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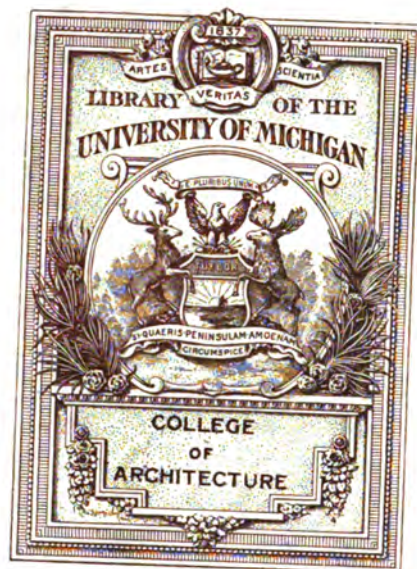
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THE ARCHITECTURAL FORUM

AN ILLUSTRATED ARCHITECTURAL MONTHLY DEVOTED TO THE ART, SCIENCE, AND BUSINESS OF BUILDING

NEW YORK

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THE DETROIT NEWS BUILDING

Albert Kahn, Architect; Ernest Wilby, Associate

THREE COUNTRY HOUSES

By John Russell Pope

Aymar Embury II

Brockie & Hastings

ASPECTS OF INDUSTRIAL HOUSING

Industrial Town Planning from work of John Nolen

Review of Government Activities

Relating to Solution of Present Problems

THE DEVELOPMENT OF AMERICAN ARCHITECTURE

A brief and connected history by Fiske Kimball

A GOTHIC DETAIL DRAWING

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JANUARY 1918



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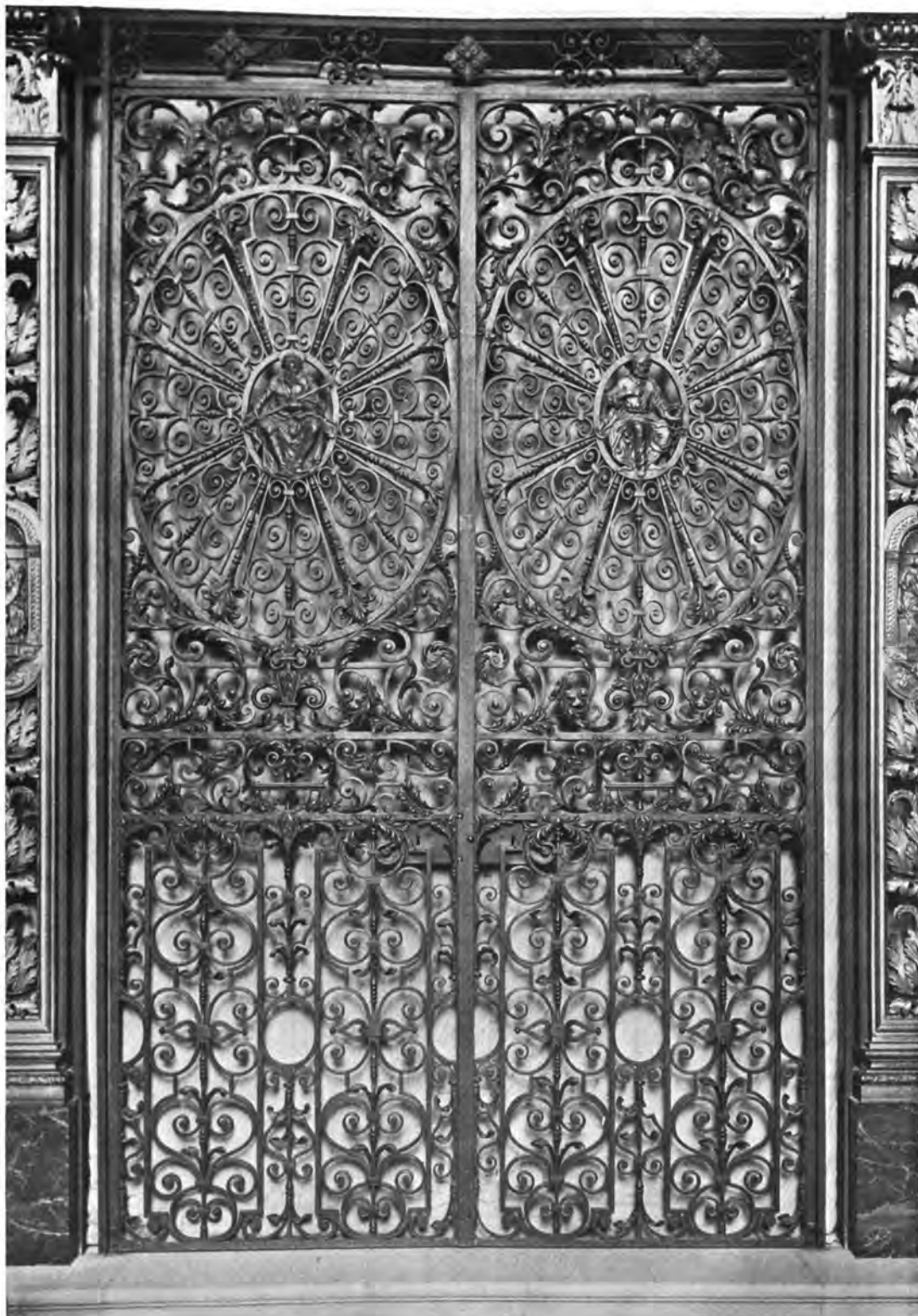
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CENTER GATES OF SCREEN IN SOUTH CHOIR AISLE, ST. PAUL'S CATHEDRAL, LONDON, ENGLAND
WROUGHT IN IRON BY JEAN TIJOU

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THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXVIII

JANUARY 1918

NUMBER 1

★ The Development of American Architecture

By FISKE KIMBALL

Editor's Note. — No attempt has hitherto been made to trace in connected fashion the development of American architecture from its origin to the present day. In the following sketch the author of several special studies in the history of American architecture attempts the task, with the employment of rich material relating to many beautiful and important buildings which have been hitherto neglected.

I. THE COLONIAL PERIOD

WITH the coming of the European colonists to the New World a problem new and unique in modern times was created for architecture; civilized men had to face conditions which were absolutely primitive, and had to struggle against odds for the attainment of traditional ideals of building. As a result there was everywhere a pioneer stage in which the settlers seized the first means at hand — *adobe*, logs, or even turf — and built as simply as would serve primary needs of shelter and worship. Later they sought to replace such modes of building by those of their mother country, but these were inevitably modified to a greater or less degree by differences in the materials available, and in economic and social conditions. The duration of the pioneer period itself varied greatly with the character and support of the colonists, and with the resources and climate of the region.

The English colonies in America were at first widely separated, as well as very different in their character and purposes, so that there was much diversity of architecture even in those where the settlers were mainly of English birth. Certain general characteristics hold for all, however, among them the essentially medieval nature of all the buildings of the seventeenth century. This could scarcely have been otherwise, in view of the fundamental medievalism of most buildings in England during the century, outside of London and of court circles. England has been the last country to adopt Renaissance forms of detail, and was much later still in adopting classical types of plan and mass. Throughout the seventeenth century the country churches built in England were Gothic, and the rural cottages and minor country seats were medieval in all but a few applied details and their tendency to symmetry. Even in London, we may recall, the first classical church was not built

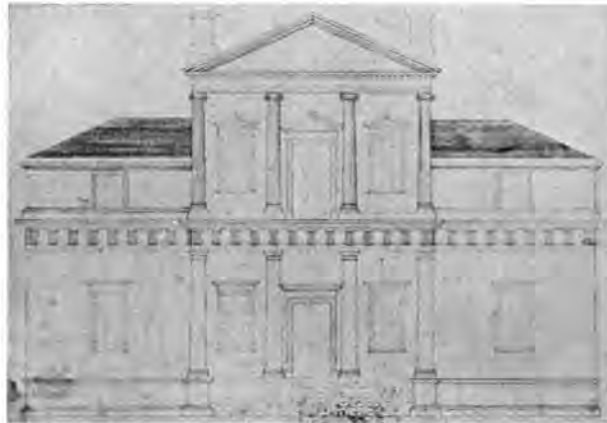
until 1630, and it had no imitators until after 1666. Small wonder, then, if the colonists, themselves largely from the rural districts, erected buildings which, stripped of almost every detail not structurally indispensable, revealed their basic medievalism. A corollary of this, and of the relatively primitive state of society, was the general absence of professional architects and the dependence of the craftsman builders on tradition in matters of style and workmanship. Another general trait in the seventeenth century was the almost universal prevalence of wood as a building material, even in regions where the later monuments which are preserved are of masonry. In contrast with England the new continent was densely forested, so that in clearing land for cultivation timber was felled ready to hand. The immediate introduction of saw mills in populous centers made plank still less expensive than otherwise, so that for years, and even to this day, brick and stone have stood at a disadvantage in cost far greater than anywhere in Europe.

Virginia had at the start the backing of a powerful trading company, and the advantage of a unique staple crop in tobacco, which soon became enormously valuable for export. With the outbreak of the Civil War in England, the colony, with Maryland, became a refuge for the royalists, many of them possessing some means. Nevertheless architectural progress was very slow. From the founding of Jamestown, in 1607, the home authorities made constant efforts to establish towns and to require that buildings be constructed of brick. The absolute necessity of a plantation system, however, forced the inhabitants to scatter along the navigable rivers and made mechanics of any kind scarce. Framed houses only began about 1620, and were still uncommon in 1632. Clay and some brickmakers there were, yet the first house wholly of brick does not seem to have been built until 1638. The typical Virginia house of the seventeenth century was a rectangular framed building of very moderate size, devoid of any architectural ornaments, and with a great chimney of brick at each end. The buttress-like form of these chimneys, with the steepness of the roof, proclaimed the medieval basis of the design.



St. Luke's, Smithfield, Va.

Mid-seventeenth century church, showing transplantation of late Gothic traditions to America



From Kimball: "Thomas Jefferson, Architect"

The Original Design of Monticello, 1771, Thomas Jefferson, Architect
The first strictly Palladian house designed in America

This is even more pronounced in the oldest of the Virginia churches still remaining, St. Luke's, Smithfield, which includes some bricks of 1631, although it is very doubtful if the whole fabric was built so early. With its pointed and mullioned windows this is unmistakably an English parish church of the outgoing Gothic, in spite of the quoins of its tower. In Maryland and Carolina the same general history was later repeated, bricks of local manufacture being gradually adopted by the wealthier planters. Although Carolina was not settled until after 1660, and large houses were not built until near 1700, one or two of them still show the fantastic curved gables of the Jacobean manors.



"Westover, Virginia," about 1730

Vernacular brickwork with isolated classical and baroque details

In New England, buildings entirely of brick and stone were especially rare; on the other hand, permanent framed buildings of wood were erected almost immediately after the founding of Plymouth (1620), Boston (1630), and Hartford (1636), with no long period of makeshifts. The earliest settlers included carpenters, and, under the conditions of town life which prevailed, artisans were numerous throughout the Colonial period. They brought with them the medieval English traditions of framing houses with overhanging upper stories, and of filling up the frame, where possible, with brick. The changeable climate did not favor the exposure of such half-timber work to the weather, and from the start, in most instances at least, the exteriors were covered with clapboards. The windows were small leaded casements, essentially medieval, like the clustered form of chimneys and the ornamental drops at the corners of the overhangs. Several different types of plan may be distinguished, each characteristic of certain localities. In Massachusetts Bay and the Connecticut colonies the usual type was one having two rooms upstairs and down, with an entry and a great chimney between, and often with a lean-to added at the back. Later the lean-to was included from the start, as in the Whipple house at Ipswich, Mass., well preserved and restored. The typical house in Providence Plantation was one of a single room below, with a great chimney at one end, creating the "stone-end house." Occasionally, as in the Theophilus Eaton house at Hartford, Conn., the Elizabethan U or H plan, with a central "hall," was preserved. In interiors the cavernous fireplaces, the wainscot sheathing, and the occasional paneling were de-

void of any Renaissance detail. Toward 1700 the framed overhang was abandoned, but medieval details and methods lingered well into the eighteenth century.

The churches or "meeting houses" in New England likewise retained survivals of medieval forms, but their disposition was fundamentally affected by the extreme Protestantism of the settlers there. After the passing of the earliest simple cabins, they tended to conform to the prevailing Protestant type of England and the Continent, — a squarish, hall-like room, with galleries around three sides and the pulpit against the fourth, which was generally one of the longer sides. There was no tower; the belfry was merely placed astride the ridge at one end, or on a deck in the center when the roof was hipped, as in the "Old Ship" Meeting House at Hingham, Mass.

Philadelphia was not founded until 1682, so that colonial architecture in Pennsylvania has mostly the post-Renaissance detail of the eighteenth century. Before leaving the medieval survivals, however, one must consider the buildings of the German sects of Pennsylvania, although the earliest of any pretensions were not built until well after 1700, and others not until about 1750. The monastic halls of religious communities like that at Ephrata, with their whitewashed walls and small windows, their steep roofs and ranges of little dormers, are unmistakable offshoots of the Middle Ages in Germany.

With the eighteenth century came greater means and comfort, wider use of permanent materials, and the adoption of classical forms of detail. The whole seaboard was now under



Courtesy of the White Pine Bureau

The Whipple House, Ipswich, Mass.

Mid-seventeenth century house, showing medieval survivals



The Redwood Library, Newport, R. I., 1748-50, Peter Harrison, Architect
The first public building in the colonies to have the free-standing portico of grammatical academic forms. The rear portions are modern additions



Drawing Room, Miles Brewton House, Charleston, S. C., about 1765
Extreme elaboration of individual features with many baroque survivals

English rule, and local diversity was subject to uniform English influence. By this time in England the style of Jones and Wren was everywhere established, and the small provincial towns abounded with doorways and interior woodwork in which the favorite post-Renaissance motives of broken pediments, consoles, and rich carving were conspicuous. Still more important for the colonies was the codification of current architecture in books, great and small, which reproduced both formulæ for the orders and other details, and designs for whole buildings. These were imported very freely and will be found to have had the greatest influence on single buildings and on the prevailing style. In the early part of the

century the colonists merely adopted classical details for the individual features of their buildings — the cornice, the doorway, or perhaps a cupola — without any general classical treatment beyond a symmetrical arrangement. Later the churches and public buildings, and finally even the dwellings, began to assume a monumental character. During the later years of the colonial régime there also appeared some tendency toward the Palladian strictness which had carried the day in England, and had dominated the later architectural publications. In these movements, as was also the case in England, cultivated amateurs played the leading rôle, although the builders themselves were quick to master the teaching of the books and to assume also the functions of architects.

The first signs of the transition at the opening of the eighteenth century were the adoption of less steep roofs, the substitution of sash windows for the leaded casements, and the tendency to employ a uniform cornice with a hip roof, or a pedimented gable, instead of a gable of medieval type. When cornice and door were given rich detail — of modillions and of pilasters with a pediment — one had the scheme exemplified about 1730 in Westover, Va., and in the finest houses of that day throughout the colonies. The ample and symmetrical dependencies seen at Westover were characteristic of Virginia and of Maryland, and were sometimes seen at Philadelphia.

Frequent use of the curved and the broken pediment and of rusticated enframements revealed that the baroque element of Wren's work was still current. In a few instances, beginning about 1735, tall pilasters were applied to the corners of the house. As these were only associated with an individual pedestal and a fragment of entablature, however, they create no general architectonic treatment. The earliest important house in which a more academic scheme was attempted was Mount Airy in Virginia (1758), where two loggias — one arched, the other colonnaded — were the axial features of a group with balanced outbuildings, taken apparently from James Gibbs' published designs. It was not until 1760 or later that the free-standing portico with a pediment was applied to dwellings, and this did not become at all common until after the Revolution. In a few instances, notably the Miles Brewton house in Charleston, S. C. (c. 1765), there were superposed porticoes following the general scheme of many of Palladio's villa designs, although with much freedom in proportions and detail. Strict following of Palladian canons in residence work only began with Thomas Jefferson's design for Monticello in 1771, on the very eve of the Revolution. The interiors of the houses, owing partly to the prevalence of wooden paneling, were much richer and often more coherent in architectural treatment than the exteriors. The subdivision of walls by pilasters was by no means uncommon, although more often, as in the Brewton house, each essential element, such as a doorway or chimney-piece, was elaborated individually. Baroque features persisted even after they had vanished from the exterior.

The buildings in which the more advanced tendencies were first manifested were the churches. Old St. Philip's, Charleston, consecrated 1723, had a portico of four columns, freely grouped, only a few years after the great London churches with a similar general *parti*. The nave of Christ Church, Philadelphia, built 1731-44, under the direction of Dr. John Kearsley, has an architectonic treatment of the Roman arch order with pilasters in two stories. Both of these buildings had the basilican interior treatment of St. Brides' and other London churches, which became the favorite system for the more elaborate colonial examples. The exterior portico, which in St. Philip's had only the width of the tower, was enlarged in St. Michael's, Charleston (1752-61), and in St. Paul's Chapel, New York (1764-66), to embrace almost the full width of the church. The steeples followed English examples, among which that of St. Martin-in-the-Fields and other designs reproduced in Gibbs' published works attracted the most imitators.

The earliest public buildings of any preten-



St. Paul's Chapel, New York, 1764-66, McBean, Architect

One of the rare instances of the great free-standing portico in colonial times. The steeple was added in 1794 by John McComb

sions, such as the old New York City Hall (c. 1700) and the old Virginia Capitol at Williamsburg (1702-14), still betrayed a lingering medievalism in their H plans, in spite of the round arches or the columns of the connecting loggias. Even in buildings where all medieval character has vanished, like the old State House (Independence Hall) in Philadelphia (1732-35), the architectural character remains fundamentally domestic, and the public functions are suggested on the exterior only by the greater size of the building and its possession of a cupola. In the interior of Independence Hall, indeed, there is a monumental treatment by an arch order with engaged columns, which was unique in the colonial period. The first attempt at academic design was Faneuil Hall in Boston (1742), by the painter Smibert, with the arch order in two stories, the lower one forming an open market.

A series of buildings of unique architectonic character was designed by Peter Harrison of Newport, R. I., who, whether or not he had professional train-



Royall House, Medford, Mass., 1737
Early appearance of the colossal pilaster, though still as an isolated detail

ing in England, deserves the distinction of being the first professional architect in North America. The Redwood Library in Newport (1748-50) has a Roman Doric portico of four columns, united to the body of the building by a single unbroken entablature. Originally only the small wings flanking the façade prevented the building from conforming entirely to the temple type, already imitated in the garden temples in England. The Market at Newport (1761) represents a more advanced academic phase than Faneuil Hall, in that it involves an engaged order running through two stories, over an arched basement. This was the characteristic motive of the more ambitious buildings on

the eve of the Revolution, such as the Pennsylvania Hospital, the Exchange in Charleston, and others. The greater number even of public buildings, however, still retained not only the modest materials, brick and wood, but also the simple wall surfaces and isolated details commonly used during the early part of the century.



Old State House, "Independence Hall," Philadelphia, Pa., 1732-52, Andrew Hamilton, Architect
Restored 1898 to its condition in 1776. A typical public building of the colonies, straightforward brickwork and classical details without any general academic treatment

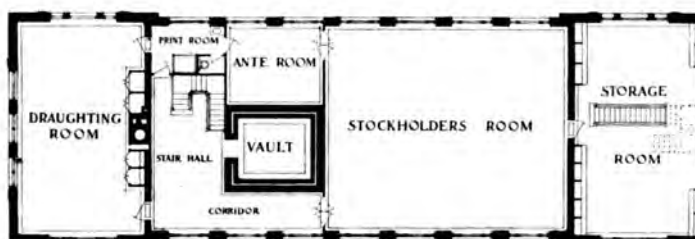
Office Building for Naumkeag Steam Cotton Company, Salem, Mass.

KILHAM & HOPKINS, ARCHITECTS



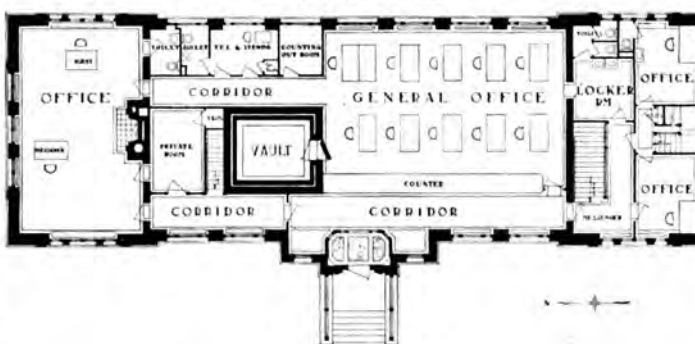
THE exterior of this building is constructed of a smooth red brick to match that used in the curtain walls of the new mill plant which is of reinforced concrete with brick panels. The trimmings of the office building, including the cornice, are of granite, and the roof is covered with slate. The construction is practically fireproof. The interior is finished in fumed quartered oak and contains the mill offices, agent's office, drafting room, and room for stockholders' meetings. A well equipped garage is provided in the basement.

A feature in the arrangement of the plan is the provision for the employees coming for their pay, whereby they enter the basement from which they can easily reach the pay counter on the floor above, thus keeping the main office portion of the building free for the transaction of regular business, and incidentally in a more cleanly condition.



SCALE 0 10 20 30 40 50 FEET

SECOND FLOOR PLAN



FIRST FLOOR PLAN

Some Aspects of Industrial Housing

I. INTRODUCTORY AND EXAMPLES OF INDUSTRIAL TOWN PLANNING FROM THE WORK OF JOHN NOLEN

By CHARLES C. MAY

THE broad subject of housing, as a problem, includes the provision of adequate living facilities in all cases where laws of supply and demand have failed to meet modern requirements. The terms used are necessarily inexact, for standards of living do not lend themselves to precision in statement. Yet the idea includes, in a general way, both of the principal divisions of the subject: first, the improvement of existing conditions where housing is bad because of congestion — overcrowding the acre, as in parts of most cities, and overcrowding the room, as in a few spots, at least, in nearly every town; and, second, the provision of new housing facilities to meet new or increased demands. The former has been and probably will always be a matter of legislation and inspection; the latter is a constructive task which is inspiring in its combination of responsibility with opportunity.

Roughly speaking, the recognition of the housing problem, in its first sense, dates in our own country from about the middle of the nineteenth century. At that time not a single city in the United States possessed a building code to regulate the construction either of single family dwellings or of tenements. The legislative lead was taken by New York in the enactment of its tenement house law of 1867. As was natural, the bent thus imparted to efforts toward housing reform has proven dominant through forty or fifty years. As city after city has awakened to the existence of its own housing problem, attention has been focused very largely upon tenement conditions; legislation has been aimed at remedying and restricting the tenement slum. Only to a far lesser degree has study been given to the social and economic conditions which have produced the tenement and the slum; and only within a comparatively short period have laws been passed which aim specifically to prevent the growth of new slums like the old ones. Today, too, the emphasis is placed far less exclusively upon the tenement as the seat of housing evils, for we know now that conditions which encourage epidemics and tuberculosis, that constitute fire hazard, that foster immorality and breed defectives, are by no means confined to the tenement. Overcrowding the room is an evil far more widespread than overcrowding the acre, yet equally ominous.

In these articles we are to be more particularly interested in the housing problem in its second sense — that of providing new housing to meet new demands, and, more particularly still, demands produced by industrial expansion rather than those

ordinarily met by the usual real-estate development.

Beginnings in this sort of housing problem far antedate those in the first class already mentioned. The U. S. Bureau of Labor Statistics, in recent investigations, found evidences of the "company house" back into the eighteenth century. Lowell, 1798, and Wilmington, 1831, are among the earliest examples. They were the forerunners of a large group where villages sprang up, oftentimes around a single industry upon which they depended not only for their growth and prosperity, but for their very existence. One thinks at once of such towns as Hopedale and Whitinsville, Mass., and, in their early days, of Pullman and Gary, near Chicago, as examples of this inseparable relation between industry and town.

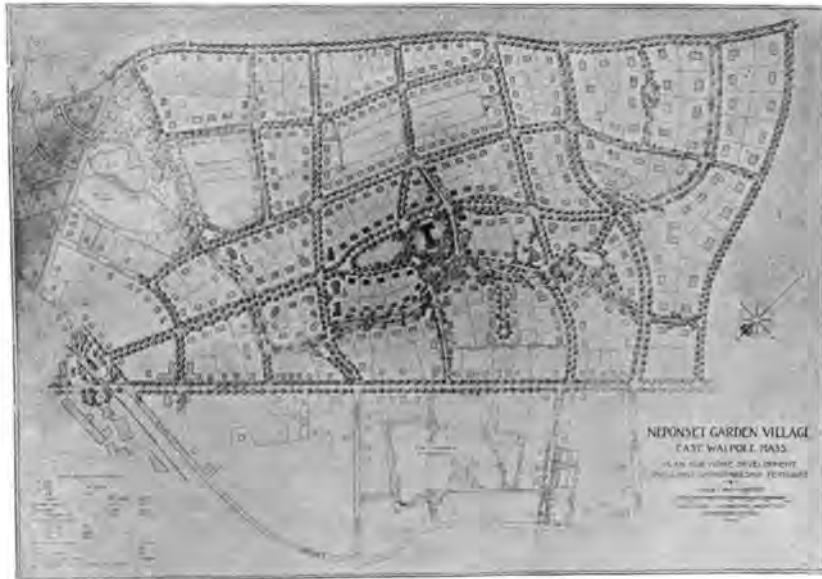
Because this relation has been so close, the subject of industrial housing is intimately bound up with the several great movements that have marked industrial progress during the last half century or so, with all the changes they have wrought. First came the movement toward consolidation, in which big business replaced small businesses. The mountain stream that formerly furnished power to a series of small, independent paper mills now runs idle and unhindered; the mills have been "absorbed," the operatives scattered, or rather concentrated, many of them seeking a livelihood in the great mill of the city — the mill which has swallowed up their former means of employment. Everywhere and in every line of business the same process has taken place in the wave of centralization. Small towns have become booming cities; an entire new group of industrial and commercial centers, each one a good sized metropolis, has arisen from the smaller towns that were wont to think they had perhaps reached their limit of expansion.

We are all familiar with this vast change which within a few decades has diminished our rural population and multiplied our urban many times. Congestion of factories has ever been productive of congestion in the tenement district not far away. Thus the vast expansion of industry with its concentration of population, its increasing employment of low waged employees, its gravitation toward traffic, supply and power centers, has proven a very potent factor in the exaggeration of the housing problem in both its aspects.

But there has ensued a secondary reaction in large-scale industrial growth. City conditions have not proven permanently advantageous to the largest industrial plants. The case is not unlike that of an-

other American phenomenon, the skyscraper. So long as it was an individual exception—a Singer Building or a Woolworth tower—its promoters reaped large rewards and enjoyed singular advantages of light, air, and exposure beyond their neighbors of the more ordinary type. But when gradually the movement spread over whole districts, and when the multi-storied structure was expressed not as a tower, covering only a small proportion of the lot, but as a gigantic box over all the area the law would allow, then it became evident that such development was inadvisable, uneconomic, and disastrous. So in the urbanization of industries, those first on the spot reaped probably all the anticipated benefits, and did so about in proportion as they were located nearest the very center of things. Presently, however, came need for expansion, and the cramping restriction of the city street system made itself felt; new land must be acquired, and the greatly enhanced cost of real estate became a serious deterrent; at the same time carrying charges on the original plant had jumped to points only partly justified by the newly exalted value in the site itself.

Hence arose that industrial countermarch of which



Plan of Neponset Garden Village, East Walpole, Mass.
John Nolen, Landscape Architect

Mr. Graham R. Taylor treats in his book, "Satellite Cities." One after another manufacturers of all classes have found it to their advantage to remove bodily from their central, urban situations into districts less congested, less expensive, and more flexible. Begun with individual instances as much as twenty years ago, the movement of industry toward the outskirts of the city is to-day a general one of national importance.

That this vast, industrial flux and reflux has a bearing upon the subject of housing, is obvious; yet the

immediate reaction has not been such as might have been predicted. Decentralization of industries has given little or no relief from congestion in the tenements of the greater cities, nor from the need for a larger supply of inexpensive houses in the smaller ones. What it has produced in certain cases is a new population of wage-earners who must add a transportation cost to their expense budget, since in most cases the new factory facilities have been accompanied by no corresponding facilities for houses. We find, therefore, instances of the condition pointed out by Mr. Taylor—large industrial areas in the suburbs, and adjacent to them, not acres of



Plan of Kistler Industrial Village, Mifflin County, Pa.
John Nolen, Landscape Architect

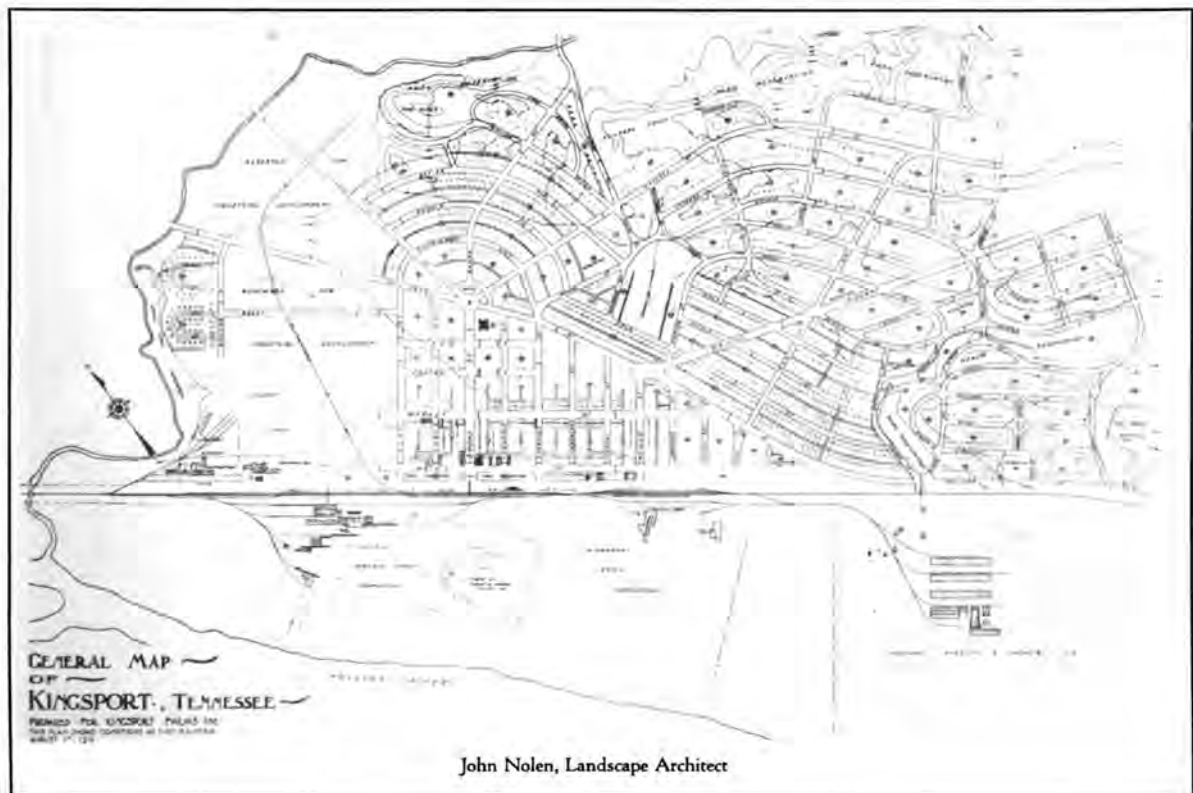
well planned, cheap houses for the factory population, but houses for middle-class commuters whose work is in the city. The factory employees, on the other hand, continue to live in the tenement at the heart of the city's congestion. Night and morning the two classes exchange places — country for city and *vice versa*.

Such conditions bring out very clearly one of the difficult questions in the subject of industrial housing, — that of making some one really responsible for housing the worker. The employer has not recognized the responsibility as his, because he has heretofore been more or less successful in his reliance upon a local or adjacent labor market to keep his payroll filled; the speculative builder has avoided it, because he has found richer returns in catering to the middle-class commuter; the governing body (federal, state, or municipal) has not accepted it, because America has, up to the present, feared such extension of the governmental function. The case has simply been allowed to go by default; as usual, everybody's business has proven nobody's business.

Of late years, however, an increasing number of employers of labor, some among the comparatively small, many among the very largest, have taken this burden upon themselves. They have verified the conclusions reached by those best qualified to speak: first, that the influence of environment upon the individual worker is a vital element in his efficiency,

and in the aggregate becomes a factor of considerable weight in the balance between success and failure; second, that certainly for higher grades of workmen, and under certain conditions of employment, for the lower paid employee as well, individual ownership of houses is desirable, not only for its very considerable saving to employers through steadying men in their jobs, but also for its healthy influence toward thrift, self-respect, and reliability upon the men themselves; third, that the failure of private initiative to provide industrial housing adequate in either quantity or quality must be accepted as a definite conclusion, and that big business would do well therefore to include in its initial program of capital outlay a charge for housing its man-power, on much the same basis as that for housing its plant and equipment; fourth, that since the manufacturer's primary job is turning out goods, not putting up and getting rid of houses, the employer must not look for profits on his housing program comparable to those of the speculative builder. His own returns must be and can be anticipated in other directions — directly, through stabilizing his forces and eliminating the exorbitant waste of "hiring and firing"; and indirectly over a long period, through increased efficiency, health, and morale of the workers.

Prompted by such considerations, numerous employers of labor have taken the most radical step. They have removed beyond the city congestion, be-



John Nolan, Landscape Architect

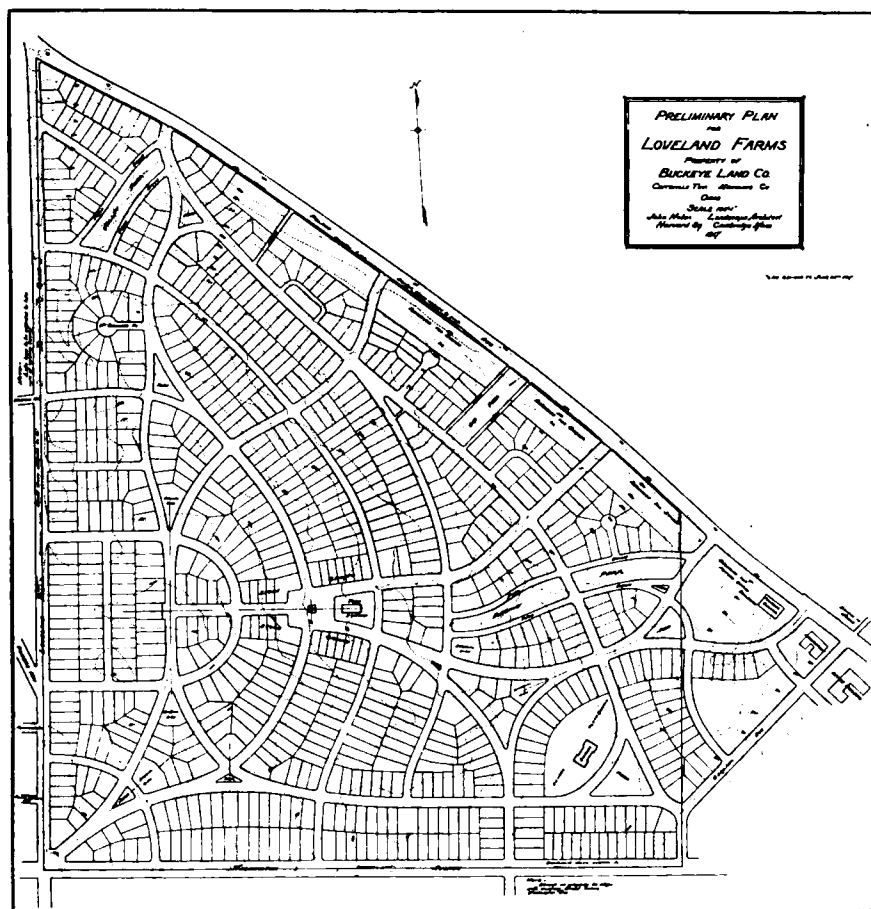
yond the semi-civilization of the outskirts, to points where with plenty of room for expansion, unhampered by external circumstances, they might work out a salvation under conditions of their own making. The responsibility they have assumed in so doing is no light one. In uprooting and transplanting a unit of population, be it large or small, the operator shoulders the moral obligation to provide not merely the physical requirements of bodily shelter and a means of obtaining food, but also some at least of the manifold social activities of a self-contained community.

