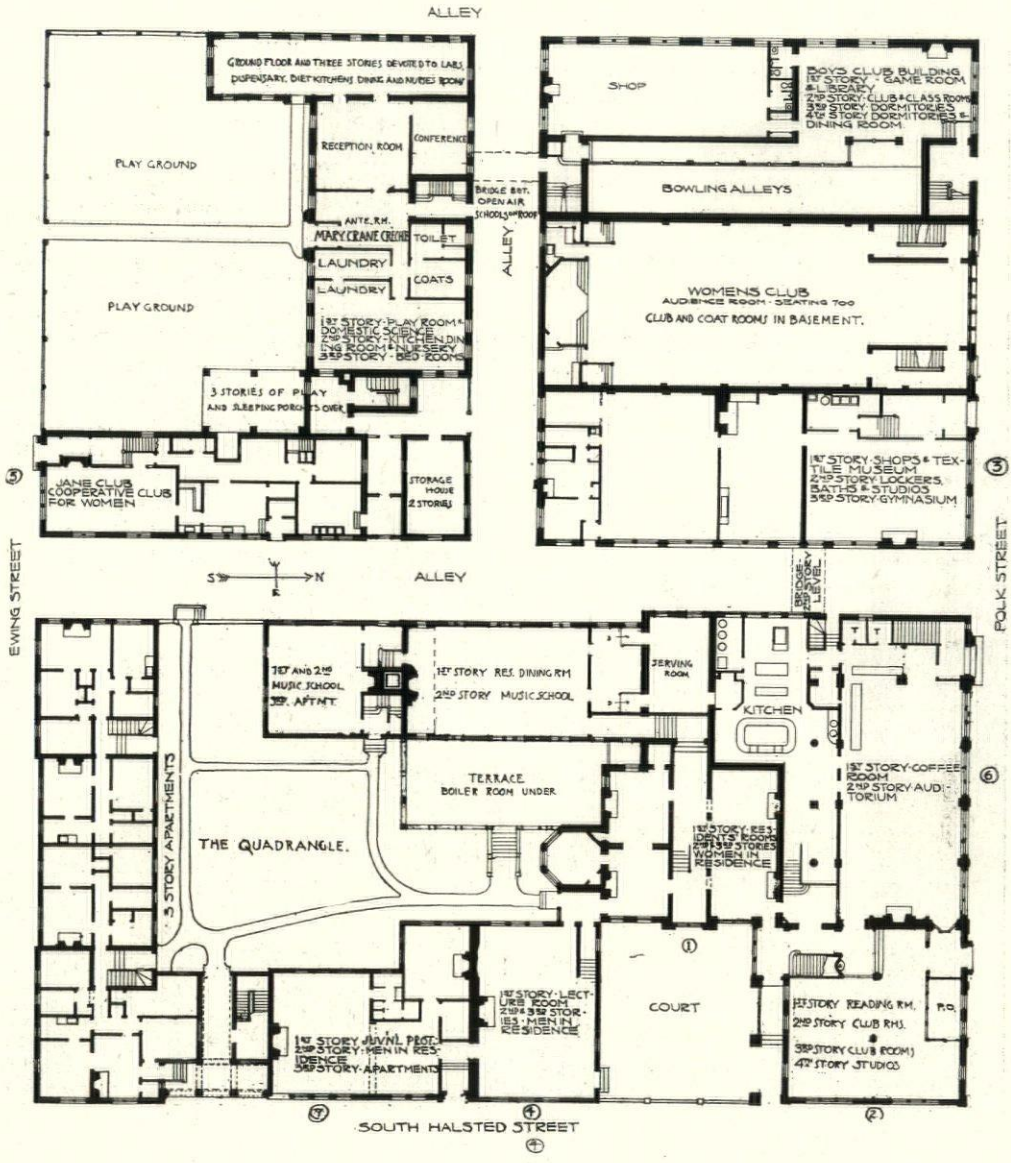
The group, the early history of which was traced by one of its designers in the *Brickbuilder* for September, 1902, now has the following accommodations and arrangements. The old mansion, which still houses the administrative offices and the residents' social rooms, fronts a small entrance court on Halsted street and opens to the south on a terrace backed by the large residents' dining room. The bed rooms of the women in residence occupy the second and third stories of the old house, while the men residents are provided for in the upper stories of adjacent buildings. To left and right of the entrance court are a lec-

ture room and a reading room with the rooms for men's clubs above. Adjacent to the old house on the north is a block containing the public restaurant or coffee-room, with its kitchen serving also the residents' dining room, and, above, an auditorium with a small stage for theatricals. Next in order along Polk street come the shops and gymnasium, the Women's Club with a larger auditorium, seating seven hundred, and the Boys' Club with game room, bowling alleys, class and club rooms and dormitories. At the south corner of the front is a block of apartments—for both married residents and neighborhood dwellers—designed to furnish by their rentals an income toward the maintenance of the House. It forms two sides of an interior quadrangle completed by the main house and the school of music, which has an old world air very unusual in this country. To the south, along Ewing street, follow the residence club for

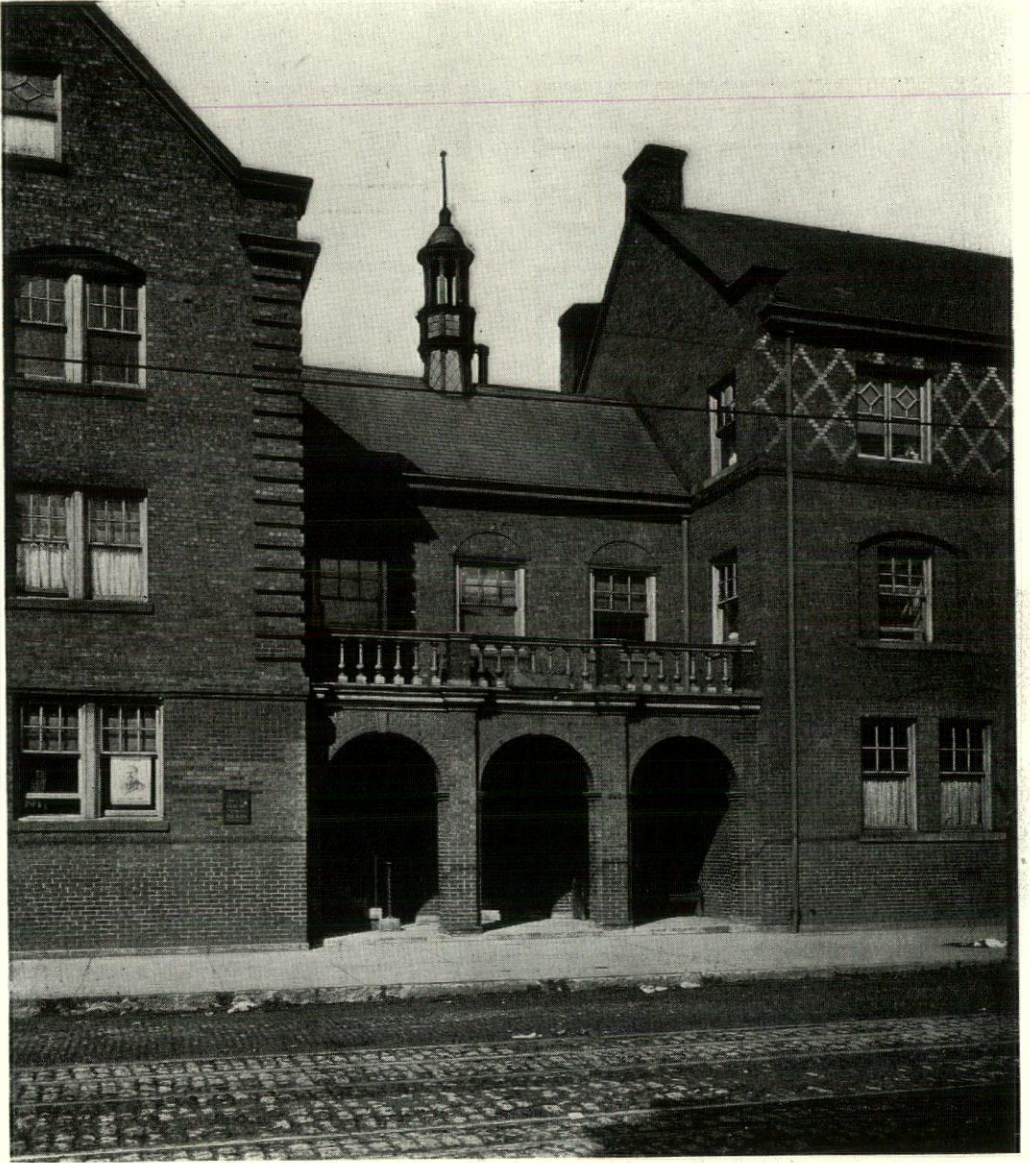


POLK STREET FLANK WITH COFFEE ROOM, GYMNASIUM, WOMEN'S CLUB AND BOYS' CLUB—HULL HOUSE, CHICAGO.

Pond & Pond, Architects.



PLAN OF HULL HOUSE, CHICAGO.
Pond & Pond, Architects.

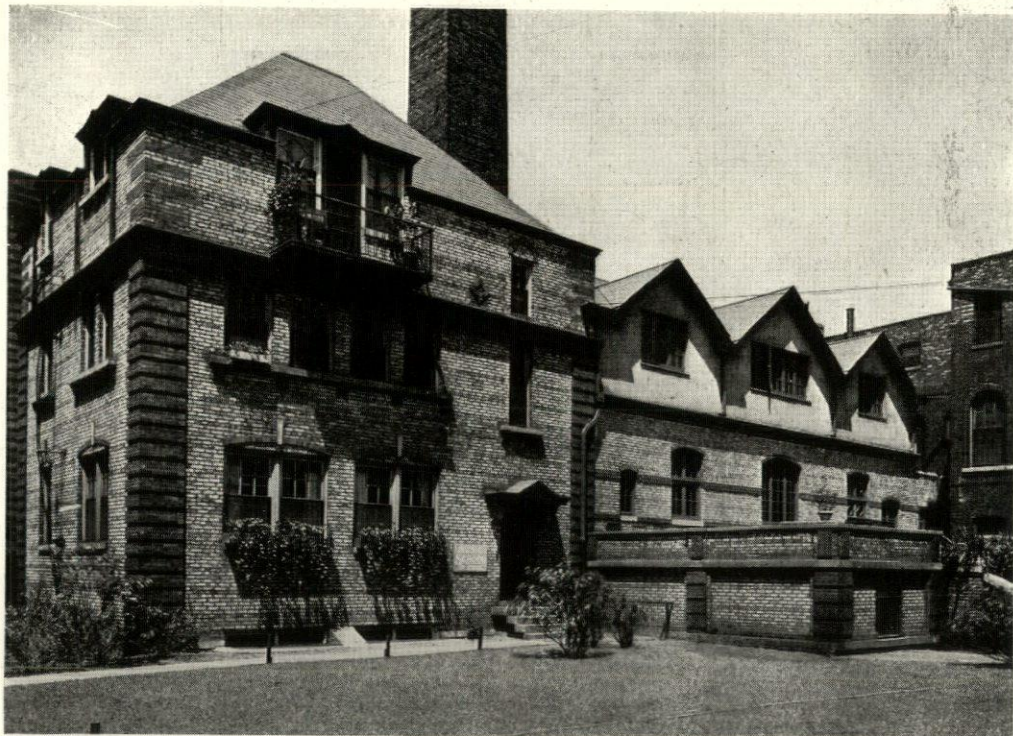


ENTRANCE TO APARTMENTS AND QUADRANGLE—
HULL HOUSE, CHICAGO. POND & POND, ARCHITECTS.

working girls, and the day nursery, diet-kitchens, and dispensary.

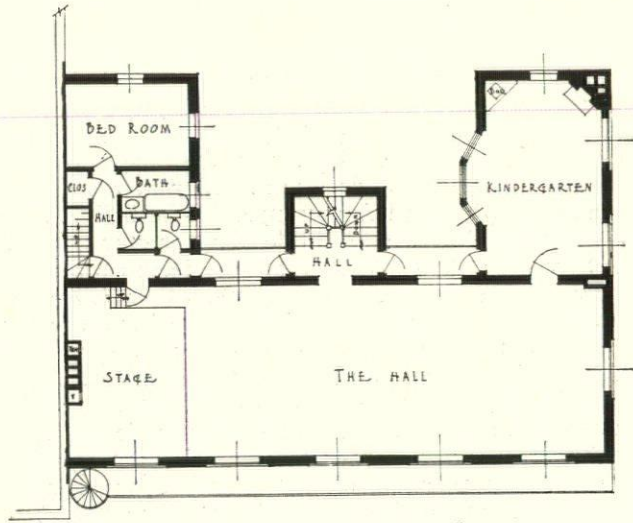
Some settlements where the headquarters have remained in old dwellings, instead of keeping their entire plant centralized as at Hull House, have erected the various supplemental elements as separate units. Thus to fill the need for social meeting places under decent conditions the Henry Street Settlement in New York took the initiative in erecting Clinton Hall, an independent structure with meeting rooms for trade unions, lodges, and benefit societies, an auditorium and dance hall, pool rooms, bowling alleys, dining halls, and kitchens, with provisions for the Kosher preparation of meals. In summer there is a roof garden, with a stage for theatricals. All told the patrons number some five or six hundred thousand a year. The Neighborhood Playhouse, well known as an independent "little theatre," is an offshoot of the same settlement.

The plan of scattering the various units throughout the district has been followed especially by South End House in Boston, with a view to providing "separate centers of influence so as to attack the needs of the neighborhood from different angles and at very close range." The buildings here include, beside the director's house and the separate residences for men and for women workers, a boarding club, the South End Music School and the South Bay Union. This last was specially constructed to meet the needs of its neighborhood, a congested factory and tenement quarter already provided—largely through efforts of the settlement—with municipal baths and gymnasium. It contains a lunch room, noonday rest rooms, a kindergarten, reading and club rooms for men, a small industrial school for boys and girls, and a "neighborhood town hall," designed to help the district achieve civic unity.

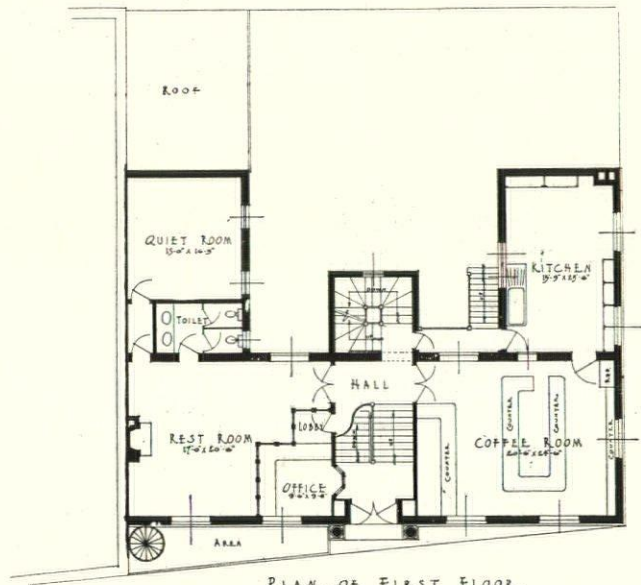


THE QUADRANGLE WITH SCHOOL OF MUSIC, RESIDENTS' DINING ROOM AND PART OF THE OLD HOUSE—HULL HOUSE, CHICAGO.