One might maintain that this problem is not different from that which has for many years confronted the mining companies in starting a new operation. The nature of the business usually locates the plant apart from conditions of settled town life — oftentimes in most inaccessible and uncompromising surroundings. Whatever settlement is to exist, must of necessity be provided and maintained by the company itself. On the other hand, coal and iron mines are not inexhaustible, nor are their plants readily transformed into other lines of industry. With few exceptions, therefore, the companies have in the

past regarded these settlements as temporary, their housing investments as short termed, and any but the cheapest construction unwarranted. These conditions have constituted the mining towns as special cases, and have tended to lower their housing standards, so that while their problem has, in fact, been similar to this newer one, the distinction comes in the spirit in which the problem has been attacked. It might not be unjust to suggest that whereas in the older types of mining camp the policy too often appeared to provide as little and as cheap housing as the company could "get away with," the newer idea says distinctly that the employer is justified in providing all that can be paid for without involving an economic fallacy.

In times less abnormal than the present, it might have been conceivable that the growth of this newer conception of the relation of housing to industry could work out a solution in the natural course of events. The process would have developed through generations of growth, setback, and modification. Actually, war conditions have placed the whole problem in a totally different light. What was formerly regarded by many employers as welfare work,

to be entered upon or not, as a matter of debatable policy, has suddenly loomed up as the stiffest requirement in their emergency program. The facts are becoming too well known to require more than the briefest mention. We know, for instance, that within the next few months the New Jersey meadows along Newark Bay will become the seat of a tremendous ship-building industry — where its 15,000 workers are to live, nobody knows. We know, too, that Bridgeport is building another munition plant, toward which the federal government has contributed two and one-half million dollars. Several thousand workmen will be required to man that plant, yet not a single home has Bridgeport to offer them. We have heard the appeal from Newburgh, N. Y., whose prospective short-



Plan of Loveland Farms, Coitsville Township, Ohio. John Nolen, Landscape Architect

age amounts to 2,000. Not to multiply instances, but to sum them up, we are told that government contracts now pending will require the transfer, within a very few months, of no less than 136,000 workers, five-sixths of whom must be placed in the already congested regions of New England and the other Eastern states. The accommodations for receiving this army being practically nil, it is obvious that the situation rapidly approaches the intolerable. The task is too big for the employer; it is too big for the municipality or the state. The emergency is national in scale. Happily, there are signs that federal authorities are becoming alive to the situation. Let us hope that traditional reluctance will not prevent action upon a scale as broad as the need.

In subdividing the matter of industrial housing, we have distinguished, somewhat arbitrarily, two main types. They are, to be sure, traversed by cross currents, and merge into each other at many points; but if not regarded too rigidly the distinction is useful. Roughly, then, we may speak, first, of the industrial village proper, where an employer seeks to house his own working force, and in doing so provides an industrial housing development which is (or approaches) an independent community; second, of the town or city where a housing corporation or similar agency seeks to provide housing facilities for workers in order to meet an acknowledged shortage, but irrespective of any particular industry or concern.

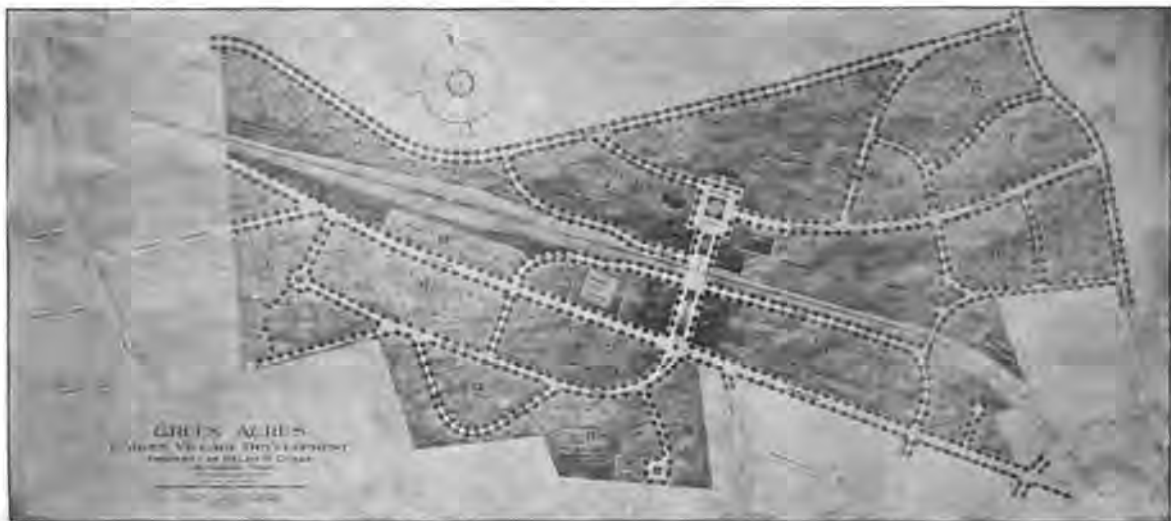
War-time housing might fall into either of these classes; that is, should government aid be confined to an advance of money to further housing developments already planned but held up for lack of funds, its action would doubtless be impartial as between housing corporation and individual employer. Or, in the event of our own country following England's

example by taking up the building program itself, government activity would in all probability include both the independent munition town, comparable to Well Hall in England, and the industrial suburb or section of an already existing community.

Among those who have been identified from the first with problems of industrial town planning, none has thought more deeply nor practised more widely than Mr. John Nolen of Cambridge. The general plans which we are privileged to reproduce herewith give hints of an exceptional range of activity; they are at the same time suggestive of the individuality which attaches to each industrial problem, and which must dictate its solution.

Of these plans, all except one come within the class that we have called the industrial village proper; that is, a housing development created primarily to care for the employees of a single concern. The exception is found in the plans of Kingsport, Tenn., where a corporation has set out to meet the housing needs of an entire town — a town whose phenomenal growth has far outstripped the possibilities of home building under private initiative.

Looking at these plans even casually, certain characteristics are immediately noticeable. Some have to a very great degree the qualities of independent, self-contained units; others reflect, even on paper, something of the fragmentary, incomplete aspect which was very marked in the original conditions of the problem, and which the most skilful treatment by the town planner cannot wholly obviate. This desirable unity and completeness in a community plan may be inherent with the property itself, or it may to some extent be attained; that



Plan of Green Acres, Waterbury, Conn. John Nolen, Landscape Architect



GENERAL PLAN OF OVERLOOK COLONY, BRANDYWINE HUNDRED,
NEWCASTLE COUNTY, DELAWARE

JOHN NOLEN, LANDSCAPE ARCHITECT

AN exceptionally interesting and successful development in spite of severe handicaps in irregularity of boundaries and contour of property. The three isolated arms of land have been brought into a unified and coherent scheme by carefully located arteries of travel, and the development of the

central depression into a parked space to be enjoyed by all members of the community. This plot also illustrates the difficulties encountered by the town planner when the limiting boundaries of the property are not sufficiently definite to insure independence of developments occurring on adjoining sites.

is, for the first, the tract may be fortunately bounded by natural features, such as a river, a forest, a park, or an important thoroughfare. Any one of such features will give definition to the property, and will go far toward enabling the town planner and the architect to produce within these bounds the atmosphere that should pervade the well planned community. Note, for example, Kistler Industrial Village, with two sides of its triangle, bounded, the one by a river, the other by the railroad; similarly in the Loveland Farms tract, note how the broad thoroughfares on two sides, and the factories on the third, perform the same function. Lacking such topographical aids, the sense of unity must be produced artificially if at all. To do this requires a wise co-operation between owner and town planner, and it is here that the owner often fails to realize the best possibilities of his project by not calling for expert advice until too late. The town planner ought to be developing his studies at the same time that the owner is carrying on negotiations for the land he needs for the new development. Only so will the relative importance of various plots become evident; only so can be avoided the state of affairs that too frequently occurs — an essential street connection blocked because the land is adversely owned and held at a prohibitive figure. Co-operating with the planner, the owner may usually acquire his land quietly, without publicity, until the essentials for his program are in hand. They will act without publicity, not in order to take advantage of previous owners, but simply to avoid being themselves taken advantage of by others. Such a procedure, adopted in the case of the Neponset Garden Village at Walpole, Mass., worked out with generally satisfactory results. The most important plots were acquired at equitable figures, and those not so important were worked into the plan as they stood.

When the planner enters the problem late, unfavorable property lines must usually be regarded as fixed — one of the given conditions, at the best, to be transformed into an opportunity; at the worst, to be accepted and ameliorated so far as may be. Looked at from this point of view, the plan of Green Acres, at Waterbury, Conn., is not equally fortunate with that, for instance, of Loveland Farms. In several portions it shows cases where lotting is not ideal, where economy of street development is not to be wholly attained, and where the executed work must fall short of its possibilities, were the artificial boundaries of the property less exacting.

Among the desirable natural boundaries of a development we listed a river. That term should be understood in its literal sense — not as meaning any piece of water, large or small. The point is, it must, in fact, *bound*, that is, it must be of sufficient size to form a real limitation. A river or a lake will do this acceptably, whereas a small stream marking

the property line is usually a serious detriment. The planner may find such a stream of great natural possibilities for a boundary park; yet controlling only one bank he is powerless to realize the ideal, if the opposite side happens, as it usually does, to be left in an unsightly, unsanitary, or run-down condition. Or supposing the lay of the land suggests a community swimming pool for summer, a skating pond for winter — however ideal the location, however slight might be the expense involved, nothing can be undertaken which will flood any square foot of the opposite bank. In somewhat the same way a boundary street has its disadvantages. To be sure, the planner is not here prohibited from developing as he likes on his own side, but he cannot hope to gain his effect of unity in the face of an uncontrolled development across the street.

One would say at once that the obvious solution for such difficulties is in co-operation with adjoining property owners. So it is, provided they will consent to co-operate. In case the land in question is owned by one individual or one company, it can often be managed, for self-interest will point out the advantages of co-operation. It is when the land is held by various interests, under varying conditions, that the real (and the usual) difficulty arises. In such cases it is hardly to be expected that those not primarily interested will attain a concert of action, especially such as will commit them to a line of action or, perhaps, restriction for a term of years.

By far the best place for an artificial boundary, from the town planner's standpoint, is along the rear lot lines; that is, in any block the property owners will all face a street wholly within their own community, and will turn their backs upon the property adversely owned. We do not, in this, advocate adopting such a method as a rule of general application. To do so would be to violate a town-planning fundamental — the articulation of the new street layout with the main, through arteries of traffic and transportation; the provision of a natural circulatory system, not only within the community itself, but with relation to other communities on every side. Some of the most troublesome conditions in the older, middle-sized cities are those that have arisen when villages that were formerly far apart have gradually grown toward each other to the meeting point, only to discover that their thoroughfares were totally unrelated, and could not be hooked up without large outlay for replanning.

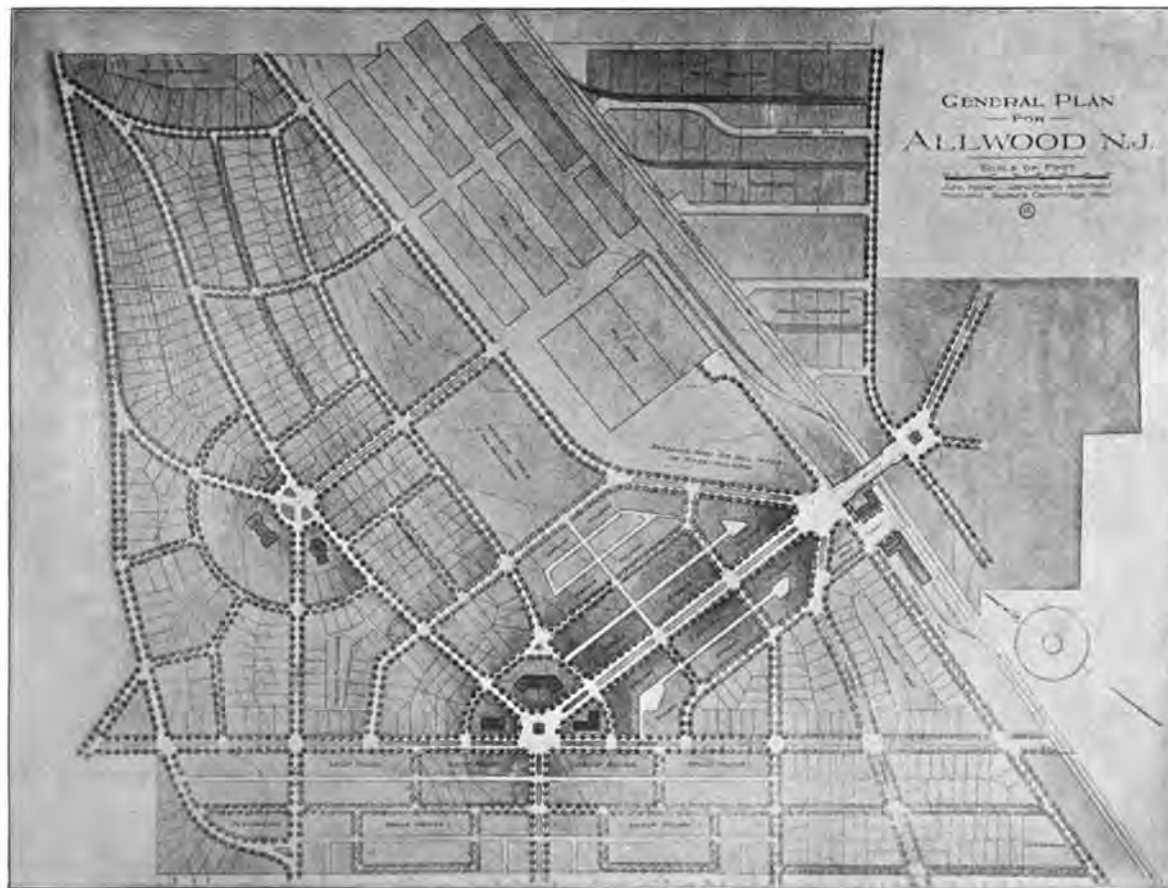
The general plan of Overlook Colony contains illustrations of several of the points we have mentioned. As it stands, this is a very successful and beautiful piece of work, and it is so in spite of several conditions that were exacting — not to say exasperating. First of all, the outline of the property is anything but conducive to unity, its jogs and angles are haphazard and unrelated; second, the boundaries are

nearly all artificial and indecisive. Beginning at the extreme northern corner, all down the eastern side, around to the parked thoroughfare on the west, no portion of this tract can be made invulnerable to harm from adjoining land; the northern boundary of the western tract is, as we have seen, good — the lots front on a street of their own and are comparatively independent of what happens to the rear of them. Similarly, the railroad at the extreme northern boundary is an effectual line of demarcation; between these areas, note that the property line runs with the center of the stream. Here the whole fate of that wooded valley may be said to depend not so much upon the art of the landscaping on the side of the Colony as upon the character of the opposite bank. Third, and most important of all as affecting the property itself, the topography would have been the despair of the old-style real-estate operator. Now that the solution is before us, we see that it is the only one. That depression of twenty feet or more in the middle of the development, with the creek running through it at the bottom, was a "jumping-off place" as one walked north from the Wilmington Post Road; but, build a small dam at the eastern outlet to the natural basin and we have at once the axial feature around which the whole

plan is designed; put a bandstand across the pond from the head of the village green, leave the grass slopes of the valley natural and open to the public, and we have at once the elements which not only make for a wholesome community life, but make such a life difficult to avoid. It would be hard to find a better example of a case where a seeming serious handicap had been made a valuable asset.

The general plan of Allwood is particularly interesting because it presents one of the best American examples of clean-cut, industrial town planning. Here all active work on the site was preceded by study of the best work of other countries; experts were early retained to cover the several departments, and, what is more unusual, the factory locations and layout were considered as an integral part of the general plan. In other words, this plan of Allwood displays all the features of comprehensive planning, of zoning, of generous reservations for public and semi-public uses, of gradation of street widths and lot sizes to respective uses — all those features which have been best exemplified in the Garden Village of Letchworth in England. Not only Allwood, but every one of these plans of Mr. Nolen's will bear the closest scrutiny and will repay minute study.

(To be continued.)



Plan of Allwood, N. J., John Nolen, Landscape Architect

✓ The Statler Idea in Hotel Planning and Equipment

III. SAMPLE ROOM FLOORS AND RESTAURANT SERVICE

By W. SYDNEY WAGNER
Of George B. Post & Sons, Architects

IN the preceding article it was my endeavor to expose in detail the salient points of the Statler idea as it is expressed in the planning and equipment of the typical floor. My reason for this detailed exposition was, as I stated therein, that nowhere is the expression of this idea more clear cut and characteristic, more readable to him who runs, more important as a factor of success, than in this typical floor.

In the planning and equipment of the other parts of the hotel this great idea is just as much a guiding lamp, an inexorable standard of judgment, and as fully developed as in the typical floor. Yet the very character of these other parts, their complex and more varied functions, makes its expression less apparent and impossible of concise typical exposition within the scope of this article. It must suffice, therefore, to touch upon only the more important and general manifestations of the idea in these parts. Of these, the expression of the sample room floor as exemplified in the Detroit and St. Louis hotels is the most significant.

In the two earlier hotels these rooms form an integral part of the typical floor. They are large rooms devoted to the display of samples of merchandise. Salesmen's samples are usually packed in large

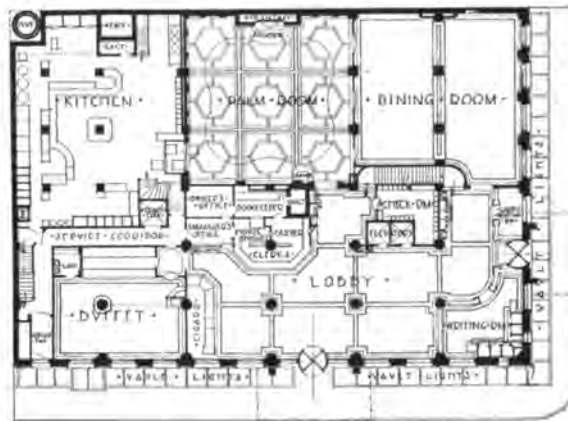
trunks, and the rooms are therefore located with special reference to their accessibility from the freight elevators.

These rooms also serve as sleeping rooms for the merchant displaying his goods, and it was this function that first determined their grouping as a part of the typical guest room floor.

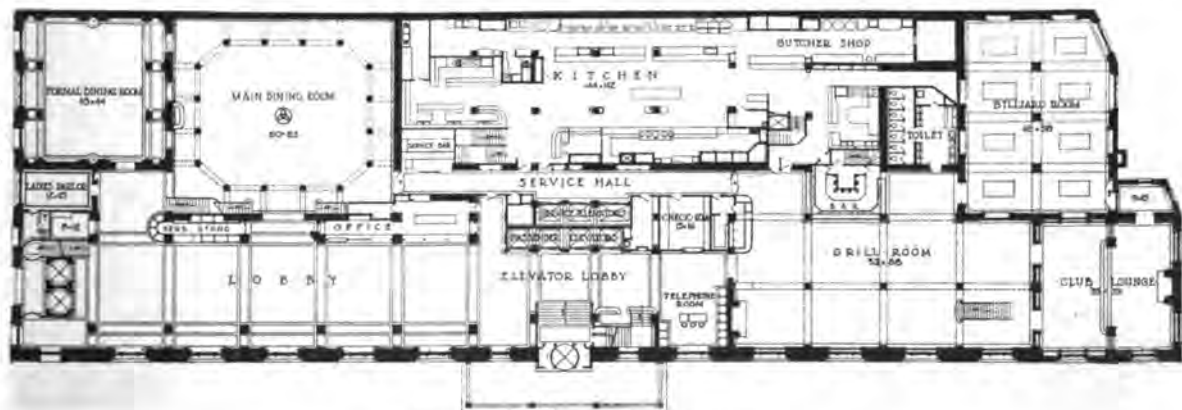
It was found, however, that there were many objections to this arrangement. The dragging of the heavy sample trunks along the public corridors was objectionable to the other guests, and also caused much damage to the walls and trim. In the later hotels, therefore, these rooms are found removed from the typical floor, and grouped into separate sample room floors. In the St. Louis hotel these rooms form three complete floors

located below the typical guest room floors, and just above the helps' dormitory floor.

The advantages of this arrangement are many. The corridors, rooms, walls, doors, and door frames can be designed to withstand the rough usage incident to the handling of the sample trunks; the freight elevator service necessary in this handling is reduced in run, and consequently is capable of better service; persons calling to inspect the display of samples do not feel that they are intruding upon a



Main Floor Plan, Hotel Statler, Buffalo, N. Y.
Eisenwein & Johnson, Architects



Main Floor Plan, Hotel Statler, Cleveland, O.
George B. Post & Sons, Architects

sleeping room floor—it permits of architectural expression on the exterior through the use of larger windows, and consequently provides better light for these rooms. It facilitates the service of the room clerk in the front office, because it differentiates most distinctly on his room rack the sample rooms from the guest rooms and prevents confusion.

The sample room must provide a dual service.

Primarily it must be suitable for the display, to their greatest advantage, of the various kinds of merchandise and samples. Secondly, as the merchant, for reasons of economy and surveillance, usually demands sleeping and living accommodations in the same room with his display, it must provide these without interfering with the display, inspection, or sale of the merchandise.

In the St. Louis house will be found the best expression of the sample room. In these rooms the beds, when not in use, fold back—"disappear"—into a ventilated closet, and the dresser and the entrance to the bathroom are located in an alcove. This arrangement leaves the room proper clear of all furniture other than that required for sample display purposes; provides the maximum amount of wall space, and removes from sight all suggestion of a sleeping room, which might be objectionable to visitors calling to inspect the display. This last is of particular importance where the display is of such character as to attract women visitors.

The details of the plan, equipment, and furnishing of these rooms all reflect the constant effort always to provide better service. In this case it is display service.

The radiators are low to permit of sample tables being placed over them; the room door openings are of extra width to allow the passage of the big sample trunks, and the jambs are of steel to withstand the wear and tear incident to their passage. The lighting fixtures and receptacles are designed and located to give the best lighting to the greatest variety of merchandise. The color tones of the wall, floor, and furniture coverings are neutral, forming a

quiet and helpful background, rather than the usual assertive anvil-chorus, to the display.

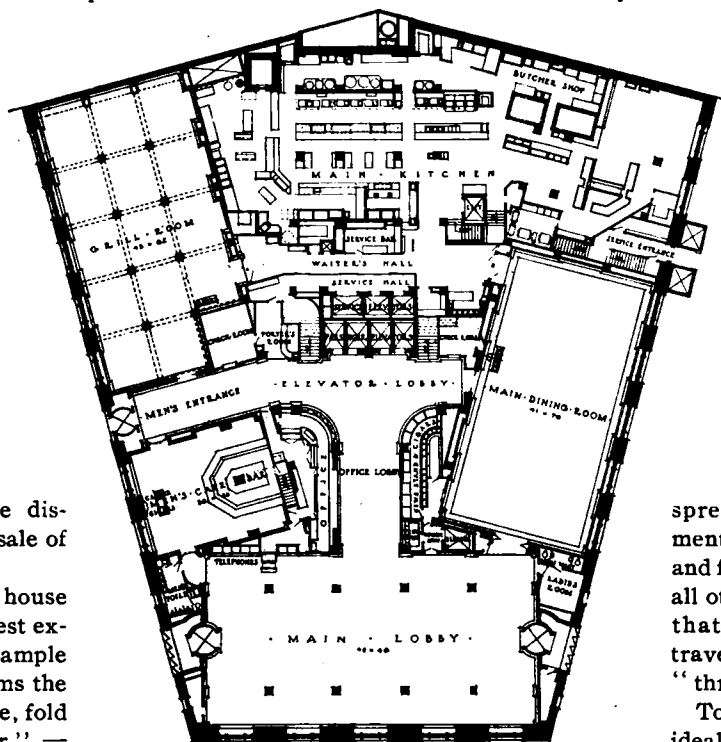
Next in importance to the guest room and sample room service of the hotel is the restaurant service. This includes not only the public dining and banqueting rooms, but also the service dependencies of these rooms located on the principal floors, and of these the kitchen is by far the most important.

It might well be maintained that this service is of equal importance with that of the guest rooms, for, no matter how perfect the room service may be, if the hotel lacks good restaurant service it can never attain a full measure of success. If, on the other hand, this service is of such distinctive character as to create widespread, favorable comment, it will lift the name and fame of the hotel above all others. It is still true, that the way to the traveling public's heart is "through its stomach."

To make possible this ideal of service involves the proper location of dining rooms, not only in relation to the convenience of the guests and public, but also to their accessibility from the kitchen and their other service departments. To produce efficient and economical service, the kitchen should, if possible, be located on the same floor as the main dining room. This is of particular importance in the smaller cities, where it is at all times difficult to secure efficient waiters. If, then, the waiter is compelled to constantly climb up and down the stairs during his service, he will soon leave to seek more comfortable employment. In the larger cities such as New York, which is the waiters' Mecca, this objection is of lesser degree, but it remains an objection nevertheless.

In the planning of the Statler Hotels, one of the fixed requirements is, and has been from the inception of the first hotel for this company, that the main kitchen must be located on the same floor level as the principal dining rooms.

To this principle has been sacrificed the possibility of securing much valuable outside rental space on the ground floor in the form of stores and shops—



Main Floor Plan, Hotel Statler, Detroit, Mich.
George B. Post & Sons, Architects

rental space which in the majority of instances is in other hotel plans the governing factor that controls the architect in the arrangement of the public floor and in the relations of kitchen and dining rooms.

While the merits of this principle may be difficult of justification from the short-sighted standpoint of financial returns, yet its value as a means of securing better service is unquestionable. It "does its bit" toward producing a perfect hotel, and in this lies its true virtue.

Only where, as in the St. Louis hotel, the ground area was so restricted as to make it impossible to apply this principle without seriously dislocating the other essential units of the ground floor plan, was the kitchen of necessity placed in the basement; and here the unusual importance attached to this dining room service is clearly apparent in the planning and equipment of the service pantry on the dining room level—a pantry equipped with refrigerators, warmers, silver and plate racks, and service bar; with an endless chain dish conveyor to carry all soiled dishes to the dish-washing department below; with a linen chute to carry the soiled linen to the laundry; with a double stairway designed to prevent the crossing or congestion of waiter traffic. It is apparent in the myriad details of arrangement in the kitchen below, where everything required by the waiter is in relative proximity to the service stairway.

Many owners, and most architects, fail to realize the importance of this principle. To many the lure of high revenues from store rentals is irresistible; the statement of the estimated earnings of the proposed hotel, swollen wonderfully by the figures for these store rentals, proves the convincing argument in relegating the kitchen to another floor, under

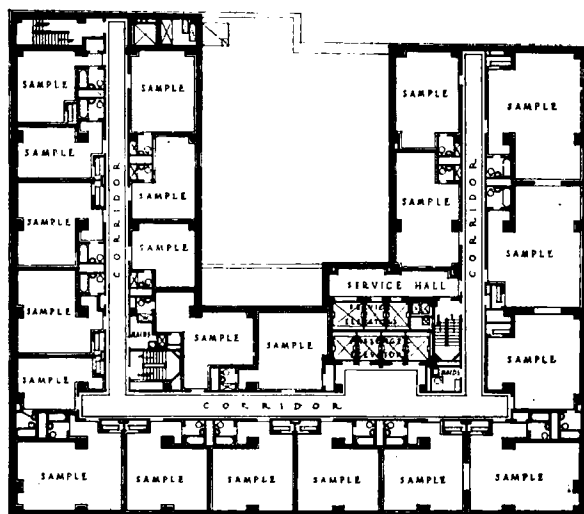
conditions where it is possible and highly desirable, from the standpoint of adequate service, that it be kept on the same floor with the dining rooms.

As a horrible example of this sort I wish to mention one with which I am familiar—one which is particularly flagrant because of the prominence of the building, the lack of necessity for doing what was done, and the utter absence of judgment and responsibility displayed in the arrangement of the plan. This was an hotel project representing an investment of over thirteen millions of dollars. The ground area was such as to permit of an ideal solution of the problem, yet the entire plan was made subser-

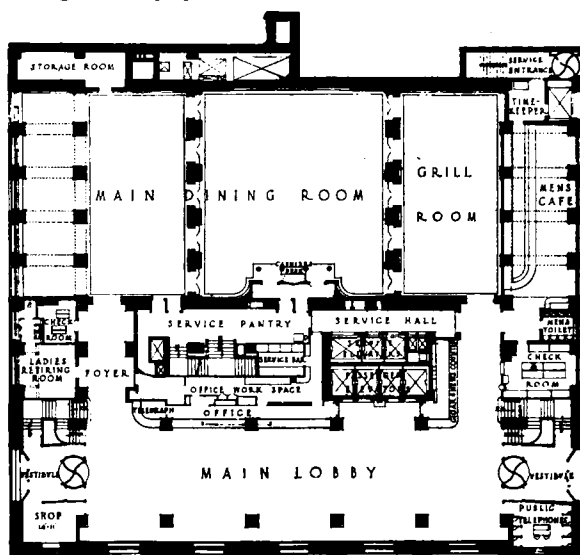
vient to the stores placed on every frontage. The main dining room, on a mezzanine floor, was not visible from the lobby, nor easily accessible from the elevators or stairways. The main kitchen was placed in the basement, *two full floors* below the dining room, and as a crowning climax to this grim and costly comedy of plan, the service between kitchen and dining room depended upon an escalator stairway of a new, unproven type. This stairway broke down completely under the first day's service and could never again be operated. For months thereafter the management was forced to depend upon a small, secondary, and wholly inadequate kitchen for this most important dining room service. The

escalator has been removed and thousands of dollars spent to remedy this defective service condition, yet the service can never be made satisfactory without radical and practically prohibitive changes in the public floors.

In other hotels the kitchens have been located on a floor above the dining room, making it necessary for the waiters to serve downstairs. Now, if there



Sample Room Floor Plan, Hotel Stadler, St. Louis, Mo.



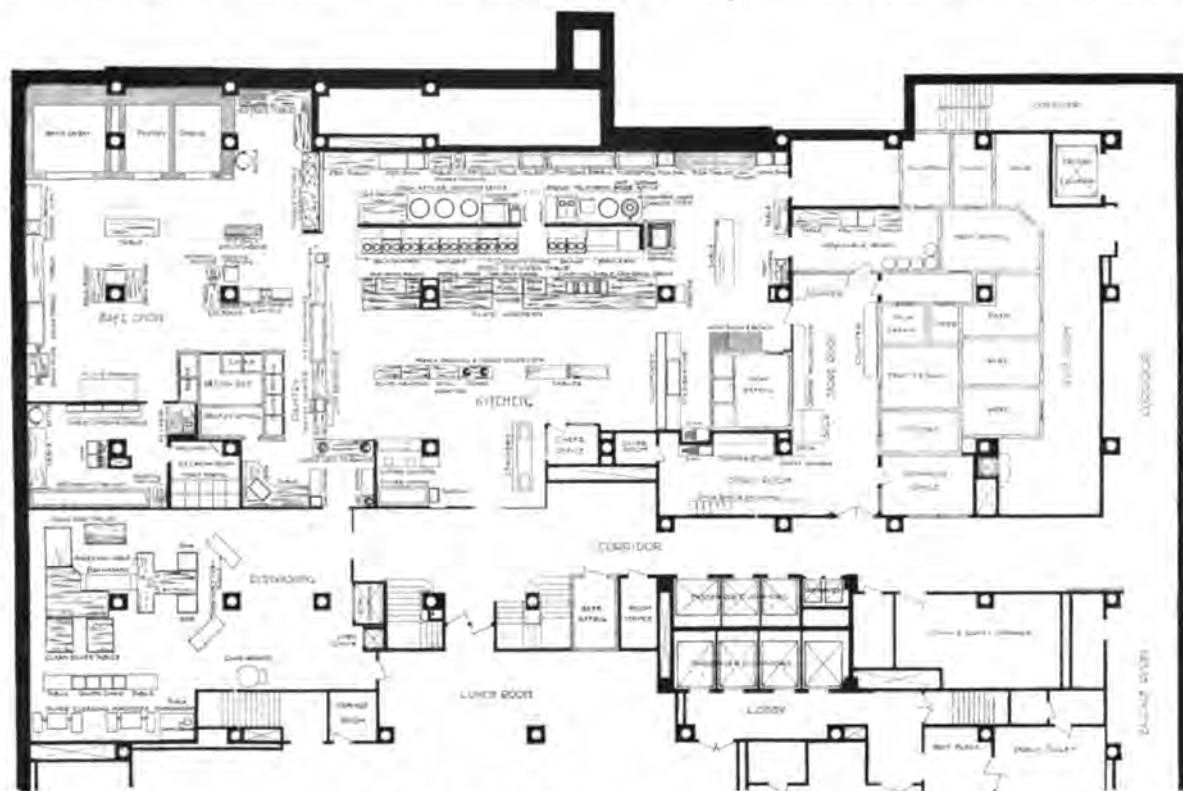
Main Floor Plan, Hotel Stadler, St. Louis, Mo.
George B. Post & Sons and Mauran, Russell & Crowell, Associate Architects

is one thing more difficult and trying to do than to carry a loaded tray upstairs, it is to carry one down — one trial will convince any one. Yet many hotels are designed (but by no means operated) in blissful ignorance of this fact.

The details of the Statler kitchen, with its many departments of food storage, preparation, cooking, and service; its many problems of ventilation, draft, refrigeration, heating, and circulation; its

Any further discussion and examination of the other and less typical differences would only add to the burden of proof already given of the singleness of idea behind them; would only drive home more clearly the fact that this idea is applied to and expressed in every part of the hotel structure, from the plan of the typical floor to the profile of the smallest moulding on an obscure wall.

This idea, as I have shown, is not a mysterious



Detailed Floor Plan of Kitchen, Hotel Statler, St. Louis, Mo.
George B. Post & Sons and Mauran, Russell & Crowell, Associate Architects

dependent departments of dish washing, baking, silver cleaning and repair, room service, etc., are of entirely too technical and varied a character to permit of even the most superficial exposition here. The kitchen of the St. Louis hotel reproduced here in plan, and characterized as the best of the Statler kitchens, must therefore suffice.

Sufficient also, I believe, have been the discussion and examples given of the Statler idea as expressed in the plan and equipment of the buildings to show wherein these hotels differ from others, and to explain the simple reasons for these differences.

something concealed behind a veil of secrecy and accessible only to the initiate — it is simply the idea of service.

It is the constant effort, the absolute necessity of realizing and upholding these high ideals of service, which has resulted in so clear a demonstration in the plan and equipment of the Statler Hotels of the principles of simplification and standardization. It is to these two great principles and to the high ideal of service that the architect must look for the ultimate solution of that now most complex of his problems, the modern hotel.



THE DETROIT NEWS BUILDING, LAFAYETTE BOULEVARD, DETROIT, MICH.

ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATE

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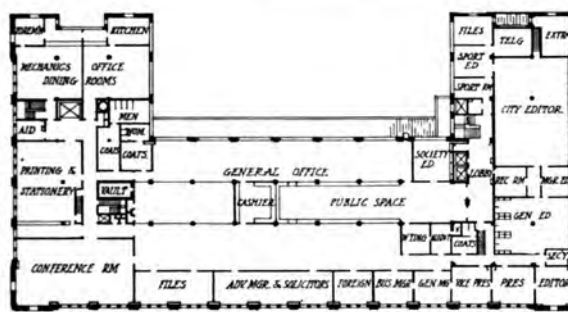


DETAIL OF MAIN ENTRANCE

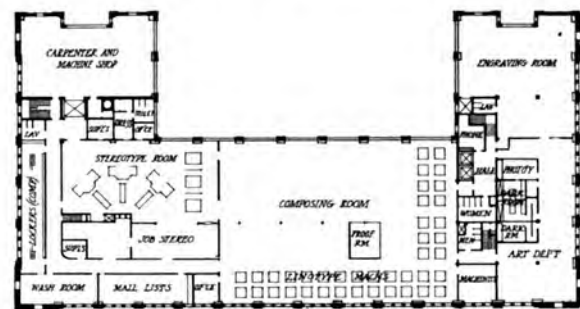
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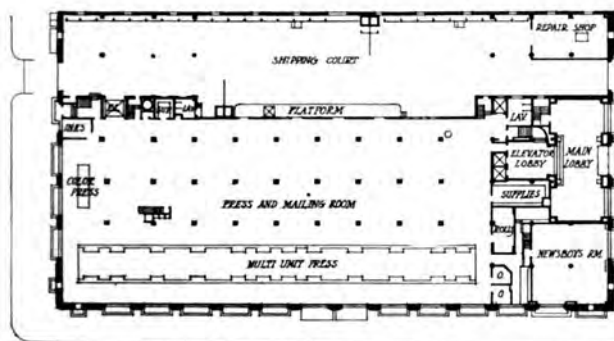




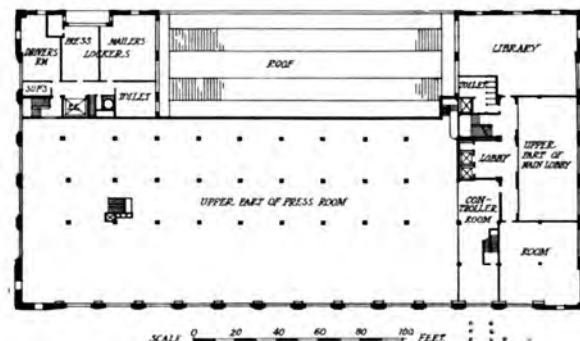
SECOND FLOOR PLAN



THIRD FLOOR PLAN



FIRST FLOOR PLAN

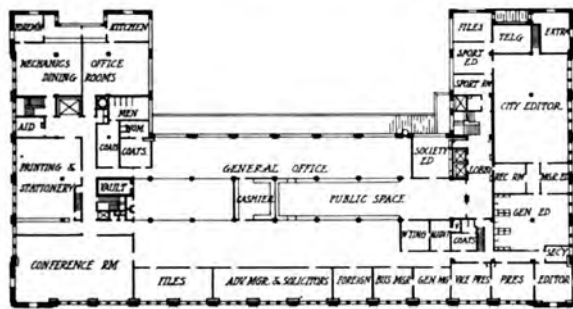


MEZZANINE FLOOR PLAN

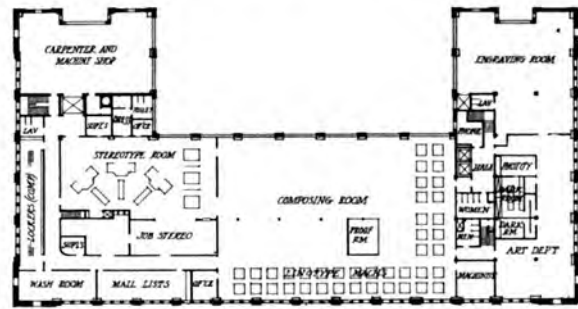
THE DETROIT NEWS BUILDING, LAFAYETTE BOULEVARD, DETROIT, MICH.

ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATE

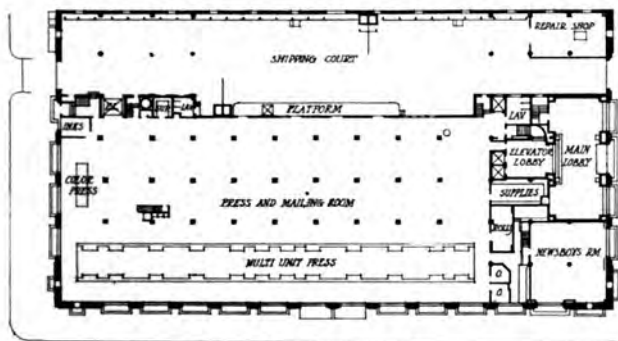




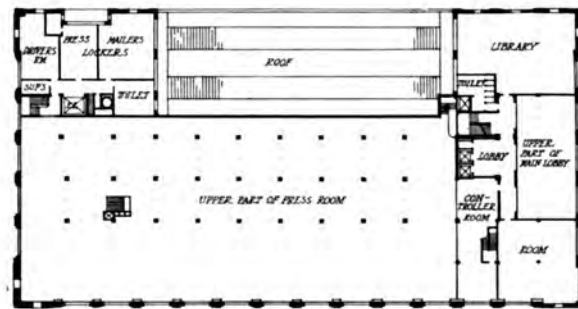
SECOND FLOOR PLAN



THIRD FLOOR PLAN



FIRST FLOOR PLAN

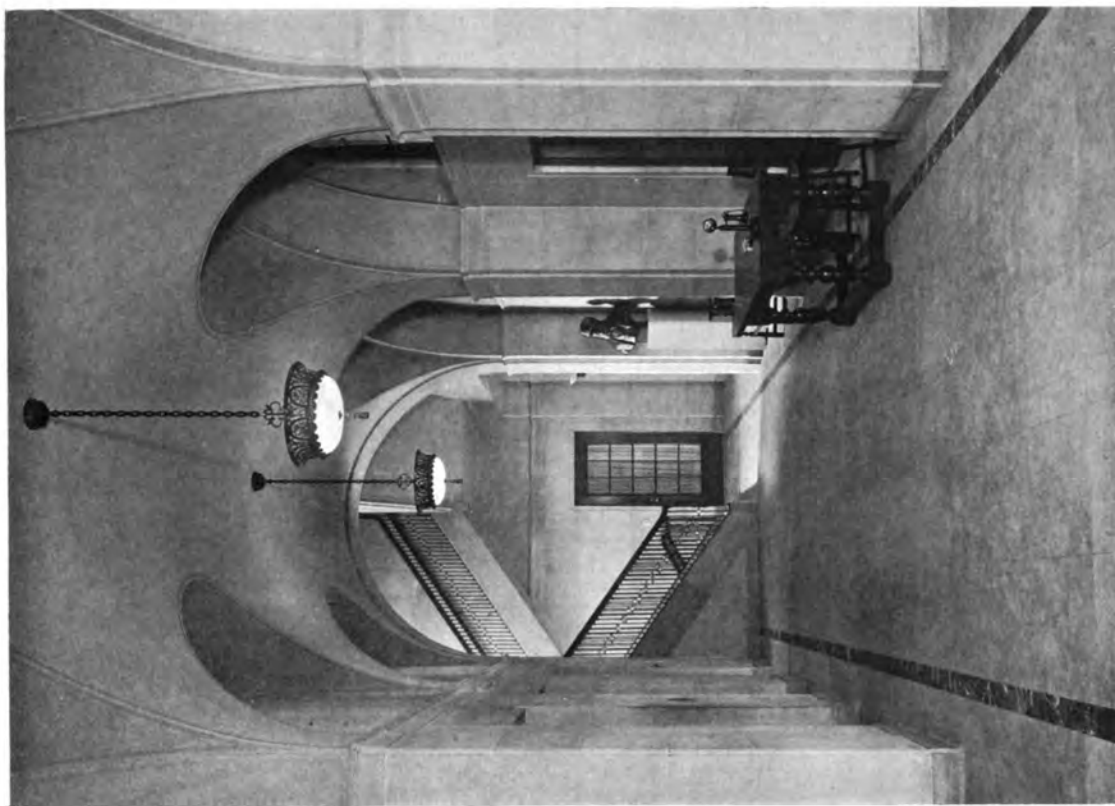


MEZZANINE FLOOR PLAN

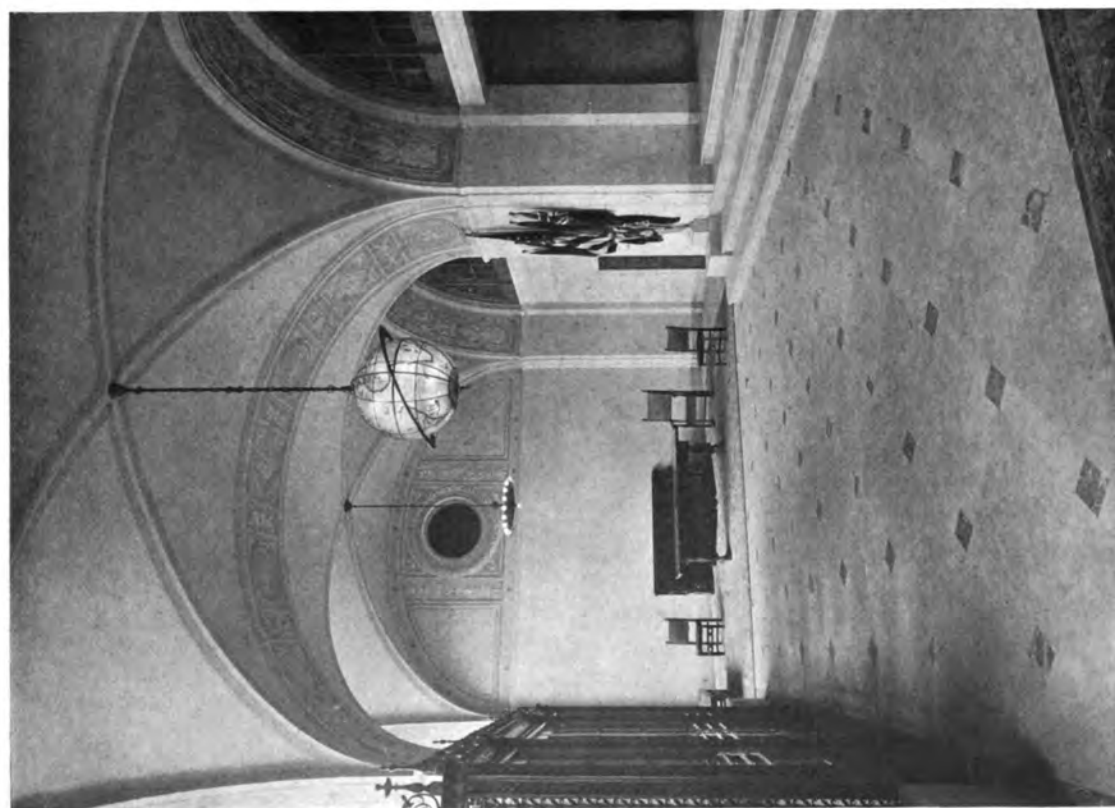
THE DETROIT NEWS BUILDING, LAFAYETTE BOULEVARD, DETROIT, MICH.

ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATE

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SECOND FLOOR CORRIDOR



ENTRANCE LOBBY

THE DETROIT NEWS BUILDING, LAFAYETTE BOULEVARD, DETROIT, MICH.

ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATE



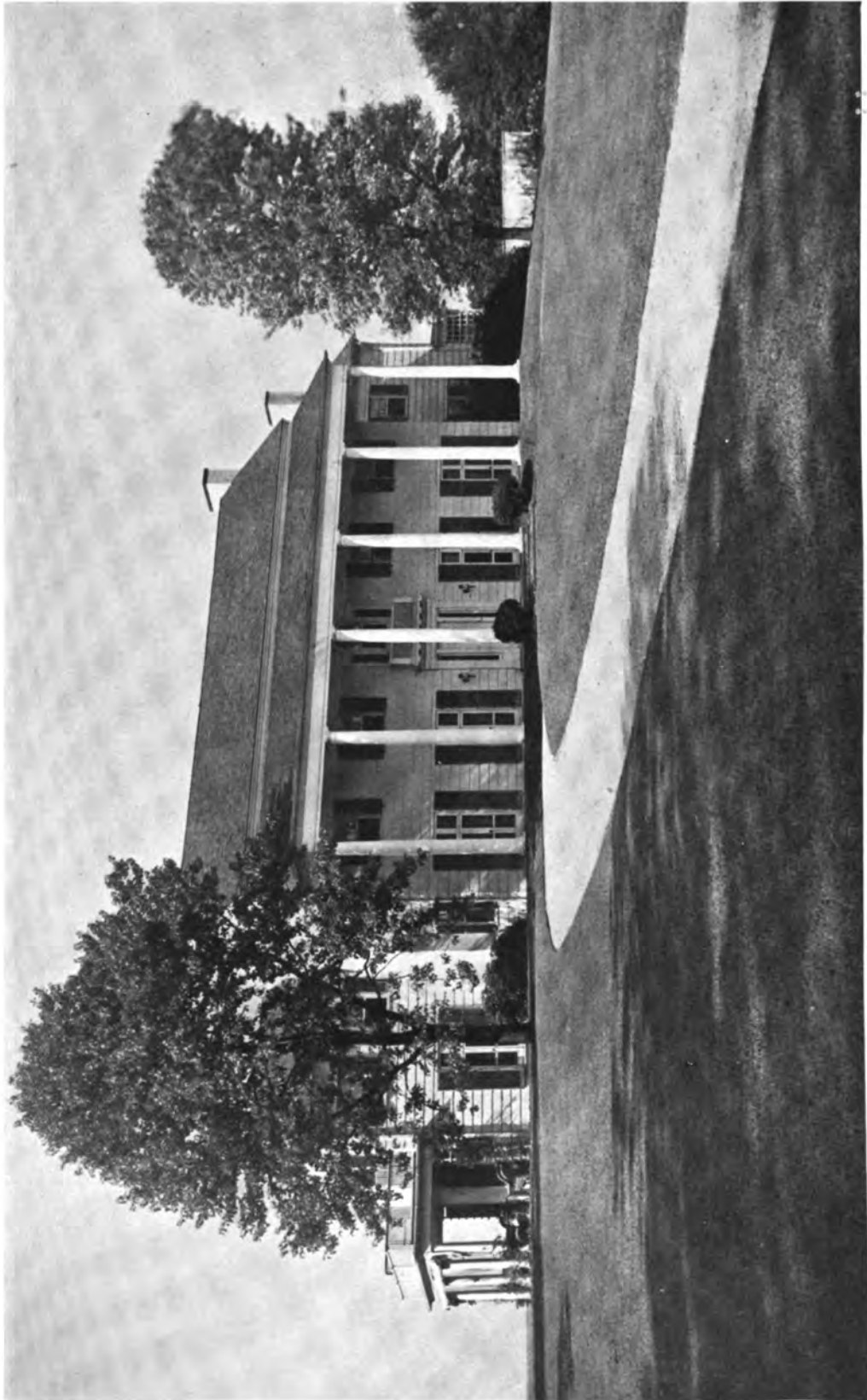


RECEPTION ROOM OF PRESIDENT'S OFFICES



TYPICAL PRIVATE OFFICE ON SECOND FLOOR

THE DETROIT NEWS BUILDING, LAFAYETTE BOULEVARD, DETROIT, MICH.
ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATE



HOUSE OF J. RANDOLPH ROBINSON, ESQ., WESTBURY, LONG ISLAND, N. Y.
JOHN RUSSELL POPE, ARCHITECT

33



FIRST FLOOR PLAN



SECOND FLOOR PLAN

VIEW OF GARDEN FRONT

HOUSE OF J. RANDOLPH ROBINSON, ESQ., WESTBURY, LONG ISLAND, N. Y.
JOHN RUSSELL POPE, ARCHITECT

3



VIEW OF SERVICE END



VIEW OF LIVING ROOM END

HOUSE OF J. RANDOLPH ROBINSON, ESQ., WESTBURY, LONG ISLAND, N. Y.

JOHN RUSSELL POPE, ARCHITECT





DETAIL OF GARDEN SIDE



DETAIL OF ENTRANCE SIDE

HOUSE OF J. RANDOLPH ROBINSON, ESQ., WESTBURY, LONG ISLAND, N. Y.

JOHN RUSSELL POPE, ARCHITECT





HALL AND STAIRCASE

HOUSE OF J. RANDOLPH ROBINSON, ESQ., WESTBURY, LONG ISLAND, N. Y.

JOHN RUSSELL POPE, ARCHITECT



DINING ROOM

2

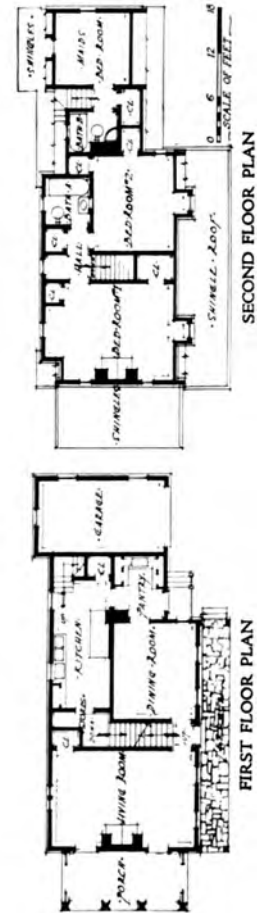


HOUSE OF MRS. W. H. FALLON, SPARKILL, N. Y.
AYMAR EMBURY II, ARCHITECT

24



VIEW OF SERVICE END



FIRST FLOOR PLAN

SECOND FLOOR PLAN

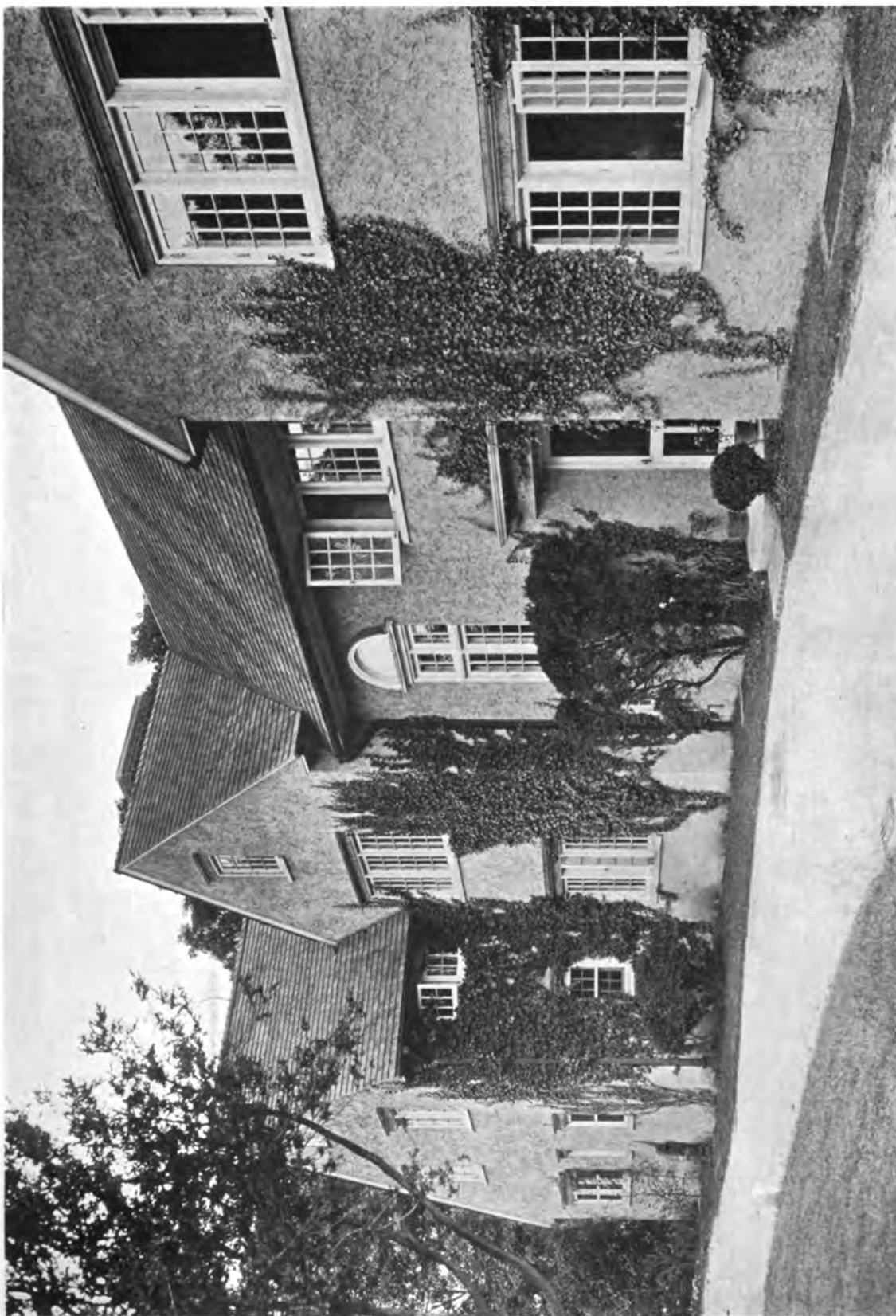
HOUSE OF MRS. W. H. FALLON, SPARKILL, N. Y.

AYMAR EMBURY II, ARCHITECT



VIEW ALONG TERRACE





HOUSE OF WILLIAM H. TROTTER, ESQ., CHESTNUT HILL, PHILADELPHIA, PA.
BROCKIE & HASTINGS, ARCHITECTS





VIEW OF ENTRANCE SIDE FROM DRIVE

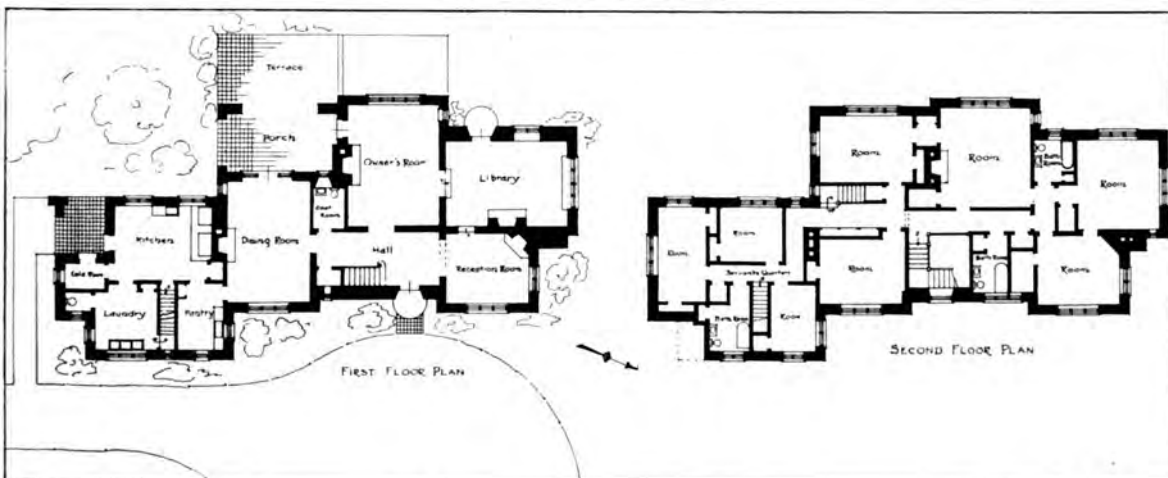
HOUSE OF WILLIAM H. TROTTER, ESQ., CHESTNUT HILL, PHILADELPHIA, PA.

BROCKIE & HASTINGS, ARCHITECTS





VIEW OF GARDEN OR WEST SIDE



HOUSE OF WILLIAM H. TROTTER, ESQ., CHESTNUT HILL, PHILADELPHIA, PA.
BROCKIE & HASTINGS, ARCHITECTS



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DETAIL OF MAIN ENTRANCE.



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The Ironwork of Jean Tijou

II. HIS CRAFTSMANSHIP AT ST. PAUL'S CATHEDRAL, LONDON

By R. RANDAL PHILLIPS

TIJOU'S work at St. Paul's as may be seen from the accompanying illustrations was on an equally fine scale with that at Hampton Court described in the previous paper. All the ironwork in the cathedral is not Tijou's, — some was done by contemporary and later smiths, — but the major portion of it is, including the work in the choir, the balustrading to that amazing circular stairs which stands out straight from the wall of the southwest tower, the balustrade to the whispering gallery, and various grilles and gates. The most remarkable of all this work is that in the choir. It is well preserved and has not been much restored, or where restorations have been made, the work is very skilfully handled. It is not, however, in its original positions. The organ, now placed on either side at the entrance to the choir, originally stood in the middle, and the gates which now enclose the sanctuary, facing the north and south aisles, originally occupied positions under the organ case, facing west; while the elaborate rail across the entrance to the choir was originally the altar rail. The alterations were made when the new high altar was

set up by Bodley and Garner in the last quarter of the nineteenth century.

The great gates facing north and south into the aisles, each consist of a central panel and two side panels, one of which opens, giving a way across the sanctuary in front of the altar, the panels being enclosed within a brass frame divided by pilasters and crowned by an iron overthrow. The central panels, and the one to the east in each case, together with the overthrow, are Tijou's; the remaining panels, that is to say the two opening gates on the west side, being modern work. The central panel, both north and south, is in reality made up of two gates, those facing the north aisle (with embossed plaques of the four evangelists in the corners, as shown in the illustration) having originally been the central gates under the organ, the two other panels, now fixed in the aisle screens, having been gates on either side. The new work is executed with astonishing skill, but the hand of the master is seen in the old work, in the perfection of the embossed leafage, and the beautifully preserved line of the scrolls. Adjoining these



Wrought Iron Panel in Back of Choir Stalls, St. Paul's Cathedral

screens are the gates to the ambulatory, which show Tijou's skill in another remarkable degree. The scrollwork in the filling of these gates has a filigree effect when seen silhouetted against the dark interior of the chapel, but it is not in the least "thin," being good smithcraft, free and flowing.

The St. Paul's accounts furnish detailed particulars of the work which Tijou supplied, and as indicating the manner of the time it is interesting to give a few extracts.

The first entry is for November, 1691, as follows:

To Mons. Tijoue ffor the Ironworke of two windows ffor ye Choire, vizt ffor 34c 1q 20 lb at 6d	96	08	00
ffor 45 foot runing of the Grotteske bars	13	10	00
ffor workmanshippe of ye two Scrowles in ye keys	06	00	00

(signed) Reced

J. Tijou

Sept. 17, 1695*

*This date refers to the time of payment, nearly four years after the work was completed.



Central Gates, North Choir Aisle, St. Paul's Cathedral



Detail of North Choir Gates Shown at Left

(It does not say where this work was wrought, but as in most instances the entries state from Hampton Court, presumably the foundry was there.)

Many similar entries appear, covering nearly the whole of the windows, most of which were Tijou's work.

To John Tijoue ffor iron worke of the Rayles of Two Stair Cases	40	00	00
ffor two little windows in ye sd Staire ffor 12 paire hinges ffor Choire 14s each and 48 steel handles ffor the drawing seats in the Choire 5s each.	20	00	00

A number of "Grotteske Panels" were supplied for the Choir, measuring more than 150 feet over all, at 40s per foot.

"Ye Iron Screene under ye organ case in ye Choire, 221 ft. super" was supplied by Tijou under a contract at £2 per foot.

Hopton, a Joiner, was paid "ffor gluing of boards for Mr. Tijoue to draw ye Iron screene upon and also for Mr. Gibbons, a model ffor seats in Choire and ye Altar, and ye Deans seat."

Tijou was paid £525 for eight windows supplied in January, 1700, the windows themselves costing £412 08d 06s, "8 scrowles for top of windows 40 00 00, and for 364 fete ornaments in ye double barrs of ye same 72 16 00."

The high railings which entirely surrounded St. Paul's were cast by Tijou at Lamberhurst, in Sus-

sex, and are believed to have been the last ironwork of any magnitude cast or wrought in that county. According to Miss Phillimore, Wren, who doubtless intended to employ Tijou, wanted a low, graceful railing of hammered iron, which, in all probability, would have included some of Tijou's finest work; but was overruled by the Commissioners, who determined that the railing should be a high one, and that it should be of cast iron. The western portion of this railing, together with the gates at that end, were sold in 1874 to an iron merchant at Bow, who disposed of it to a client in Toronto; but the vessel carrying the ironwork was wrecked, and the whole

was lost, with the exception of a small portion that was salvaged and is now preserved in Canada.

From the accounts we know that Tijou was working at St. Paul's for twenty years, from 1691 till 1711, but after that date we lose all trace of him, and, like his beginning, his end is an unknown tale. But if we know so little of the man himself, we are fortunate in still possessing the bulk of the finest craftsmanship that was wrought either by his own hand or to his design and under his immediate supervision. We are also able to judge of the executive ability the man must have possessed, for shortly after his arrival in England the number of commissions he



Secondary Gate, North Choir Aisle



Ironwork at Foot of Staircase in Southwest Tower



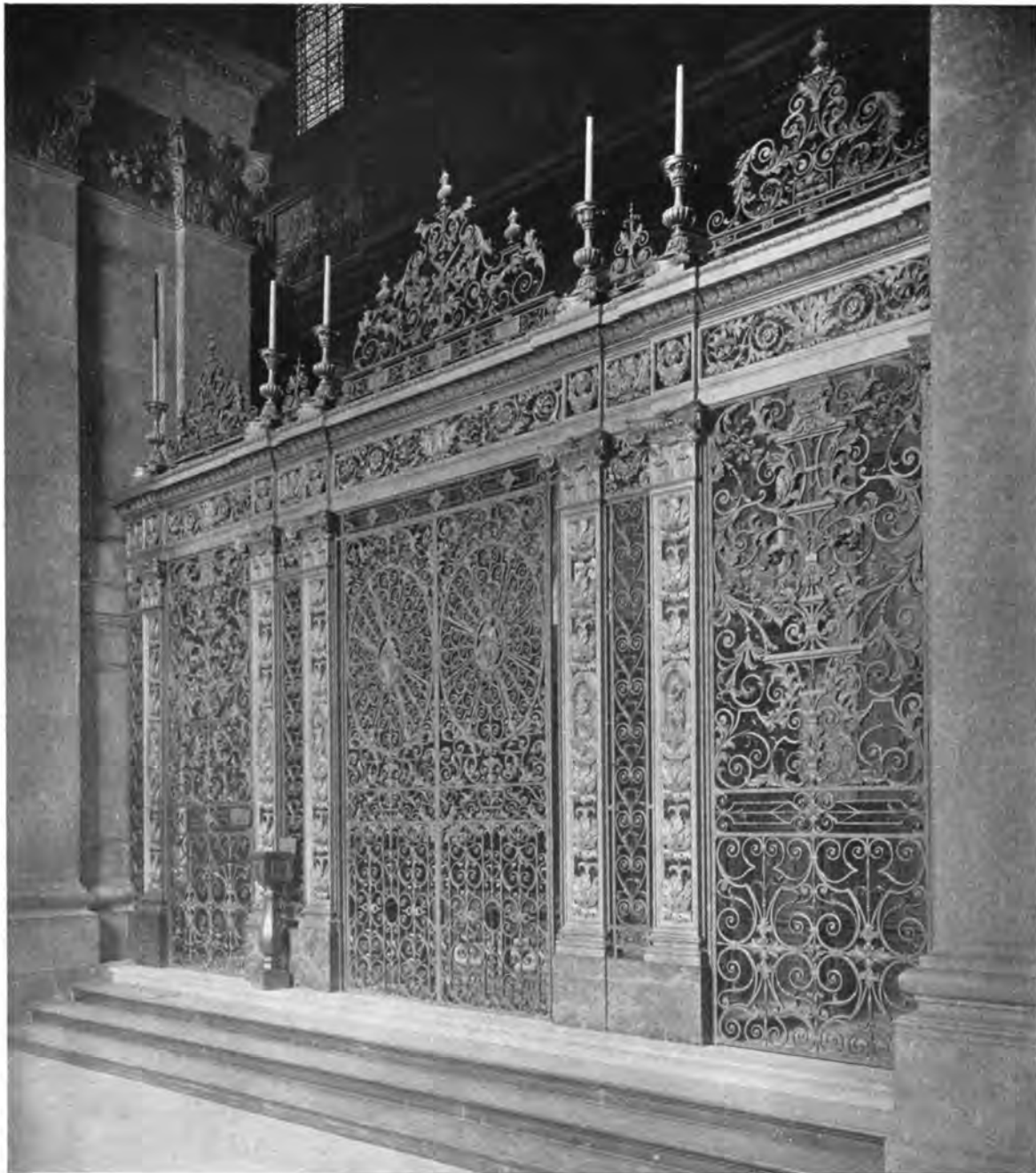
Bay of Choir Rail

Details of Ironwork Wrought by Jean Tijou, St. Paul's Cathedral, London

received and the speed and great care with which they were executed, would indicate that he had surrounded himself with other capable craftsmen.

In studying his work in comparison with what had been done in England before his time, and with the ironwork of those who followed him, we see at once that an entirely new departure was effected by Tijou. He brought with him a French influence that wholly changed the character of English smith-

craft. Before his time the possibilities of rich leafage, of embossed masks and panels, had not been realized. It was Tijou who set the model and created a new school of English ironwork, and so high was the standard of his execution that it was never excelled either by contemporary or later craftsmen. It is the perfection of craftsmanship, for it preserves the freedom of the smith with the studied art of the designer, and as such is a unique heritage.



Wrought Iron Screen in South Choir Aisle, St. Paul's Cathedral

See Frontispiece for Detail of Center Gates

The Need for Industrial Housing

THIS GREAT PROBLEM NOW BEFORE THE ATTENTION OF THE NATIONAL GOVERNMENT
REQUIRES THE SERVICES OF ARCHITECTS FOR ITS PROPER DEVELOPMENT

IN the past few weeks the necessity of housing the industrial workers, who are required in great numbers to keep production up to the scale of the country's war needs, has gradually been recognized as one of the vital problems of the day. In its proper solution is held the promise of speeding up the ship-building program — one of the immediate results the Government must accomplish.

The necessity of providing houses for the workers, where they may enjoy normal family life and such sanitary conveniences and opportunities for recreation after their hours of labor as will ensure decent, healthful living, has not been overlooked by all manufacturers, and could not well be, for it has been apparent to any one conversant with conditions that the great "overturn" of labor, with its attendant tremendous cost, was the direct result of assembling men at newly created plants devoid of any housing facilities, and in many cases even adequate transportation to bring them to and from centers where they could be accommodated. Much as they realized the situation and perceived the remedy, the manufacturers themselves were powerless to supply the deficiencies. Such tremendous demands for war materials were placed by the Government upon them that all of their capital resources were required for the expansion of their plants, purchase of raw materials, and equipment. To illustrate the extent to which manufacturers must provide working capital, it may be stated that one large corporation has contracts covering \$300,000,000, contrasted with its normal commercial business of \$40,000,000, and another's contracts total \$150,000,000, compared with a normal business of \$10,000,000. It is evident from conditions such as these that local capital cannot assume the responsibility of supplying the housing shortage. Many concerns at the beginning of the industrial expansion attempted to supply their own needs, but their plans had to be abandoned because they could not secure the necessary credit beyond that for working capital.