Pond & Pond, Architects.



PLAN OF SECOND FLOOR



PLAN OF FIRST FLOOR

SCALE: 1/8" = 1'-0"

SOUTH BAY UNION, BOSTON. R.
CLIPSTON STURGIS, ARCHITECT.

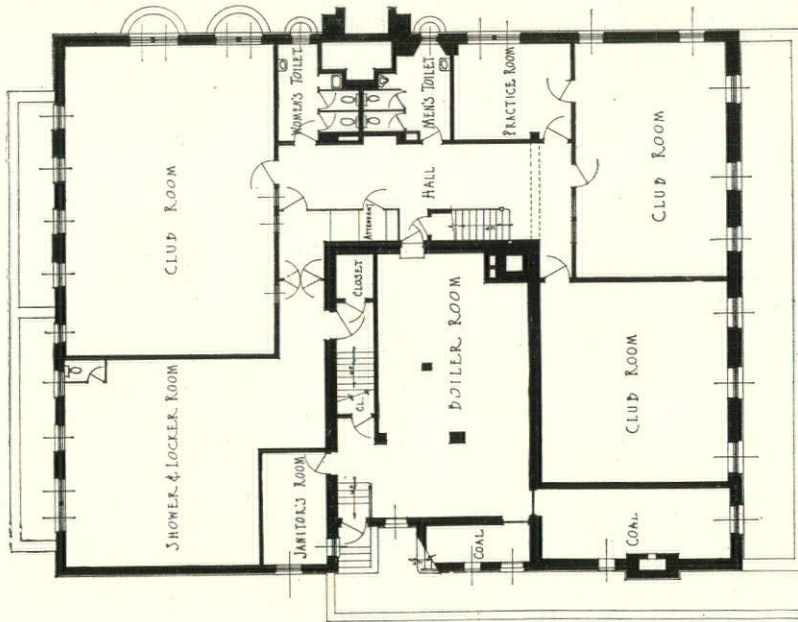


SOUTH BAY UNION, BOSTON, MASS.
R. Clipston Sturgis, Architect.

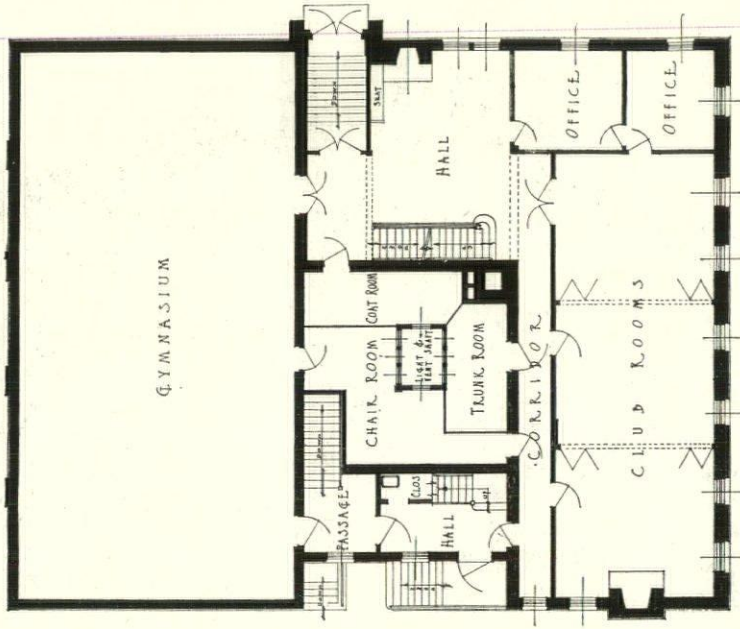
Among the self-contained settlement buildings erected for the purpose—relatively few in number—one characteristic of the simpler type is the Gad's Hill Center in Chicago. The problem architecturally is not greatly unlike that of a small Y. M. C. A. building, with offices, social rooms and gymnasium on the first floor, locker rooms and club rooms in the basement, dining and other club rooms on the second floor and bedrooms on the third floor. Great skill has been shown in securing the utmost utilization of space while providing for separation of functions and for every convenience of access. Thus the first floor, seventy by eighty-five feet, is built over practically solid, with coat room, chair room and trunk room occupying the center, illuminated by a small light-well. The office commands the entrance, the stairs both up and down, the gymnasium en-

trance, and the corridor serving the social rooms when separated for clubs. The kitchen on the second floor serves both the residents' dining room and the club rooms there, as well as those below by means of the service stairs. The rooms for men and for women residents, reached by separate stairways, occupy wings along the two outer sides of the block, with a suite for the head resident on the corner.

Notable among recently constructed settlement houses is Greenwich House in New York, equally interesting from the practical and the artistic viewpoint. Real estate values imposed a height of seven stories on a lot seventy-five by eighty feet, but domestic feeling has been maintained by a high-gabled Georgian treatment of the "head-house," while ample natural light is secured for the rear wing by courts at either side. The inclusion

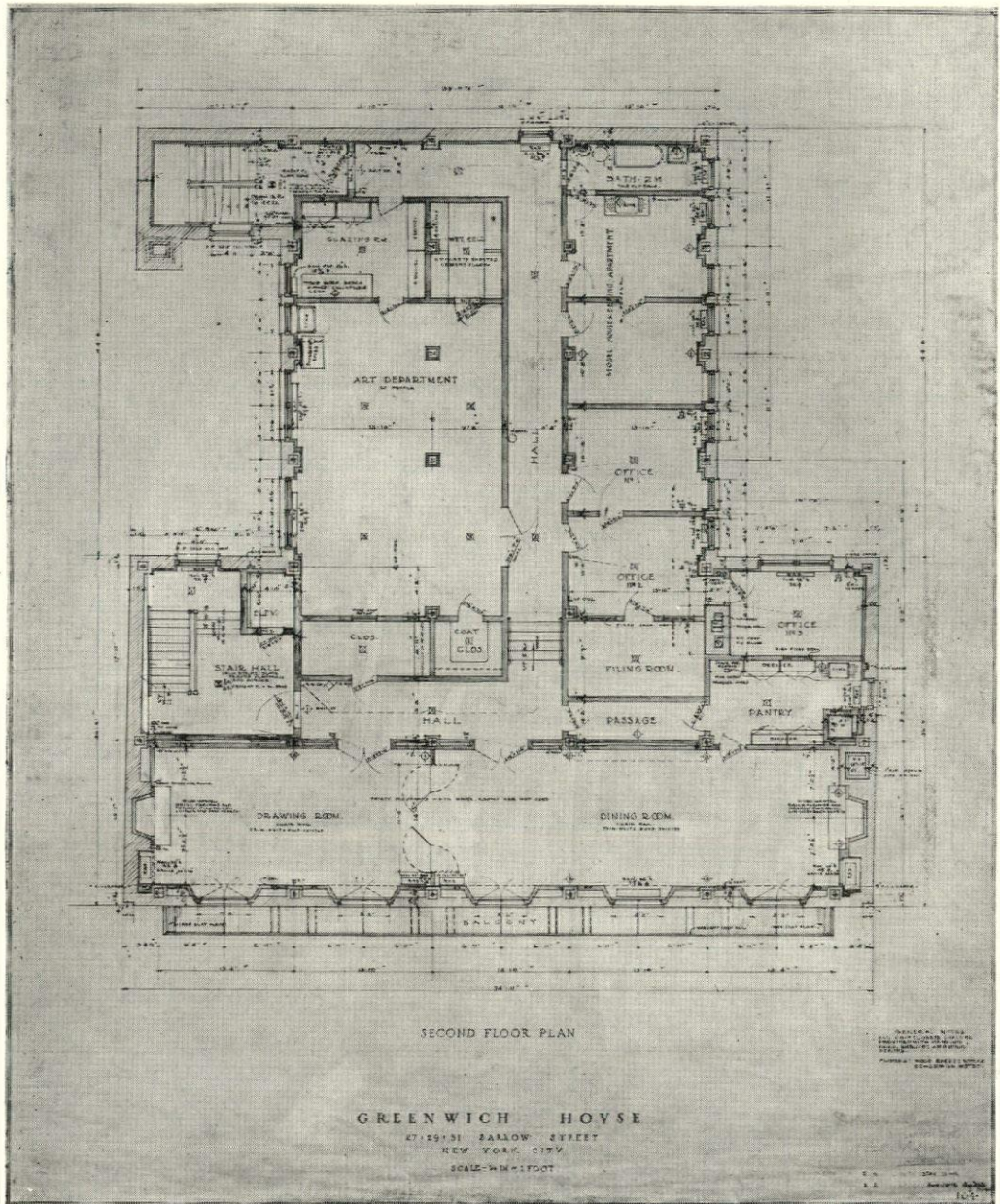


PLAN OF BASEMENT
Scale 1/8" = 1'-0"

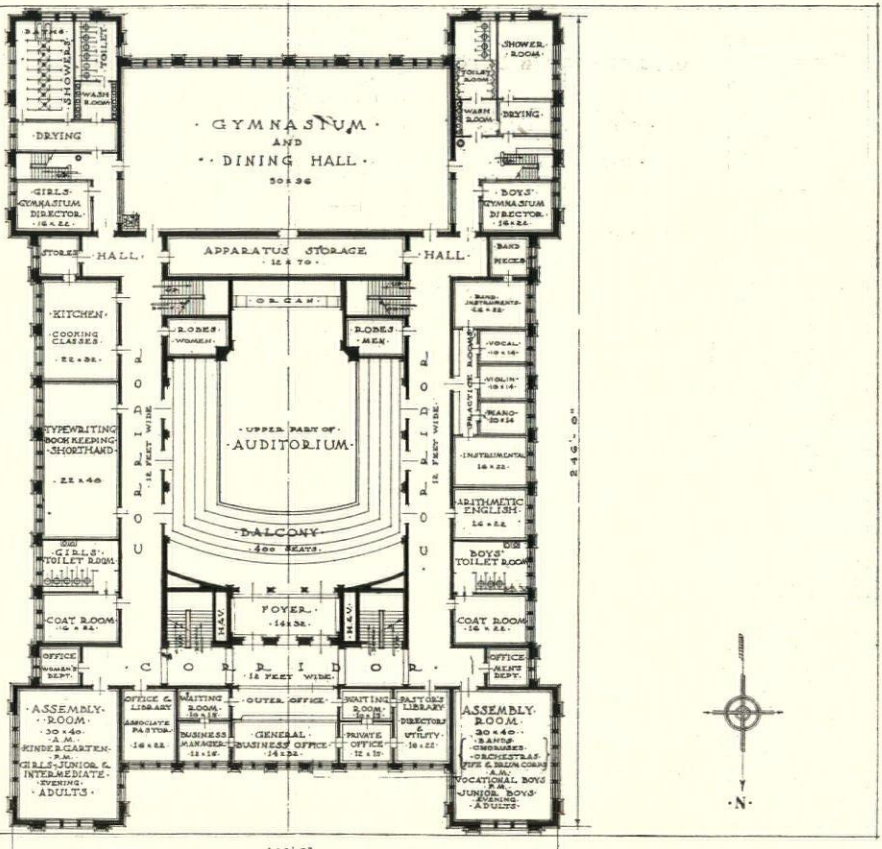
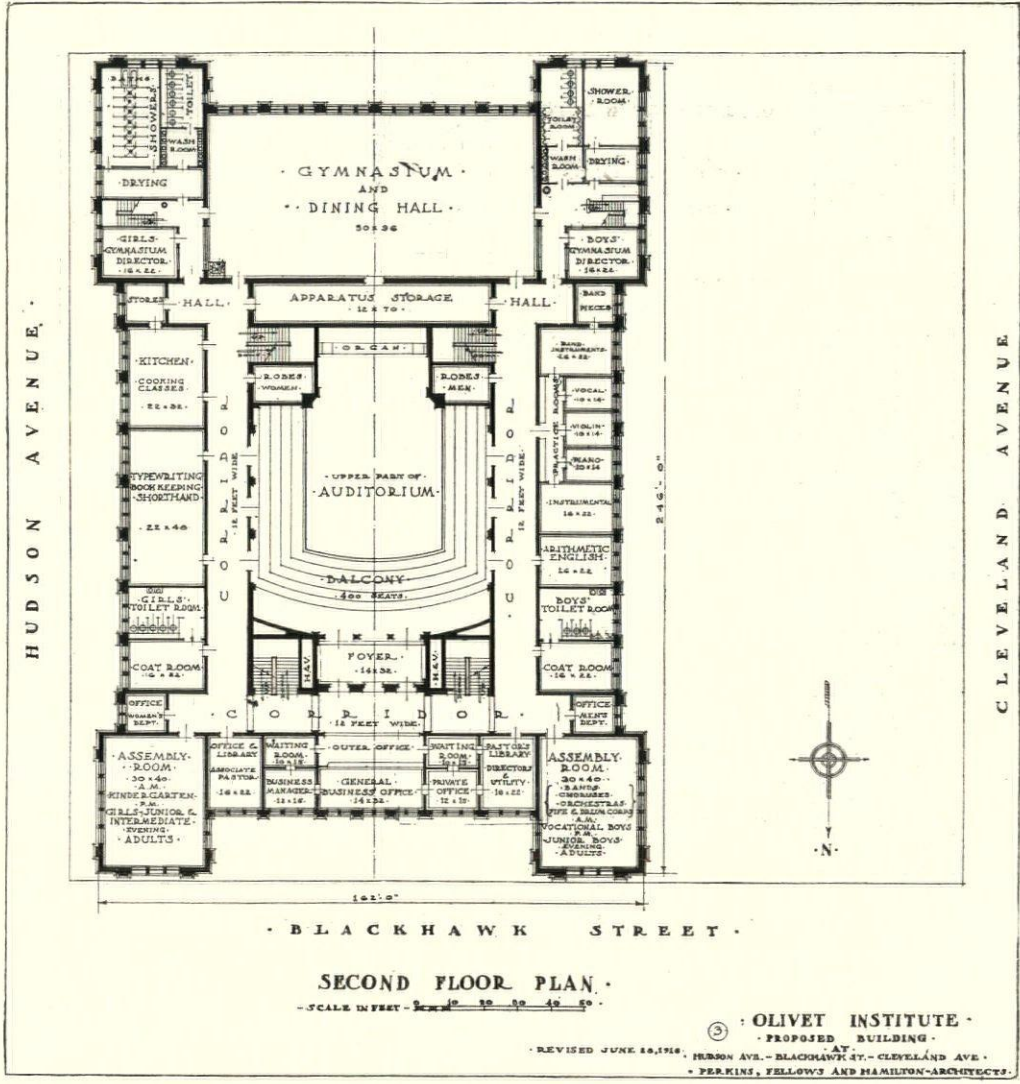


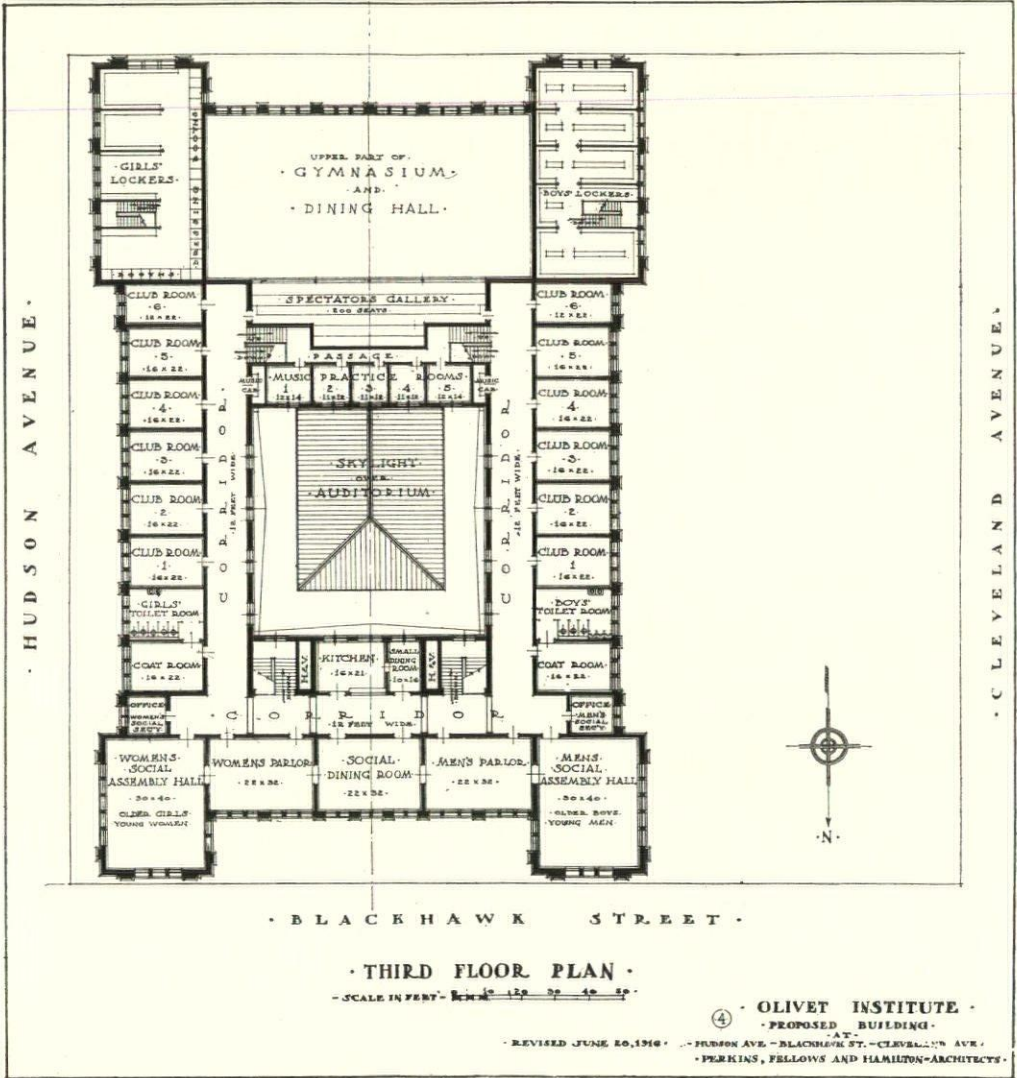
PLAN OF FIRST FLOOR

GADY'S HILL CENTER, CHICAGO.
Pond & Pond, Architects.



SECOND FLOOR PLAN—GREENWICH HOUSE, NEW YORK CITY, DELANO & ALDRICH, ARCHITECTS.





of an auditorium for theatricals, subject to the New York fire laws, largely determined the interior disposition, since it had of necessity to occupy the ground story. The foyer in front is also the reception hall, with a fireplace at one end and two retired alcoves. A first-aid room occupies one corner, with stairs to the clinic in a mezzanine. The second floor has the offices, the long main dining room and drawing room across the front, the art department, and a model house-keeping apartment. Then follow in order floors devoted to girls' clubs, to residents' rooms, to boys' clubs, to the gymnasium and track, and finally a roof garden with an open air school and a terrace for convalescents. The basement has a carpenter shop and a potter's kiln, for the Italians of the neighborhood are eager for art instruction and apt in creating beautiful wares. By electric connections there are facilities for cooking and service on every floor, so that any club may serve tea or supper.

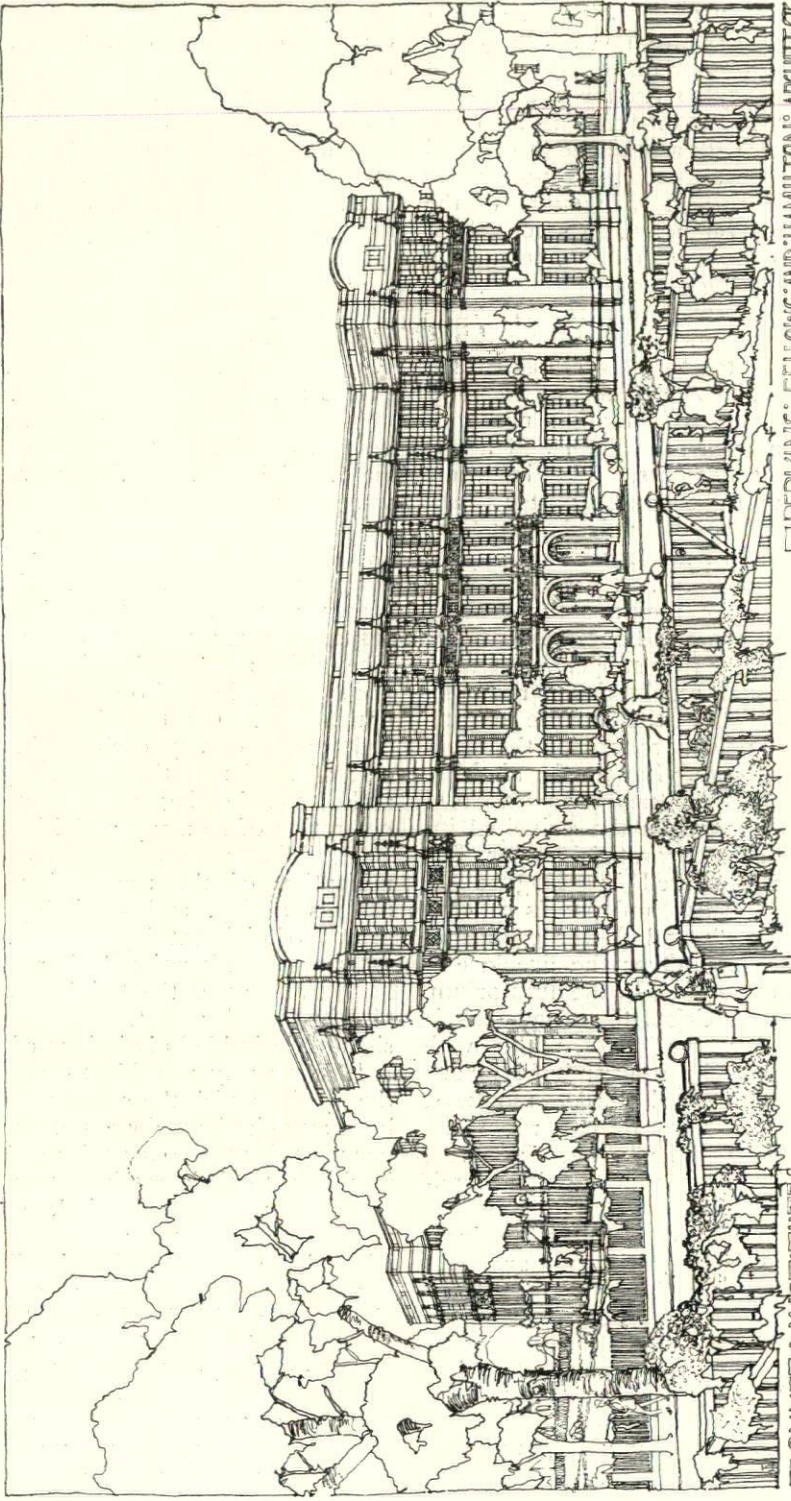
Very unusual results have been secured by enlisting the unique artistic forces of the neighborhood for the decoration of the house. For the façade Mrs. Harry Payne Whitney has modeled four medallions, while the principal interiors have been decorated in color. The entrance hall, painted by Eugene F. Savage, has lunettes and panels of conventional peacock and flower groups in clear vivid color. Over the fireplace is a ship with all sail set. In the auditorium, done by Arthur Crisp, the woodwork is mauve-lavender, the walls white with vases of fruit and a multitude of joyous squirrels, long-legged birds, monkeys, and elephants. The dining room, by Augustus Vincent Tack, has dado and trim of deep blue with fanciful landscapes in the chimney recesses.

Perhaps the most comprehensive single building for social purposes yet proposed in America by any philanthropic agency is the projected one for the Olivet Institute in Chicago. This organization is an outgrowth of religious institutional work, yet the architectural provisions do not differ essentially from those needed where there are no religious affiliations. A large auditorium used for church ser-

vices on Sundays and Thursdays indeed occupies the center of the plan, but this might equally be the case where a public forum or dramatic activities were important. Unlike the settlements proper, but like many neighborhood "centers," the building has no residential apartments. On the social, recreative and educational sides, however, it is very highly developed. At the rear of the auditorium are a gymnasium and swimming pool, while on the other three sides it is surrounded by a twelve-foot corridor, having the reception rooms, assembly rooms, reading rooms and offices at the front, and the other provisions at the flanks, with a general division of the sexes to left and right. Thus the kindergarten, day nursery, and school of domestic science, shorthand and typewriting occupy the two lower stories at the left; the shops for vocational training, draughting rooms and school of music the corresponding quarters on the other side. The girls' and the boys' locker rooms are similarly located on either side of the gymnasium. On the third floor small club rooms occupy each flank. At the cost of rendering the plan *un peu mêlé* and of complicating supervision, the concentration of so many activities in a single building makes possible economical utilization of the rooms during three periods a day, and flexibility in the growth of different departments. On the exterior the educational character dominates, and gives the building rather an "institutional" aspect, not always considered desirable in buildings of the sort.

It is scarcely possible to overestimate the service which the settlements and related agencies have done, not only for the poor but for the community at large. It is chiefly to their workers that we owe any exact and sympathetic knowledge of urban life, poverty and overcrowding which have made possible intelligent efforts at amelioration on a larger scale. From their initiative largely have come the successful agitation for district and school nursing, milk inspection, legal aid service, small parks and playgrounds, housing legislation, and against unemployment, sweating and child labor.

Admirable as their work has been, and

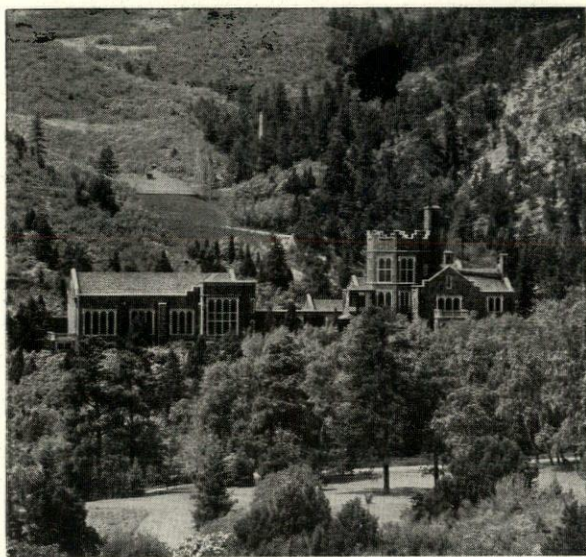


PERKINS, FELLOWS AND HAMILTON ARCHITECTS

OLIVET INSTITUTE

necessary as it will remain for a long time to come, there have not been wanting critics among the workers themselves, who point out certain elements of weakness and of self-destruction in the movement, which render its future uncertain. Aside from the tendency of the subjects of all philanthropic enterprise to resent that something is being done *for* them by others of better fortune—a tendency largely overcome by the tact and devotion of the settlement workers—there is the defect inherent in the very idea of the settlement: that a band of cultured outsiders could become at will neighbors of the poor while maintaining conditions of life and internal association artificial to the slums. Only an exceptional enthusiasm and

human warmth, which in the long run cannot be counted on, have overcome this difficulty, which increases just in so far as special buildings are provided. Even more striking is the tendency of the settlements to depart from this original emphasis on personal consecration to the service of individuals and to lay emphasis on the improvement of the whole social and economic mechanism by political action. In so far as this is successful, or even in so far as the practical activities initiated by the settlements are taken over on a more comprehensive scale by civic agencies, the *raison d'être* of the settlement tends to disappear. Thus the ultimate glory of the settlements will be to have rendered settlements unnecessary.



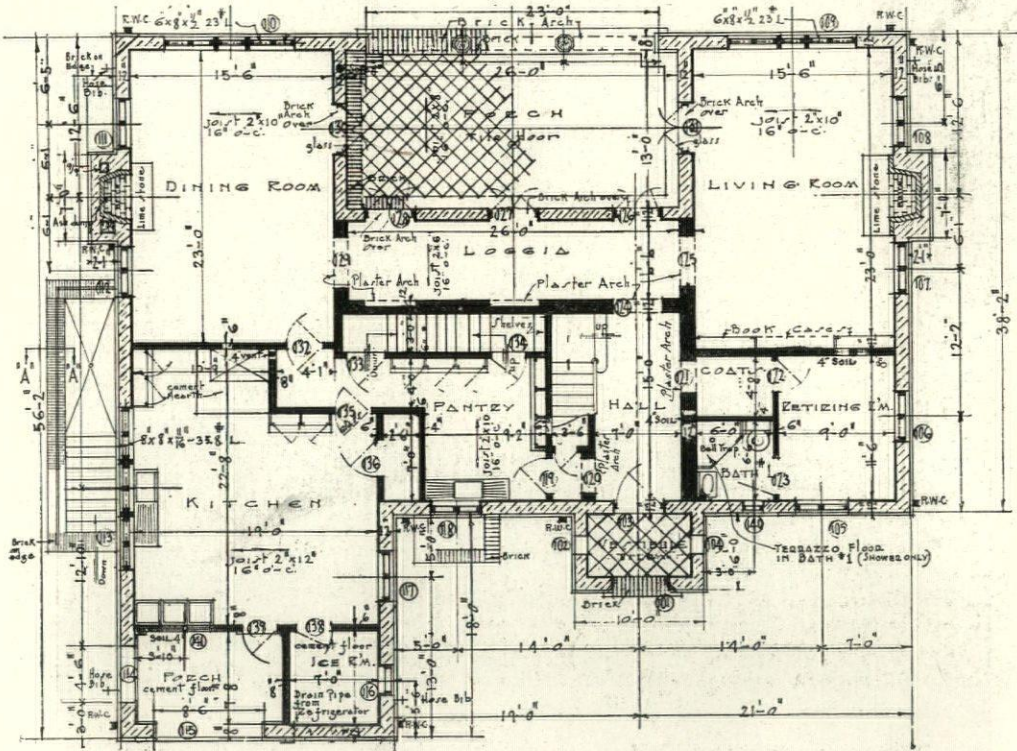
PORTFOLIO
OF
CURRENT
ARCHITECTURE



ENTRANCE—HOUSE OF MRS. HENRY A. DALLEY,
ARDMORE, PA. TILDEN & REGISTER, ARCHITECTS.



EAST FRONT—HOUSE OF MRS. HENRY A. DALLEY, ARDMORE, PA.
Tilden & Register, Architects.



GROUND FLOOR PLAN—HOUSE OF MRS. HENRY A. DALLEY, ARDMORE, PA.
Tilden & Register, Architects.