The solution of the difficulty must therefore be looked for through Government aid, as it has already been accomplished in England, where the identical problems we are now facing have been solved to an appreciably large extent.

The importance of immediate action to relieve present chaotic conditions was brought forcefully to the attention of the Government by Homer L. Ferguson, President of the Newport News Ship building Company, testifying at the recent investigation of shipbuilding progress conducted by the Senate

Commerce Committee. He said in part: "The housing problem is one of the most vital factors facing the Government in the conduct of the war. You cannot get the ships unless houses are provided for workmen. We want to add 5,000 men to our force, and there is no where in Newport News for them to live. I understand that conditions elsewhere are equally as bad."

This statement was made on January 8th and since then considerable action has taken place that indicates the Government recognizes the need of its help and is making plans to furnish substantial assistance. The events of the last few days may be briefly reviewed to show what steps are being taken.

Shortly previous to the present activity, Secretary of War Baker, acting as Chairman of the Council of National Defense, appointed a committee of five to study the needs of housing war workers. This followed a hearing conducted by the Advisory Commission of the Council of National Defense instigated by the results of an investigation begun last June by Samuel Gompers, Chairman of the Committee on Labor, through one of the subdivisions of his Committee on Welfare Work, which, however, have not been made public.

The committee appointed by Mr. Baker was composed of the following members: Otto M. Eidlitz, New York builder, Chairman; Gertrude Beeks Easley, Director of Welfare Department, National Civic Federation; Theodore W. Robinson, Vice-President of Illinois Steel Company; Wm. J. Spencer, Building Trades Department, American Federation of Labor, and Charles G. DuBois, of the American Telephone and Telegraph Company. It may be remarked in passing that the great body of American architects, many of whom have contributed largely to our knowledge of town planning and housing, might have been represented on this committee by at least one member of their profession to the benefit of the committee's survey of a difficult problem; but the sense of well ordered building, directed, as it can only be, under the hand of a competent architect, is not one of the attributes possessed by the powers at Washington.

This committee completed its work, and after the receipt of its report Mr. Eidlitz was appointed a committee of one to confer with the three departments concerned — the Army, Navy, and Shipping Board — with a view to obtaining early action. In its report to the Council of National Defense the committee included certain recommendations comprising, in part, the creation of an administrative agency to

direct the housing problem for the Government, which it is hoped will be allowed an appropriation by Congress of not less than \$100,000,000 to be loaned for a period of years at a low rate of interest to contractors who are building ships and making munitions for the Government.

It recommends that the problem be considered only as a war measure and that Government aid be rigidly confined to such industries and communities as can clearly prove that their output of essential war supplies would otherwise be restricted.

It further states as its belief that considerable congestion can be avoided in the future if the organized agencies of the Government making contracts give due consideration to labor supply and housing facilities prior to closing contracts, so that undue concentration of workers may be prevented in any one locality.

Particular advantages claimed for this means of handling the problem are that it would place the responsibility for the expenditure of the money on the corporations, would tend to interest local capital, and would excuse the Government from determining the needs in particular instances, since the liability placed on the individual corporations that received the loans would be expected to prevent automatically any reckless or extravagant building.

From the fact that President Wilson conferred with the committee on the day previous to the publication of the report, it may be considered to express, more or less, the views of the Administration and indicate the probable line of action the Government will pursue.

The suggested solution of this emergency problem entails many departures from traditional American Government functions, and because of precedents such action may establish, the subject has a broad interest for architects, who by nature of their profession have largely directed private enterprise in housing from the establishment of the country. With the intimate knowledge they have of housing conditions, architects realize that housing shortage is no new problem — it is a condition of long standing, and has only now been brought to the attention of the public in such a manner that it can be measured in terms the entire people can understand, because of the present extremely aggravated state. Knowing these conditions, architects cannot but see in the above outlined program a strong tendency toward considering the problem in a temporary light and meeting it with the minimum of expense and responsibility, instead of adopting the broad constructive policy that should characterize any undertaking of the Government. In the light of the tremendous strides taken by the British Government, which strike at the root of the matter, the proposed relief in our own country seems entirely lacking in constructive vision and adequacy.

Aside from the narrowness of the suggested policy, certain outstanding and fundamental handicaps are immediately imposed on the execution of work carried out on its basis. It will make long delays and bargaining necessary on the part of corporations to secure the needed land, and also incur delay in establishing terms between the Government and the corporations as to the security of loans and their payment. With the power of spending the money in the hands of individual corporations, no unified scheme will be followed, and it is safe to say that in almost every case only the immediate need will be considered. The corporations will assume as little responsibility as possible, and the absolute minimum of conveniences will be provided — while it is earnestly hoped in permanent, safe construction wooden barracks, following the precedent of the National Army Cantonnements, may possibly be the answer.

Furthermore, the division of this great work into isolated units, controlled by unaffiliated corporations, will set up more competition for labor and materials than we are contending with at present, due to the inevitable priority rights that all will demand.

The great danger to our industrial progress that lurks in handling a big undertaking in this way is clearly pointed out by past events — months will be spent making separate arrangements with many different corporations, competition between corporations will limit effective action, and the condition which should have been apparent at the start, at least in the case of new shipyards located in open stretches of waste land along the seaboard with absolutely no housing facilities, will continue till our active participation in the war will be forced still further into the future.

Architects have been eager to place at the disposal of the Government their expert knowledge with reference to building activities, and in this present problem where they can be of great practical use it is hoped the Government will recognize their qualifications. The New York Chapter of the American Institute of Architects has forwarded to President Wilson and members of the War Council a list of recommendations embodied in a resolution recently passed by the Chapter, urging that the Government take upon itself the responsibility of providing the necessary housing facilities. Its recommendations take the form of the following specific suggestions:

THE FIRST STEP

Create a central authority with:

(a) Power to take land for this purpose.
(b) Powers to survey needs for housing facilities and to determine, in co-operation with a central priority board, the relative importance of industrial operations.

(c) Powers to design and construct communities where the needs of such have been made evident by the survey.

(d) Powers to operate and manage these communities during the war and for a period of years thereafter.

(e) Powers to maintain a high standard of physical well-being in munition plants (adopting the standards set by our most progressive industrial corporations), and to organize community activities within the communities thus created.

THE SECOND STEP

Create a commission to study the final disposition of these properties. Such a commission to consider and report upon:

(a) The basis upon which such communities could be transferred to municipalities or local limited dividend corporations.

(b) The organization of local limited dividend corporations to manage and develop the communities created during the war.

(c) The establishment of that part of the cost which should be written off as belonging to the cost of war.

(d) The methods of saving of the appreciation of land values for the benefit of the community as a whole.

Frederick L. Ackerman, a member of the institute who has recently returned from England, where he investigated the methods adopted for housing the war workers, in discussing the recommendations stated that the methods proposed for Government aid in America are the very ones which were tried and discarded as a failure in England early in the war. He points to England's present success in handling the problem to prove that her method of assuming the entire responsibility through a Government housing agency is the only certain method of getting immediate and permanent relief, as well as providing a flexible policy that may be quickly adapted to changing conditions. In the British system the Government is empowered to acquire land, build houses of a permanent nature that will be useful after the war and rent them to the workers, leaving the final disposition of the property and the amount the Government will charge off as a part of the war cost, to be determined after the war when a careful study of the entire problem can be made.

As we go to press the activities already started at Washington do not indicate a policy even slightly resembling the broad thoughts embodied in the New York Chapter's resolution. The Shipping Board has been convinced that it is absolutely necessary to relieve conditions at the shipyards, and a few loans have been made to some of the shipbuilding corporations for erecting barracks and other temporary structures. The money for carrying on this work is provided the corporations that control its expenditure from the emergency funds of the general appropriations for shipbuilding, and is naturally limited.

In addition to this relief, which is small in scope and intended to meet only the most immediate need, a bill authorizing the expenditure of \$50,000,000 for the construction of houses near shipyards has just passed the Senate. This bill places the housing matter in the hands of the Emergency Fleet Corporation, and clearly shows the inadequate way in which the Government is attacking the problem. It would seem after forcibly having had the tremendous handicap housing shortage imposes on production brought to the foreground in the shipping inquiry that it would require no exceptional foresight to see that the same conditions will prevail in other industries and in sections of the country other than the Atlantic seaboard. Munitions, airplanes, powder and ordnance plants—all these must be developed and filled with workers who will need many times the housing facilities near them to-day, if indeed in some instances there are any accommodations whatever. The present situation is only the logical outcome of the neglect on the part of Government authorities and manufacturers to contribute in any definite way to the housing of workmen for many years past. In a great national emergency, when a problem of such vital importance demands the recognition it should have long been accorded, our authorities in Washington make a few scratches on the surface, recognize one small division of the subject, and throw its development and execution on a department of the Government already fully occupied by its own mammoth duty—the building of ships.

The housing of the workers that will be needed to make the supplies for our fighting forces will be one of the biggest problems of the war, and the earlier it is recognized and plans made for its solution, just so much earlier may we expect to see peace. The housing problem, furthermore, will not be solved by merely providing a place for a worker to sleep. It must be so handled that living conditions will be sufficiently good to hold a force of workers in contentment in the face of a great demand for labor at high wages.

There is only one method that will ensure satisfactory results from both standpoints of speeding up the industries and securing good housing that will meet both present and future needs. Briefly stated, it is the creation of a central authority in the form of a Housing Administration of the Federal Government, headed by a competent architect of broad training and ability who can secure for the Government through the co-ordinated action of architects, engineers, and contractors housing accommodations of such practicability and good quality as can only be produced by the best talent the country possesses.

From Washington

THE national melting-pot has reached the boiling point in Washington and is being very vigorously stirred by our Congressmen and Senators who have returned to the fray.

The architectural profession, with few exceptions, unfortunately is not in the position it should be to help our country to the best advantage in this great crisis, and in a number of instances it is very evident that it could replace others, much to the advantage of the government. One of the most important problems to be considered in doing the best to win in the least amount of time, is the placing of the right talent in the right place. This unfortunately has not been done among the architects to the extent it should be, and it is believed that our great profession has to a certain extent been overlooked, because the public has unfortunately acquired the impression that an architect is not a practical man.

In the conception of economical and practical planning undoubtedly the architect does shine above all other technical experts. His profession is one where imagination and judgment receive the greatest chance for development, yet none of the cantonments except in an indirect way has been done by architects, and very few of the other large government temporary structures used for war purposes. This is undoubtedly all due to the fact that the public does not realize the necessity of plans being prepared by expert planners. The fact that the architect has not been employed as an architect with proper powers, was probably also due to the jealousies of bureau heads, who are most desirous of holding as much power in their own hands as possible. This has been the great problem that has confronted our profession in Washington in the past. Every dark cloud has its silver lining, however, and we hope this cloud of war will have such a lining that will illuminate this condition in the eyes of the powers that be, so that a change for the better may be had.

The great demand for clerical forces in Washington, brought about by war conditions, is naturally straining the office space of the quiet little southern city that Washington was before last April. No one could have grasped in the beginning what an enormous increase of office and housing space would be required, and it is not yet entirely understood.

It was found when the war began to speed up that it was imperatively necessary to have properly lighted, heated, and ventilated offices immediately, and that the only way to get such space in a hurry was to build them out of non-fireproof materials. The first group of such buildings found necessary after every available space of office room in Washington had been utilized, consisted of quarters for the Defense Board, the Fuel Commission, the Food Commission, and part of the Ordnance Department. These build-

ings have now been completed and were paid for out of the President's emergency war fund.

A much larger group has been built on the mall from a direct appropriation made by Congress amounting to \$2,000,000. The plans were prepared in the office of the Bureau of Public Buildings and grounds under Colonel Ridley of the Engineering Corps of the U. S. A. It is found now that additional space in large quantities will be required, for which Congress has been asked to appropriate \$3,500,000.

Aside from these buildings another has just been started for the War Trades Board, which will contain over 250,000 square feet of space from plans prepared by Waddy B. Wood.

The size of these different projects can be grasped when one realizes that temporary office buildings now complete and those contemplated in the near future will cover, in two stories, eighty acres of space. A number of similar projects are being built in the same way throughout the city, such as storehouses, temporary offices for the Navy Department, Quartermaster's Department of the Army, etc., none of which to our knowledge is designed by an architect.

Building regulations in Washington have been waived as to fire laws in connection with this work, and unfortunately these buildings are scattered about the city, in some instances in a rather dangerous way in case of a large conflagration.

It is realized that when all of these buildings are completed the further question that will naturally arise is how this vast army of officers and clerks is going to be housed and fed, and this in turn brings us to the question of housing conditions in Washington—one totally different from the housing problem as applied to employees in war industrial works.

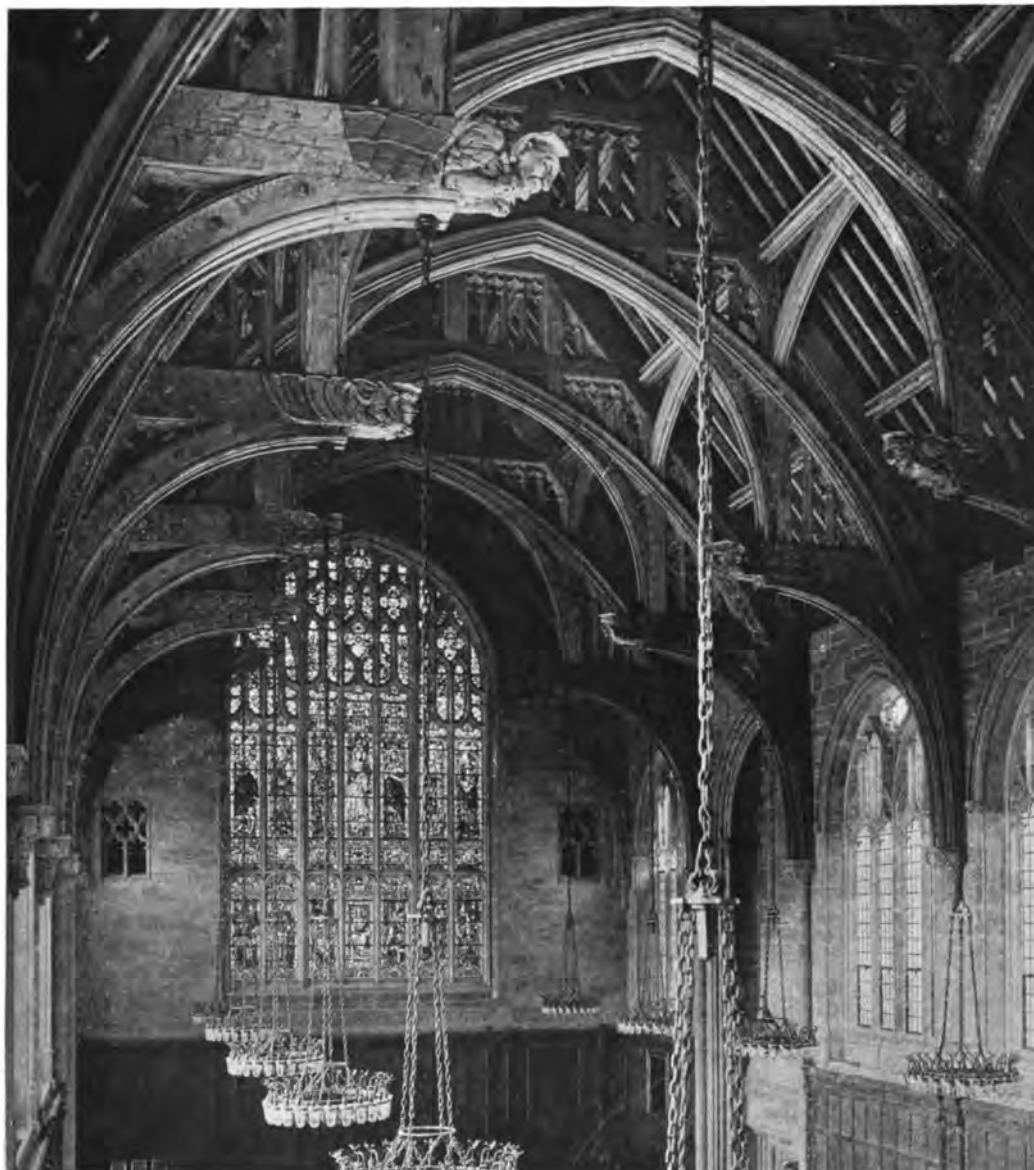
The housing problem in Washington is treated in a report made by Mr. Frederick Law Olmsted, member of the Council of National Defense, and is most excellent in every particular, but not yet released.

It is remarkable how red tape is being done away with, and it is also surprising, when one looks into it, how the government in the past could have accomplished what it has, fettered by this hindrance.

When one reads reports from abroad, he cannot help but realize that even if we have done so well, in order to win we will have to do a great deal better and make much larger sacrifices than have been made. This, there is no doubt, America with its brains and strength will do, and it is hoped that as soon as possible every one will see the absolute necessity of the architect and engineer, the builder and the soldier, all being put where their special training will do the most good. When this has been accomplished, our great machine will run like clockwork, whereas now there is still a great deal of friction which nevertheless is very rapidly disappearing.

THE FORUM COLLECTION OF
MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE ONE



ALL members of the trusses are of solid oak, hand hewn and adzed, but with no applied finish, the wood being left to acquire natural color tones with age.

The top of the ridge is 59 feet above the floor. The hall is composed of eight equal bays, with half trusses at the ends, and has a total length of 106 feet 6 inches.

GREAT HALL TRUSSES, THE GRADUATE COLLEGE, PRINCETON UNIVERSITY

CRAM, GOODHUE & FERGUSON (BOSTON OFFICE), ARCHITECTS
DETAIL DRAWING BY EDGAR T. P. WALKER ON FOLLOWING PAGE

The Detroit News Building

AN IMPOSING EXAMPLE OF COMMERCIAL ARCHITECTURE AND AN EFFICIENT NEWSPAPER PLANT

ALBERT KAHN, ARCHITECT; ERNEST WILBY, ASSOCIATE

THERE has been an increasing tendency among large American business concerns in late years to erect buildings of distinctive architectural character that are limited to their exclusive use. Banking institutions have undoubtedly been in the lead in this respect, and the success attending their experiments has extended the practice to other commercial corporations. Some of the large daily newspapers recognized the advertising value of such a policy, and among the first to be represented was the *New York Herald*, whose building, erected some years ago from the designs of McKim, Mead & White, established a precedent for many of those erected since.

The most recent and in many respects one which presents an ideal solution of the newspaper plant, both from its architectural expression and its perfectly co-ordinated plan, is the building for *The Detroit News* recently completed at Detroit, Mich., from the designs of Albert Kahn and Ernest Wilby. The building occupies a full block on Second avenue, with the principal elevation fronting on Lafayette boulevard. It is unique among the commercial structures of Detroit, aside from certain banking buildings, in having the solid appearance of a masonry building. So general has become the practice of designing commercial buildings with a maximum of glass area and a minimum of wall surface, that a building suggesting masonry construction in its appearance becomes at once distinctive because of its radical departure from surrounding structures.

In its architecture the Detroit News Building is characterized chiefly by an expression of structure.

Its frame is of reinforced concrete, and this fact is easily apparent from the series of strongly accentuated piers and spandrels. The piers rise in unbroken lines from the pavement to the top of the parapet, and the strong vertical movement is further intensified by the stone window mullions running through the second and third stories. While at first glance the scheme of the façade may appear to limit the lighting of the interior, in reality no light has been sacrificed, certainly none which affects the use of the interior, and there is, furthermore, an advantage gained in enabling the subdivision of interior space to be more easily accomplished.

The building has no cornice, but instead a broad stone parapet broken by a continuation of the main piers, and at the corners by heavy pylons which are pierced with but a single row of windows and terminated by interesting strong mouldings. The panels of the parapet on the principal façade are decorated with inscriptions of raised letters, which in their vigor are in full sympathy with the façade. Directly above the four piers of the same façade are carved stone figures of the pioneers in printing, — Gutenberg, Plantin, Caxton, and Franklin. In the spandrels between the second and third floor windows are carved various printer's marks of the early periods of the art, and they form the chief and characteristic decoration of the façade, supplemented by the richly carved arch mouldings and ornamented ironwork of the first story windows.

The same broadly handled and simple scheme of decoration has been carried to the interior of the



Composing Room, Showing Double Row of Linotype Machines in Background



Press Room, Showing Battery of 24 Presses in Unbroken Line of 205 Feet



View of Business Offices from Entrance

building. Stone similar to that of the exterior is used for the walls of the entrance lobby and staircase, and a strong factor in the decoration is contributed by the wrought steel vestibule and grilles in the tympani. The decoration of the public portions of the building is in a modified Renaissance manner characterized everywhere by a sense of dignified restraint. The vaulted ceiling of the lobby is painted in various colors and gold following simplified Florentine precedent. An accessory of special interest is the central lighting fixture, an iridescent glass globe leaded and in color to reproduce the medieval maps.

The editorial and business offices are wainscoted in oak and have flat coffered ceilings, which, with the neutral tints of the plastered walls, contribute to a restful simplicity of effect. The private suite of offices on the second floor and president's suite on the mezzanine floor have been decorated in a modified Elizabethan style, with characteristic oak paneling and modeled plaster ceilings.

In developing the plan of the building the needs of a newspaper plant were at all times the influencing factor. The printing of a modern daily newspaper assumes the character of a manufacturing proposition, and in the equipment and planning of the building the principles of arrangement which have been

proven to underlie successful manufacture were applied. The essence of newspaper publishing is the efficient use of time, much of the necessary work being done in periods that are counted as minutes—not hours—and it is therefore evident that a logical and efficient scheme of quickly handling the various operations was the controlling factor in the arrangement of the various floors.

The composing room and engraving room, each requiring abundant daylight, are arranged on the top floor where they

are enabled to receive great quantities of light through the large window openings of the court; and in the composing room where eye strain is both continuous and severe, roof lighting in addition is obtained through a structural steel monitor, which is the one departure from concrete construction.

The Detroit News Building, aside from being a success as the home of a large manufacturing enterprise, is also of significant value in being the source of keen satisfaction to the employees of the newspaper, and the inspiration of countless people who pass it by in the course of their daily life.



News Room with Staff Partially Assembled

EDITORIAL COMMENT

WHAT is the trouble with architecture as a profession in these troublous times? Up to last April architects were a hard-working and generally respected set of citizens, who voted conservatively, paid their taxes with a good grace, gave rather more liberally of their time for schemes of improvement than did the average citizen, and complacently regarded themselves as useful members of society and worthy of at least reasonable consideration in any time of emergency. But how these innocent ideas have gone glimmering in the past nine months! Although scores of architects of the highest standing offered their office organizations and personal services complete to the Government in the early stages of the war when the great National Army cantonments were being projected, not one offer was accepted, and the construction of these buildings was entrusted to hastily gathered organizations of engineers and landscape architects, working under or with the general direction of the Quartermaster Generals' office, itself a force crude in ideas and hastily expanded to many times its normal size. It has not yet been shown what the country gained by thus summarily dispensing with the services of architects of long experience, and assuming offhand that their training and habits of thought would be useless in such an emergency.

Following this humiliating snub the profession was given another jolt by the President's amazing request that all construction work be abandoned until the close of the war. This request, which as a matter of fact amounted to an order, put architects and contractors in the same class with brewers and saloon-keepers, whose business was undesirable and whose maintenance was unnecessary, and implied that as far as serving the country was concerned, while the younger men might assist as bomb-throwers or at best as members of the camouflage corps, those beyond military age had better be knocked on the head after their capacity for paying "excess profit" taxes and buying Liberty Bonds had been exhausted. The Government apparently has not stopped to consider that in Germany work on many great public construction operations such as the Berlin Subway, for example, has been going on constantly during the war, and even in long-suffering France such a costly operation as the Marseilles Ship Canal has not suffered a moment's delay during the war period. The present pessimism of the Government, which seems to amount almost to a panic, has probably resulted in a worse dislocation of business in the United States than has occurred even in some of the invaded countries.

These remarks are not made in criticism of the Government, but are statements of fact as they must be interpreted by architects. It is realized by every

member of the profession that the country was called upon to meet an emergency for which it was not fully prepared, and in the stress of hastily assembling organizations to direct huge undertakings, it was inevitable that offers of valuable service would be overlooked. But what still remains difficult to comprehend is why after there has been ample opportunity to judge relative values, the same conditions should be allowed to exist.

What can architects do to save what remains of their business and perhaps build up their professional influence to its former position? Many important Government projects remain to be carried out, although the land is covered with the engineering abortions of the summer's haste and waste policy from which only the contractors profited. Great operations are proposed for housing the workers at the shipyards and munition plants. The projectors of these enormous plants, not stopping to investigate the experience of England, seemed to suppose that workmen would be content to live for months or years in bunk houses away from their families and far from diversion of any sort. Only now is it beginning to dawn upon them — thanks to the unremitting labors of some members of the Council of National Defense — that even to ensure their health, decent sanitary conditions of space and drainage are essential; while to avoid the fearfully costly weekly "overturn" of employees, amounting in some cases to 50 per cent of the entire force engaged, comfortable homes, suitable for family life or decent boarding places, must be built as a part of the general plan, and with them must go schools, churches, and cinemas, as well as playgrounds and recreation centers. There is no escape from this final conclusion, no matter how many costly blunders are made at the outset.

Here, then, is a field for the architect, and one indisputably his own. Architects by experience and training are accustomed to good permanent construction, and none other should be considered by the Government for an instant, for the Government must be made to learn that any other construction is simply building future slums for the working class.

Architects are used to completing buildings within a given, and usually inadequate, appropriation. This is part of their daily life, for the extravagant "cost plus" and "unit" systems of engineers have no place in their schedule. Up to the present, economy has formed no part of the Government's program, but there are signs of dawning sanity in this direction. The cities that are to rise around the great shipyards and factories must be "Garden Cities," in the best sense, which means that they must not only be healthful, attractive, and comfortable, but

they must be good, permanent investments which will continue to be useful and paying propositions after the war when the purely military construction has gone to the scrap heap. Properly planned and built, these cities will be so attractive for workers that new industries will actually flock to them, and the Government's investment will be practically as well as sentimentally sound.

Unless architects heed the knock of opportunity the chance for utilizing their talents will be lost and instead of leading the march of civilization with a splendid showing of modern industrial cities, America will, as she has too often done before, build instead as habitations for her industrial army, which is no less important than her military forces, an array of disease-breeding slums—a prey after the war to conflagration or worse.

RED CROSS REQUESTS OLD TRACINGS

THE Red Cross is making an appeal to all architects and engineers for discarded tracing cloth. It has been found that this material, when properly washed, makes excellent surgical dressings for use in hospitals for our wounded soldiers and sailors. Arrangements have been made by the Red Cross with public laundries for laundering the cloth, and architects and engineers who have tracings of no further use are asked to communicate with the local Laundryowners' Association or any of the large laundries which will be found ready to send for such cloth as may be donated. This is a small service, but of the greatest value and importance in its total effect.

BOOK NOTE

HANDBOOK FOR ARCHITECTS AND BUILDERS. Emery Stanford Hall, Editor. 448 pages. 6¼ by 9¼ inches. Chicago. Illinois Society of Architects. This volume is the twentieth edition of the official publication of the Illinois Society of Architects. It shows evidence of painstaking care in its preparation and embraces an extremely wide range of subjects in its contents. So completely have the conditions governing the practice of architecture in the State of Illinois been covered in past issues that the "Handbook" has become part of the standard equipment of every Illinois architect's office. In the present volume there is a complete index to the Building Ordinances of Chicago which were revised in June, 1917, accompanied by diagrams illustrating obscure or puzzling passages whereby authoritative interpretations are made easily available. Fully one-half of the book is given over to engineering computations and standard specifications of constant value, along with articles on such topics as heating and ventilation, acoustics, paint, and other general subjects which make it of value to others than the architects of the locality from which it emanates.

PLATE DESCRIPTION

HOUSE OF J. RANDOLPH ROBINSON, ESQ., WESTBURY, LONG ISLAND, N. Y. PLATES 6-10. This house is of frame construction with shingle exterior, after the fashion of the New England type. In color it is cream, with green shutters and weathered dark gray shingle roof. The portico feature is somewhat reminiscent of the southern colonial, and recalls in quaintness of detail and execution the country seats of the gentlemen of our colonial period. The terrace on the garden side and the porches are paved with red brick laid in herringbone pattern and level with the grade of the lawn. Simplicity of design and construction is the keynote of the entire house. It is steam heated and is supplied with water from a driven well and storage tank in the adjoining woodland.

HOUSE OF MRS. W. H. FALLON, SPARKILL, N. Y. PLATES 11, 12. The planning of this small house presented a number of requirements which when grouped formed a most interesting problem. First, the lot, an interior one, was but 36 by 80 feet, with a steep pitch across the short dimension. On this was to be placed a house containing six rooms and two baths and a garage for one car. A view toward the Hudson River made it necessary to provide a porch on the long side as well as on the end. The porches seemed to determine most of the plan, as the lot limitations were such that the long porch must be put under the main roof of the house. An adaptation of the colonial houses of northern New Jersey provided for all of these features better than any other style. While the materials used are not true to the type, the architect has preserved the outlines and details of these beautiful old buildings. A point of considerable interest is that the house cost less than \$5,000 to build in the early part of 1917. While the rooms are small, none has been reduced to such a degree that comfort or practical use has been sacrificed.

HOUSE OF WILLIAM H. TROTTER, ESQ., CHESTNUT HILL, PHILADELPHIA, PA. PLATES 13-16. The thought that influenced the design of this house was primarily the desire to preserve the natural grades of the property which borders on and slopes to the beautiful and rugged Wissahickon Valley, and to make the house appear as if it fitted and belonged to the ground—a quality so well shown in old English cottages. In order to preserve the natural grades and avoid all artificial fills and terraces, the floor level of the living room was lowered, so that one can step through its exterior door directly upon the natural grade. The walls of the house are of local stone, covered with a light buff stucco, and the roof is covered with split cypress shingles. The principal rooms are finished after the colonial manner, with white painted woodwork of simple character.

THE
ARCHITECTURAL
FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

HOTEL STATLER, ST. LOUIS, MO.

George B. Post & Sons
and Mauran, Russell & Crowell, Associated

**WESTCHESTER COUNTY PENITENTIARY
AND WORKHOUSE, WHITE PLAINS, N. Y.**

Alfred Hopkins, Architect

INDUSTRIAL HOUSING DEVELOPMENT

By the Bridgeport Housing Company
R. Clipston Sturgis, Architect

PRISONS AND PRISON BUILDING

By Alfred Hopkins

**THE NEW TEMPORARY GOVERNMENT
OFFICES AT WASHINGTON**

Waddy B. Wood, Architect

FEBRUARY 1918



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THE EDITORS FORUM



IN recent issues we have published a series of articles by W. Sydney Wagner, describing in detail the principles of planning and equipment of the Statler System of hotels which have been such important factors in making this group of hotels particularly successful. In this issue we present illustrations and plans of the latest Statler Hotel, recently opened in St. Louis, accompanied by a paper describing its architectural character which follows the spirit of the preceding buildings, but with an individuality all its own through the employment of carefully studied Italian Renaissance detail instead of that derived from the work of the Brothers Adam. The working drawings prepared by the architects for this work are excellent examples of careful draftsmanship, and we are fortunate in being privileged to reproduce several of them.

In the paper on "Prisons and Prison Building," Mr. Hopkins, who has made a special study of prison design, points out the great changes that have taken place in the attitude of society toward the criminal, and how necessary in supplying the proper environment is a well planned prison with distinctive architectural quality. A reading of this paper will also show the influence an architect may exert in having humanitarian methods put into practice and securing those refinements which elevate the moral tone of the prisoner and make him a better person when he is again allowed his freedom. It is highly satisfying to know that prison reform has so far progressed as to make possible such a prison as the Westchester County Penitentiary and Workhouse, designed by Mr. Hopkins. This building does not suggest the least note of criminality in its appearance, and we are certain that the unconscious appeal of its architecture is felt by every inmate to the joint benefit of himself and society.

A convincing demonstration of the worth of architectural services to the Government in its emergency building program is found in the new temporary offices in Washington for the Council of National Defense, Food and Fuel Administrations, and the Ordnance Department. At a cost only slightly in excess of that on the cantonments which were built in the most temporary manner and with the minimum

of equipment, these offices have been given a pleasing exterior appearance, stucco exterior walls on metal lath, interior space divided into offices with regard for their special uses and appearance, in addition to such complete plumbing and heating equipment as may be found in permanent office structures. Surely such an accomplishment merits the attention and approval of the Government, and it is hoped this example will serve to influence the Government officials to place the greater portion of the future buildings needed for war purposes in the hands of architects.

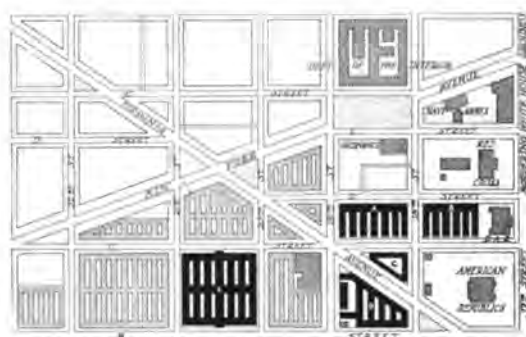
The plan reproduced herewith shows the location of these offices in Washington and also the available land on which it is proposed to erect others as the need for them arises. Already the architect of the four buildings shown in this issue, Waddy B. Wood, has been commissioned to plan additional buildings for the group. A building for the War Trade Board over 400 feet square is now under construction, and work will soon be started on another building for the Food Commission equal to the present one in size, and the quarters of the Fuel Commission will likewise be doubled. In this group of buildings there will shortly be an army of over 20,000 clerks to carry on the work of these departments.

The second article of Fiske Kimball's paper, "The Development of American Architecture" will appear in our March issue and will cover the Post Colonial and Gothic Revival periods of American work.

A COMMUNICATION

Editors, The Architectural Forum: Several newspapers have recently published an article on a proposed "Better Homes Exposition," proposed to take place at the Grand Central Palace, New York, May 18 to 25, in which my name has been mentioned as representing the Architectural League. I would be pleased to have you publish this general disclaimer to the effect that my name has been used absolutely without authority, and furthermore that I do not at present represent the Architectural League in that or any other matter. I am not in sympathy with the proposed Exposition, and I distinctly object to my name being used in connection with it.

Yours very truly, CASS GILBERT.



Plan Showing Present and Proposed Office Buildings for Government Departments

- A Food Administration
 - B Council of National Defense
 - C Fuel Administration
 - D Ordnance Department
 - E War Trade Board (Under Construction)
- Cross-hatched areas show location of future buildings

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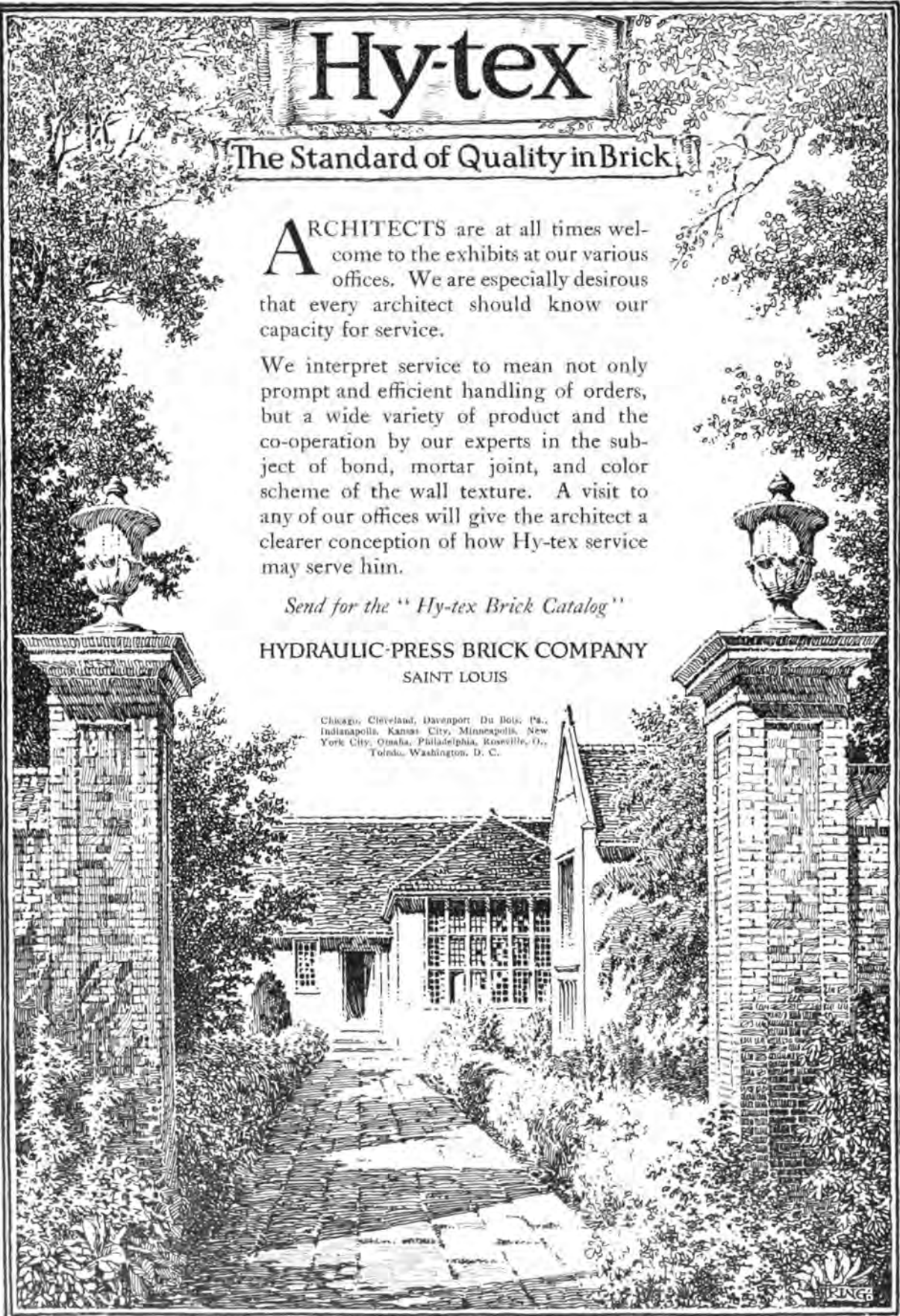
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THE ARCHITECTURAL FORUM

VOLUME XXVIII

NUMBER 2

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ENTRANCE LOGGIA, PALAZZO MASSIMI, ROME, ITALY

BALDASSARE PERUZZI, ARCHITECT (1481-1530)

THE ARCHITECTURAL FORUM FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXVIII

FEBRUARY 1918

NUMBER 2

✓ The Hotel Statler, St. Louis, Mo.

GEORGE B. POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS

By W. SYDNEY WAGNER

AMERICAN hotel design, until within a very recent date, had developed few principles that could be honored as being of proven worth, that could be accepted without question as axioms in the solution of this most complex of architects' recurrent problems.

Many principles had been formulated and accepted which in later practice were revealed as fallacies. The incorporation, in blind faith, of certain of these principles into the design of an hotel, upon the supposition that they were the determining factors in the success of an earlier one, often produced contrary, disastrous results. It apparently proved, in so far as hotels were concerned, that what was sauce for the goose was decidedly not sauce for the gander. It led to the belief that there could be evolved no general principles which would be applicable to practically all of our problems of hotel design. In support of this belief was indicated the diametrically opposed views of the various hotel operators; each view absolutely justified by proofs of success and withal each one capable of confusion by evidence of failure.

This belief has deprived the profession in general of any assured *point d'appui* upon which to base a scientific study of the problem, and has kept it without a clear understanding of the essence of it. It has resulted in placing the majority of the commissions for this type of building in the hands of the so-called specialists—hands often unworthy from the practical and the constructively efficient standpoint, quite wholly from that of the artistic.

Within the past few years, however, there has grown to prominence in this country, a system of hotels known as the Hotels Statler. In them the scientific expression of certain principles of hotel design has been developed to such a high degree, and has met with such success, that these principles have come to be accepted as the criteria of contemporaneous hotel practice.

They have stood the acid test of time and repeated use, for they have remained fundamentally unchanged from the time of their first expression, ten years ago in the Hotel Statler at Buffalo, to that of

their fourth and latest in the hotel of the same name at St. Louis. Their basic character is such as to be applicable to practically all American hotel designs.

The hotel at St. Louis is of more than usual interest, not only because it embodies these principles in their most highly developed form, but also because its architectural character presents a direct development by the same architects of that of the company's two preceding hotels. George B. Post & Sons, with whom Mauran, Russell & Crowell were associated as the architects of this hotel, were also the architects of the Hotels Statler at Cleveland and Detroit.

It is not the intention in this article to enter into an *expose* of the principles of hotel design upon which the design of this hotel is based, as these have recently been discussed in detail in the pages of THE ARCHITECTURAL FORUM of the issues of November and December, 1917, and January, 1918, under the title of "The Statler Idea in Hotel Planning and Equipment"; rather it is the endeavor to present a *resume* only of the architectural and decorative aspects of this structure—aspects of peculiar interest as showing the matured ideals of the architects in this their third expression of practically the same problem.

The city of St. Louis is typical of the average city of the Middle West in that its population devotes the best of its thought and energies to commerce, and to the solution of the immediate, more apparent problems arising therefrom. Until quite recently it has been far too busy, too absorbed in these problems to take communal thought and action upon the less obvious æsthetic and circulatory needs of the rapidly growing city. In consequence the business section has grown up in the old narrow and crowded streets, many of which have the added ugliness of overhead traction, telephone, and telegraph wires.

The hotel occupies a site in the heart of this section and fronts on Washington avenue, Ninth, and St. Charles streets. These streets are all of the narrow crowded type; add to this the fact that the summer climate of the city is what might be termed semi-tropical, and the fact that the ground area of the property upon which the hotel stands is much

smaller than that occupied by any of the other Statler Hotels, and you will have the conditions which, together with the fixed requirements of plan and equipment demanded by the Statler type, were the principal factors governing the design.

It is readily apparent to even the most casual observer that the same sense of architectural fitness, the same feeling which permeates the character of the preceding structures, is equally the dominant note in the design and execution of this latest work. Yet it is equally apparent that this note carries with it no suggestion of mechanical duplication, no implication of a poverty of creative design. The use of a style differing from that which influenced the others, and the conditions of climate, site, and plan, were all contributory in giving to this hotel a striking individuality.

The rectangular, almost square form of the property, together with the height of the building, which, owing to the restricted ground area, was necessarily carried up to the limit of height permitted by the city, has resulted in an impressive mass — impressive because of the sheer vertical fall of the walls from the cornice to the street two hundred and thirty feet below; because of the far-reaching frowning cornice above, and because of the proportions of the great masses of brick masonry, which, to quote Ruskin, "have been gathered up into a mighty square, and which look as if they had been measured by the angel's rod, 'the length, and the breadth, and the height of it are equal.'" Unfortunately no comprehensive impression of this mass is obtainable by photography, owing to the narrowness of the surrounding streets.

It will be observed that the architects have again resorted to that successful expedient of cutting away the sharp corners of the shaft with a graduated chamfer. It gives to these vertical masses of wall an appreciably increased sense of stability and entasis, and overcomes in a simple and economical manner, that unpleasant optical illusion so common in our high buildings, of the wall surfaces having a decided tendency to overhang, to "lean out" from the vertical.

In the design of the lower stories, it was the problem of the façade upon the narrow street which confronted the architects — in essence the same as that encountered in many of the Italian cities by the Renaissance architects, and of which the façade of the Palazzo Massimi at Rome is a familiar solution.

In the façade of the hotel, a thorough understanding and a nicely discriminate use of the principles of design established in these Renaissance precedents, are everywhere visible to "eyes that bring with them the power of seeing." The subtlety of projection in cornice, pier, balustrade and string course; the significant composition of the two stories above the lower cornice; the width and the shallowness of

the channels in the rusticated surfaces; the "flair" for the right turn of a moulding, for the right choice of material and texture; the concentration of the sparingly used ornament, are all evidences of a conscious striving toward a clearly seen objective.

In its realization, this objective, this solution of this particular problem of design, is more than a meaningless mask of beauty. Here the architects have succeeded in academically expressing the plan composition in both the vertical and horizontal divisions of the façade. In its three vertical divisions, the three major units of the plan are clearly defined, for the base marks the unit of the public floors, the shaft that of the guest room floors, and the crown that of the function floor. The boundaries between these parts are indicated in both instances by the balustraded cornices, one at the level of the fourth floor and the other at that of the sixteenth or ballroom floor. In the horizontal divisions of the base, and in their frank composition, are visibly expressed the length and the width of the main lobby, with its entrance vestibule at each end, and the length of the public dining rooms.

The style of this latest of the Statler Hotels indicates an abandonment of that of the Brothers Adam, which characterizes the preceding structures, for the richer, more mature forms of the Italian Renaissance. But the same feeling which dominates the early works, here indicated in a preference for broad wall surfaces, a reticence in the use of ornament, and a freely exercised sense of the right to adapt precedent and style forms to the purposes in mind, has given to this house a character similar to that of the others.

The likeness is accentuated by the use of similar materials — warm buff Indiana limestone with rubbed and picked surfaces for the lower stories; for the shaft a textured brick ranging in color from a golden red to a deep rich brown, and laid in the pleasing yet unobtrusive pattern of the English cross bond, with a mortar joint of a color recalling that of the limestone; for the crown, a terra cotta of the same color and texture as the limestone.

An interesting change in the use of materials, due to the exigency of the war, is exemplified in the roof covering. Originally the roof, which has the low pitch characteristic of those of Italy, was to have a covering of sheet copper. Because of prohibitive cost, this material was replaced by a patented covering of asphalt and felt, having a surfacing of crushed slate, gray green in color — a color which answers to a satisfactory degree, the desired one of weather-beaten copper.

To one familiar with contemporaneous hotel plans, the plan of this hotel is remarkable chiefly because of its simplicity. In a building of its magnitude (it contains six hundred and fifty guest rooms and has a total height of twenty-two stories) a certain complexity of plan is expected. Noteworthy in this plan,



Lower Stories Showing Entrance on St. Charles Street

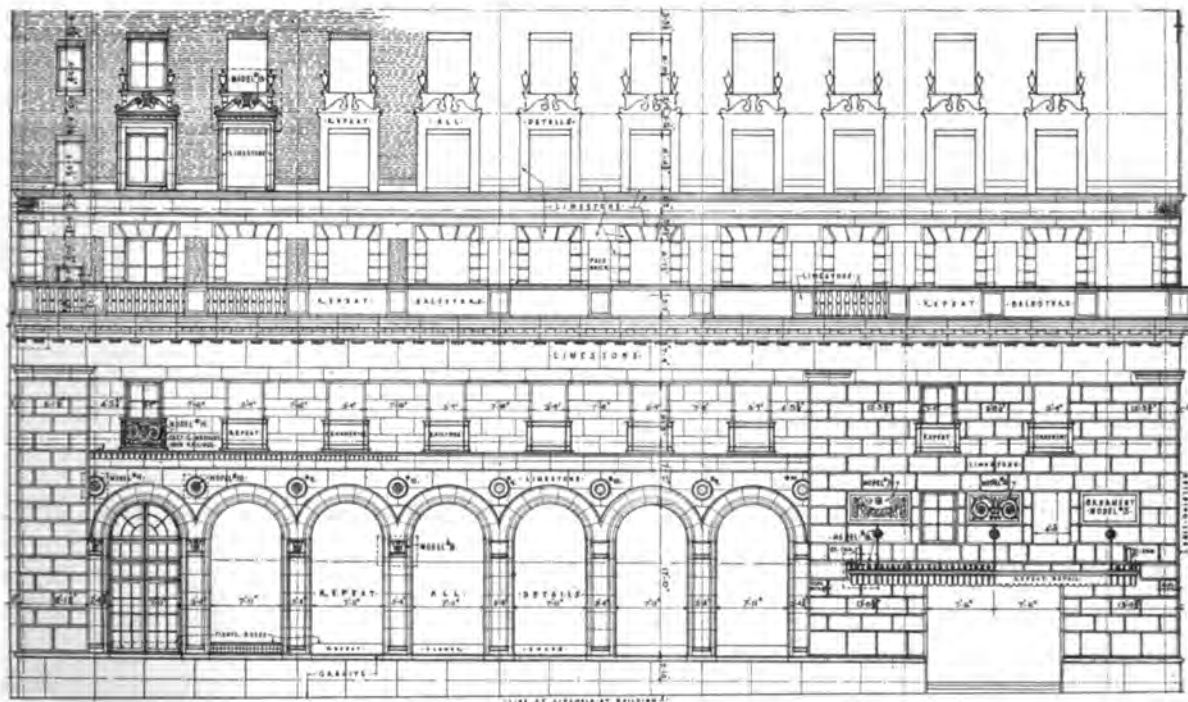
therefore, are the extreme definition, simplicity, and standardization of its parts, and the coordination of structure and decoration.

The simplicity of plan is well illustrated in the plan of the ground floor. Here the main lobby with its entrance vestibules extends across the entire Ninth

street frontage, and the dining rooms behind the lobby open one into another in such fashion that a vista is obtained across the entire width of the building. This simplicity is further accentuated by the absence of the main kitchen, which, owing to the restricted property area, was placed in the basement—a necessary departure from the Statler principle, until then inviolate, of placing the kitchen on the same floor with the dining rooms it serves.

In the main lobby, the architects, realizing the psychological advantages of similarity, have duplicated in so far as was possible, the structural forms and the furniture arrangements of the lobbies in the earlier

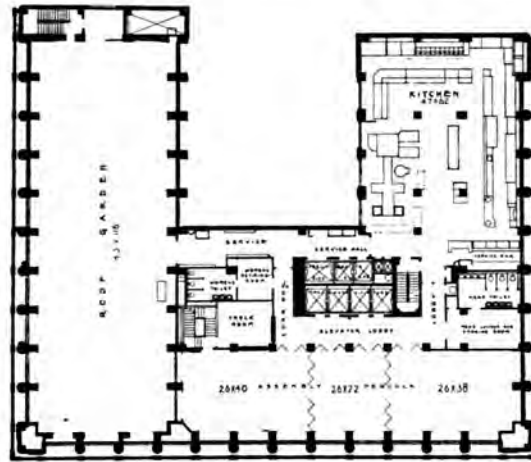
structures. But in the decorative physiognomy of this room, as well as in that of the other public rooms, there is evident the same change of style which marks the exterior—the relinquishment of the rather emasculate forms of the Adam for the more vigorous ones of the Italian Renaissance.



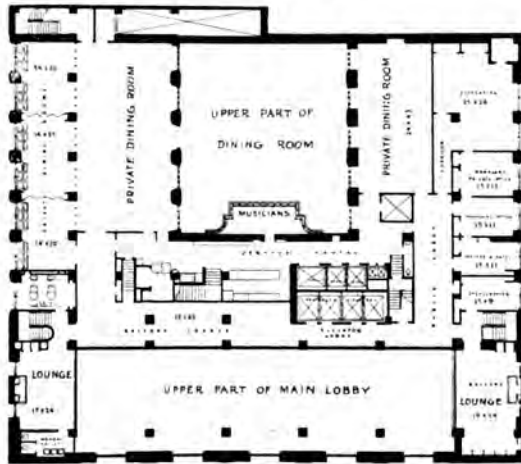
Elevation of Lower Stories on Washington Avenue Facade



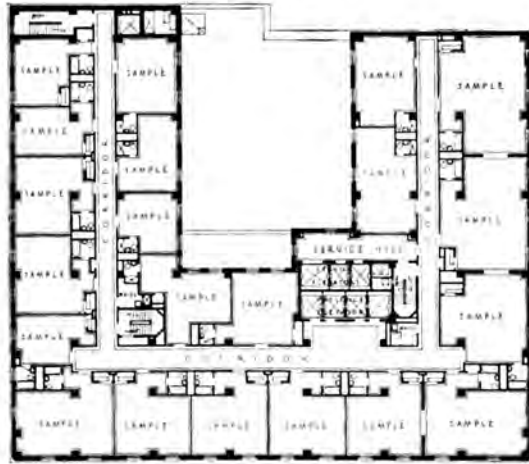
TYPICAL FLOOR PLAN



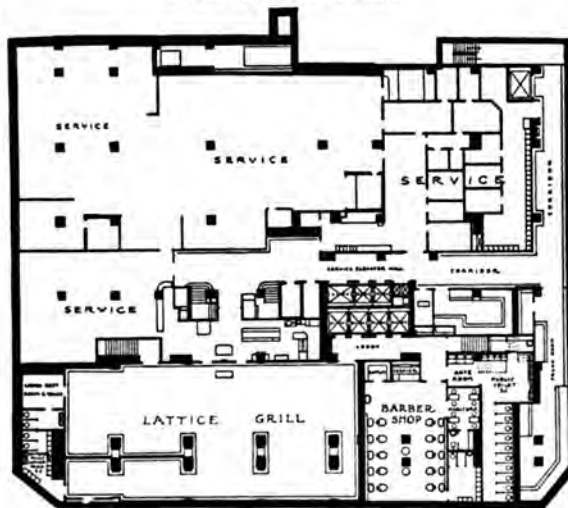
BALLROOM FLOOR PLAN



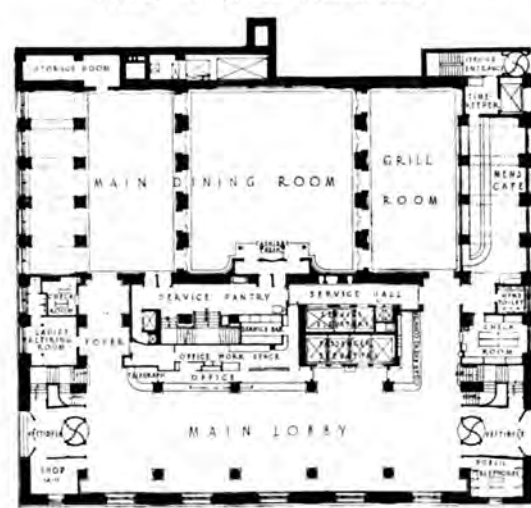
MEZZANINE FLOOR PLAN



TYPICAL SAMPLE ROOM FLOOR PLAN



BASEMENT FLOOR PLAN



GROUND FLOOR PLAN

HOTEL STATLER, ST. LOUIS, MO.

GEORGE B. POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS

The walls of the lobby are wainscoted to the height of the mezzanine balcony with a medium toned Botticino marble, the surface of which is rusticated with very shallow channels. Twelve piers of marble terminating in a vigorously silhouetted, foliated capital support the vaulted ceiling. This ceiling is arabesqued with ornament in low relief, after the manner of that in the Villa Madama. It, together with the wall surfaces, is painted in light tones of a color reflecting that of the marble, and ranging from a luminous porcelain white to that of a rich warm *café-au-lait*. Here and there certain panels have been backgrounded in a color recalling the blue and silver gray of the window hangings and furniture coverings. The floor is of silver gray Tennessee marble, in which interest of pattern is obtained by the Roman design of the *tesserae* and the subdued veining of the material. The five alcoves between the piers on the street side of the room are furnished as lounges, with rugs, very comfortable lounge chairs and couches, tables and writing desks, which with the potted palms, floor and table lamps, give a desirable air of intimacy to this necessarily large room.

On the opposite side are located the main office with its complex, highly organized departments; the passenger elevators, the telegraph office, and the news and cigar counter—the very center of the hotel's activities, equally accessible from both entrances.

Here, too, are found the entrances to the public dining rooms, the men's café, the ladies' parlor, the public check room, and the stairways which serve the restaurant and barber shop in the basement below, and the private dining rooms and the mezzanine balcony on the floor above.

The mezzanine balcony extends along the inner side and the two ends of the lobby. That portion overlooking St. Charles street is fitted up as a men's lounge and library, heavily carpeted, with a big fireplace, bookcases revealing inviting rows of books, and big comfortable lounge furniture. The opposite end overlooking Washington avenue is furnished as a ladies' lounge with the ladies' hairdressing room and retiring room in convenient proximity.

Furnished in this manner, being a floor above that of the main lobby, yet overlooking it and its activities, this balcony provides a quiet, retired lounging place for the women guests, and for those delicately constituted personalities to whom the hurly-burly and intimate contact of the main floor are objectionable.

The group of public dining rooms is divided into three parts. The Palm Room, which is in the center of the plan and directly beneath the light court of the typical floors, separates the general dining room paralleling Washington avenue from the grill room and the men's café on the St. Charles street side.

The Palm Room is of the semi-exterior type, walled with Caen stone and ceiled with a great vaulted dome of opalescent glass in a frame of

wrought iron and dulled gold. The Italian influence is here strongly evidenced in the richly decorated, rather baroque screen, which is the focal center of the room, and which relieves the otherwise severe and restrained treatment of the walls; in the triple arched, mirrored openings opposite, and in the balustrade which surmounts the cornice. Palms, flowers in gaily painted boxes, and a tessellated floor of cream white and green marbles contribute to the pervading atmosphere of cool restfulness.

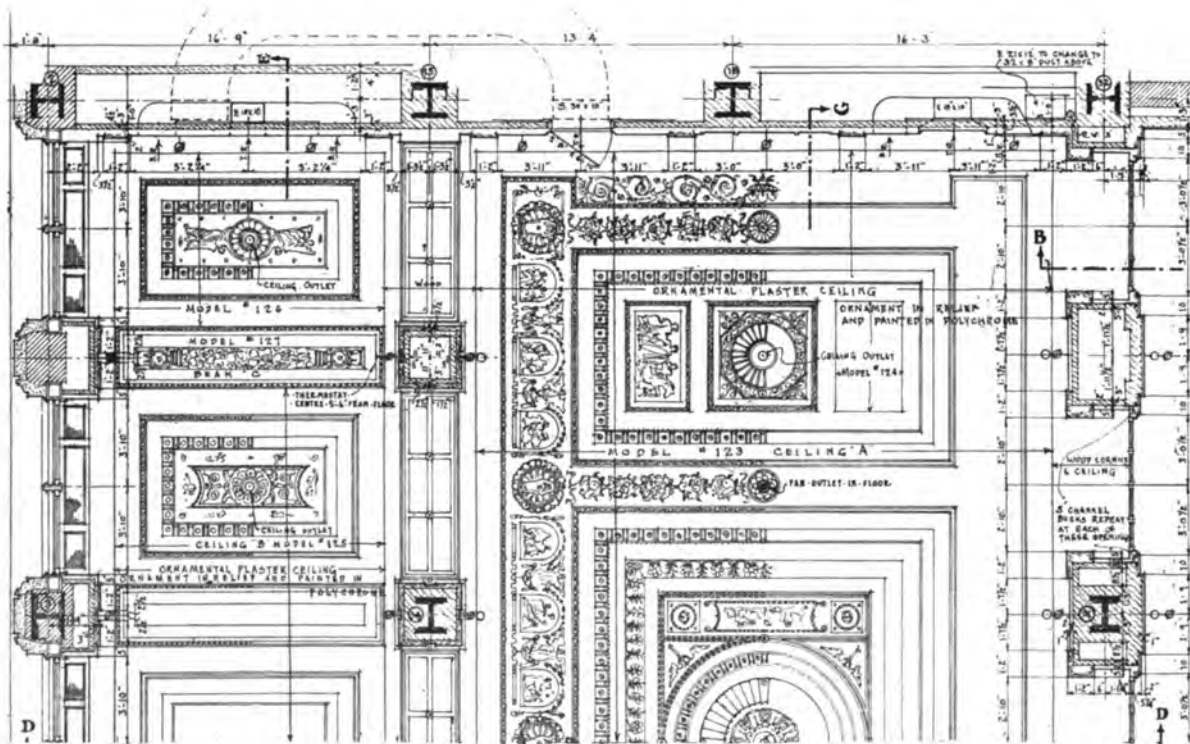
The general dining room has walls wainscoted to the ceiling with deep toned, quietly veined Italian walnut paneling between pilasters of very dark Botticino marble. The gray ornamented ceiling, the heavily carpeted floor, and the judicious selection of the furniture give to this room an air of quiet dignity; the lighting fixtures of gracious and elegant design with pendants of cut crystal, the sparkle of silver and crystal and china on the tables, add an inviting air of cheeriness.

Of similar design but of different detail are the grill room and the men's café opposite. Here the walls of paneled oak, the character of the fixtures, hangings, and furnishings, all evidence the domination of the masculine. The decorative interest of the grill room centers about the charmingly executed copies of old Japanese temple paintings, framed into the paneling at each end of the room.

The ceilings of the general dining room, the grill room, and the men's café are noteworthy examples of modern decorative plaster work. In composition they were inspired by those of the porticoes of the Massimi Palace. Of the Italian Renaissance also are the facility of composition and the artistic reserve displayed in the handling of the ornament; yet in the modeling there is everywhere in evidence that freshness and sparkle of creative design expressed at white heat in a highly plastic material, which is characteristic of the Roman "stuccatura."

Professor Hamlin has truly remarked that "our American art is no less American because much of it has been the work of foreign artists and artisans domiciled among us," and these ceilings, though in large part wrought by the hands of Italian artists, are nevertheless truly indicative of the high degree of artistic excellence reached in America by this plastic art.

The mezzanine floor contains in addition to the mezzanine balcony the offices of the administration and a series of private dining rooms. Of these last, that termed the Daniel Boone Room is worthy of special mention. This room derives its name from the historical interest attaching to the wood with which it is wainscoted—an American walnut obtained from an old walnut tree that grew on the Daniel Boone farm in Kentucky. The unusual beauty of this wood, its sober graining and mellow coloring, and the inspired use of it in walls all of a



General View and Detail of Ceiling, Main Dining Room, Hotel Statler, St. Louis, Mo.
George B. Post & Sons and Mauran, Russell & Crowell, Associated Architects

surface — flush rails and stiles and crotched panels — give to this room a penetrating charm of tone and color which is not appreciable in the photographic illustration.

The two uppermost floors are devoted to the ballroom and the banquet rooms, with their public and service dependencies, including a complete kitchen. In this location they are capable of performing a dual, all-the-year-around service, overcoming the objection inherent in most rooms of this character. It has been the usual practice to place ballrooms and banquet rooms on one or more of the lower floors and, consequently, although they are in constant use during the winter social season, yet during the summer months they are in almost total disuse owing to the cessation of social functions, and to the inadaptability of their location and arrangement to other purposes.

Here they adequately meet the winter's needs, and for the summer provide an ideal roof garden, high above the heat and noise of the street, open to every breeze that blows, and overlooking the Mississippi River and the surrounding countryside. This summer use is reflected in the design of the ballroom. Its wall surfaces have been reduced until they form tall, square



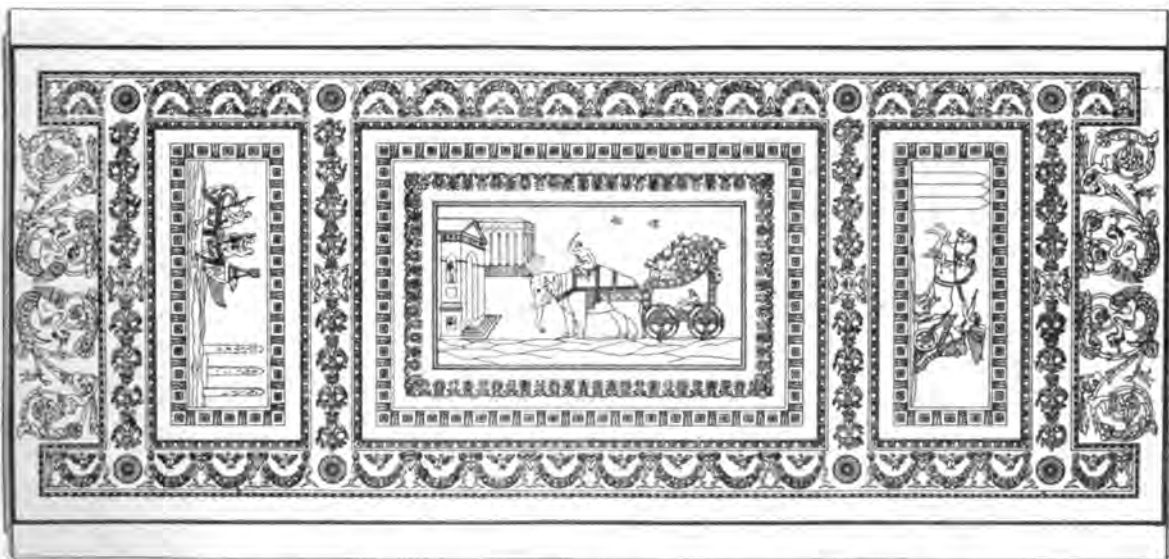
Men's Cafe on St. Charles Street Side

piers which support the cornice and ceiling. The spaces between are all of glass, great windows, 22 feet high and 9 feet wide, which open to the floor without step or sill, and which when open, provide intimately secluded dining alcoves upon the balconies outside.

In its decorative treatment this room is severely architectural, inclining in character to the Roman. The order used was inspired by that of the Temple of Vesta at Tivoli. The ceiling is a vault without ornament of any kind, painted in atmospheric tones of blue, and simulating the vault of the sky.

While architecturally complete and decoratively satisfactory, yet a room designed as this one is to be the setting for formal social functions when not occupied projects a curious mental impression of incompleteness and inanimate expectancy. Whether this is due to the necessary lack of permanent furniture arrangements, to the depressing ranges of empty chairs along the walls, or to a more obscure psychological reaction, the fact remains that a room of this type depends, for the full realization of its character, for its vital spark, upon the presence of the festive public, upon the sparkle of jewels and the kaleidoscopic movement

of bright gowns and somber male attire.



Plan and Detailed Section of Vaulted Ceiling in Loggia of Inner Court, Palazzo Massimi, Rome

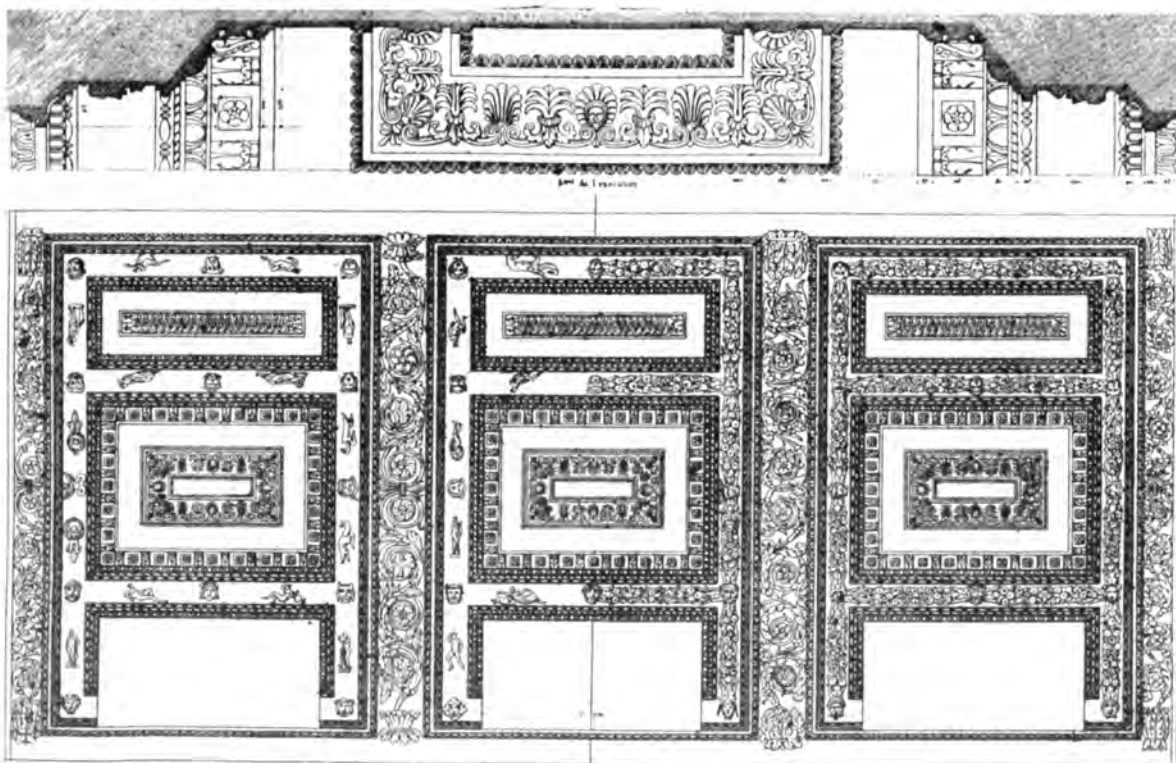


Detail of Plaster Model for Portion of Main Dining Room Ceiling

The ballroom and banquet rooms, when used during the summer months as a roof garden, are to have decorations of a temporary, appropriate character. Latticed paneling, palms and flowering plants, and great billowing ceilings of striped tenting supported on slender masts painted a bright venetian red, will enhance the open, out-of-doors impression already evident in the great window openings, and will hide from sight the more formal permanent decorative characteristics of these rooms.

It is impossible to discuss in these pages the mechanical features of the hotel, and the Statler guest

room is too well known to require further exposition here. In this latest hotel the guest rooms are, in every essential feature, a duplication of those in the earlier structures. If here and there are discovered minor changes in their detail of equipment or furnishing, it is but evidence of the constant efforts made to anticipate the needs of the public. In the high development of this service, the thorough grasp of the principles of hotel planning and the high standards of architecture and decoration displayed in its façades and interior, this hotel ranks with the best of contemporaneous practice.



Plan and Detailed Section of Vaulted Ceiling in Loggia of Inner Court, Palazzo Massimi, Rome

Some Aspects of Industrial Housing

II. TYPES OF DEVELOPMENT BY COMPANIES

THE GROUPS AT LORDSHIP AND FAIRFIELD, CONNECTICUT, BY THE BRIDGEPORT HOUSING COMPANY
R. CLIPSTON STURGIS, ARCHITECT

By CHARLES C. MAY

TO the employer who has decided upon a housing program, several broad questions of policy immediately present themselves. Among the very first, is that of the type or organization of the new settlement. Shall our development be planned as an independent community, or shall we regard ourselves as a part of our nearby city neighbor; shall we confine ourselves to providing homes for our workmen, or must we also provide them with stores, movies, libraries, clubs, and what-not?

Sometimes, as we have indicated, the question answers itself in the nature of the industry, in that the housing group, whether or no, must be reasonably accessible to the plant, and the plant is oftentimes necessarily located far from an established center of population. In a majority of cases, however, the question comes squarely up to the owner. Industries cannot cut themselves off from centers of transportation and power, even if they are in a position to carry their labor with them, so that usually the new development is located not so far from a town or city but that an employer might with some show of reason shift the responsibility for community life in that direction. Under such circumstances the owner must consider very carefully what shall be his policy — how far shall he carry the town-building proposition, or, if you like, at what point may he with propriety stop.