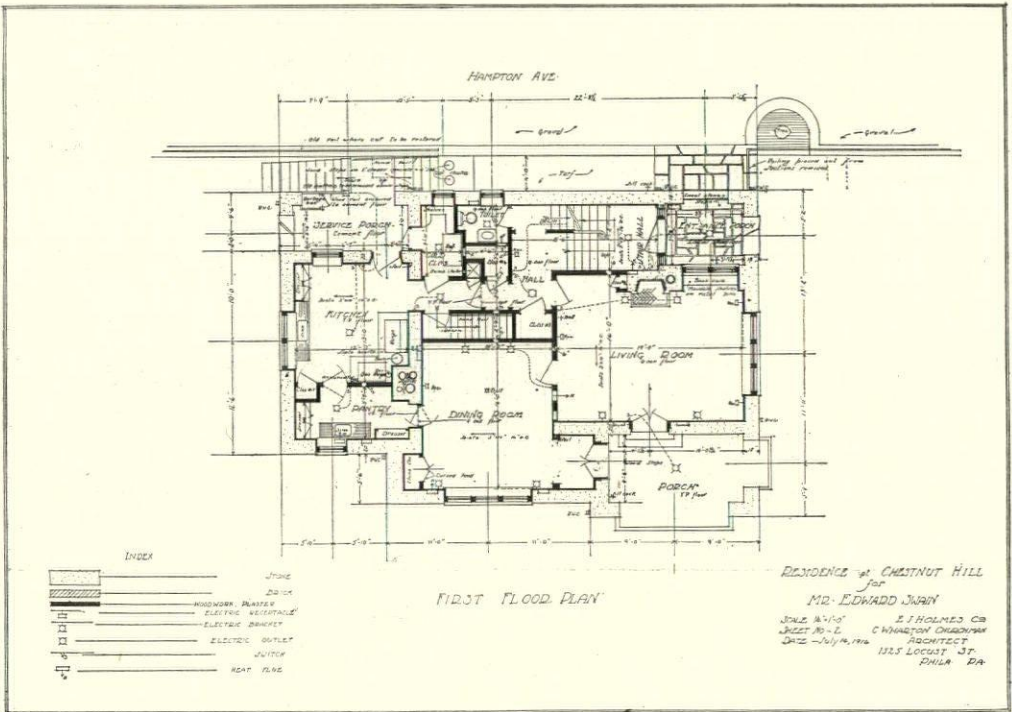
WEST FRONT—HOUSE OF MRS. HENRY A. DALLEY,
ARDMORE, PA. TILDEN & REGISTER, ARCHITECTS.



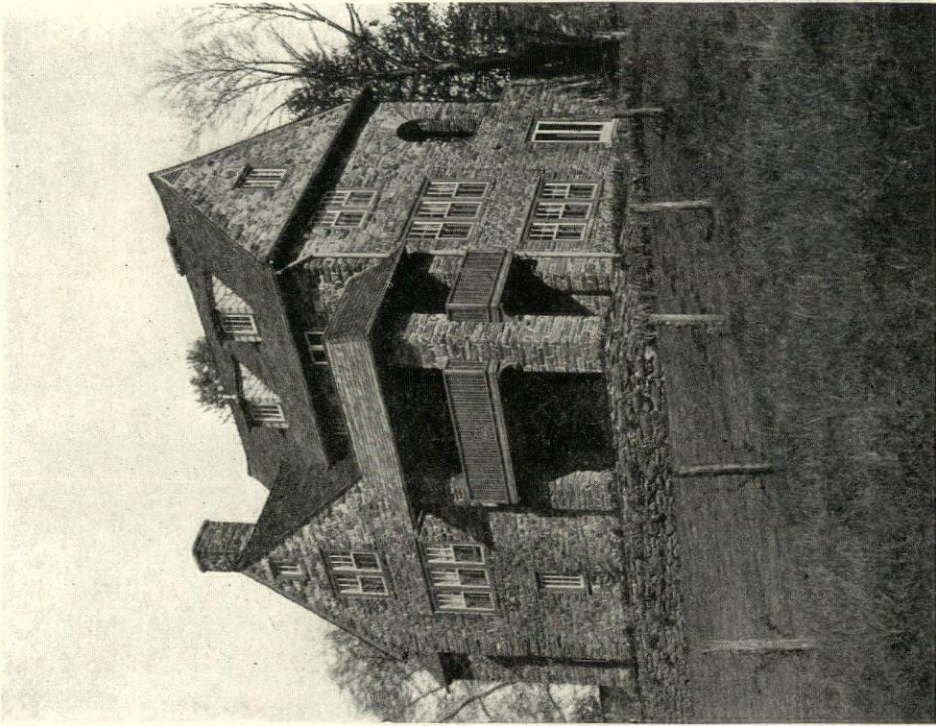
STAIRCASE—HOUSE OF MRS. HENRY A. DALLEY,
ARDMORE, PA. TILDEN & REGISTER, ARCHITECTS.



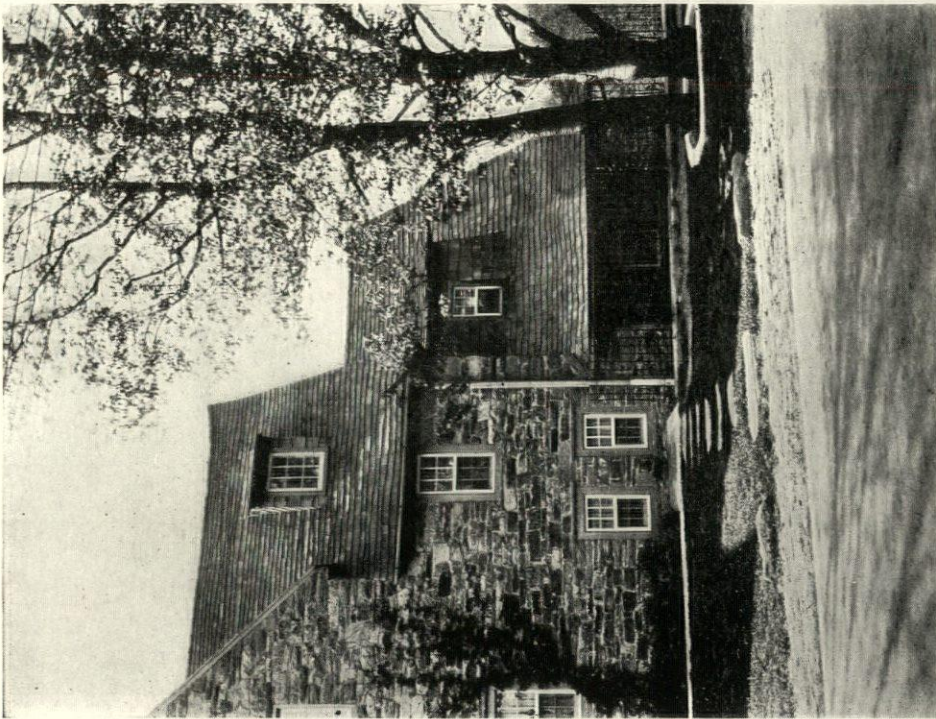
SOUTHWEST FRONT—HOUSE OF EDWARD SWAIN, ESQ., CHESTNUT HILL, PHILADELPHIA.
C. Wharton Churchman, Architect.



STREET FLOOR PLAN—HOUSE OF EDWARD SWAIN, ESQ., CHESTNUT HILL, PHILADELPHIA.
C. Wharton Churchman, Architect.



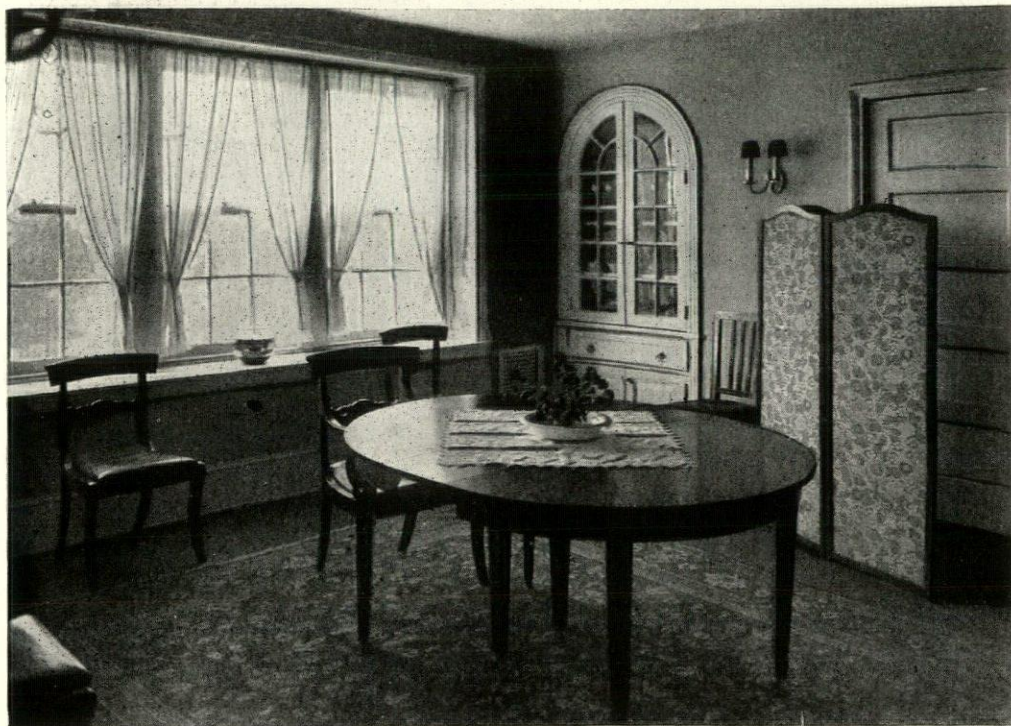
NORTHWEST AND NORTHEAST FRONTS—HOUSE OF EDWARD SWAIN,
ESQ., CHESTNUT HILL, PHILADELPHIA.
C. Wharton Churchman, Architect.



SERVICE ENTRANCE—HOUSE OF EDWARD SWAIN, ESQ., CHESTNUT
HILL, PHILADELPHIA.
C. Wharton Churchman, Architect.



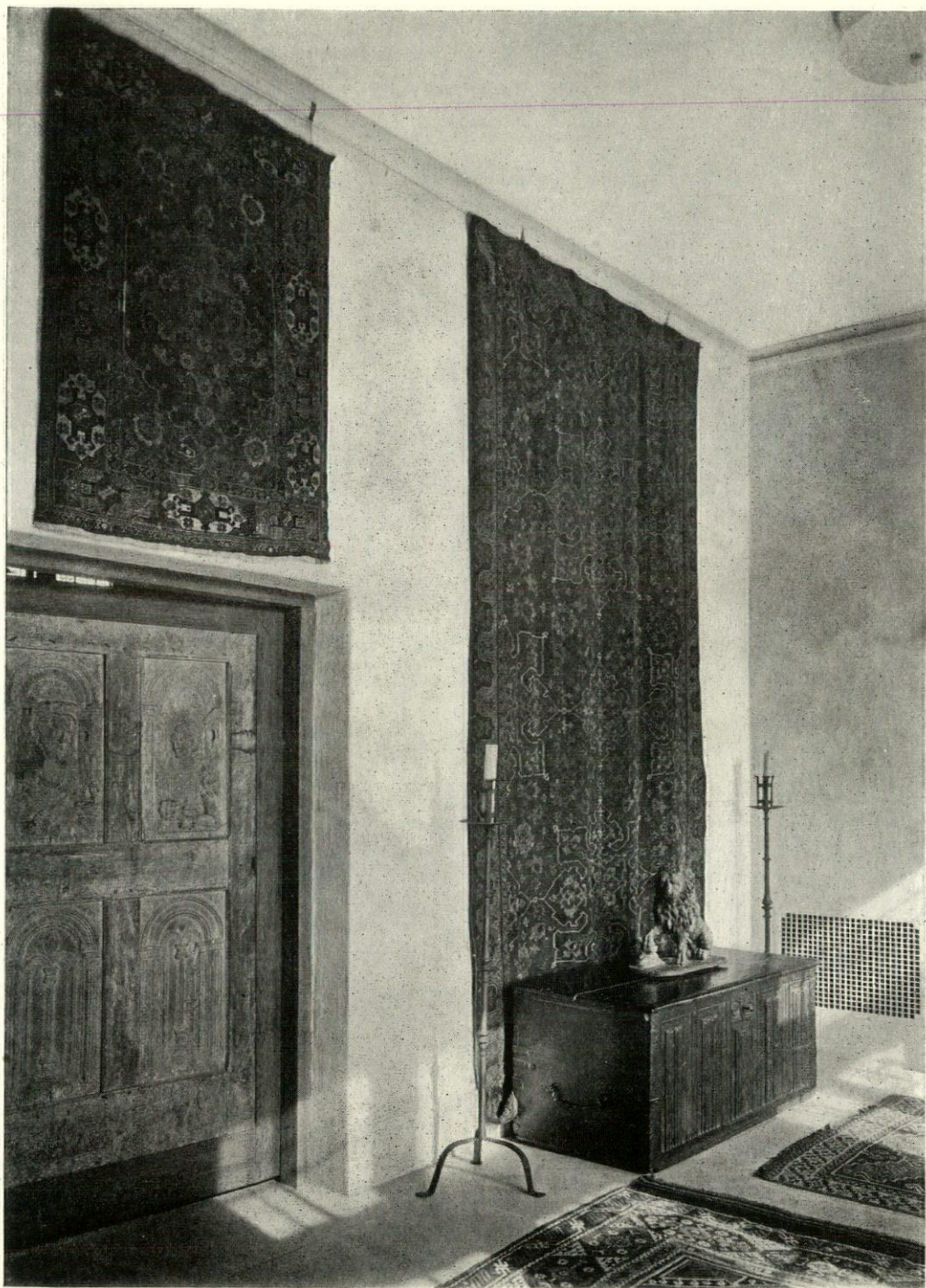
LIVING ROOM—HOUSE OF EDWARD SWAIN, ESQ., ARDMORE, PA.
Tilden & Register, Architects.



DINING ROOM—HOUSE OF EDWARD SWAIN, ESQ., ARDMORE, PA.
Tilden & Register, Architects.



DOORWAY IN SUN ROOM—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA. DUHRING, OKIE & ZIEGLER, ARCHITECTS.



SUN ROOM—HOUSE OF JOHN D. McILHENNY,
ESQ., GERMANTOWN, PHILADELPHIA.
DUHRING, OKIE & ZIEGLER, ARCHITECTS.



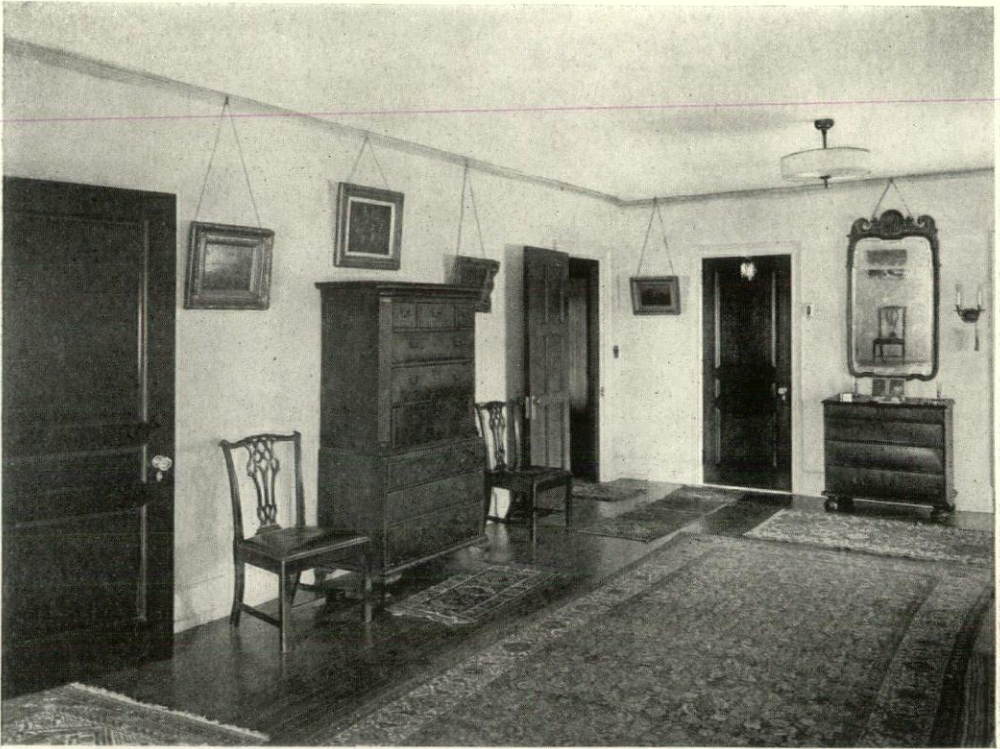
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ESQ., GERMANTOWN, PHILADELPHIA.
DUHRING, OKIE & ZIEGLER, ARCHITECTS.



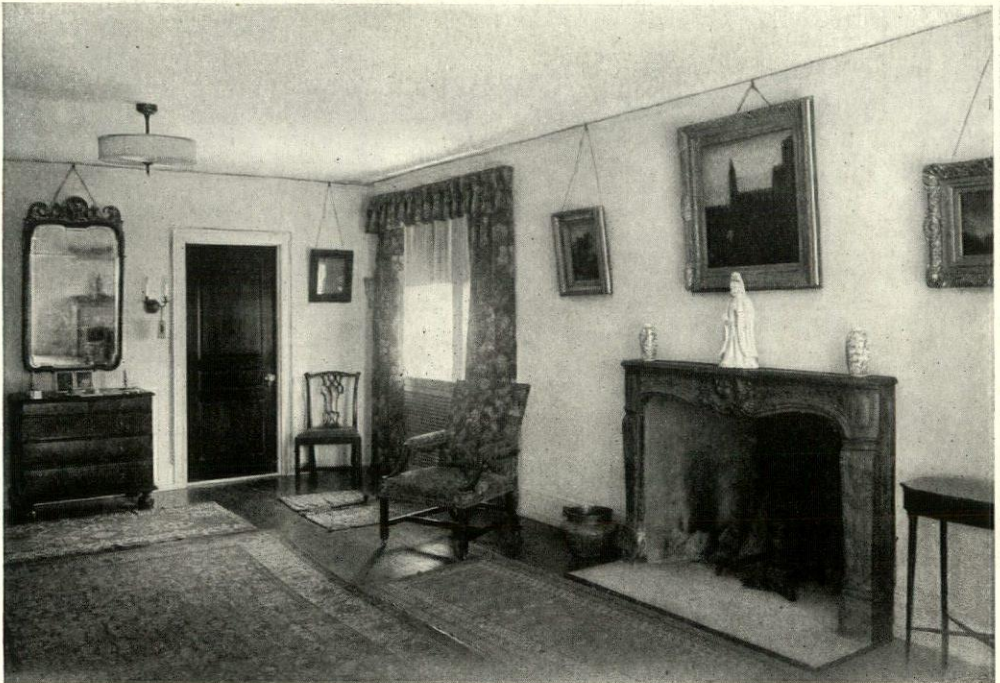
MANTEL IN GALLERY—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA. DUHRING, OKIE & ZIEGLER, ARCHITECTS.



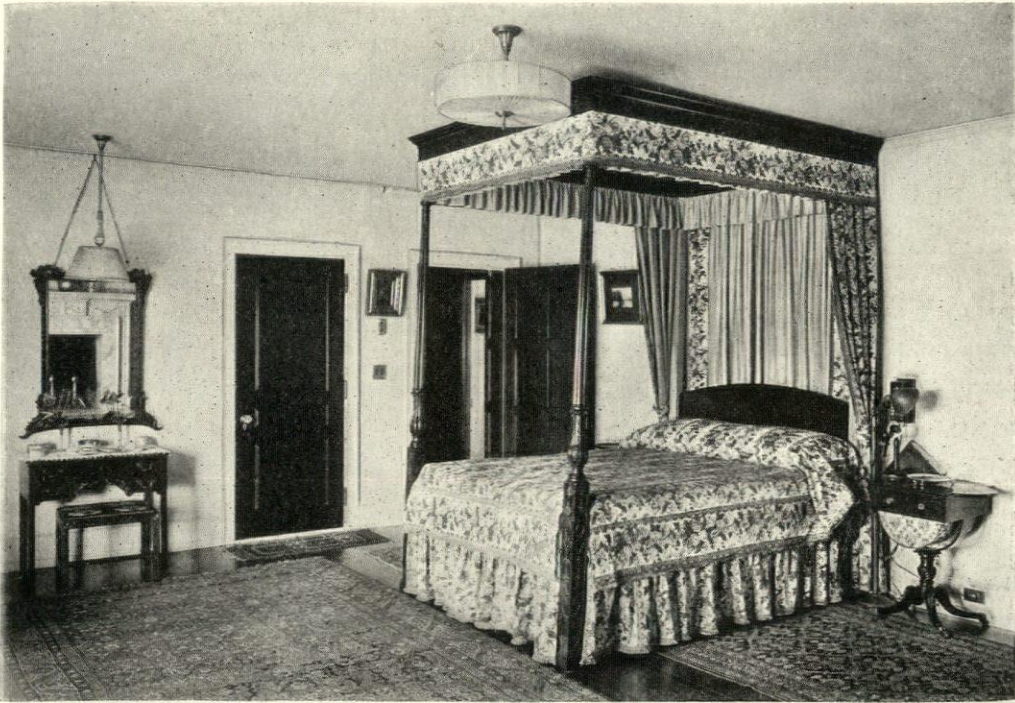
GALLERY—HOUSE OF JOHN D. McILHENNY,
ESQ., GERMANTOWN, PHILADELPHIA.
DUHRING, OKIE & ZIEGLER, ARCHITECTS.



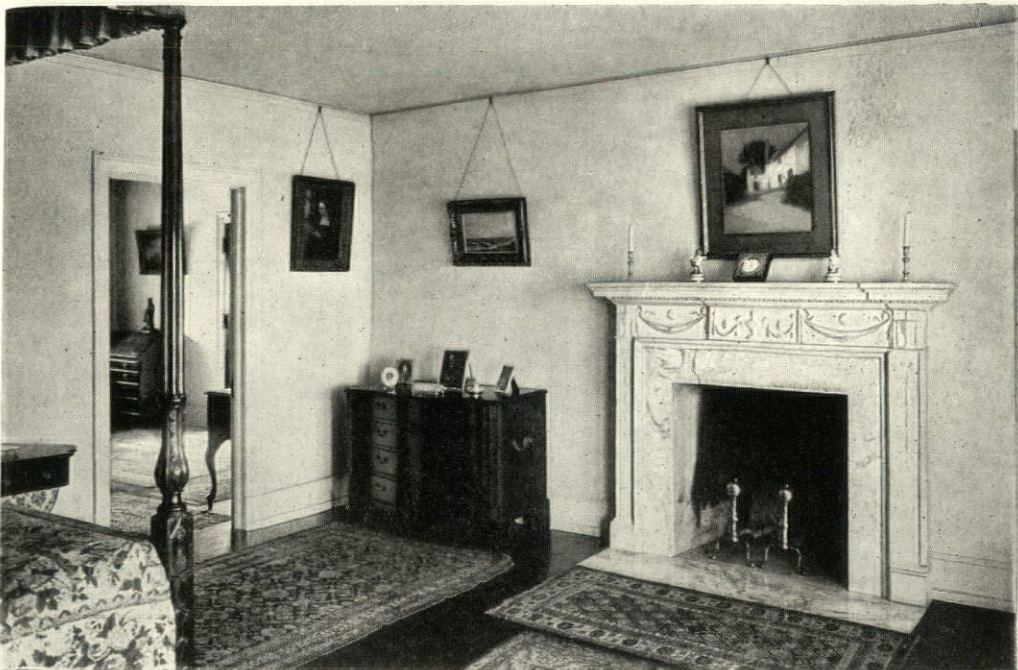
DRESSING ROOM—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA.
 Duhring, Okie & Ziegler, Architects.



DRESSING ROOM—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA.
 Duhring, Okie & Ziegler, Architects.



BEDROOM—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA.
Duhring, Okie & Ziegler, Architects.



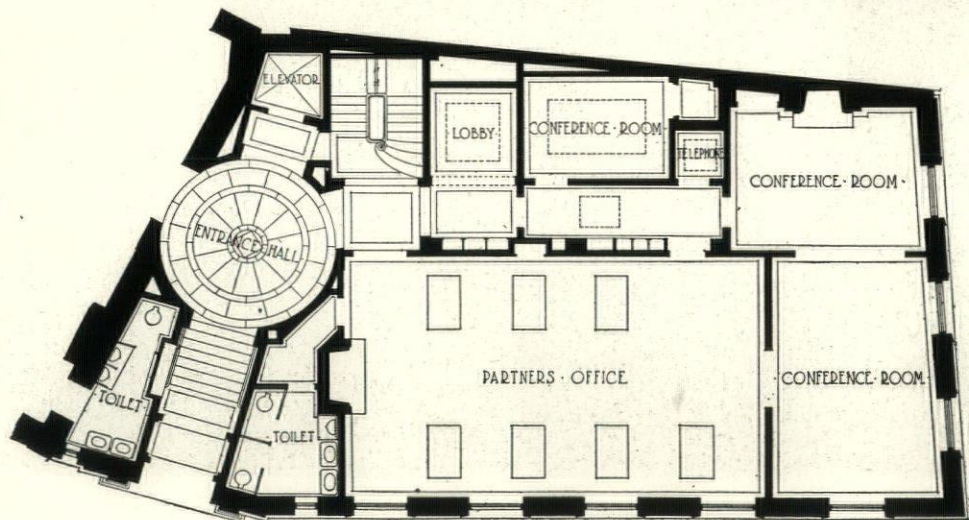
BEDROOM—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA.
Duhring, Okie & Ziegler, Architects.



MANTEL IN BEDROOM—HOUSE OF JOHN D. McILHENNY, ESQ., GERMANTOWN, PHILADELPHIA. DUHRING, OKIE & ZIEGLER, ARCHITECTS.



VIEW OF BROWN BROS. & CO.'S BUILDING, NEW YORK.



FIRST FLOOR PLAN—BROWN BROS. & CO.'S BUILDING, NEW YORK.
Delano & Aldrich, Architects.



ENTRANCE—BROWN BROS. & CO.'S BUILDING,
NEW YORK. DELANO & ALDRICH, ARCHITECTS.

THE BASILICA OF SAINT REMY *at* RHEIMS



By Clement Heaton

WHAT is more beautiful than those old buildings lying in the highways and byways of France and Italy, buildings once the center of an active life, but now the silent and almost unused remains of bygone ages!" These words were written ten years ago concerning the Church of Saint Remy, which was in existence until a German shell exploded in the building.

As soon as the dust and smoke had cleared away, what had been a noble relic of the past was but a heap of blackened ruins. Yet under the stones and dust was the crypt. There in the darkness was the golden shrine or casket containing the remains of Saint Remy, Patron Saint of Rheims.

While the shells were still falling, three French officers brought the shrine from the crypt, which was still uninjured. It has now been removed safely to Chalon-sur-Marne.

Who was Saint Remy? How came the church to bear his name and when was it built?

The cities of Soissons, Laon and Rheims were more important as centers of art than Paris up to the twelfth century. Of these cities Rheims was the metropolitan center of an ecclesiastical province which extended to the coast of the English Channel.

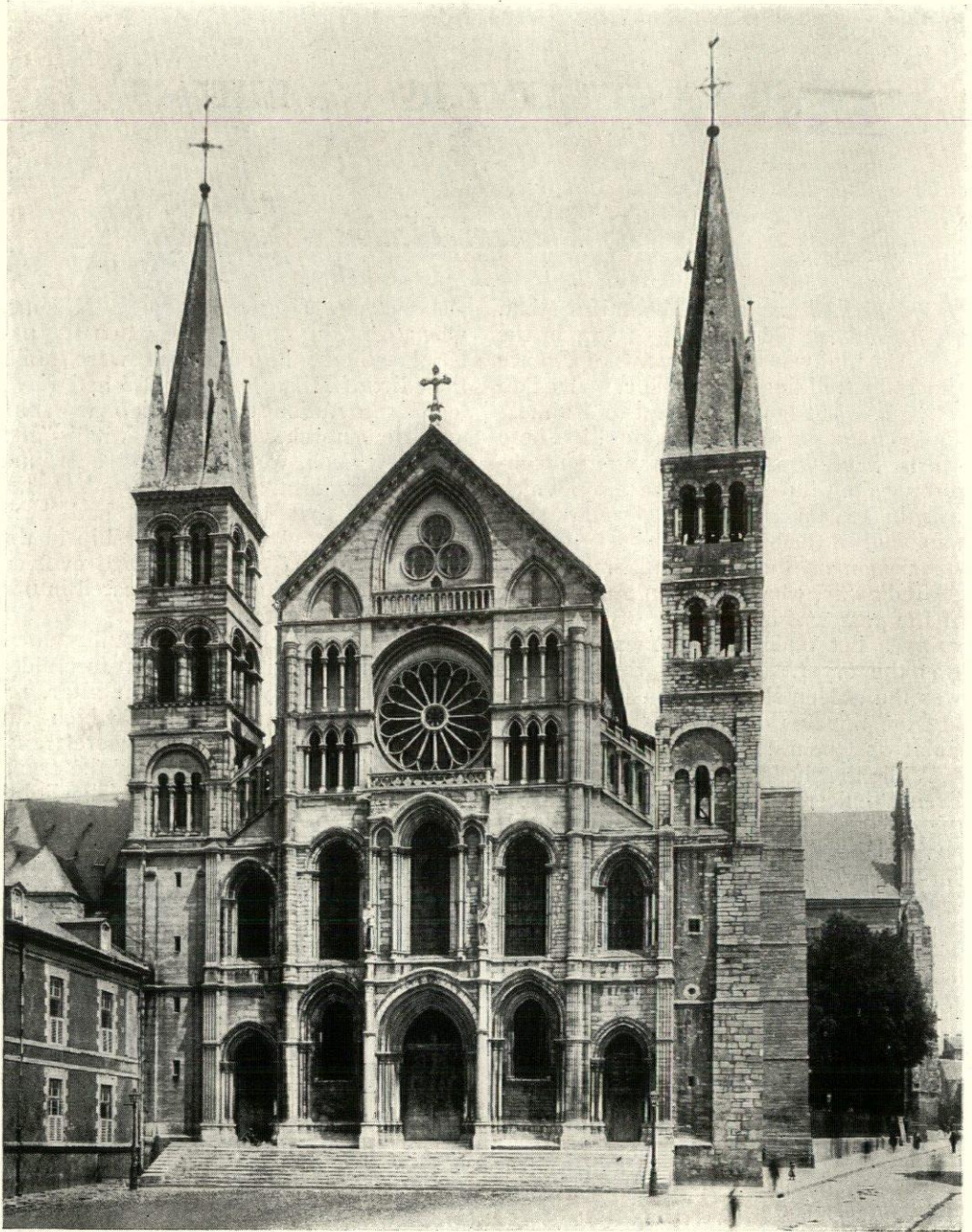
The Romans had taken over the Gaulish city and made it a military center, where the general in chief of the Roman armies built a palace A. D. 370. During the Roman occupation prior to 313, Christian worshippers conducted the practices of their faith at Rheims as at Rome in a dark labyrinth of catacombs quarried under the surface of the earth. In the third century chapels existed here and there among the tombs, where

Betausius, a Greek Bishop of Rheims, officiated. But at the time when the palatial military headquarters were built, the edict of Milan in A. D. 313 had given legal recognition to Christian worship, and the churches of Saint Vitalis and Saint Agricola were built above ground in open daylight.