It may be taken as an axiom that something of community life must be provided to insure a contented and reasonably permanent body of workers. To make this requirement concrete, one example might be cited. A few months ago the writer visited a group of houses recently completed by one of the largest coal mining companies. These were seven room, single-family, semi-detached houses of the most modern type — brick, with slate roofs, steam-heat, plumbing, and electric light. They were well planned and substantially built. For these accommodations the company asked a rental of \$12.00 per month with electric light free, yet at that time there were thirteen vacant houses out of a total of about thirty-six.

The reasons given by the employees themselves were simple. The houses were fine, but they were "too near the mine, and too far from the trolley." The breaker was, in fact, visible from the front porches of the houses, at a distance of perhaps a quarter of a mile. The trolley was a ten-minute walk, and the city to which it formed the connecting

link was then a ride of about twenty minutes. At that time at least, the attraction of these exceptional rental values in the houses (for which the miners were amply able to pay) was not sufficient to offset the lack of a community to live in. The lure of town-life was strong enough to compensate for a twice-a-day journey of about forty minutes to or from some one of the other villages that lay close around the larger city.

It will be seen, therefore, that even where a city is reasonably nearby, the employer is not always absolved from the necessity, or at least the advisability, of planning his housing group for, if nothing more, a neighborhood unit with a social life of its own. If, on the other hand, the plant is to be moved wholly outside the radius of existing communities; if the employer proposes to make a real contribution toward decentralization of industry — by so much the more is he bound to enter the field of real industrial town planning.

Assuming, then, that the employer has decided upon a building program that includes the fundamentals of community life, he cannot move far until he has adopted a policy on organization. Let us see, briefly, what general forms of structure are possible for the industrial development.

The earliest and simplest of these villages, springing up around a single industry, were hardly conscious of any organization at all. It simply came about that the company, needing accommodations for its "hands," built a house here and there, leased it to one of its own men, collected the rent, made necessary repairs — all as part of its own business.

Very often the owner of the factory was besides being owner of the homes, the founder and donor of the village library, the auditorium, perhaps the hospital and club-room. He was probably, too, the president of the bank and the head of the school committee — in every way, the town's leading citizen. This paternal sort of industrial village had its day before consolidation in industry took place, when the head of the business was a person, not a board of directors, and when the intimate relation between employer and wage-earner had still something of the idyllic about it. They were the days, too, before the trades-union had combined with the automatic power-machine to take the romance out of earning a livelihood. When well administered by a man possessed of the necessary tact and patience, there were many features about these paternal settlements which were peculiarly at-

tractive, and no better cared for, prosperous, and contented bodies of workers could be found than in certain of the villages of this character.

Yet, being founded upon an essentially small-concern relation between employer and worker, the paternal type of village was doomed to failure when attempted on a large-concern basis, with the personal element lacking. Furthermore, cases had early begun to appear where the "company house," even the company club or library or church, were looked upon by the men with suspicion. They could not conceive such things being provided for them from purely unselfish motives; there must be a string tied to them somewhere; besides, it began to look like charity, and charity they would have none of.

Sometimes, unfortunately, their suspicions appear to have been justified. At any rate, many elements of modern industry continued to work together to make this prejudice against the "company house" almost universal, and to the worker, it came to mean, not protection, but exploitation.

To get away from the prejudice against purely "company" activities, and still to maintain a close coordination with the parent organization, the arrangement most frequently adopted is the creation of a subsidiary company to handle the building program. This is the more often resorted to, because in several of the states, manufacturing companies or corporations, as such, are prohibited from dealing in real estate for housing purposes. It was this law, in Illinois, for example, which forced the dispersal of the Pullman holdings, back in 1898. Furthermore, the officials of large corporations are seldom in a position to add to their usual duties, those of the organization and conduct of a considerable business in real estate, building construction, and social administration. However active and enthusiastic may be their interest in the building program — and those feelings are by no means universal among employers — limitation of time, if nothing else, prevents any proper concentration upon their housing development. Both economy and efficiency, then, point toward the creation of a subordinate branch, or an independent organization to which may be intrusted the conduct of the housing program. Sometimes the bond between the manufacturing and the housing organization is a close one, in other cases the personnel is entirely different, and aside from the broadest matters of policy, the whole responsibility is placed upon the subsidiary.

The older form of organization — that of the paternal type, was in the early days, splendidly democratic. In spite of the fact that all activities were those of the company, all benefits handed down by the company, still the intimate human contact was the touch of nature that made the company head and the lowest paid "hand" workers together. As they grew gradually apart, this democratic spirit became more rare, the class consciousness more keen, with evident

touches of antagonism cropping out more frequently.

The industrial village of the present must be democratic in structure; it must express individual independence of action and the possibility for individual initiative. For the workman of to-day is exceedingly jealous of his freedom of movement; anything that savors of company compulsion is frowned upon by the individual workman and actively fought by the labor unions. Both have very emphatically voiced their disapproval of certain company selling schemes by which the way of entry into a home-owning contract was made temptingly easy, while the way of withdrawal, in case circumstances made withdrawal wise, was so difficult that the workman was almost bound to the soil. Probably no one thing is so essential for success in an industrial development as a conviction among the employees of the good faith of the company. *Esprit de corps* through the works is a seemingly intangible element — but a multitude of examples have proven it the one indispensable. It is the vital spark whose presence may give life and success to a mediocre housing development, whose absence may wither and deaden a most carefully studied and otherwise excellent program.

For these reasons the personality of the one to whom is intrusted the active prosecution of the housing development is a prime factor. Given all the qualities of executive and administrative ability, he cannot be successful without holding the confidence of the workmen. Such a man is often one who has risen from the ranks, whom the older men can remember as a workman in the shop, whom they still regard as of the same spirit with themselves. He will be in a position to feel the pulse of the shop all through the course of the development, to correct misconceptions before they grow serious, to consult, to advise, to interpret as the need arises. He will be able to influence the trend of their thought as a group, he will be quick to perceive when it is wise to modify the company's program, so as to conform more closely to that thought.

A democratic form of organization for the industrial village is desirable wherever and to the extent that it is found practicable. Here at once enters the fundamental question of the grade of workmen to be housed, and their nationality. It goes without saying that a colony of skilled American mechanics, accustomed to ideas of self-government, to independent thinking, and to some collective action, is fitted for a totally different form of organization from that which must be adopted for a body of foreign labor, hardly in touch with our language, totally out of touch with American institutions. More difficult still is the case where a single development must house several different nationalities, each having its own clearly defined traits and habits of living.

In the latter case a really democratic organization is not immediately practicable, nor will it become so

until an indefinite period of guided probation has been passed through. Even so, every effort should be made from the first to make the community organization a representative one. In each of the nationalities present there is almost sure to be some family which stands out above the others in intelligence, appreciation, and responsiveness. Finding such a family, its co-operation may be used to good purpose in many ways—as representing a group of the working forces within the building organization, and as leaders setting the pace for less quick-witted families of their own nationality.

This sort of representative government for the industrial village has been successful in numerous instances in this country. Carried to its ultimate form representation becomes partnership, and we have the peculiarly attractive type of community which, since its beginnings years ago, has made such remarkable growth in England. The co-partnership town, briefly, is one in which all property—real estate, public improvements and utilities, as well as the houses themselves remain permanently in common ownership by a corporation in which every resident is a stockholder. As a form of organization it has appealed strongly to

American town planners, and several communities have set aside tracts in their developments with a view to making them co-partnership communities. Thus far, however, there is not, so far as the writer has been able to discover, any American example of a community actually organized and operating under the co-partnership principle. Two main objections have hindered its progress in this country—first, the absence, in almost every industrial village, of a population that is homogeneous enough in its make-up for an organization which must depend for success upon collective thought and action; second, even where a community is predominantly American in make-up the individualism that is still our characteristic prevents us from accepting—instead of complete ownership of small things, a common and partial ownership of large benefits. It should be said, however, that the idea is by no means dead in this country, and we may yet see it put into operation as a working plan.

Experience has proven, then, that for the organization of industrial communities under American conditions, several general conclusions may be accepted: first, that the paternal form of workmen's

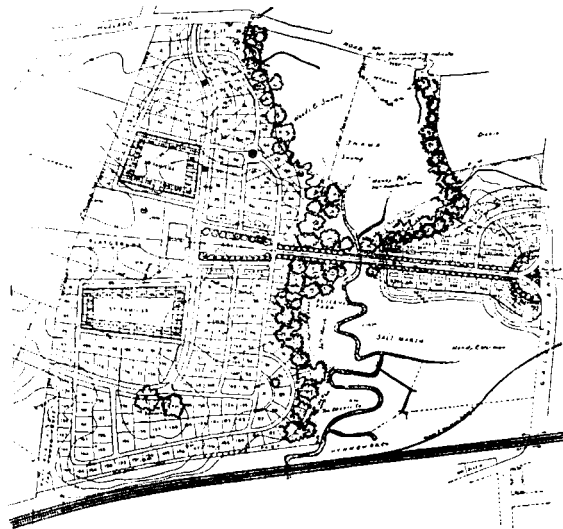
village—where all benefits flow from a single source—the company—is obsolete, because when proceedings are on a business basis, the workman suspects that he is being exploited and, when action is clearly without financial return, he resents being made the object of philanthropy; second, that a democratic form of organization is desirable in such degree as may be practical, which will depend upon the grade and racial make-up of the working population; third, that representation for the workers in the building organization will prove valuable in many essentials; fourth, that with the growth in this country of a social sense, and an appreciation of the advantages of collective action on a large

scale instead of individual action on a minute scale, the co-partnership principle may still work itself out with large advantages to the interests of both worker and employer.

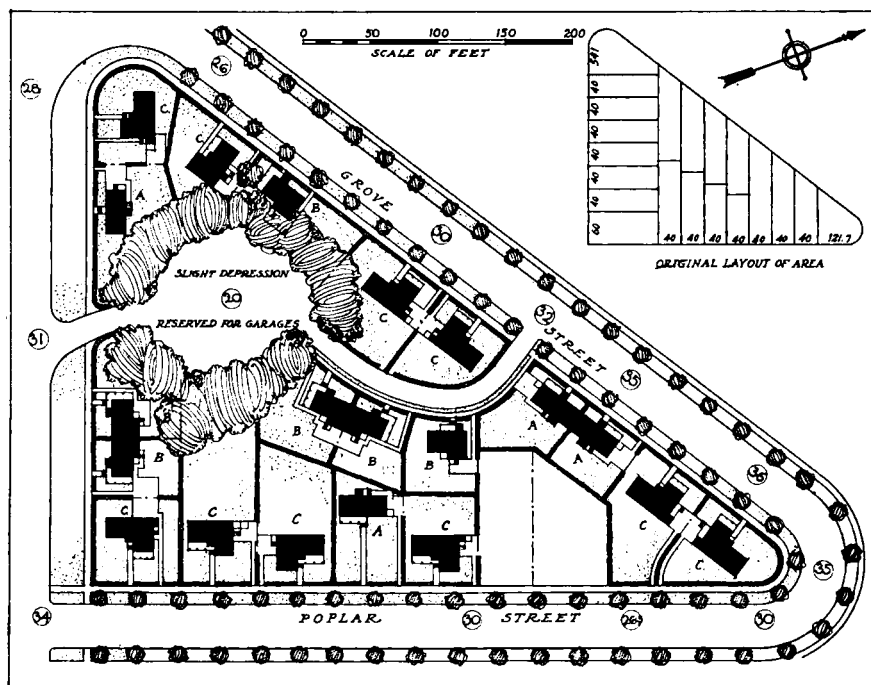
In summarizing the work of the past year in housing of workingmen, Mr. Lawrence Veiller, speaking before the National Housing Conference, stated that it was the Bridgeport Housing Company which had pointed the way to all the others. The company has been operating hardly more than a year, yet it has upon its list of accom-

plishments, an apartment, accommodating 39 families, a group of "terrace" dwellings of one and two family houses accommodating 139 families, a group of single-family detached and semi-detached dwellings, housing 20 families, and a second group of similar types, also for 20 families. The apartment and the terrace houses are within Bridgeport's central area; the latter two groups lie outside the city limits, one at Lordship, the other just inside the limits of the town of Fairfield. Both these groups, illustrated herewith, are the work of R. Clipston Sturgis of Boston, as architect and community planner.

Speaking first of the Fairfield group, the portion upon which these first houses have been placed, forms merely the entrance motive for the whole development as projected. This relation will be made clear by a reference to the general plan, reproduced on this page. At the moment this present group appears inconclusive and fragmentary, and so it must until further development supplies the focus toward which the street is headed, in the schoolhouse, its playground, the two flanking quadrangular groups of terrace houses together with



Study for Future Development of Fairfield
R. Clipston Sturgis, Architect



Plan of Lordship Development

the surrounding areas of detached and semi-detached dwellings, forming a self-contained community.

In another sense, however, this group should attain at once more of the neighborhood quality than the Lordship community, because in occupying *both* sides of its street it thereby becomes at once a self-contained unit of population. The Lordship collection of houses appears, on paper, far more unified and complete, yet in that all its houses, except two, face out toward property over which the housing company has no control, the effect in execution will be better held together in the group where both sides of the street belong in the picture.

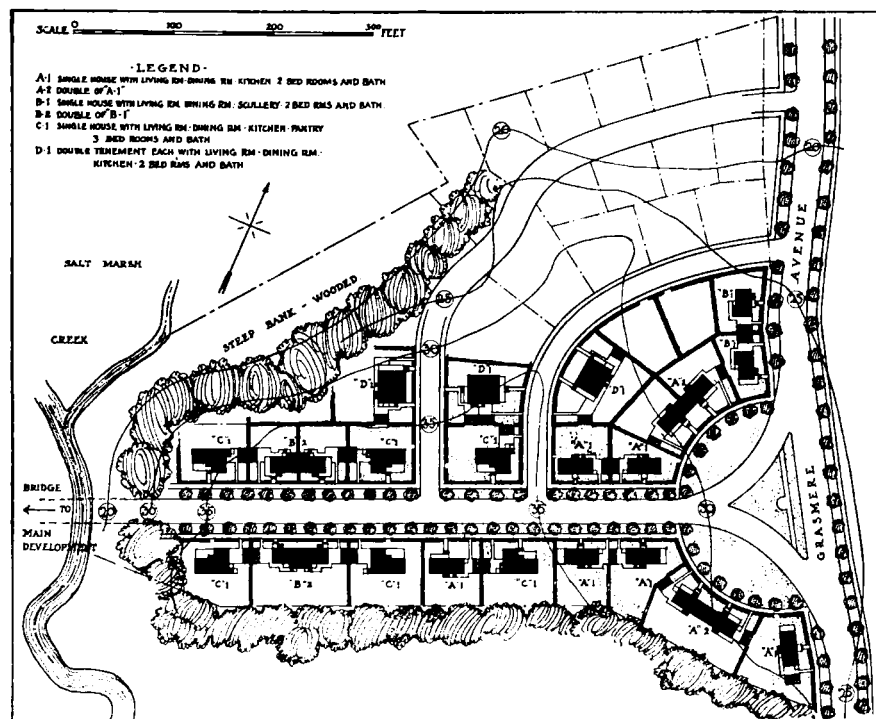
Yet immediate contrast between what has been and what may be our workman's home building standards, has its advantages. Decidedly, no good deed in a naughty world ever shone to better comparison than do the several

little cottages which are placed to mark the approach from Fairfield Avenue into the development. They stand trim and optimistic, inviting further acquaintance with the community beyond, and shaming by direct contrast their drab neighbors.

The lotting of the Lordship group is of particular interest because the land had previously been subdivided—badly—and lots had been sold. The resubdivision by Mr. Sturgis provides for as many families, makes lotting more normal, introduces some interest of grouping, and has left over, a natural circular depression, screened by large trees, which is to

be reserved for a community group of future garages.

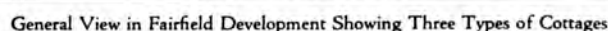
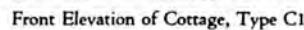
The houses that compose the two groups are of six types, two of them—the semi-detached—being modifications of the single-family units. The range, both in size and in number of rooms, is not a wide one, for



Plan of Fairfield Development

For ingenuity of plan and arrangement the two-family house (D) challenges attention. Entrances separated by the length of the house, living porches

the standard of construction and equipment is high —so high that it is amazing to think back a mere fifteen years to college dormitories where the student kept his coal in a closet and shoveled it into a sheet-iron stove, where he filled the oil lamp from his own can, where he walked to another building for toilet facilities, to an outdoor pump for water, and to the gym for a bath. Such facilities are to-day frowned upon for the temporary bunk house of a

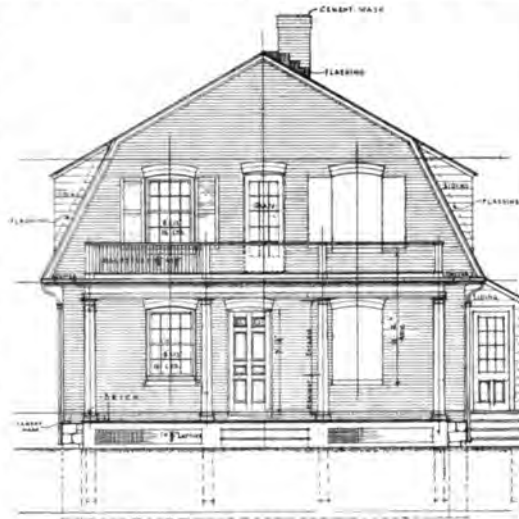


railway section gang. The Bridgeport houses contain all that to-day's standards call for—individual heating plant, plumbing of the most modern type, electric light—in several cases, an open fireplace.

All walls are of brick of good texture and interesting bond ; roofs of slate, not the cheapest, but of excellent variety and color ; gutters and leaders of wood. The house plumbing is all taken at present to individual cesspools, which are placed in the grassed and tree-planted space along the roadways. Later, when the sewer system is installed these drainage lines will be available for easy connection. In the meantime, incidentally, the street trees should flourish as the biblical bay tree.

It is greatly to be regretted that tabulated costs both on general development and on individual houses are not at present available. We know that the Bridgeport Housing Company has not set itself to solve the industrial

housing problem in its most acute form — that of the lowest paid wage earner; their problem is a special one. We know, too, that their first year's work has been carried on under circumstances of labor and material markets which have very generally choked off all building. Their accomplishment in carrying on at all is much, but they have done more — they have given a demonstration of worth-while building with substantial materials, looking for their return over a long period in low upkeep costs and continuing value: they have reverted for their architectural inspiration to American examples which after a hundred years and more are still worthy and sound; they have set down in the midst of Bridgeport an example of architectural



End Elevation, Two Family House, Type D

simplicity and dignity that marks a forward step in the design of workingmen's houses and which cannot fail to have an influence for good upon the future development of the whole city.



Two Family House, Type D



SCALE 0 5 10 15 20 FEET



First Floor Plan

Fairfield Development for Bridgeport Housing Company

R. Clipston Sturgis, Architect

See Plates 31 and 32 for Further Illustrations

THE FORUM COLLECTION OF
MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE TWO



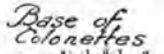
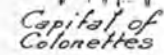
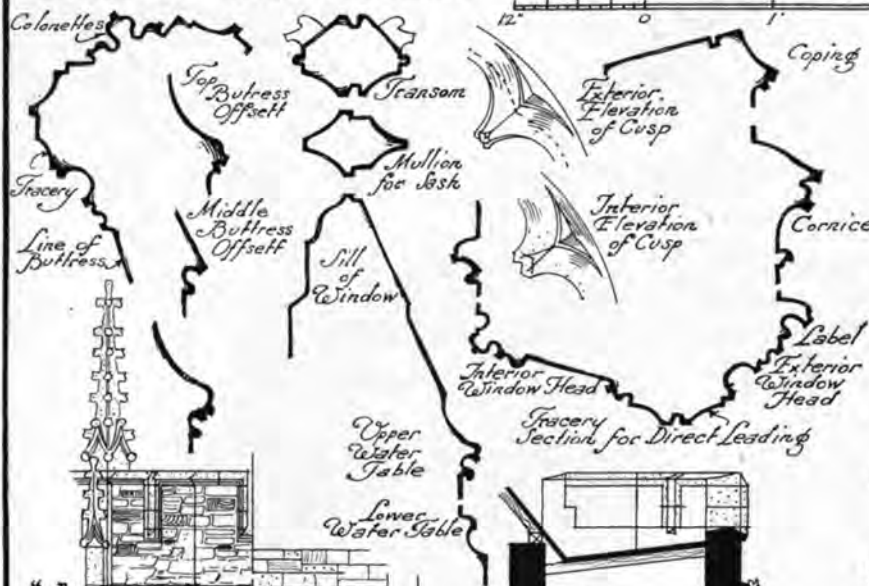
THIS bay is on the axis of the fireplace at the dais end of the Great Hall. It is entirely of masonry construction including the ceiling vault. The exterior trim

stone and that of the interior walls is Indiana limestone and the exterior walls of local ledge stone. The glass is temporary and soon will be replaced by a permanent window.

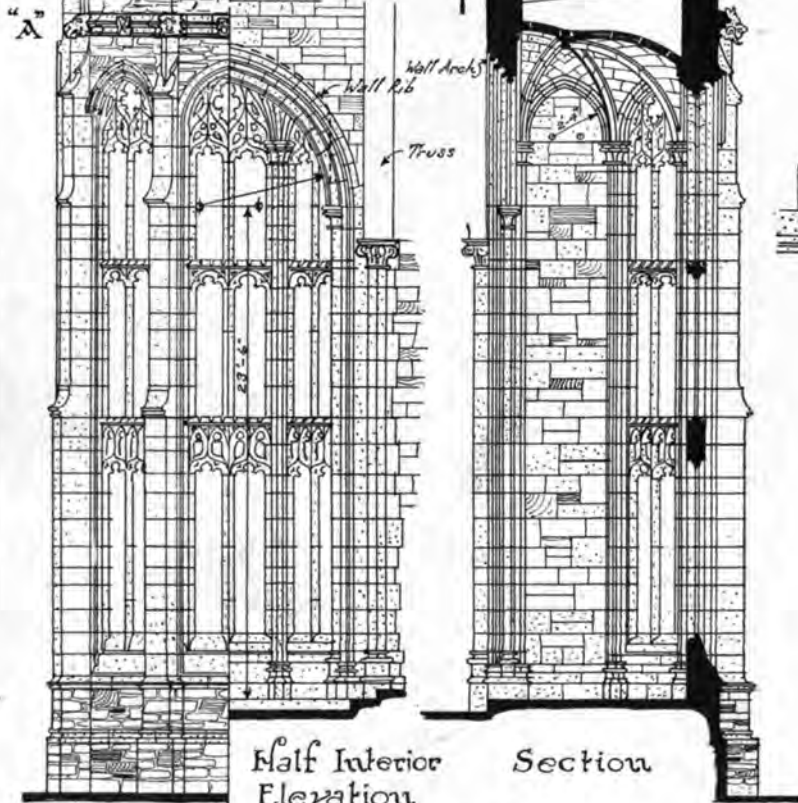
DETAIL OF BAY IN GREAT HALL, THE GRADUATE COLLEGE, PRINCETON UNIVERSITY

CRAM, GOODHUE & FERGUSON (BOSTON OFFICE), ARCHITECTS
DETAIL DRAWING BY EDGAR T. P. WALKER ON FOLLOWING PAGE

Exterior and Window Details Scale in feet



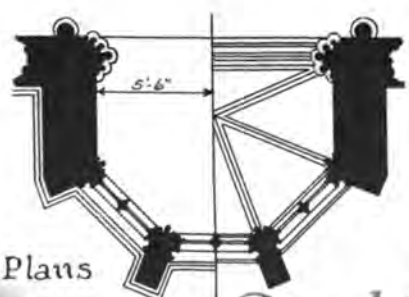
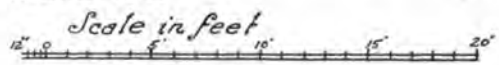
Interior Details



Half Interior Elevation

Section

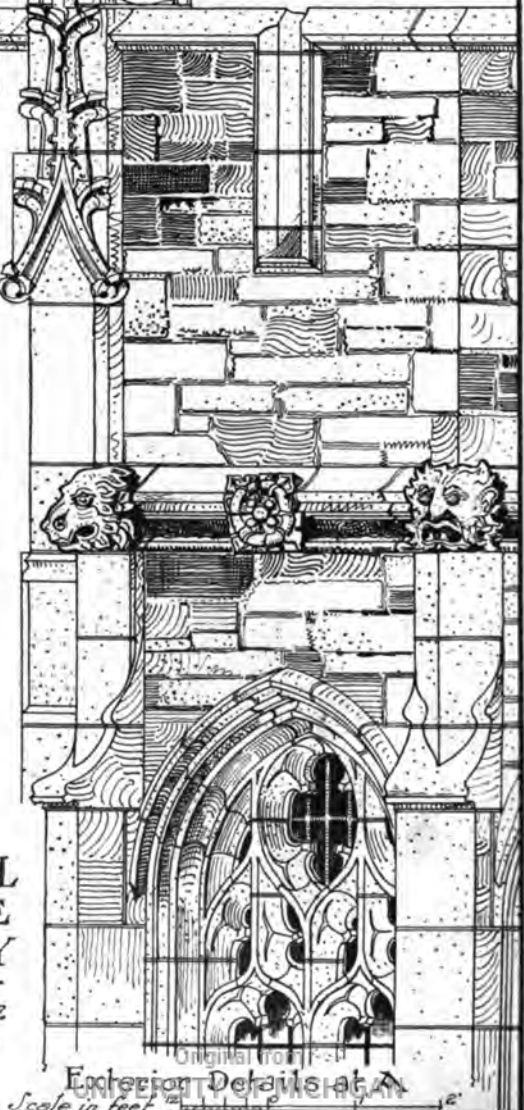
Half Exterior Elevation



Plans

DETAILS OF BAY IN GREAT HALL GRADUATE COLLEGE PRINCETON UNIVERSITY

Cram Goodhue and Ferguson Architects Boston Office



Exterior Details at A Scale in feet



GENERAL VIEW OF NINTH AND ST. CHARLES STREETS FACADES

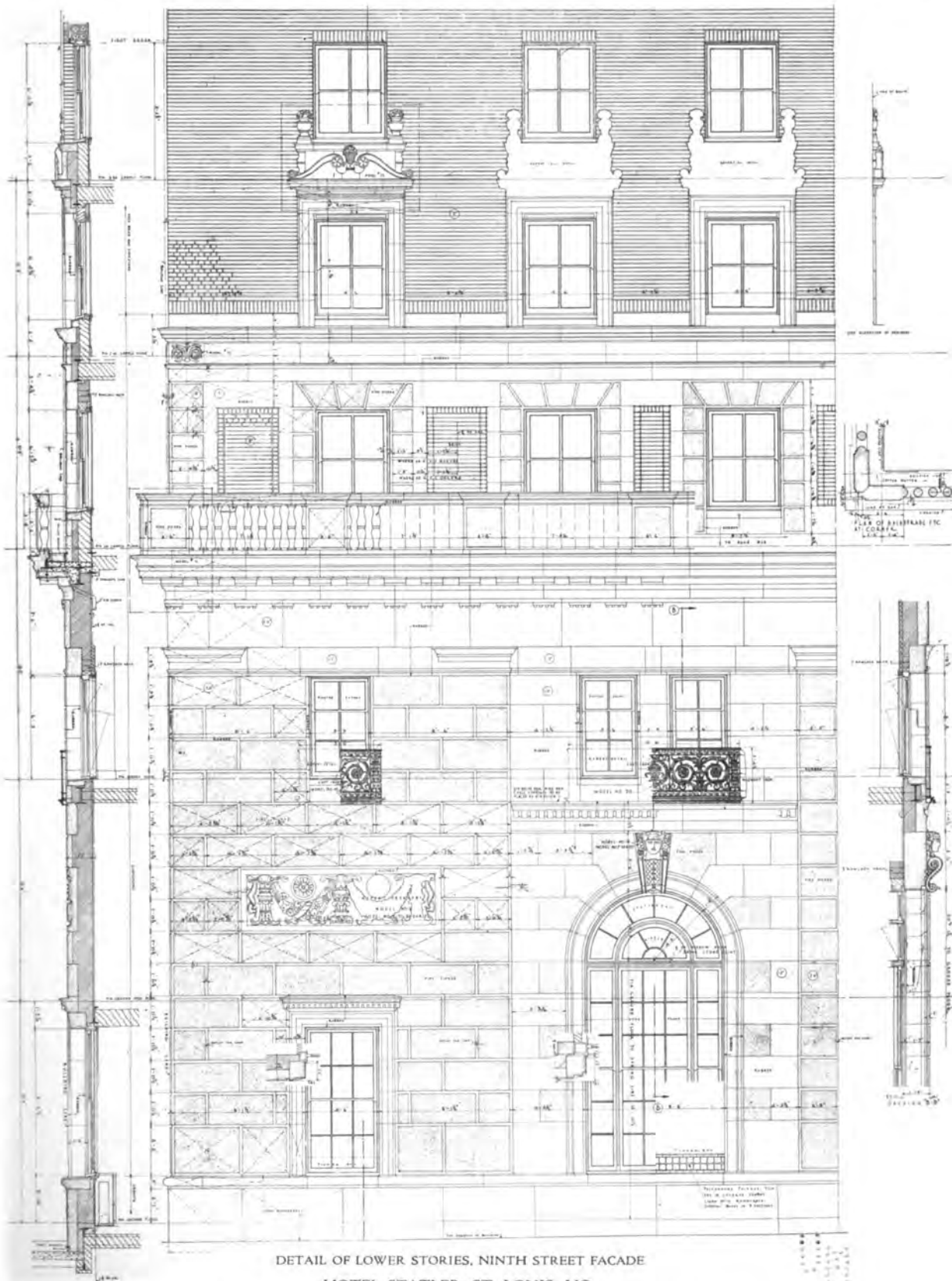
HOTEL STATLER, ST. LOUIS, MO.

GEORGE B. POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS

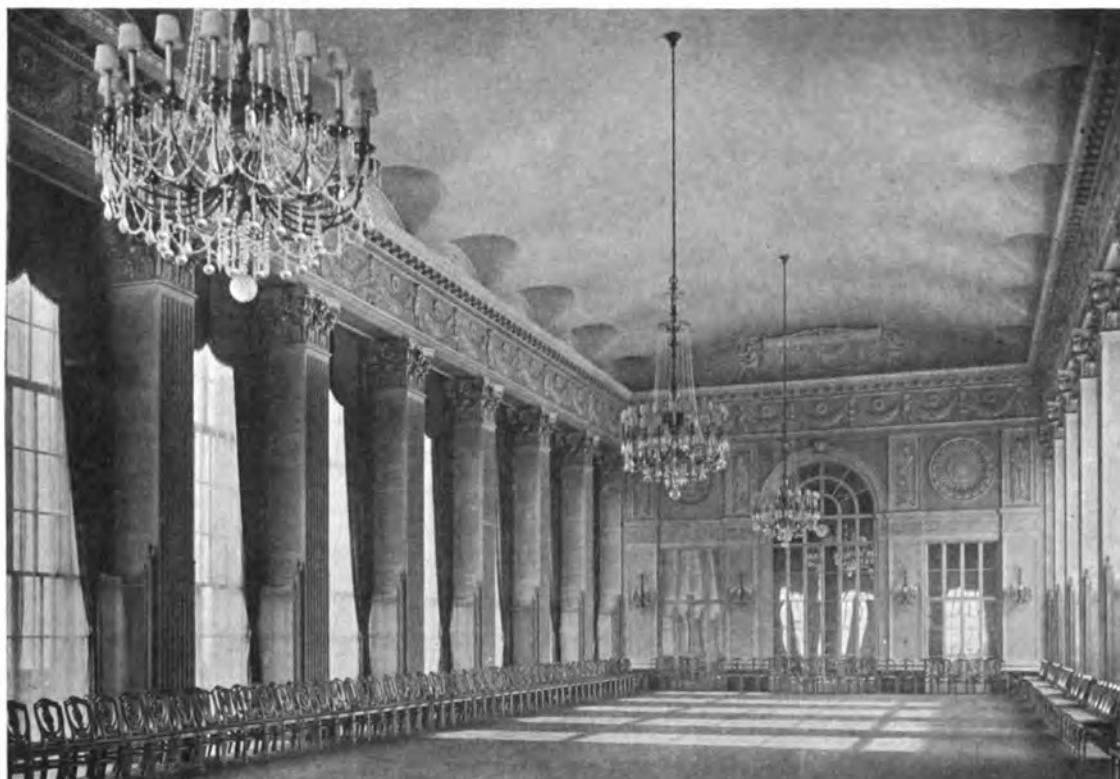


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GEORGE B. POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS



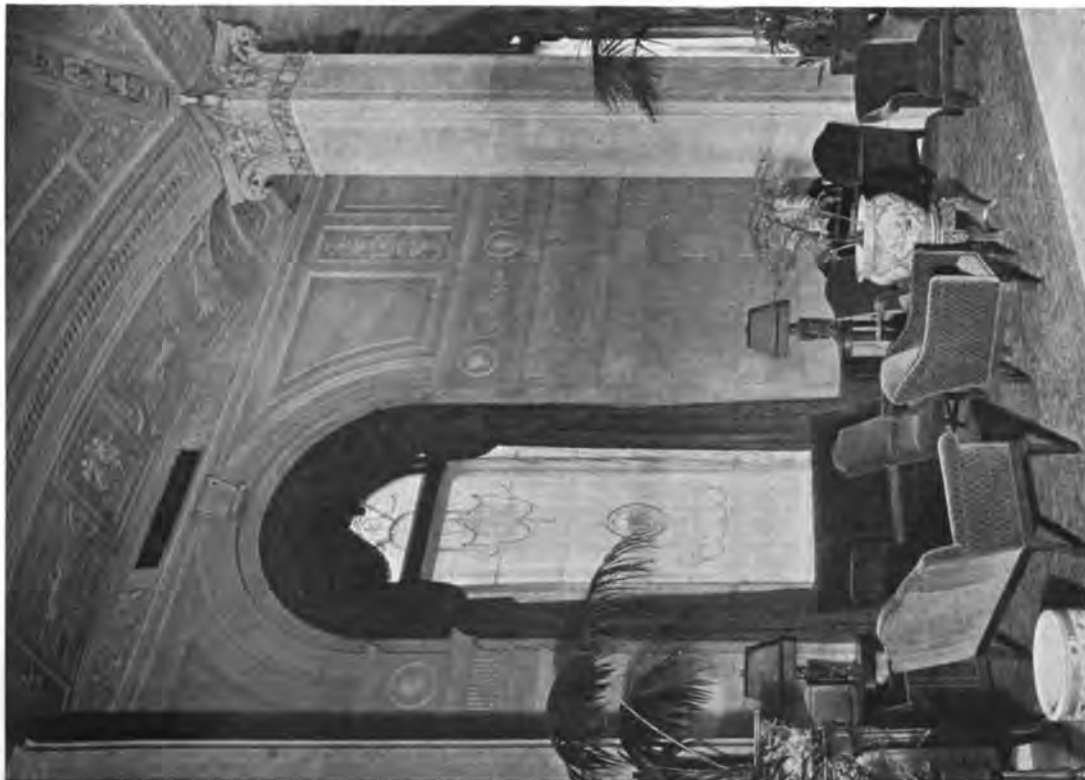
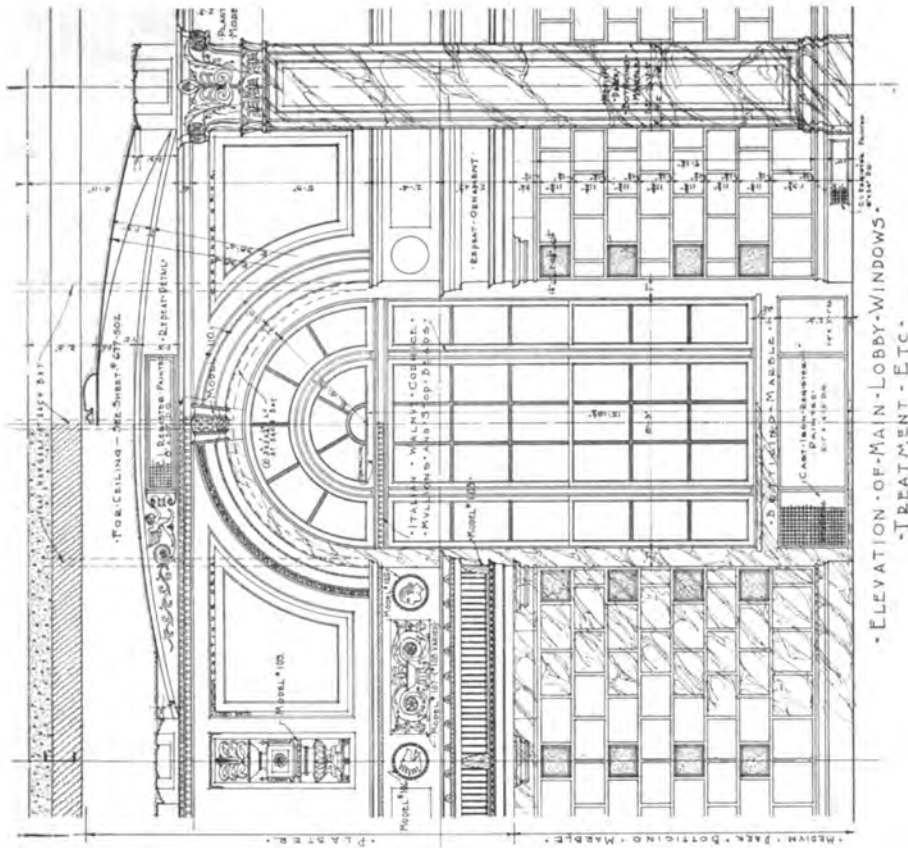
GENERAL VIEW OF THE BALLROOM



VIEW IN LOBBY LOOKING TOWARD ST CHARLES STREET ENTRANCE

HOTEL STATLER, ST. LOUIS, MO.