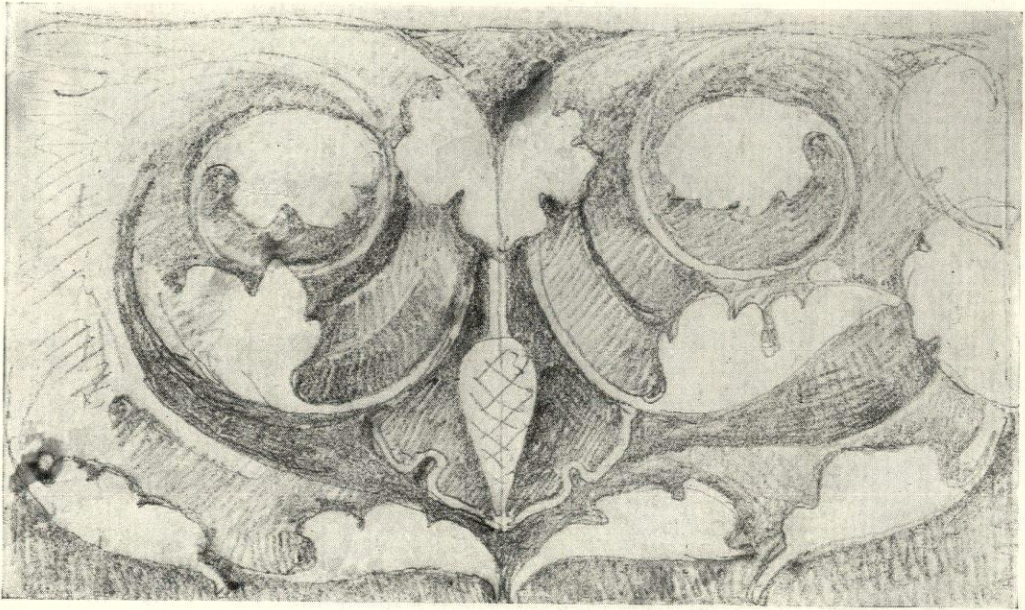
But by that time habits had been formed by many years of worship in the dark catacombs. The altar had evolved from the tomb of a martyr located in one of the small subterranean chapels. So, when the churches were built above ground, it was still the custom to build a dark cellar or crypt under the altar, resembling the catacombs, to which the remains of the early martyrs were transferred. This was the origin of the crypt, a symbol of former history. The lights necessary to worship in such underground interiors also remained, and all this was the case at Rheims.

A succession of Bishops continued from the time of the Greek Betausius. Of these, Remigius or Remy was the fifteenth. He was buried in A. D. 533 in the church then bearing the name of Betausius, but which has since borne the name of Saint Remy. From the renown of the Saint, the church became a center of pilgrimage, and as at Chartres, Canterbury and Vezelay, sumptuous buildings were later on provided in view of these crowds, erected from the proceeds of the offerings given at the tomb of the Saint.

The Basilica was first built between 600 and 638 on the model of S. Appollinare in Classe at Ravenna. It was one of the wonders of France. Its attractive influence continued to increase during the seventh and eighth centuries. Archbishop Turpin (756-802) introduced the Benedictine Monks at Rheims. So Saint



EXTERIOR OF THE CHURCH
OF ST. REMY AT RHEIMS.



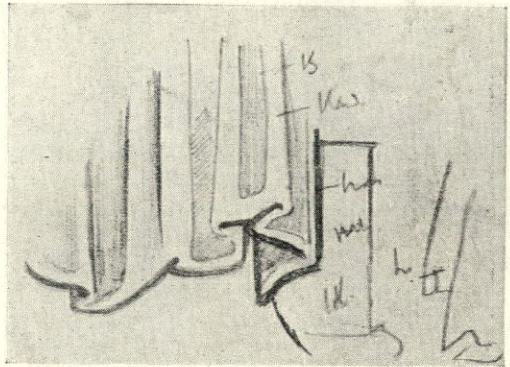
DETAIL OF CARVED STONEWORK, RHEIMS.

Remy became the church of the Monks of the Order of Cluny, at that time the most influential order of western Europe.

The Basilica was again rebuilt by Turpin, and Bishop Ebbon (816-835) continued the building then commenced. This was shortly after the death of Charlemagne, and his successor, Louis the Debonair, sent his chief mason, Romuald, to do the work. Bishop Hincmar (845-882) built a crypt, dedicated in 852. From this time forward the city became a royal burial place. King Robert was buried there in 922; Lothair, in 954, and the fame of the Church of Saint Remy was further consolidated from this fact. The church was reconstructed in 1005 by Bishops Thierry and Herimar. This was consecrated by Pope Leo IX in 1049.

While the Church of Saint Remy thus remained such an important center, the Frankish dynasty was sinking into insignificance. It was Anselm of Bec who described the consecration in his writing "Itinarium Leonis IX Papae." Bec was a Norman Monastery, and the Normans had become at this time the chief political power in this part of the world.

The earliest part of the Church that remained to our times was that built by Bishop Thierry in 1034; part of what



TREATMENT OF DRAPERY IN CARVED STONE.

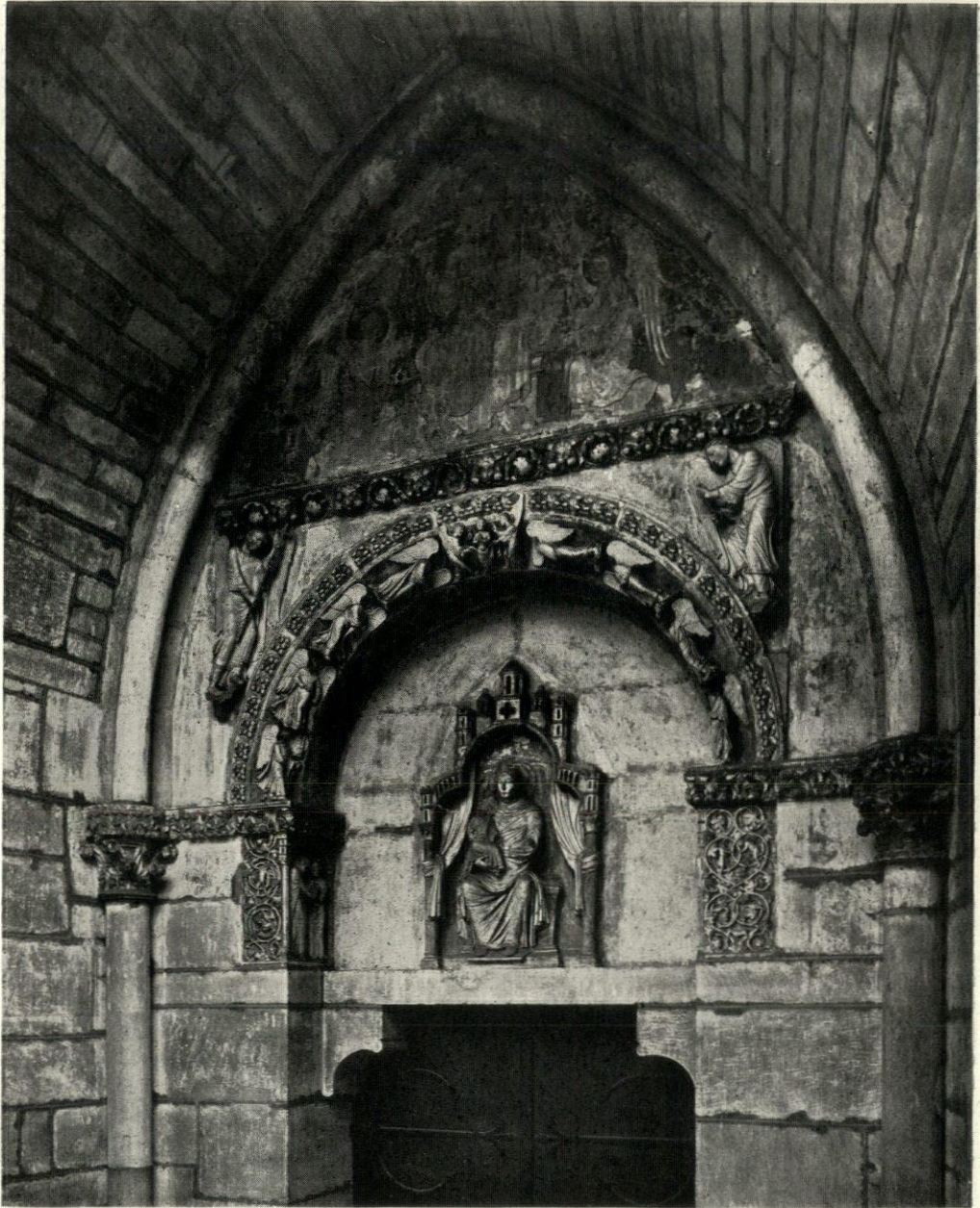
was built in 1048 was, however, standing till destroyed by the Germans.

The apse, of which a photograph is given, was built by Pierre de Cellis (1162-1182). In the thirteenth century (1211-1311) the well-known Cathedral Church of Rheims was constructed near Saint Remy, after an earlier building had been demolished.

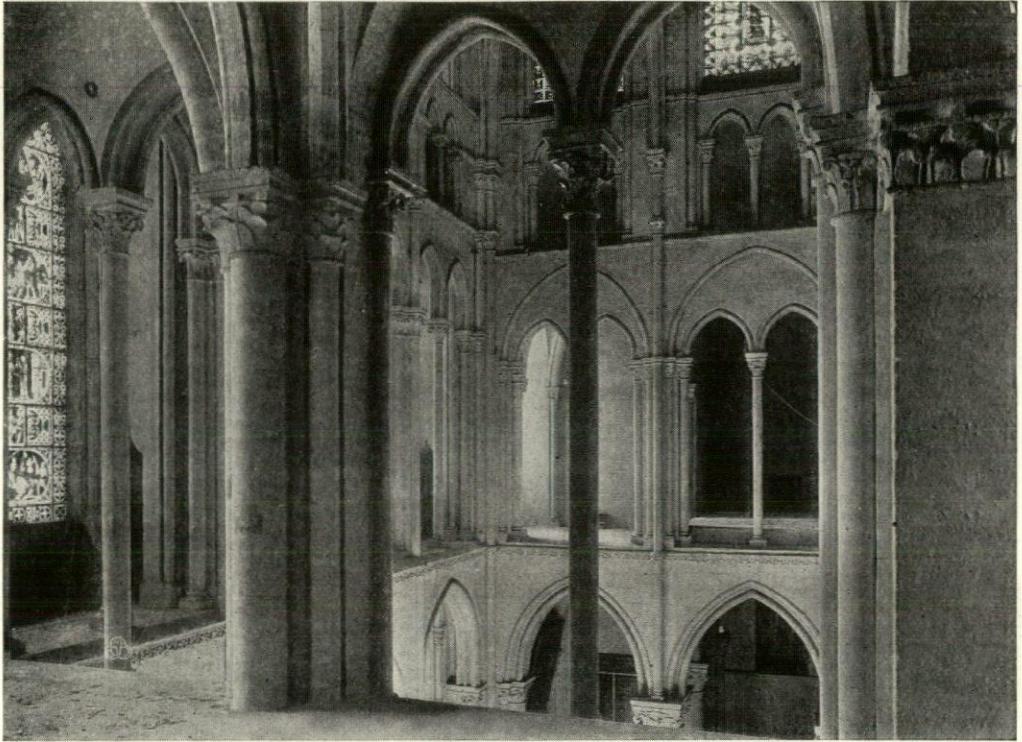
The monastery of Saint Remy was a center of learning, with a public school and library. This contained rich manuscripts and copies of the classic authors, and it was in this and other such places that early manuscripts of the classics



INTERIOR OF CHURCH OF
ST. REMY AT RHEIMS.



DOORWAY IN THE TWELFTH CENTURY CATHEDRAL AT RHEIMS.



TRIFORIUM OF THE CHURCH OF ST. REMY AT RHEIMS.

were discovered, and printed in existing editions. This was part of the movement of the Renaissance, and so the classics have been preserved for us.

A wonderful mosaic pavement was laid in the Church of Saint Remy in 1090, when art of this kind was the subject of so much keen interest. At the same period goldsmith's work with colored enamel was in highest esteem. So a golden shrine was thus made for the remains of Saint Remy, which was compared to the Shrine of Saint Ambrose at Milan. A golden chalice and part of a candelabrum in bronze have also remained from this period.

But in the eleventh century a new art arose of greater brilliance than that in gold and enamel—the art of figure work in stained glass. As Rheims was a center of learning and wealth, it was one of the first places in which this new art appeared. Bishop Adalbert, writing in the eleventh century, is the first who mentioned stained glass windows containing subjects: “Fenestris continentibus di-

versas historias.” A monk of Zurich, Ratpert, wrote at the same time as Adalbert concerning the glass in the Fraumunster there: “Sique fenestrarum depinxit plena colorum pigmenti laqueam.”

These are the earliest mentions of stained glass known. From the eleventh century to the end of the twelfth, this was the rising art. It affected even the growth of architecture itself, which was modified by providing windows of larger size and in greater number. This is the probable reason why the Church of Saint Remy was built on a larger scale in the twelfth century. All its windows were then filled with figure work in stained glass, executed at this time, and they remained there till the church itself was destroyed. We are glad to learn that this glass was removed and has been preserved.

The photographs of the church and the glass are the only ones we believe existing in this country. They were made at Rheims and brought here by the writer before the war.

THE FUTURE OF INDUSTRIAL HOUSING

By Sylvester Baxter

WHEN industrial housing was taken so energetically and competently in hand by the Federal Government as an essential element in bending every possible resource towards the single end of winning the war, plans were made looking to a continuance of the work so long as it might be needed. How long, it was impossible to forecast. But whatever the outcome, one thing was practically assured. Unlike so many other war activities, the results would not eventually be a scrapheap of things for which, the war being over, there would be no further use. A great beginning—indeed, an unprecedented beginning—was made in dealing with a national problem of enormous importance, and there would be a continuing use for what had been achieved. With such a start, the momentum of the movement could hardly fail to carry it indefinitely on to consummations of vast significance.