GEORGE B POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS



DETAIL IN LOBBY

DETAIL OF LOBBY WINDOWS AND WALL TREATMENT

HOTEL STATLER, ST. LOUIS, MO.

GEORGE B POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS





DETAIL OF BALLROOM END

HOTEL STATLER, ST. LOUIS, MO

GEORGE B. POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS





DETAIL OF SERVICE SCREEN IN CENTER DINING ROOM

HOTEL STATLER, ST. LOUIS, MO.

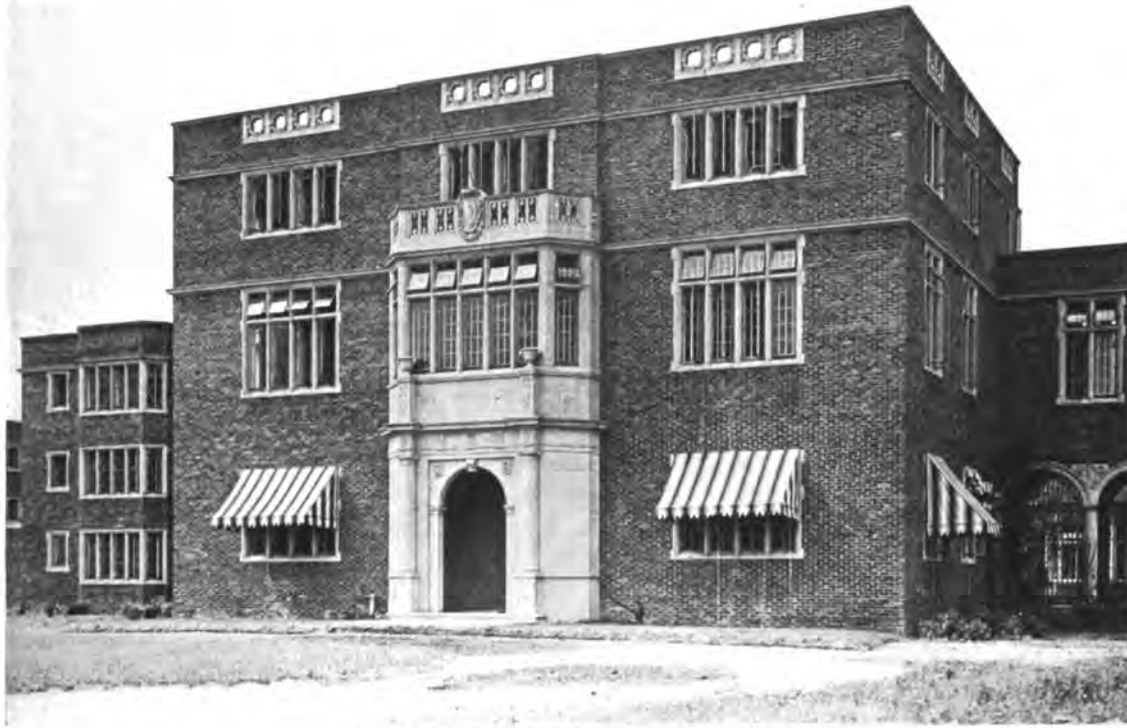
GEORGE B. POST & SONS AND MAURAN, RUSSELL & CROWELL, ASSOCIATED ARCHITECTS





COURT FACADE OF ADMINISTRATION BUILDING
WESTCHESTER COUNTY PENITENTIARY AND WORKHOUSE, WHITE PLAINS, N. Y.
ALFRED HOPKINS, ARCHITECT

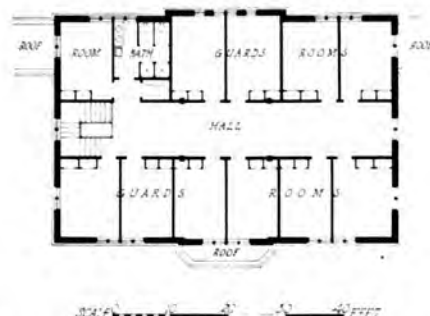
24



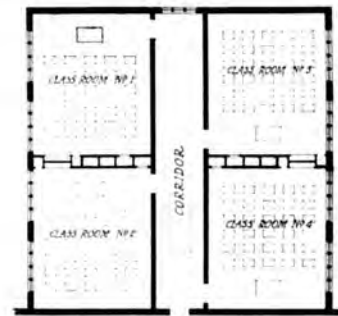
ENTRANCE SIDE OF ADMINISTRATION BUILDING



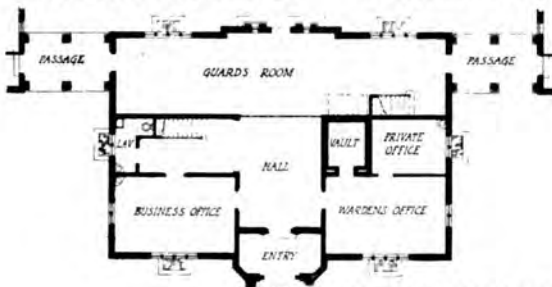
PLAN OF RECEPTION BUILDING



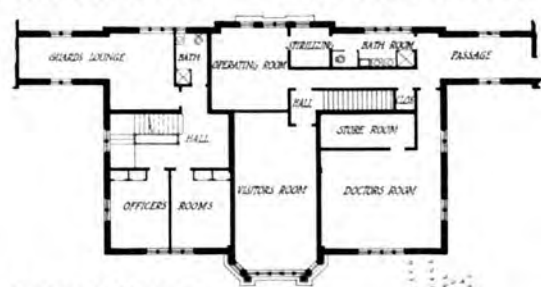
THIRD FLOOR PLAN, ADMINISTRATION BUILDING



PLAN OF SCHOOL BUILDING



FIRST AND SECOND FLOOR PLANS, ADMINISTRATION BUILDING



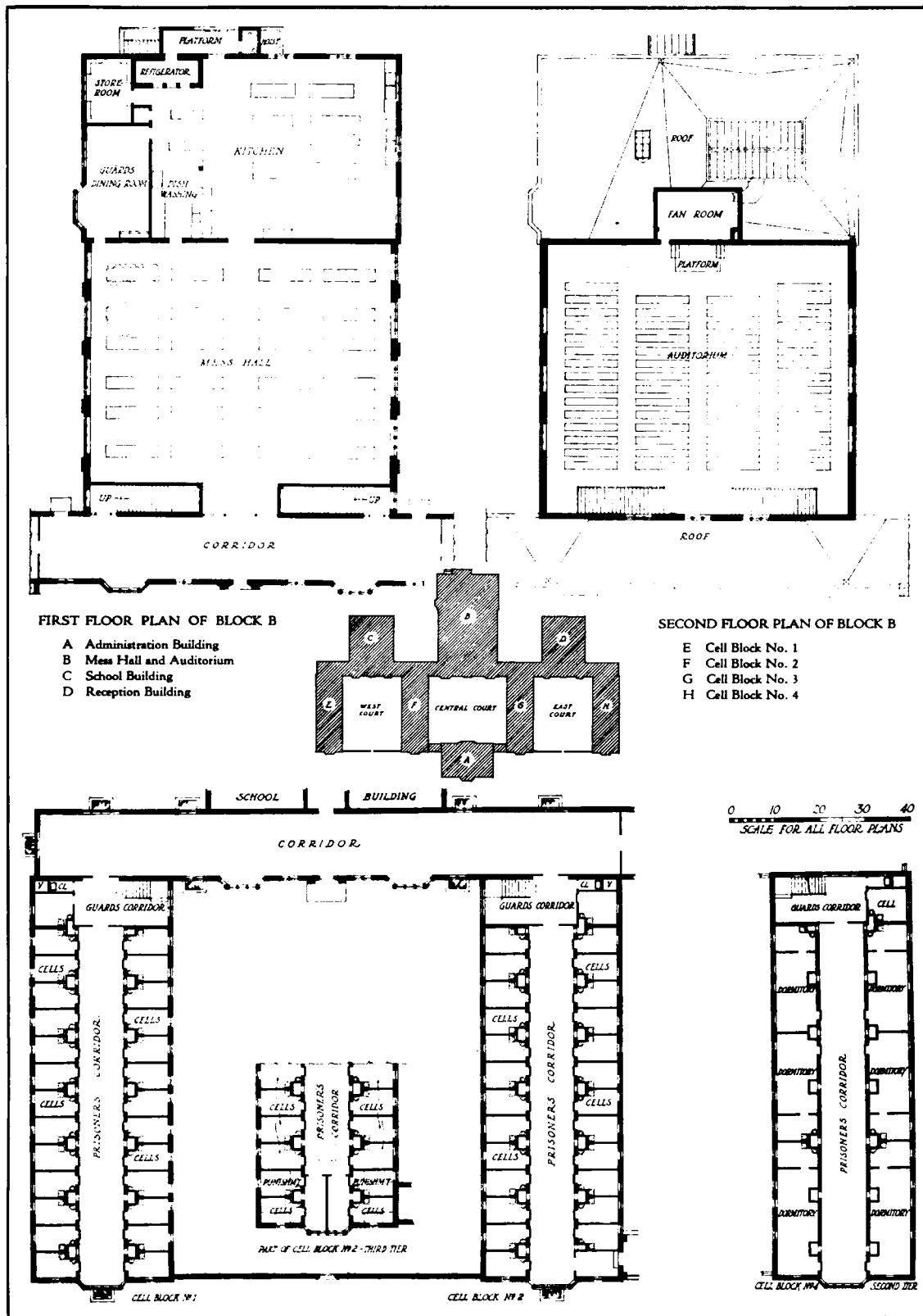
WESTCHESTER COUNTY PENITENTIARY AND WORKHOUSE, WHITE PLAINS, N. Y.

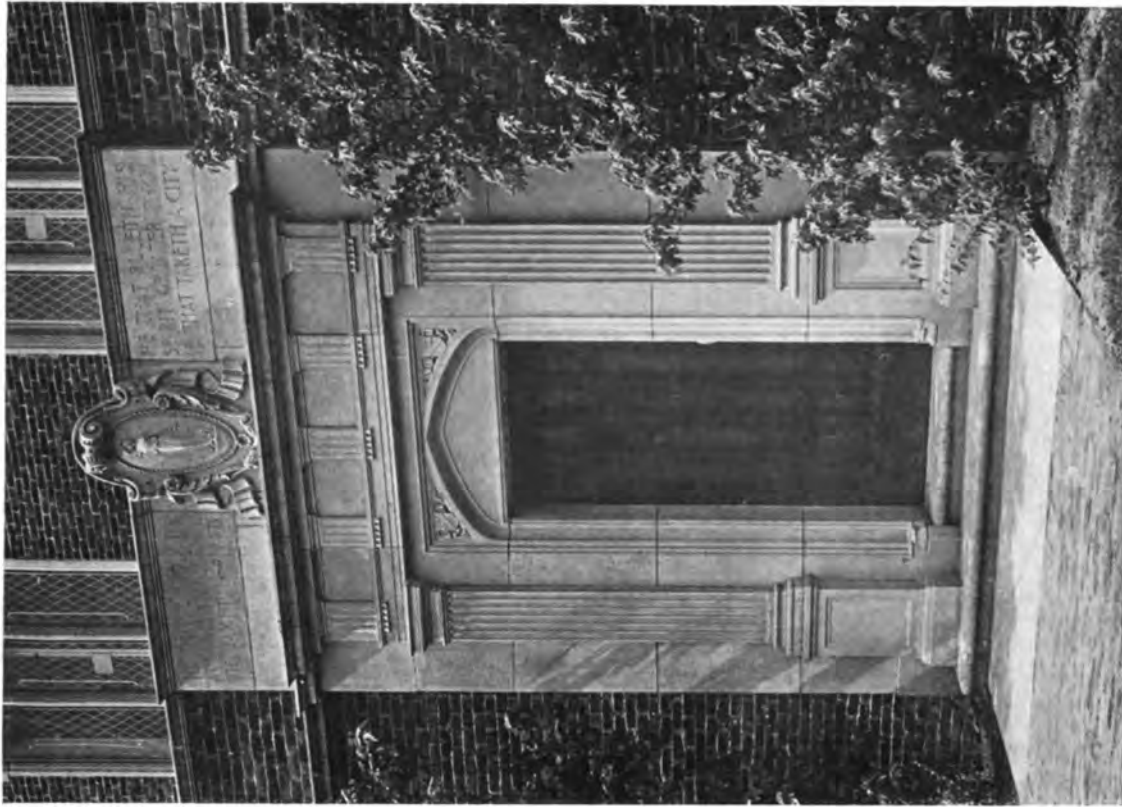
ALFRED HOPKINS, ARCHITECT



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COURT ENTRANCE TO RECREATION CORRIDOR

WESTCHESTER COUNTY PENITENTIARY AND WORKHOUSE, WHITE PLAINS, N. Y.

ALFRED HOPKINS, ARCHITECT



DETAIL OF LOGGIA FROM CENTRAL COURT

WESTCHESTER COUNTY PENITENTIARY AND WORKHOUSE, WHITE PLAINS, N. Y.

ALFRED HOPKINS, ARCHITECT





RECREATION CORRIDOR LOOKING TOWARD CELL BLOCK NO. 1



STAIR HALL, ADMINISTRATION BUILDING



VIEW OF MESS HALL FROM CORRIDOR

WESTCHESTER COUNTY PENITENTIARY AND WORKHOUSE, WHITE PLAINS, N. Y.

ALFRED HOPKINS, ARCHITECT



GENERAL VIEW, TYPE C1



GENERAL VIEW, TYPE A1

(PLANS SAME AS ONE SIDE OF SEMI-DETACHED TYPE A2)

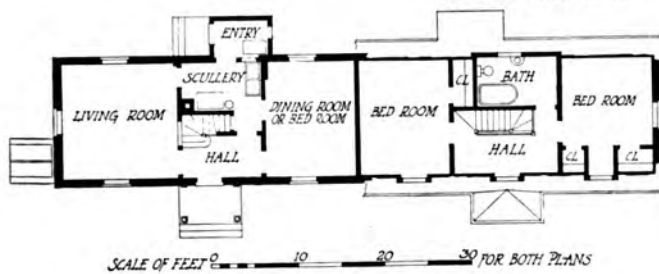
COTTAGES FOR THE BRIDGEPORT HOUSING COMPANY, LORDSHIP AND FAIRFIELD, CONN.

R. CLIPSTON STURGIS, ARCHITECT





GENERAL VIEW OF SEMI-DETACHED TYPE A2



FLOOR PLAN, TYPE A2



FLOOR PLAN, TYPE B2



GENERAL VIEW OF SEMI-DETACHED TYPE B2

COTTAGES FOR THE BRIDGEPORT HOUSING COMPANY, LORDSHIP AND FAIRFIELD, CONN.

R. CLIPSTON STURGIS, ARCHITECT

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The New Temporary Government Offices at Washington

WADDY B. WOOD, ARCHITECT

THE need for additional buildings in which to carry on activities growing out of our participation in the war was first keenly felt at the National Capital, and the manner in which the need has been met is of particular interest to architects because the successful results obtained are due to the services of one of their own profession.

These buildings consist of offices for the Council of National Defense, the Food Administration, the Fuel Administration, and the Small Arms Division of the U. S. Ordnance Department.

Aside from the fact that these buildings were erected in a marvelously short time and for approximately 13 cents a cubic foot, they further illustrate that it is possible to make great economies and do emergency work quickly and still preserve in the finished work a reasonable amount of architectural beauty. The result in this instance clearly demonstrates that if the work is put in graceful hands, the result will be graceful, and it also demonstrates that graceful hands are the most practical.

The Council of Defense building, the first one completed, was entirely designed, built, and equipped in forty-two days and has all the modern conveniences of a well planned office building with far more light and better circulation than the average building used in peace time for office work.

The entrance lobby to this building is very attractive and simple in appearance and gives one the impression of entering into a country hotel with counters for information on either side and in front a railing at which guards are stationed to prevent any one entering who has not a pass. There are guards at intersecting halls as well. These buildings now house over 4,000 clerks doing their work as smoothly a few days after moving in as one would find in any average office organization.

It was the recommendation of Mr. Wood that with the ample space in Washington that could be easily



Entrance to Council of National Defense Building

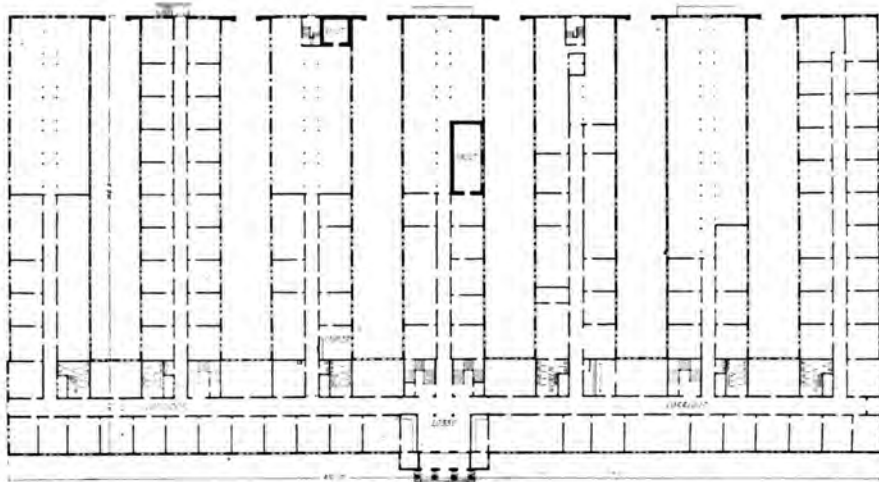
obtained on most reasonable rates of ground rent, it was unnecessary to risk life by designing these buildings over two stories in height. While every fire protection in the way of alarms, sprinkler systems, etc., has been provided, still the problem of incendiaryism was worth consideration, and it is thought that with a two story building with ceiling heights only 9 feet, even a woman could drop from the second floor window sill without serious injury in event of a disastrous fire; whereas a three story building, fired in different points with German

efficiency, would undoubtedly mean a great loss of life, no matter how many exit stairways were provided.

It was also found that the two story building cost no more to erect per cubic foot than the three story building. The lease to the Government for the land on which the buildings are placed contains a stipulation that they are to be removed as soon as the work is completed on the expiration of the war, and that the materials in them belong to the Government. It is thought that the salvage of this material, all of which is adaptable to almost any kind of non-fire-proof building, and will be in practically as good condition upon demolition as when new, will return quite an amount of money to the Government when the buildings are wrecked.

The ground rent per year amounts to approximately 5 cents a square foot, which seems, under the circumstances, very reasonable. The buildings are heated with a one pipe system of steam, which is much more economical than a two pipe system, but not quite as elastic. The wiring is exposed, which is a great economy. The plumbing consists of the usual fixtures of good make, connected with iron sewer pipes to the courts and from these points to the street sewers in glazed terra cotta pipes laid with cement joints.

These buildings demonstrate the great advantages of large ample space for light and air, and limiting



First Floor Plan, Building of U. S. Food Administration

the depth of rooms so that every part of them is utilized. This is an important factor in their success when it is recalled how many schemes often considered are too great in depth to utilize the space in the central part away from the light source, although the showing in area might be very good.

When Mr. Wood was commissioned to do this work he was allowed forty-eight hours in which to prepare for actual construction, and the results would seem to demonstrate that what this Government needs, and to a large extent is getting, are men in authority who can not only think clearly but arrive

at logical conclusions quickly. The construction work was done under a well organized contracting company which was amply provided with everything necessary to start the work the moment the order was given. Within three days after the first building was started cars were rolling from the South with lumber, and six sawmills had been installed outside of the building and were cutting up the material that could be procured

in Washington with which to start operations.

The Cantonment Division of the Council of National Defense did the purchasing and made some marvelous savings, on which they should be congratulated. Major Kilpatrick, Reserve Officer in the Quartermaster's Department of the Army, was detailed as Constructing Officer, and Mr. Wood states that his appointment and the able service he received from Major Starrett of the Council of National Defense had much to do with the speed and economy that were effected. All who are familiar with athletics doubtless remember Kilpatrick, the all



Building of U. S. Food Administration, Washington, D. C.
Waddy B. Wood, Architect

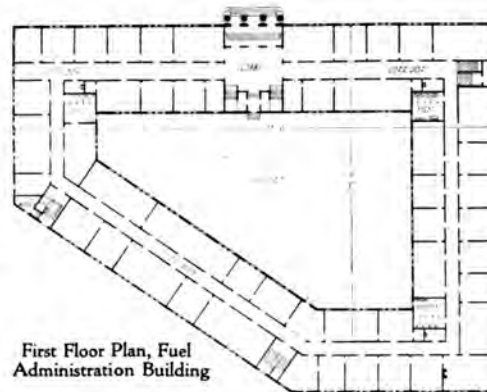
American end on the Yale team of 1910. He has now gone to France to superintend the construction of work there and prove what wonderful material our college athletes are providing.

Mr. Hoover remarked, when he came down on the completion of his building to inspect it, that he was greatly surprised to see that instead of going into a rough cantonment structure he was going into an office building in which it would be a pleasure for his men to work. He also said that he thought there was a good deal of psychology in the attractiveness of a working place and that it would mean greater efficiency.

The Ordnance building differs in one particular from the other buildings in this group in that it has one of its bays disconnected from the others and made entirely fireproof. This fireproof building contains the heating plant and the drafting quarters, where designs for all kinds of arms are prepared. The necessity of having this section fireproof is evident, for it would be a great loss if this data were destroyed by fire. This drafting room is one of the largest in the country.



Building of U. S. Fuel Administration



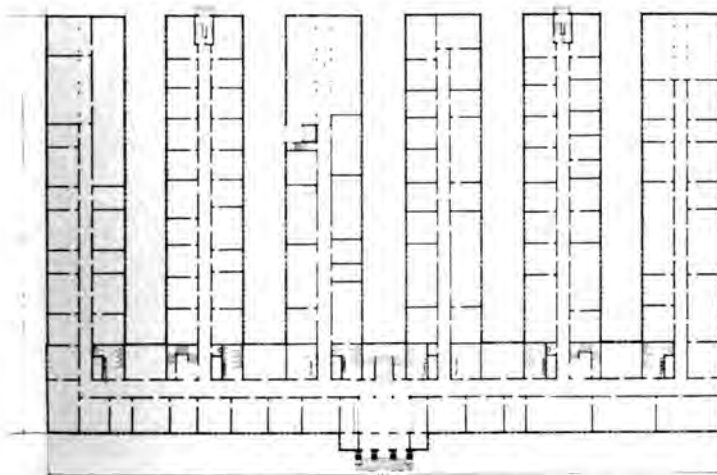
First Floor Plan, Fuel Administration Building

Every one of these buildings was completed before the time allotted and also at a lower cost than the appropriation anticipated. Following is a brief description of the construction used:

The exterior facing of the buildings is metal lath and stucco with a rough finish. Cornices, porticoes, and other finish are of wood, executed in the simplest manner and

with regard to every inch of material but with every moulding and part gracefully designed.

It was found in starting on this project that, contrary to the general belief, usual stock sizes should be avoided, for the reason that they had all been absorbed by cantonment work. The architect, therefore, avoided in every instance sizes of material and equipment that were used to a large extent in other war projects. It was also found that grouping the windows not only immensely improved the appearance of the buildings, but was much more economical and gave much better light to the interior office space than arranging them in isolated units.

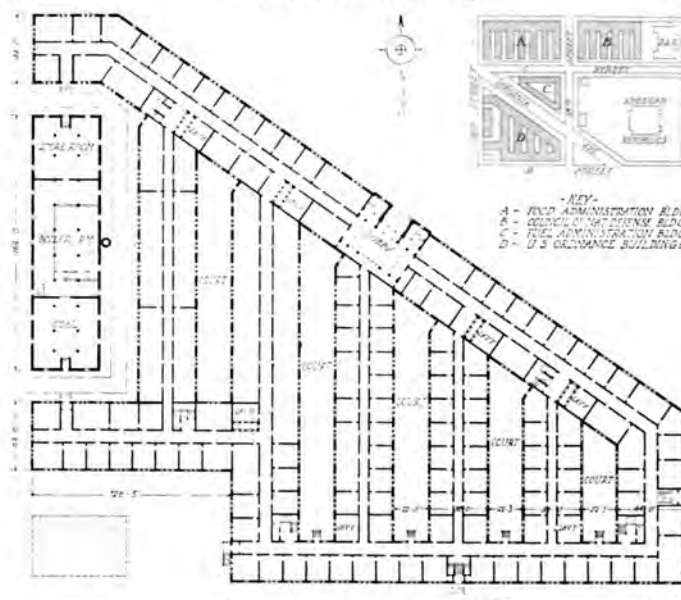


First Floor Plan, Council of National Defense Building

The interiors have North Carolina pine floors with sub-floors and building paper between, and the walls are lined with wood pulp board $\frac{1}{4}$ inch thick, the joints being covered with wood strips. Roofs are covered with felt of an attractive greenish gray color and ventilated at the top along the entire ridge. All the corridors are fitted with telephone wire moulds and all the rooms with picture moulding, chair rails, and base boards. The chair rail was found necessary because of the danger of breaking through the wood pulp. The courts in the Council of Defense building were lined with rustic siding; but it was found that it was not any cheaper than stucco, so the later buildings were stuccoed on all exterior walls, which practice is, of course, more fire-proof and forms a much better non-conducting outside wall. The Defense building has 100,000 square feet of area,



Entrance to Ordnance Building



First Floor Plan of Ordnance Building

the Food building 125,000, the Fuel building 50,000, and the Ordnance building 150,000.

It is very interesting when one stops to consider that these buildings, and others that will be continued in the group, are really the heart of the war work in this country. It is here that all of the big problems will be decided, starting from the White House, passing through this group and then to the cantonments and to France. When it is considered that the Ordnance building, erected in this group, is only one of the branches connected with Small Arms, and there are numerous other branches of the Ordnance which in itself is only one of the activities of the War Department, and the War Department is only a part of the executive force of the Government, it can be realized into what an enormous project this system of buildings will develop before the war is over.

Rear View, Building of Small Arms Division, U. S. Ordnance Department
Waddy B. Wood, Architect



Eastern Penitentiary, Philadelphia, Pa., John Haviland, Architect

✓ Prisons and Prison Building

By ALFRED HOPKINS

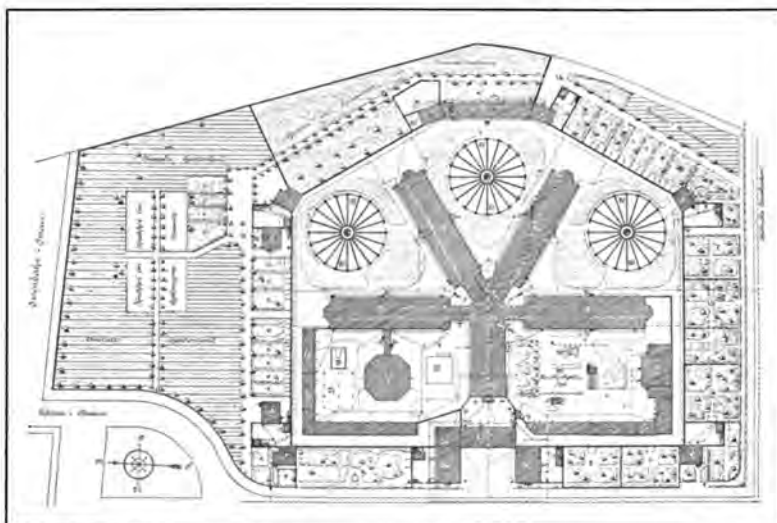
I. THE PENOLOGY OF IT

CESARE LOMBROSO, the famous Italian criminologist, focused attention on the offender from the standpoint that he had come into the world with inherited tendencies that made him predestined to do wrong. Lombroso divided his prison class into three general divisions: the born criminal, the morally insane, and the criminaloid, the latter embracing the very large class of men who come to all prisons and are those who have not criminal instincts, but through their heredity and environment have acquired, at least temporarily, an entirely wrong point of view on what is necessary for each man to feel and to do if he wants to live happily and contentedly in the society of his fellows. Many of this class live with us and do not get into jail, but some of them do.

Lombroso's views resulted largely in drawing attention to the criminal as a being belonging to a class by himself. The great criminologist expresses fine satisfaction in discovering, during a *post mortem* examination on the skull of a murderer, that it contained characteristics similar to that of the skull of the primitive man. At the sight of that similarity Lombroso exclaims, "I seemed to see all at once, clearly illumined, as in a vast plain under a flaming sky, the

problem of the nature of the criminal, who reproduces in civilized times the characteristics not only of primitive savages, but of still lower types, *as far back as the Carnivora*." The italics are the author's, because he wishes to draw attention to the fact that in Lombroso's penology there is given to the criminal some, at least, of the instinctive qualities of the man-eating animal—qualities which he has actually inherited from it.

This view of the ferocity of the offender caused him to be regarded as a creature of an entirely different nature from his brother outside of the prison gate, who shunned him as something to be despised and rejected of men. Lombroso observed that he was made up of different physical, psychic, functional, and skeletal anomalies: "just as a musical theme is the result of a sum of notes and not of any single note, the criminal type results from the aggregate of these anomalies which render him strange and terrible, not only to the scientific observer, but to ordinary persons who are capable of an impartial judgment." It was this point of view which has been responsible for the most brutal, grotesque, ignorant, and stupid treatment of the offender of the civil law, the evidences of which greet the investigator on every hand, even at the present day.



Plan of a German Prison on the Radiating Type

Showing space for the exercising yard. It is gratifying to know that even in Germany, where in some of the prisons these yards still remain, they are now entirely in disuse.

This extreme view received perhaps its first puncture at the hands of Sir Charles Booth, an English investigator, who after a careful study of Lombroso's penological principles put them to an ingenious and quite unexpected use. He found as a result of his investigations that some of the most distinguished and able English politicians, bankers, architects, and others exhibited perhaps, in a slightly less degree, the same traits, the same irregularities of feature, frame, and mind which Lombroso detected in the criminal.*

This unusual pronouncement naturally caused those who had been influenced by Lombroso's penology to begin to revise their judgment of it, and that revision has been going on steadily ever since. Now it is known that the criminal is not to be classified solely by his physiognomy or by any physical, psychic, functional, or skeletal anomalies which differentiate him clearly from the rest of us.

The slow and tortuous course of prison reform need only be touched on here and the dismal history of the cruelties and abuses which it has finally overcome. How John

*This is perhaps not an exact statement, but the author could not resist the temptation of putting the result of Booth's investigations in this form. Booth called attention to the fact that the physical and other peculiarities which Lombroso noticed were not peculiar to the so-called criminal, but were all more or less characteristic of the classes of society from which he was recruited.

Howard, whose name is revered as no other in the annals of prison reform, went about from prison to prison, giving their vile conditions what publicity was possible in those latter days of the eighteenth century, and finally dying of prison fever in far-off Russia. How France chained men together with iron rings around their necks for service in the galleys, and their departure for that miserable servitude was one of the diversions of the titled classes—a circumstance not entirely dissimilar to the slumming of society to the night courts in our own day. How Baccaria, the great Italian reformer and a nobleman by birth, gave the death blow to the methods of torture

which prevailed in his day. The story continues through the English system of transporting the criminal to Australia and the dreadful pass which prisoners had come to on Norfolk Island until Captain Maconochie became its governor, under whose administration order prevailed in a prison community where disorder had previously been unspeakable. Through his efforts a system of marks was established, whereby the prisoner could obtain good marks for good behavior, which resulted in alleviating and elevating his position and established different grades, one of the very first examples of the classification of prisoners, now so important a factor in our prison administration. Sir Walter Crofton built on this principle in the Irish prisons, where it came to be known as the Irish system, and aimed at the reforma-



A Design Submitted in Competition for a New Sing Sing Prison by Westinghouse, Church, Kerr & Company
With one long cell block and a central alleyway connecting some of the more important buildings

tion of the prisoner, where heretofore the thought had been almost solely to punish him. This principle of reformation came to be the guiding one at the new prison built at Elmira, in New York State, which was boldly proclaimed for the first time not a prison, but a reformatory. Here was developed in our own day the indeterminate sentence,—America's honorable contribution to penology. Different systems of treating prisoners became identified with different prisons: thus that at Auburn was known as the Auburn system; and that at the Eastern Penitentiary at Philadelphia as the Philadelphia system, the former advocating the separation of prisoners by night only, the latter by day as well as night—a natural reaction against herding prisoners together without regard to age, sex, or condition, mental or physical, as had been the case formerly, and which developed a controversy that interested penologists all over the world. Many came to America to inspect its early prisons, among them Sir William Crawford who, upon his return to England, constructed the great prison of Pentonville and others on the radiating principle of the Eastern Penitentiary of Philadelphia. All this and much more, quite equal in interest to any tale of fiction devised with all the art of the most consummate master, is open to the student of penology in many books of prison history, experience, and investigation.

In striking contrast to this former state of opinion and ignorance it may be said that now every one realizes that the old idea of the incarcerated prisoner with ball and chain and with stripes and lock steps is a thing relegated to the past. Even the idea that the offender should expiate his crime in prison punishment has gone by the board. All resentment for his crime, so called, has been eliminated, and modern penology now looks upon him largely from the standpoint of the psychologist as a patient afflicted with a disease for which science is trying to find a cure.