Whatever turn may be given to the work, now that the early cessation of the war has brought abrupt changes and terminations into all this far-sighted planning, these consummations may still be looked for. Others, more sanguine, had looked to the carrying on of the work as a feature of the largely planned activities whereby the developments of our industrial resources, under the conditions and the tremendous demands that peace would bring, would be continued with an efficiency and a coordination of activities comparable with what the necessities of war had taught us to do. Hence, in this housing question, it was felt that the work might still proceed under some effective cooperation of Federal and local authorities. In times of peace it would remain a national question. The participation of the Federal Government, as represented by the extraordinarily efficient device of a United States Housing Corporation,

substituting business methods for political ones, would be well justified in view of the fact that the enormous economic waste represented by the drifting of labor, skilled and unskilled, hither and yon, is a national concern, affecting the whole country. With labor kept employed where most needed, simply by providing adequate and attractive housing at such points, a tremendous saving would be assured.

But the lessons of disaster are not so easily learned. So, although the war has taught us how to do many things as they should be done, when the urgency is over, the tendency is to lapse into the old slovenly and incompetent ways. The big, competent men, the masters of business and industry, who had come to the front to put things through as they had to be put through, went back to their own affairs. The greatest business of all—that of government, which ties all business together—reverted into the hands of politicians, who in the main know little about business. So in this housing matter curtailments and terminations of the work have taken place on every hand. Many admirable projects that deserved to be realized have been abandoned, although, if carried through, they would have met real needs. Work under contract and far advanced has been suspended; the contracts annulled. Projects of this sort will doubtless be in some way taken over and completed by local interests.

Nevertheless, so much has been done, and so finely done, that it cannot fail to have made a nation-wide impression, with results of high import in prospect. The term "housing" has taken on a new significance for the public; its practicality as an element in the great and world-wide movement for industrial betterment is now almost universally in evidence. As to town-planning, it now takes its place as a full-fledged profession beside

architecture and landscape architecture; its fundamentals drawn from both of its sister arts as well as from civil engineering. As a profession town-planning promises to enjoy in this country a development commensurate with that of another vocation that with us is still young. At the time of the Columbian World's Fair in 1893 Gifford Pinchot was the only professional forester in the United States. Forestry is now a widely practiced profession with ample opportunities in the service of large private interests, as well as with the Federal Government and numerous state governments with their extensive forest reservations. The national outlook for the exercise of town-planning as an art is correspondingly encouraging.

The appropriations placed at the disposal of the two great organizations concerned with housing-operations as war-measures—the United States Housing Corporation and the United States Shipping Corporation—reached a total of \$200,000,000. After due allowance for the unexpended balances, the expenditures thus made are represented by work so extensive, and so widely in evidence in numerous industrial communities throughout the country, that they can hardly fail to lead to remarkable transformations for the better in the aspect of these cities and towns. The example thus set will continue to make its influence felt in steadily augmenting degrees. The demand for keeping up these activities, so auspiciously begun, must inevitably persist in some shape. It is a vital question; the consideration of the methods best adapted to assuring the best results; economically, artistically, and to the greatest advantage of the workers and of the community at large.

What shape will the disposition and administration of the great housing projects undertaken by the Federal Government take? Federal ownership and operation had been definitely planned for only while the war lasted. But more or less thought has meanwhile been given to what may best be done with the properties when peace prevails. It seems hardly likely that Federal ownership and control will continue any longer than

is necessary after the completion of arrangements for the transfer of titles to new owners, either corporate or individual. Hitherto, collective housing activities in this country have with few exceptions been individualistic in their final aims, having regard almost exclusively either to the ownership of his own home by the worker or by the employing party. The great co-operative movements, that in recent years have become so important in Great Britain and Germany, have with few exceptions hardly touched our industrial life. This, for us, has been a weakness that, until these big housing undertakings of the Federal Government, has barred the way to the creation of such collective examples of model housing as the beautiful "garden cities" of England.

It has been said that co-operative activities do not accord with our "American genius." But perhaps this objection may have as its basis merely the fact that in the matters involved co-operation has never been really brought to the test. Our people have been given little opportunity to know anything about co-operative housing activities. Perhaps, if what has been accomplished abroad were laid effectively before them and its possibilities shown, such methods would appeal to them. Indeed, there is one form of co-operation that in the housing field has been a great success in this country in supplying the funds on easy terms for the building of individual homes: the co-operative loan and banking associations. In certain other ways, as in the co-operative marketing of fruit by fruit growers on the Pacific Coast, co-operation cuts an important figure in our industrial and economic life. The possibilities of well organized co-operative effort in increasing our economic efficiency are enormous, and as yet hardly touched.

The celebrated "garden cities" of England are largely due to the initiative of employers. Port Sunlight, near Liverpool, is one of the earliest examples of the sort. Others are co-operative in some form or other. There are also extensive instances of municipal housing, the municipality taking into its own

hands the solution of the menace of the slums, clearing away the undesirable constructions that encumber the ground in congested localities, replacing them with model dwellings and assuring a continuance of the improved conditions thus created by remaining permanently the landlord. Municipal housing is yet unknown in this country; our loosely managed cities have not the competency for dealing with such problems that has been achieved by British and German municipalities. But with the growth of the industrial-housing movement a steady advance in its encouragement in various practical ways by our municipalities may be looked for. One factor is the growing tendency to apply the principles of town-planning in providing for the intelligent growth of a community. Such plans will thus be shaped with reference to the needs of the housing projects as may be organized for this or that section of a city or town. Schools, playgrounds, parks, transit facilities and community centers will be provided with reference to such projects. Municipal encouragement along such lines has to no little extent already taken place in regard to the housing activities undertaken by the Federal Government. Such encouragement is, of course, a matter of self interest for a city or town; housing projects, when realized along these lines, are important assets for a community, increasing its taxable values, its good looks, and its general well being and attractiveness as a place to live in.

Industrial-housing activities on the part of manufacturing corporations date back to the early days of such undertakings in this country, now something like a century ago. It is, of course, a matter of prime interest that employes should be provided with dwellings within convenient reach of their work; individual enterprise could not often be depended upon for the purpose. Too frequently the old-fashioned mill-tenement was far from attractive; along with the "company store" it was likely to be a matter of abuse. Yet in the pioneer manufacturing centers of New England, like Lowell in Massachusetts and Man-

chester in New Hampshire, there is a notable and restful charm in the rows of red-brick "corporation houses" that face placid elm-shaded canals, suggestive of Amsterdam or Bruges. Of later date there are also scattered through the country many "model towns" established by great manufacturing concerns. Hopedale in Massachusetts, the work of the Ludlow Manufacturing Company near Springfield, in the same state, and the Pullman addition in Chicago, are typical.

The housing situation in Bridgeport is of the sort that a certain way of dealing with its continuation seems quite natural and correspondingly likely. A year or more before the Federal Government entered the field a good start had been made by the leading local manufacturing interests. These had organized the Bridgeport Housing Corporation; extensive building of homes for employes had been undertaken, as mentioned in a previous article. This corporation has thus had abundant experience and is correspondingly well equipped for carrying on the work. It would therefore seem the logical thing for the United States Housing Corporation—now that it appears to be settled that the Federal Government will withdraw from the field altogether as soon as practicable—to effect an agreement with the local housing company whereby the latter would take over the properties on equitable terms that would eventually reimburse the Government for its outlay with perhaps the exception of the proportion representing excessive war-time costs, that could be written off and charged to profit and loss, warrantably incurred as emergency outlays. In such transfer of ownership there could be stipulated provisions that would safeguard the interests of the workers in the way of reasonable rentals, etc.

Both the local and the Federal housing corporations have built on a large scale the two classes of dwellings: individual house (single, semi-detached and two-family flats) and apartment houses containing many units in one building. Different policies as to the final disposition of the respective forms of prop-

erty would naturally be adopted. It has been understood that the intentions of the local housing corporation have been ultimately to sell to the occupants on attractive terms the individual houses, as soon as post-bellum conditions had become normal, while the apartments would naturally remain the property of the company.

While no definite policy has been fixed for the United States Housing Corporation as to the final disposition of its property, the procedure most favorably considered, as along the line of the least resistance, appears to have been to transfer the ownership either to existing local organizations, or to such as might be formed for the purpose. Where corporations of the sort are composed of employers as in Bridgeport, the properties would naturally be likely to go to them. In this particular instance the work has advanced along such enlightened lines, both economic and artistic, that excellent results should be looked for. But it would seem highly desirable that the formation of housing-corporations for the purpose of taking over such properties, composed either of employes, or jointly of employes and employers, should be encouraged as strongly as possible. There are important organizations that have given much thought and practical attention to housing questions. To no little extent their leaders have been active in the Government activities, and their participation has been a notable factor in assuring the high and enlightened character of the work. Their influence should now be exerted in this direction. And the probabilities are that it will be. An encouragement of the co-operative spirit along effective lines should do much towards soundly shaping the industrial future of this country. With an intelligently practical and correspondingly substantial encouragement of voluntary co-operative activities on the part of the Federal Government—such activities to be co-ordinated with Governmental operations in various ways—the inevitable reorganization of our Government along efficient, economic and industrial lines in place of the decadent and incapable political lines of the present,

would be likely to advance with lessened friction and danger of disastrous rupture.

Under the adverse influences apparently now so influential with Congress, the prospects are that all constructive housing activities on the part of the Government will soon be a thing of the past; that little more than the winding-up of the business as soon as may be, can be looked for. Yet the adequate housing of the people is one of the most vital of elements in assuring the advancement of a great democracy towards the realization of the ideals essential to a progressive civilization. The least that should now be done is to encourage co-operative agencies for the control and administration of existing properties developed by the Government. And in view of the duty of our National Government to do its best to save the nation the enormous waste caused by the labor turnover due to unstable conditions of employment, it would be well if its housing activities were to be perpetuated in some shape and adapted to the conditions of peace. As in the task of organizing a national network of improved highways, the housing problem should be so dealt with as to be correlated with local and state activities. But if nothing more than a closing out of the business can be looked for at present, at least this should be done in a way that would encourage the continuation of the work in other hands.

We have seen that there are various forms of the co-operative organization of housing projects. Little has yet been done in this way in this country, although great advances have been made elsewhere. In turning the government projects over to local control and ownership might it not therefore be well to provide that the local organizations be shaped according to this or that co-operative method—some method that had elsewhere stood the test of practical application. We would thus have various object lessons in different parts of the country, and the ones that best commended themselves would be likely to come into general favor.

In cases where strong organizations of employers stood ready to take over the

government projects—as seems likely in Bridgeport, for instance—some form of co-operative participation for the employes might well be agreed upon. Employers have such a stake in the matter that it should prove much to their advantage to share in such undertaking in a way whereby they would subscribe for, or otherwise assure, a proportion of the capital needed for the undertaking. All these conditions might be formulated by the United States Housing Corporation. For the continued development of the projects thus taken over, and perhaps for new projects, some form of Federal participation or encouragement might be arranged for—as in giving such organizations the benefit of expert advice, or perhaps in advancing, on favorable terms, loans for construction. Should not loans to industrial workers be as much in order as loans to farmers? All this, however, would demand new legislation and would hardly apply to cases now in hand.

Individual ownership of homes has long been regarded as an ideal. It gives a man a stake in the community, promotes his interest and participation in public concerns, and tends to stability of employment. A man takes pride in the appearance of his own home and is likely to keep his house and grounds in better order than if he were a tenant. Yet the bulk of the population in our cities and towns remains tenants. Individual ownership of homes has its drawbacks. There is good real-estate expert testimony to the effect that ownership, on the average, is far more costly than rental, taking into account taxes, interest, depreciation, repairs, etc. In my own case, for instance, I have felt obliged to buy adjacent lands for the sake of preventing undesirable occupancy. Such things tend to make one "land poor." The increased cost of ownership as against tenantry may be charged to luxury: the satisfaction of maintaining and improving a home according to one's own pleasure.

These drawbacks of individual ownership, while retaining all its advantages, appear to be avoided in a plan of co-operation that has gained no little popularity in England. It was first tried

there by the co-operative organization known as the Ealing Tenants, Limited. Ealing is a suburb of London. In an undertaking of this sort a man is a tenant of the association, yet at the same time he is his own landlord by reason of the fact that when the loan that represents his participation has been paid up, his share in the property is practically the same that it would be if he owned his home individually. His rent is balanced by the dividends on his shares. The association looks after taxes, and outside repairs. The individual looks after inside repairs. With his neighbors he has a stake in the entire community through joint-ownership, and is thus made to feel his interest in the collective weal. The association protects him against objectionable neighbors by looking after the character of would-be tenants. He is not anchored to the spot by individual ownership of his home. If by reason of health, changed conditions of employment, or better prospects elsewhere, he has to live elsewhere, he is free to move. The association purchases his shares and sells them to some other person. Tasteful environment is assured by the employment of good talent for designing the layout and the architecture.

"Landlord tenants" would be a good name for this form of co-operative home owning. The idea originated in Germany, where it was successfully applied to the co-operative building and ownership of large apartment houses, such as constitute the usual form of dwelling in Berlin and many other cities of that country. This plan ought to be effective anywhere, both for co-operative ownership of apartments and of individual dwellings. The United States Housing Corporation might for instance do good service by encouraging the tenants of the handsome apartment-houses it has been building in Bridgeport to form a co-operative association for joint ownership on this plan.

The object lesson in attractive housing for workers that have been scattered throughout the industrial centers of the land, by one of the most efficient agencies ever created to carry out a great governmental undertaking, can hardly

fail to make the housing question loom large in the near future. The demands thus created among our skilled and highly paid workers will have to be satisfied in some fashion. In view of the substantial and beautiful results thus set before them, they will be less and less contented with the flimsy constructions of speculative jerry-builders that so many of them are wheedled into purchasing.

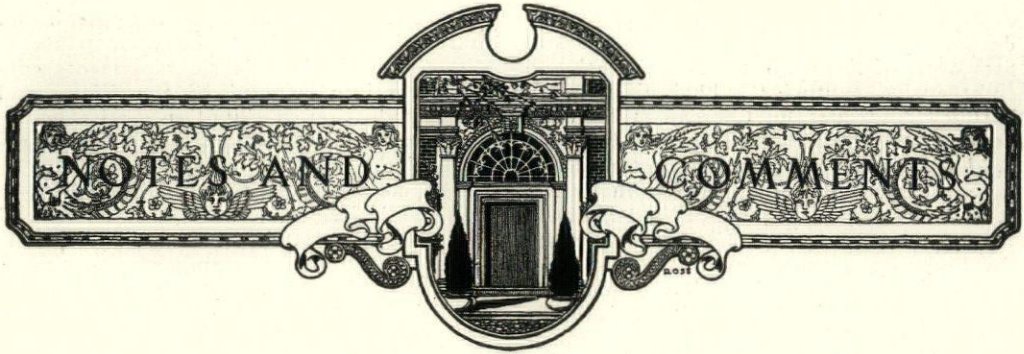
These great housing projects of the Federal government have universally been carried out by contract, the contracting party undertaking the entire work: street construction, ornamental planting, house-building—everything complete and ready for occupancy. Enormous economies are effected by these wholesale methods. In the great developments in industrial housing that undoubtedly await us, there should be a vast field for great and competent contracting concerns accustomed to turn their hands at short notice to any form of construction-work. The difference between retail and wholesale methods, as represented respectively by the man who goes to a one-horse builder to get a house built for him, and the building operations on a great scale as they are now carried on, stands in the annual aggregate for an enormous economic waste. Houses will more and more be built by the wholesale. Why should not our big contracting concerns take the initiative and enter upon the virgin field that invites profitable cultivation? For some years, now, extensive land-operations have been carried on along similar lines: large tracts obtained and developed with streets, sewers, cement sidewalks, etc., all completed; the individual house lots ready for building by the purchaser. Why not go a step further and cover such an improved tract with dwellings attractively and substantially built to meet the demands of individuals?

An example of large-scale work of this sort, undertaken on a commercial basis, is that of a "town-planning and housing company" in Boston, that has chosen a large tract in Lexington, Massachusetts, for the scene of its first op-

erations in creating a "garden city." This is to be covered with 300 dwellings, built in groups of 100 at a time under supervision of competent architects and construction engineers. The program is to build on every lot on both sides of a street, using steam-diggers for grading lots and streets at one operation. Outside walls are built of cement-stone units and blendings of cement face-brick of various textures and colors, made on the premises. A portable mill cuts lumber to required lengths and saves waste in labor and materials. The roofing of red cement-tiles is also made on the premises. An aspect of completion is assured by finished lawns, cement walks, and the planting of shade trees and shrubbery. It is estimated that the cost of the work done in this wholesale fashion is less by one half than that of building in the ordinary way.

Might it not be good business for great contracting concerns to make a feature of work in this fashion and even formulate effective plans for cooperative ownership, securing on good terms funds for financing such projects, etc.? It is worth noting that in Italy, cooperative efficiency has been so far developed that federated associations of workers even do their own contracting on a large scale. The different building-trades are organized as units; in combination, financed by "Peoples' Banks," they go so far as to enter upon gigantic undertakings by contract. In Milan they have in this fashion contracted to build a great railway terminal at a cost, it has been stated, of forty million dollars, or more—doing the work under the supervision of architects and engineers engaged by themselves.

It does not seem likely that so highly developed a degree of co-operative efficiency can long be confined to the limits of any one country. Quite possibly our own workers may in due time meet, with their own work and their own resources, their needs for housing in a way to do credit to the great initiative of the Federal government undertaken under stress of war.



**Seventeenth and
Eighteenth
Century Design
Books.**

Reference has been made before in these columns to a broad movement under way for an improvement in the standards of design and craftsmanship in the industrial and decorative arts. This movement finds its expression in the efforts of schools, museums and publishers to acquaint the public with original sources of inspiration for good design, and it is interesting to follow the various positive efforts which are being made through these agencies from time to time in behalf of the cause.

An exhibition has recently been opened at the Metropolitan Museum of Art to run through May and June, which gives a taste of the abundance of inspiration to be found in the design books of the seventeenth and eighteenth centuries. In the three galleries devoted to the exhibition are arranged a large group of engraved plates and books issued by the designers whose influence upon the industrial and decorative art of their time finds little counterpart in that of the designers of today. Issued sometimes in book form, monumental works brought out under royal patronage, or as plates individually or in series, these ingenious and luxuriant designs were used directly by the architects, decorators, workers in both precious and base metals, furniture makers and all of the allied crafts as a basis for the design of the work which they executed. Some of the books, issued with another purpose as well, constitute a record of the executed work itself.

The choice of the material is so broad that it has been necessary strictly to limit its selection in the main to the eighteenth century in France and England, a period prolific in this type of material. There are shown a large number of plates and books

by the most skillful and influential designers, while in the same room are placed actual examples of works adapted from these designs. The careful student by comparing the designs with the work as carried out will discover in what manner the early makers of furniture, ironwork, laces, textiles, painted and carved woodwork, ormolu and jewelry interpreted the paper designs which were circulated among them, and from the individual treatment which these craftsmen used in adapting these designs to their materials there lie many suggestions which may lead modern craftsmen into ways of fame and excellence.

The smallest group is composed of designs originating in the sixteenth and seventeenth centuries in Italy, Germany and Flanders, when the spirit of the renaissance was still active but running strongly toward the so-called modern types which were developed to their full in the eighteenth century. Some remarkable pen, ink and wash drawings have for their subject elaborate seventeenth century ceilings with stucco and painted decoration, wall treatments for church interiors and one church façade of the Jesuit type. A Dürer woodcut is echoed in a large sculptured panel which has formed part of a church interior. Designs by Holbein and Dürer for ecclesiastical silver are shown near to actual works almost identical in detail, and two pieces of Italian majolica are decorated with scenes reproducing popular paintings or engravings of the day. The early editions of Vignola, Vitruvius and Palladio strike a familiar chord in every architect's mind and they are surrounded by contemporary works whose interest is not lessened by the contrast.

By far the larger group of material covers the development of decorative art in France. As in all such art, the architecture forms the point of departure for the style

of the lesser arts. Great volumes of rich designs typify the works of the successful architects of France in the seventeenth and eighteenth centuries, beginning with Jacques Androuet de Cerceau, Jules-Hardouin Mansart and the designs for interiors by Le Pautre. The most important name of the early eighteenth century in France is that of Jacques Francois Blondel, whose volumes record for us the more elaborate dwellings of a time when a very marked change was coming into house planning concomitant with the revolt against the stateliness and formality of the period of Louis XIV and expressing the desire for individual comfort and freedom which we find in the later Regency and Louis XV. work. Here are the well developed germs of the rational and beautiful planning which is connected always with our thought of French architecture. After Blondel comes a long line of resourceful architects and decorators, throughout the reigns of Louis XV. and Louis XVI., ending in the adaptations of classic in the designs of Delafosse and the architects enthused by Piranesi and its emasculation in the decorations of Percier and Fontaine. The riotously fanciful plates of Pillemont and the rocaille and coquille fountains of Boucher typify a certain playful and humorous element whose influence is seen in the metal work, textiles and lacquers of their time.

The third group covers in a similar way the period in England when the use of mahogany was well under way and fashions in furniture and decoration were changing as rapidly as fashions in clothes. The early years of the century find in vogue the group of architect-decorators Swan, Kent and Batty Langley, all of whom show an equal interest in their architecture, decoration and furniture, somewhat to the injury of the latter. Toward the middle of the century Chippendale looms large on the horizon, and while wielding considerable influence of his own, seems to have responded promptly to the changing winds of fashion. His actual work carries us into the second half of the century, when Robert Adam returning from his Italian sojourn and his association with Piranesi brought into favor the classic treatments in detail and the attenuation in proportion which were followed until the end of the century by such cabinet makers as Sheraton and Heppelwhite.

All through these centuries of activity in the decorative arts we see a continuous borrowing and stealing between Italy and

France, France and England, England and Italy. Piranesi's influence was strikingly direct both in his classic treatments carried over into England by the Adams and his introduction of Egyptian motifs, whose use characterized so much of the decoration of the Empire style.

The collection of material assembled in this exhibition is full of the most helpful suggestion to architects and designers. It forms a running contemporary comment upon the life of the generations not long preceding us, and in telling us how they did what they did it preaches a timely sermon.

CHARLES OVER CORNELIUS.

The Groundplot in Relation to the Height and the Size of a Building.

There exists a certain relation between the size of the groundplot on which a residence or a public building or any other building is built and the height and size of the building itself.

Or vice versa probably, for as a rule the groundplot is the known quantity and the designing architect should consider it in regard to the size of the building he is going to put on it.

Not always is this relation studied. Every city, every town, has examples of fine residences built on groundplots too small to bring out the beauties and characteristics of the design. And not only is this the case with residences, but often public buildings of considerable importance suffer from the same defect. It often must be a great disappointment to the architect of a building to realize, after it is built, that his carefully studied front is visible only from a point across the street where trees and other street objects hide the view of it, or to discover a fine side elevation hidden by the building on a neighboring place.

The relation between building and groundplot is minimum as far as the plot is concerned. Below this minimum the building will be actually damaged. There is no maximum, it is safe to say. A cottage may look well even as the only building in a large park. We may, subconsciously, make a financial comparison between the value of the cottage and the park it is placed in, but our judgment in this case is not based on an esthetic principle. To get clearness of detail the observer may have to come close up to the building, but the general design is visible as far as the eye-sight reaches.

A person standing at the base of a three

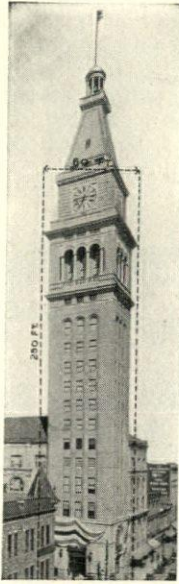
hundred foot high tower gets no better comprehension of the tower design than a man traveling to the top in the elevator inside. He may realize the beauty of the details of the base, but not even the straining of his neck muscles will reveal to him the general design. To get a clear impression of the tower design one has to stand away from it at a considerable distance. This is well illustrated in the picture of the tower accompanying this article; the people at the foot can hardly see more than the entrance design.

This distance, which decides the minimum size of the groundplot in most cases, depends directly on the angle of sight or the field covered with the two eyes. Scientists have found that one eye will see 90 degrees to the temple side and 55 degrees to the nasal side of a certain point and also 55 degrees above and below it. The two eyes overlapping would then cover a field of 110 degrees horizontally as well as vertically. Actual observation shows this angle to be far less. The angles mentioned cover a field that with much exertion of the eyes can be seen, not what is seen in one easy glance. Resting the eyes on a certain point, the field plainly and sharply visible is not over 9 to 13 degrees to each side of the point. This angle varies for the individual eye.

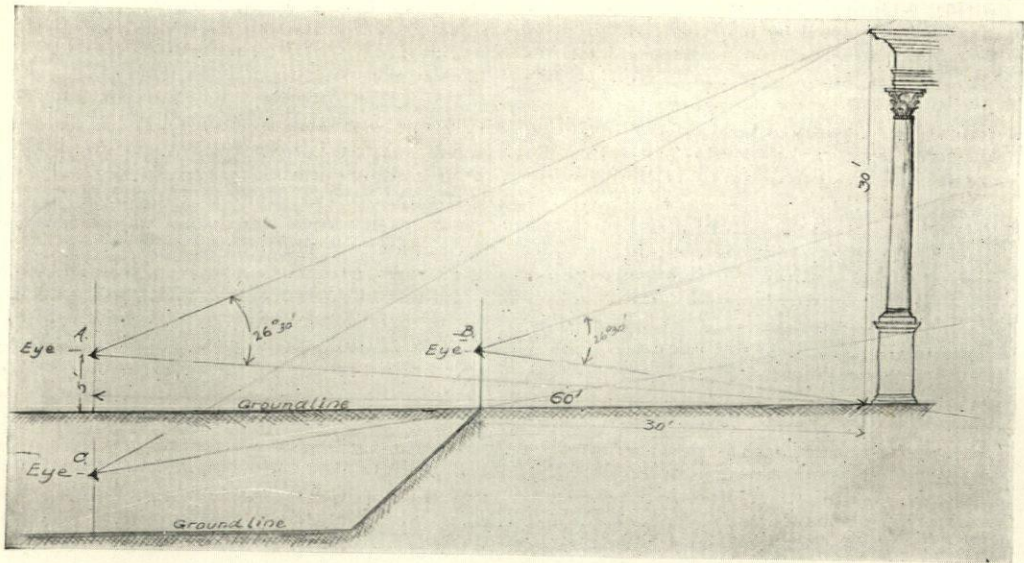
Outside of this angle, objects are only dimly visible and we realize their existence only semi-consciously. Taking 22 degrees as a mean angle of vision, 11 degrees to each side of a point looked at, we find that a tower 250 feet high should be comfortably seen at a distance of 619 feet. Experiments made with regard to the tower shown in the illustration, which is 250 feet high to the upper balustrade, proved that it was hardly well observed at a distance closer than 750 feet. At that distance it became easy to shift the eyesight and let it slowly run up the building.

The angle of clear and easy vision ranges between 19 and 26½ degrees.

Standing at a distance of 750 feet to see the 250-foot height the angle of vision is 19 degrees. The French author Ed Andre, in his book on Parks and Gardens, quotes the artist Joseph Vernet, who, speaking of the proper place to see a picture, recommends a distance away from the main object in it of twice the height, or twice the width, if the width is greater than the height. This would make an angle of 26½ degrees. This angle is shown in the sketch in Picture No. 2. A taller building will need a relatively smaller angle than a low building, and consequently a longer distance. The angle of



PICTURE No. 1.



PICTURE NO. 2—DIAGRAM SHOWING ANGLES OF CLEAR AND EASY VISION.

view of a camera lens is about 45 degrees, which accounts for the fact that a picture will show a larger field than the eye can see with one glance. Reducing these angles to proportions we can say that a building to be correctly seen should have a foreground of at least twice the height of it and, if possible, three times that height.

In viewing the width or length of a building the same angles are correct. But

in this case it is not always necessary or to advantage to see a building at right angles. Often a view at an oblique angle will be more pleasing than a view on the main axis. In buildings of unsymmetrical design often one part will make a pleasing picture without the rest and in this case the groundplot can be based on it. Of course this does not go for symmetrical designs.

S. R. DEBOER.



Handbook of Furniture Styles. By Walter A. Dyer. Being an abridged guide to the more important historic styles of furniture, especially intended for ready reference, including chronological tables, bibliography and index. Many ills., 155 pp., 5½ by 8½ inches. New York: The Century Company. Price, \$2.50 net.

University of Illinois Bulletin No. 105. Hydraulic Experiments with Valves, Orifices, Hose, Nozzles and Orifice Buckets. By Arthur N. Talbot, Fred B. Seely, Virgil R. Fleming, Melvin L. Enger. Illustrations, 80 pp., 9 by 6 inches. Published by the University of Illinois, Urbana. London: Chapman & Hall, Ltd. Price, 25 cents.

Estimating Building Costs. By William Arthur. 29 figs., 13 chapters, 211 pp., 6¾ by 4¼. New York: David Williams Company.

The Healthful House. By Lionel Robertson and T. C. O'Donnell. 12 ills., 191 pp., 9½ by 6. Battle Creek, Michigan: Good Health Publishing Co. \$2.

Interior Decoration for the Small Home. By Amy L. Rolfe, M.A. 146 pp., 7½ by 5, 33 ills. New York: The Macmillan Co. \$1.25.

Wiring for Light and Power. By Terrell Croft. 382 figures, 430 pp., 4½ by 7½. New York: McGraw-Hill Book Co., \$2.

Domestic Architecture. By L. Eugene Robinson. 50 plates, 387 pp., 7½ by 4½. New York: Macmillan Company. \$1.50.

Crosby-Fiske-Forster Hand Book of Fire Protection. By Everett U. Crosby, Henry A. Fiske and H. Walter Forster. Sixth Edition. 757 p., 7x4½ inches. New York: D. Van Nostrand Company.

National Municipal Review, Vol VIII. No. 1, January, 1919. Reconstruction Number, 107 p., 10x6¾ inches. Concord, N. H.: National Municipal League.

Drafting Room Methods, Standards and Forms. A Reference Book for Engineering Offices and Draftsmen. By Charles D. Collins. Ills., 149 p., 8½x5¾ inches. New York: D. Van Nostrand Co. Price \$2.00.

University of Illinois Bulletin. Vol. XV, May 27, 1918. No. 39 Bulletin No. 106. Test of a Flat Slab Floor of the Western Newspaper Union Building. By Arthur N. Talbot and Harrison F. Gonnerman. Ills., 52 p., 9x6 inches. Published by the University of Illinois, Urbana. London: Chapman & Hall, Ltd. Price 20c.

Lighting From Concealed Sources. A guide to better lighting methods, wherein the problems confronting the architect and lighting man are treated not only from the economic point of view, but also with full consideration for the artistic and hygienic influences. By the Engineering Department of the National X-Ray Reflector Company. J. L. Stair, Chief Engineer. Ills., 246 p., 8x10 inches. New York, Chicago, San Francisco: National X-Ray Reflector Company Price, \$2.00.