The experience which the investigator gets in search of ideas for prison buildings is always an interesting one, and the nearer he comes to the man

behind the bars, the more livening and heartening that experience is. Lombroso, who was an indefatigable worker, based his opinion of the criminal upon an examination of some 5,000 of them. If we could have had a page or two from each of the 5,000 criminals on Lombroso, society—as penologists like to call those of us who are not in jail—might have been further along in the solution of the prison problem.

Progressive wardens throughout the country have demonstrated time and time again that about the worst treatment for the prisoner is to keep him continually behind prison bars, and that with proper supervision he can be trusted to work industriously and intelligently out in the open. In fact, work is more important for the criminal population than for the civil—a fact which has been better understood abroad than it has here. To take a man who finds himself in trouble either through his inability or his disinclination to work, put him into confinement and support him without work, is to make him more incapable of honest endeavor when he is released from prison than he was before he went in. This policy, even now pursued in the great majority of our county jails, is criminal in its stupidity and has earned for these institutions the very proper and the very telling title of "Schools for Crime."

These old jails in the towns and smaller cities are slowly being discarded, and prisons are beginning to be built out in the country where the men can lead a freer and more unrestricted life; where they can be kept in a state of mental and physical cleanliness; where they can become physically tired in work out in the fields and woods, and where they have an absolute change in environment—a change in thought and in deed and scene. All this is as important for their mental as their physical state, and it is safe to say that from now on there will be no more prisons built either in or near our cities. Farms of sufficient size and remoteness should be purchased for new penitentiary buildings that will guarantee, as far as any one can foresee the future, against the proximity of urban conditions. In fact, as compared with the



The New Canadian Prison at Guelph, Under Process of Construction
This was built almost entirely by the inmates who cast the concrete blocks of which it is constructed

old methods, what seems to create the best influence in which to develop a regenerated habit of thought and mind in the offender is a confinement as unrestricted as possible. That the offender can be successfully housed in an institution without bars, has been proved so effectively that the question of how far they may be omitted altogether is now commencing to be discussed. At the United States Government Prison at Occoquan, Va., temporary wooden buildings were built some eight years ago with no jail protection whatever, except that around the whole institution was placed a high barbed wire fence. This was put up by the prisoners and not very securely done. One part of it blew down, some parts of it were torn down by careless teamsters, so that finally the whole enclosure was taken down and, as a result, this interesting fact turned up that fewer men were lost with no enclosure than with one.

Modern and more enlightened penology has proved that the majority of the inmates of our prisons are mentally retarded. Many may be classed as accidental offenders who have unwittingly transgressed the laws. That a class of degenerate, vicious, cruel, and habitual criminals exist is not to be denied,—the born criminal of Lombroso,—but by no means to the extent that the necessities of prison discipline and construction desirable in their case should be made that for all.

To build an entire penitentiary on the basis of its worst possible inmate is nonsense, yet this has been a guiding principle of prison design; but it never has and it never will produce a good prison.

Liberality of treatment for the offender is now conceded by all. The striped clothes which were to aid in his capture, if he escaped, have been discarded because the depressing influence of this grotesque costume on the men as a whole is not compensated by the advantage it gives in the single instance. In fact, the escape of a prisoner is by no means considered such a calamity now as formerly. The writer remembers Major Rogers' observation at the time of his visit to some of the English prisons, on his remark that in the United States we had perfected the process of tool-proof steel for prison work, and how expensive it made such buildings. He said, "But an escaped prisoner is not such an awful thing; why spend a hundred thousand dollars more on an institution simply to lessen the number of escapes by two or three a year? It isn't worth it." Nor is it. Major Rogers' attitude was plainly from the standpoint of the economy of cost; but a much more adequate reason is that the intelligent superintendent can build up a better morale in his men without the extreme methods of steel protection than with them. In America, especially, the one factor which has controlled prison design is the thought that the prisoner must be retained at all

hazards. We have erected one row, two rows, three rows of tool-proof steel at enormous expense, behind which we put a man to sleep who will work all day long out in the open with no thought of running away, and it is the discovery of the fact that the retention of the prisoner is not the difficult and hazardous thing which every one thought it was that changes the whole philosophy of prison construction and opens up to the architect the most interesting possibilities of prison design.

II. PRISON PLANS

The evolution of the prison plan is a subject of much interest. Since the construction of the Eastern Penitentiary at Philadelphia by John Haviland, prisons may be divided into two general types,—the radiating and the non-radiating. The radiating type, of which many of the older buildings are examples, dates from the beginning of the nineteenth century, when prison reform in England was championed by John Howard, Sir William Crawford, and later by Charles Dickens. England previous to 1800 had transported her criminals to Australia and America; but with the successful outcome of the war of the Revolution, America served no longer as a field for transportation, and consequently prisons had to be built in great numbers. These early prisons have all been demolished, and as a result of Sir William Crawford's visit to America the type of English prison to be generally adopted later was that of the radiating type patterned after the Eastern Penitentiary of Pennsylvania. This building is still occupied and is one of the most interesting prisons which the student of penology can visit. It is surrounded by a high wall, as were all the prisons of that time, and the main front is a fine and appropriate type of Gothic architecture. Its conception is broad, the detail simple and good, the walls and stonework, and indeed the great entrance doors themselves, are sufficiently old to give pleasure to the architect who delights in weather-worn surfaces and the architectural inspiration of the past, and Warden McKenty, who governs his institution with a rare good humor and intelligence, welcomes all who journey thither.

While the radiating type of prison was the logical one for the penology of its period, it has now many disadvantages. The first seems to be the unusual and disturbing appearance that such a plan gives to the architecture. At the Eastern Penitentiary this was concealed by the high enclosing wall which the architect treated so effectively, but the stockade wall is now in disrepute, and it should not be used to conceal the awkward architecture of the whirling plan. Furthermore, the radiating plan usually necessitated a huge space in the center for which no one has found an adequate use, and which is expensive to construct and heat after it is constructed.

The central dome at Rahway is said to have cost \$250,000, and encloses a vast vacant area inhumane in its appearance and utterly useless in its structure. It is impossible for the architect to give repose to the design of a series of buildings grouped so that they are all headed for a common center and creating the impression of a possible head-on collision of buildings. Then, too, the end of the cell block where it adjoins the central dome is dark, as is the dome itself, except for the top lighting — always unsatisfactory to the institutional group. Another difficulty is found in the orientation of the various wings. One wing may be placed at the best exposure — in our latitude with its long axis about northeast and southwest, but the others suffer more and more as they diverge from this angle. In this system of design everything architectural has been sacrificed so that a single guard may observe whether the man who has been working in the field all day long, may not be slowly but surely filing his way out through layer upon layer of tool-proof steel. The radiating plan gives supervision, but not of kind or degree which is best suited to modern prison methods.

That the trained architectural mind now rejects the radiating type of prison plan as architecturally unmanageable, may be seen from the competitive drawings submitted in the competition for Sing Sing Prison, instituted in 1907. Many of the designs show one long cell block containing 1,400 men — a feature which was finally embodied in the new Minnesota State Prison at Stillwater. The basis of the design of this prison, however, is that of an alleyway connecting the administration building at one end and the kitchens at the other, with the various bath-houses, dining room, chapel, cell houses, etc., between — an idea which gained credence among some prison men as a practical arrangement in which to carry out the theory of prison discipline prevailing at that time. This type of plan has much to commend it. It is in many ways practical and conven-

ient, but from the architect's standpoint it is ugly, although in this respect it is much better than the radial type of plan, and it is quite possible to orient all the buildings so that the cell block or blocks, the most important of all, will have the best possible exposure. The new prison at Guelph, Canada, has also been designed on this principle; but this arrangement never gives a well balanced plan, and the huge cell block is now felt to be bad penology. It is too unusual and unnatural. The feeling of all penologists now is that prison life should be as near normal as possible, and this normality should be felt in the architecture of the prison quite as much as in its administration, and smaller units of cell housing are very much more desirable. The impression caused by the appearance of the institution on the mind of the inmate is a matter of prime importance, as will be shown later.

What is more natural, as well as a more architectural solution of the problem, is the plan whose various parts are brought together by the use of the connecting corridor* to provide indoor circulation throughout the group. This system of design is well known in connection with other types of building, but seems to be new to prison architecture. Indeed, such an arrangement would have only been tolerated in the present attitude toward the offender. Modern penology demands, first of all, adequate possibilities for segregation and classification. These are of vital importance in the administration of the modern penal institution, and cannot be properly had in the huge cell block. To achieve this classification and segregation, the connecting corridor offers the greatest possibilities. To see how this might be accomplished, the author ventures to put forth plans of a large state prison which he drew for the New York Prison Association in consultation with its general secretary, Dr. F. O. Lewis, and which at the time they were drawn (November, 1915) embody all the features desirable in a prison of this

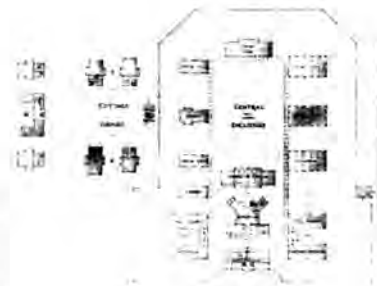


First Prize Design

*It may be interesting to note just how the connecting corridor idea in a modified form became acceptable even some seven or eight years ago. At that time the city of Milwaukee instituted a competition for a House of Correction. There were five prizes awarded. The author received the fourth prize and Messrs. Leenhouts & Guthrie of Milwaukee received the first prize. The work was not taken up immediately after the award and a year or two went by before the working drawings



Diagram of Final Plan

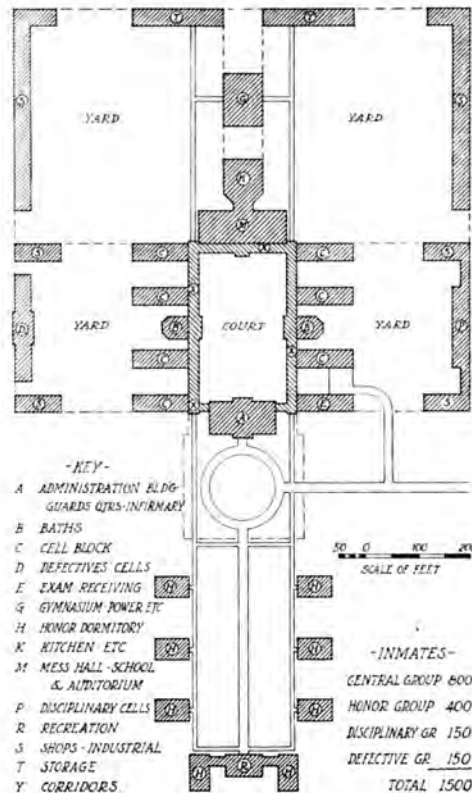


Fourth Prize Design

were finally started. Reference to the central diagram made from the working plans will show that the Institution was developed from the fourth and not from the first prize design. This was all fair enough, for by the terms of the competition all the prize plans became the property of the city, and of course they were at liberty to use any one they chose. The incident is mentioned as an argument for the connecting corridor idea, and incidentally is an interesting commentary on a competition.

magnitude. It was proposed to house 1,500 inmates, all told. These were divided into four general classifications. The main or institutional group was to contain 800 inmates, a disciplinary group was to house 150 inmates, a defective or abnormal group was to contain 150 inmates, and the honor group in cottages was to house 400. It has since become clear that it would be better for the state to have a general reception institution where all offenders should first go for classification. From there the abnormals would be sent where all could be supervised by specialists in this class of work, the incorrigibles to a special prison designed and administered for them, and the other classes segregated in their respective institutions. Such general classification of institutions would be far better than to have many classes in one institution. The advantages of this method are now recognized in New York as well as in a few of the other states.

By looking at the plan reproduced above, it will be seen that the institutional group is composed of eight cell blocks of 100 men each, four cell blocks disposed on either side of the main court and all



Plan of a Proposed State Prison, Alfred Hopkins, Architect

Honor or Cottage Group in foreground with vegetable gardens on either side. Main Institutional Group in center with hospital and defectives on left and disciplinary group at right; shops at rear help form enclosures for athletic fields.

joined by a connecting corridor, establishing two general classifications which are consistently maintained throughout every function of the institution.

The cell blocks are three stories high, each floor separated and segregated from the other floors, which makes twenty-four classifications—all that would ever be required. There are two bath-houses, one for each group of four-cell blocks.

The administration building is placed at one end of the court and the mess hall at the other. The mess hall is arranged with entrances at each end, so that the two general classifications can be kept separate in the dining rooms as well as in the school-rooms on the floor above. On the third floor is the large auditorium. This has been set back at the ends so as to let into the main court the maximum amount of air and sunshine.

To the right of the institution are the cell blocks and shops for the hardened offenders who will be confined here and will not leave their quarters. On the corresponding side to the left is the hospital and the quarters for the abnormals and defectives. The power house, over



Perspective View of a Proposed State Prison Shown in Plan Above
Alfred Hopkins, Architect

which is a gymnasium, is located behind the institution. The shops have been placed so that they form a large enclosure, giving two athletic fields with the gymnasium between and used jointly for both, so that the two general classifications of the institutional group each have their respective fields for exercise.

In front of the institution is the cottage group, whose inmates will work largely in the fields. The cottages are all in smaller units where the men may be housed in dormitories or in single rooms. A comparison of this plan with the radiating plans will show, even to the unpractised eye, that a better and more agreeable disposition of the various units has resulted by connecting these units with a corridor enclosing a square, than where all the buildings are pointing to a common center, or where they are attached to the single central corridor, as in the prison at Stillwater.

A simple form of the type of plan based on the connecting corridor is shown in the author's recently completed Westchester Penitentiary, and as it has been very carefully worked out he may be pardoned for going into the structure in considerable detail.

The general problem was as follows:

Westchester County had purchased at East View, at a very reasonable price, a fine estate of some four hundred acres of exceptionally tillable land. On this property it was proposed to build a Poor House for about 700 and a penitentiary and workhouse for about 350, all short term prisoners, the maximum sentence being thirteen months. Most of the men were to be employed on the farm, but in an institution of this size there are always men who will do better in shops so that the two kinds of work ought to be available. The plan was to build the institution by contract and the shops by prison labor.

The general scheme is set forth clearly in the plan, and it may be said that at the very beginning it was determined the men should be housed in smaller units than was usual. There are four cell blocks of three tiers each, all with outside cells, there being 27 men on a floor and 81 to a cell block. The connecting corridor 16 feet wide runs approximately east and west, and to this are joined the four cell blocks on the south, and on the north the reception building, the refectory, and school building. Between the two central cell blocks is placed the administration building connected to them by an open passage.

The administration building has on the ground floor the warden's office on one side of the hall, and the clerical office on the other, and in the rear, a long corridor which has been called the "guards' corridor" but which will be used largely for the intercourse between the prisoners and the public. On the second floor of the administra-

tion building are quarters for a hospital and some rooms for the officers. It will be noted that the officers' rooms on the second floor and the guards' rooms on the third floor are accessible from the public space, but the hospital is only accessible from the prison side. In other words, the hospital is in the fortified portion and the guards' quarters in the unfortified. The main stairway goes up to the third floor of the administration building, devoted entirely to guards' rooms and these were made large enough so that two guards could occupy one room, and while this is not generally advisable it was a wise forethought because some of the rooms have already been used in this way.

The hospital quarters are small, because in the prison with the individual room a man who is sick is better off in his cell than he would be in a general hospital ward, and the men very frequently prefer to stay by themselves.

The prisoners brought to the institution enter the bath and reception building at the rear, where the process of their reception is as follows:

They enter to the left where they undress and



Cell Block Corridor, Westchester County Penitentiary and Workhouse, White Plains, New York

bathe. Their clothes are tied up in a bag, temporarily placed in a metal lined closet which can be fumigated, and later taken to the general county farm laundry and sterilized. After the prisoner has had his bath he goes into the doctor's office where he is given a careful physical examination, and here also are made the finger print and other records of identification which are very desirable from many points of view.

He then goes to the barber if necessary and has his hair cut. It is not now the custom to crop all prisoner's heads unless the actual physical condition makes such treatment necessary. After he has been given clean underclothes and a clean prison suit he goes to the warden's office and is there interviewed by him. The prisoner is told what the rules of the institution are, and his first meeting with the warden is of consequence to both, as it gives the warden an intimate opportunity to regard and to counsel his man, and the prisoner his first intimation of what is expected of him and what his treatment will be. After his interview with the warden the prisoner is placed in cell block 3 to stay during the period of observation, which is usually about two weeks. This is not only for the purpose of finding out what his physical condition may be, and to guard against the development of contagious disease, but also that the prison authorities may make the equally important diagnosis of his mentality, from which is largely determined his future treatment.

This cell block set apart for the observation period of the inmate adjoins the administration building, and it is easy for the warden to be in frequent touch with the new men. An inmate who is only sentenced for a week or ten days would never leave this cell block, but would serve his sentence and be released from there. Men confined for a longer period, however, would be assigned to whatever classification seemed best after the observation period expires. In the reception building are also included the shower baths, twenty-seven in number, so that all the inmates of each floor may be bathed at one period. Shower baths are frequently put in the basement, about the worst possible place for them at all times, but especially in a prison. At Westchester

no quarters of any kind were put in the basement. It was determined at the outset that all requirements should be accommodated above ground, a very wise provision for every prison building. Adjoining the shower room is a store room which would be small under ordinary circumstances, but in this instance there is a large general storehouse which will be maintained independently for the penitentiary and workhouse.

The school building contains four rooms with accommodations for 30 pupils in each schoolroom.

The mess hall has been laid out so that the prisoners will sit at the table in the ordinary way, facing one another with alternate wide aisles for service. Feeding the prisoners in a large mess hall has now been generally adopted in this country, and is infinitely better than the continental system of feeding them in the cell. Man is a gregarious animal, especially when his waywardness has landed him in prison and the old systems, which aimed at the solitary confinement of the prisoner and tried to reform him by opposing all the things which were natural to him, were as stupid as they were cruel.

Over the mess hall is the auditorium, large enough for all, with two stairways so that the inmates from cell blocks 3 and 4 may be separated from those in cell blocks 1 and 2, and the connecting corridor has been divided by mesh grilles, so

that these two general classifications which are very desirable may be maintained.

The connecting corridor is not only advantageous in permitting all portions of the institution to be reached under cover, but has been very desirable as a place of recreation for the prisoners. It will be noted that it is cross ventilated by windows north and south and that, with its extended southern exposure, it makes a very satisfactory place for recreation and exercise in bad weather when the men cannot work outdoors. A signal advantage, too, arising from this type of plan is that the cell blocks on the second and third stories are lighted on all four sides because of the one story height of the connecting corridor. The cell blocks are not only closed off from the connecting corridor by a glass partition, but at each floor the corridor between the cells is



Typical Cell, Westchester Penitentiary and Workhouse, White Plains, New York

again closed off from the stair hall so as to make the quarters for the men as quiet as possible. The intolerable banging, rattling, and reverberation of the usual steel cell in the huge modern cell block is one of the chief things to be said against it.

It will be noticed that the institution as planned resolves itself into three courts, all of which will be kept in grass and planting and will look as little like the usual prison enclosure as it is possible to make them through gardening means.

The author cannot refrain from mentioning here his experience in inspecting the new and then building Camp Hill Prison on the Isle of Wight, where he had the good fortune to go with Major Rogers, its architect. The new buildings were being constructed in a delightful environment of pine trees which curiously enough it was impossible to keep the warden from cutting down when this beautiful timber was found growing within the prison enclosure. All the other prison yards in England are treeless and, consequently to the mind of the warden at Camp Hill, a prison yard with trees is not a prison yard, but something else. The fact that Camp Hill itself was something else than the usual type of English prison made no difference to the warden. To him a prison yard meant a yard without trees and paved with cobble stones.

The policy of Camp Hill is an English adaptation of the indeterminate sentence principle. Men who have been convicted three times are sent on their third conviction to Camp Hill, where they remain until the authorities consider they are more nearly capable of living normal lives in the community.

In designing Westchester the dominant idea was to accomplish three things: first, to create an institution which would look as little like the conventional

jail as possible; second, to give to each inmate the privacy of a separate compartment; and third, to build a county jail that, while giving much more in appearance and accommodation than the old type, should not exceed it in cost.

With the first idea in mind the bars to the windows were all located on the inside of the sash instead of on the outside, so that this distinguishing mark of the usual penal institution should be as little evident as possible.

By a special dispensation of the New York State Prison Commission, permission was given to place the bars 6 inches on centers instead of the usual 4½ inches on centers. The windows were designed so that only three bars were necessary. These are painted light in color and consequently offer much less obstruction to the light. They are of tool-proof steel, and as the inmates are all short term men the desire for escape is not so great as in the longer term prisoner. At the time this idea was developed the author would have hesitated to put long term men behind prison bars which were so readily accessible to the ingenuity of the accomplished crook, but he would not hesitate to do so now.

In the cells a toilet has been placed where it will be screened as much as possible and the usual prison seat has been arranged to close down over it and conceal it almost entirely from view. The cell walls have been painted a soft gray and each cell has a rug, a cot, a table and chair, a shelf and hook for the prisoner's clothes, and a wash basin. The dining room has been furnished with very creditable-looking tables and chairs and the floor paved with a bright red tile, and the dull monotony of color usual in the prison building has been avoided throughout the institution.



The Usual Type of Police Station Steel Cell

In this type there is no provision whatever for anything approaching a screened position for the toilet



General View from Approach, Westchester County Penitentiary and Workhouse
Alfred Hopkins, Architect

EDITORIAL COMMENT

WE have previously spoken in these columns of the patriotic desire of the architectural profession to serve the Government in any way in which its services might be made to count in winning the war, and how sincere offers made with a spirit of self-sacrifice were politely, but nevertheless firmly, refused. After this denial to serve the Government the recent request of Secretary McAdoo, that the building of houses and other private structures be postponed until after the war, amounts to a denial of the architect's privilege to serve private interests. We cannot but feel that this request, which in its effect amounts to an order, has been made without a careful analysis of the conditions which may have seemed to make it necessary and without realizing the widespread and evil results such an ill judged order is capable of bringing about.

The patriotism of architects and of the entire building industry has too often been adequately proved to make it seem at all likely they will not co-operate with the Government in this latest curtailment of their legitimate activities; but notwithstanding their patriotic spirit to abide by any restriction, the wisdom of this request is seriously open to question.

It is the culmination of rumors which have been current since we entered the war, that the United States would follow the example of Great Britain and prohibit all building except that required for Government use. It is certainly the part of wisdom to govern our acts in the light of British experience, and it is only to be regretted that British example in many phases of the war has not more frequently influenced our policy; but on the other hand, the conditions leading up to the adoption of British measures should be analyzed in comparison with our own before the British regulations are adopted *en bloc*. Conditions as they effect the building industry in the two countries are as unlike as can be imagined. The greater proportion of building materials used in Great Britain must be imported, and this in normal times consumes a large amount of the cargo capacity of their merchant vessels. The original intent of the British regulation was to eliminate this great burden on shipping and release greater cargo space for the absolutely essential munitions and food. With the progress of the war the great numbers of men called to the service so reduced the artisans and building mechanics, as well as members of all other industries, that the scarcity of labor itself would have automatically checked building operations if they had not previously been suppressed. The drain on British man power can be realized when their present attempt is called to mind to comb once more the industries and release for foreign service all available men that can be spared not from peaceful pursuits, but from the very industries that are furnishing supplies to the fighting forces.

These surely are not American conditions, and a drastic curtailment of private building operations cannot be justified by our present needs, at least as far as the people are given to know them. If the National Government has facts to the contrary, it would seem necessary to call into conference selected representatives of the building industry to study the situation, and if general curtailment was found necessary, to accompany the statement to the country by an explanation of the causes leading up to such action.

The great needs in this war are buoyant confidence among the people and ample finances to meet the burdens which we are rapidly being required to assume. The building industry is a very great producer of revenue to the Government, and at present so many thousands of Americans are dependent on it for their living, that any undue disturbance of its activities will surely be reflected in Liberty Bond subscriptions and other calls by the Government for money. For the last three years building has been reduced to the absolute minimum of necessity. The high cost of materials and labor and the difficulty of obtaining loans from the banks for building purposes have served to eliminate all but necessary building, and it would surely seem that these economic factors were sufficient to prevent any extravagant investment of funds in building enterprises that at this time might be of greater use to the Government. The present situation does not call for lessened activities; it demands greater activity and ever increasing production. The more the country produces, the greater will be the revenue to the Government, and the greater prosperity will the people enjoy. With prosperity there will go confidence and enthusiasm for the war. Economic factors will decide the course to be followed with the least disturbance to general industry. Let the Government draft into the service all the experts and men from civil life that are required but let the exhortation to those at home be not to work less but to work more, that we may be cheerful in our tasks, and that the revenue needed by the Government will flow in an unending stream to bring German autocracy to defeat as speedily as possible.

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THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

IN WHAT MANNER AND BY WHAT
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TECTURE BE DEVELOPED IN ORDER TO
WIN A LARGER RECOGNITION?

A Question of Vital Interest
to the Profession Answered
by Representative Architects

NEW UNIVERSITY BUILDINGS

at Johns Hopkins University
and University of California

INDUSTRIAL HOUSING DEVELOPMENT

at Kingsport, Tenn., by Clinton Mackenzie

MARCH 1918



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THE JANE K. SATHER CAMPANILE, UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.

JOHN GALEN HOWARD, ARCHITECT

THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXVIII

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In What Manner and By What Means

Can the Practice of Architecture be Developed in Order to Win a Larger Recognition?

THE recent momentous changes in the world's activities have not taken place without leaving an impression on the architectural profession. The war has called upon all with a suddenness and reality which few comprehended possible a short while ago; but the services of many agencies have not yet been fully employed, and of these, none needs more spirited defense and assertion of its true position in the complex and changing affairs of to-day than the profession of architecture. Architects have for many years been fulfilling the duties entrusted to them in a commendable manner, and the last few decades have seen great strides in our residential, civil, and ecclesiastical architecture. Some of the greatest building achievements of all time have taken place in the United States and due in the largest measure to the abilities of architects.

When our Government entered the war and began preparations on a large scale for its prosecution, it was thought quite naturally that the achievements of the architectural profession would be an appreciated guiding post and that the preparation of the Government's building plans would be placed in the

hands of architects. Were they? No. Engineers and contractors who furnished the "know how" were given precedence, while architects were dismissed as visionary artists.

This recent trend of affairs has served to awaken architects to a realization that the nature of their profession is unknown or misunderstood by the majority of the public. The results of this lamentable lack of knowledge are now clearly evident.

As a journal enjoying the support and confidence of the great majority of the architects of the country, THE ARCHITECTURAL FORUM considers it a privilege and duty to solicit expressions of opinion from representative members of the profession on this question of the moment.

We have no thought that the replies to the above question will bring out the solution of the whole problem; but we confidently hope their publication will stimulate an expression of constructive thought that will lead to the adoption of means insuring a wider recognition of the art of architecture and the high capabilities of the men engaged in its practice.

THE EDITORS.

Editors, The Architectural Forum: You ask: In what manner and by what means can the practice of architecture be developed in order to win a larger recognition?

Let us begin with some sort of understanding as to the duties and functions of the architect and then inquire if the architect is living up to his obligations, and so showing himself to be worthy of a further confidence than is now reposed in him by a willing public. It would seem to go without saying that if the architect is to hold a field against some other branch or profession, he should be more efficient and more proficient in a given line than is his rival. Should any other be able to render higher service in a certain field than does the architect, there is no room in that field for the architect, and he should not, and the public need not, worry as to his limited recognition therein. The closest competitor of the architect to-day (except, perhaps, the other architect) is the engineer, and the next in order is the decorator. Can the engineer design better industrial and commercial structures than can the architect? Can the deco-

rating company furnish more tasty interiors and more stylish exteriors than can the architect? If so, these fields are theirs and not the architect's. But can they, the engineer and decorator, so plan and design?—not if the architect is a real architect, a considerable portion of the unenlightened public to the contrary notwithstanding. The real architect can and does put into his product a basic element necessary to the larger life which neither of these others can in the very nature of things supply. Could the engineer solve his problem in the spirit of beauty, he would cease to be an engineer and become an architect. Could the decorator feel beneath the superficial cloaking and touch the skeleton of the structure he would cease to decorate, he, too, would become an architect. It is the prime duty of the architect so to plan and design that his structure shall function for use and beauty—not for modified use and superficial ornament, but for inherent practicability and beauty. The sooner the public is brought to an understanding of this the better for the public, and the sooner will the architect

receive that larger recognition which under such conditions should be his.

A larger recognition is not bound up in the acts of the architect alone, but in the attitude of the public, and ways and means of reaching that public must be considered. Among these ways and means must be counted the influence of the architect's devotion to his ideals as exerted through its materialized expression. Let the architect for a while seek beauty unadorned — not structure unbeautified, but beauty unadorned and set up for public contemplation the results of that search. The public will feel an influence frequently enough exerted, and the appeal will reach all types of minds in a highly ramified society — and reach beneficently. The problem of to-day should be solved in present-day manner, and the solution should be made appealing and attractive. Each individual can be made to realize that he can, and how he can, express himself, and that will put an end in the field of design to the bane of the real architect's existence — period architecture. The public will come to realize that period architecture means just what it says: that that architecture has come to a full stop — that it is dead! To the real architect already has come this realization — that, in a measure, makes him real. Both architect and public must grow up into this and into a further realization, beginning in infancy and beginning in the cottage and the "flat," as well as in the palace and the "apartment." The infant should open his eyes upon surroundings in which good proportions and harmonious colors are elemental in the structure and furnishings. The dweller in the cottage should be reared to an appreciation of the dignity which inheres in simple beauty or in beautiful simplicity and so, also, should the dweller in the palace. Both should be taught that beauty resides in the form and color rather than in the comparative costliness of the material from which the form is shaped; that harmonious and expressive combinations of inexpensive materials are more beautiful and more satisfying in the sum-total of human happiness than are discordant agglomerations of the richest substances. This philosophy should be learned and taught by a profession which would seek to win a larger recognition.

Educating the public and the architect in the philosophy of correct living and thinking, of estimating the real values of life, may be made a means of creating a mutual sympathy and understanding between public and architect, and of gaining for the architect that larger recognition which it is assumed by many, perhaps from the architect's own attitude, that he is earnestly seeking. It need not be taken as a foregone conclusion, however, that every one on this planet will receive his just deserts, though that is no reason that a man (or a profession) should not strive to make himself worthy of the highest.

Is the attitude of the architectural profession, as expressed by its acts in certain localities, one of arrogating to itself rights and demanding recognition? And is a certain restlessness and a feeling of injured innocence, which apparently is lying near the surface in some quarters, due to an inner consciousness that those rights are not freely granted nor the recognition fully bestowed? Has the licensing in certain localities of archi-

tecs to practise been demanded by the public? Not altogether! Has the move been entirely an altruistic one on the part of the profession which brought it about? Few thinkers will grant it! There are better ways of protecting the public and gaining recognition for the architect than this. Police regulation will protect the public against the incompetent builder; while state registration can be made to give all necessary official recognition to an architect who has demonstrated his skill and efficiency through accomplished works and otherwise. Beyond that, the recognition which an architect, and through him the profession, may justly be entitled to and gain must come through his own individual attitude toward his work and the value of the service he has rendered the community. Recognition by the public should follow only, and in direct ratio to, service rendered the public. Until an individual or a profession has rendered service in higher degree than has another, neither individual nor profession should demand recognition in higher degree than has been bestowed upon that other; and until definite and valuable service has been rendered, the community, that is the public, is not beholden to bestow any meed of recognition whatsoever.

As a matter of fact, is there not to-day, due to a lack of analytical power and close observation on the part of the public, a greater meed of recognition bestowed on the architect than his productions would seem to warrant? Humanity is so constituted that there are friends of whatever foible and followers of whatever fallacy, and so recognition is indiscriminately bestowed. But to win the recognition of the judicious, the architect must cast out his spirit of camouflage and himself appear through works which are what they seem to be. Then, and only then, will he be recognized at his true worth — and that is all that he or his profession should desire or expect.

Chicago, Jan. 26, 1918.

IRVING K. POND.

Editors, The Architectural Forum: Lack of recognition of the architect is due to the fact that notwithstanding his constant employment by individuals, firms, corporations, and public authorities, his work is not generally understood. Because he works with and through others, his general control of the whole, and the difficulty of his task, are not understood.

Any one interested in building who has been in Washington during the past year cannot but be struck by the attitude of the Government in regard to architects. Alone of all those who undertake building operations, the Government of the United States, the greatest of all builders, has failed generally in the past to employ architects, and now, in this crisis of emergency building, has not made full use of the men who are fitted by training to help, but has turned largely to engineers for their building operations.

No corporation and no private individual with a great and difficult building problem before it would have thought of such procedure. It may be of value to try to see what has caused this attitude.

The building activities of the Government have been largely centered in the Treasury Department, and here one branch of the department is the office of the Supervising Architect. This man, with an office force as large

or larger than that of the busiest architect in the country, receives a salary equivalent to what any fairly competent architect would expect to earn after a few years of practice. It follows that a first-rate man is not available and so this, the largest office in the country, is run by a man who is measured by his salary. If there were great power, authority, and prestige attached to the place, the salary might not be the measure, but there is none. This has not tended to advance architecture in the estimation of the public.

Some years ago the Congress, convinced of the inadequacy of this organization to do really good work, authorized the employment of architects, and, while the Tarsney Act was in force, the Government had the services of good men and got good buildings. For once the United States Government had work done which could rank with the work done for our leading bankers and merchants, and for enlightened states and cities. The Tarsney Act was repealed, and once more the unwieldy office of the Supervising Architect, with its low salaried head, is attempting to do the building for the United States Government.

In actual practice even so simple an architectural proposition as an office building for the Interior Department was deemed too difficult, and an architect was called in to help; and, again, when the Treasury itself wanted more office space, an architect was called in, so that the Government is definitely recognizing the field of usefulness of the architect.

Outside of the Treasury the other building work of the Government has been largely in the Army and Navy — barracks, dwellings, hospitals, etc. Here each department had its engineers and had grown accustomed to believe that engineers could build anything. One is familiar with the ugly buildings of brick which are their work, and which might be excused if they had proved to be good plans, and cheaply built, but generally they are neither. The crowning monstrosity is such a building as the granite jail in the Portsmouth yard — ostentatious, costly, and hideous. Yet it is still generally thought that engineers can build anything.

It is then and now a question as to whether an engineer or an architect is the best one to do building operations, great or small, simple or complicated.

Let us attempt first to determine what the most complicated and difficult building operations are. Take the great bridge over Hellgate. It is a question of study of conditions to determine the type of bridge, the position of piers, the foundations, the span, the details of the truss. Take as a comparison the New York Municipal building. This involves every engineering problem of foundations and steel, and in addition the most comprehensive and detailed study of every department to occupy the building, the economical arrangement of the plan for the efficient execution of the work, corridors and elevators for service, and problems of heating, ventilation, power, electric service, and plumbing, and in addition to this that knowledge of design which makes it possible to weld this complete mass of detail into an harmonious whole. The first is simple compared with the second. The first is typically an engineering piece of work, the second is typically an architectural one.

Or, to take more everyday comparisons, a manufactur-

ing plant, or mill, and a hospital. The one requires the study of one unit or bay for certain requirements of light and for certain floor loads, and then the duplication, with perhaps modifications for special uses or loads of this bay — the study of heat, power, and its application and use. The other requires study of all the structural problems of the mill, and in addition study of all details connected with patients, nurses, doctors, and servants, details of operation, administration, and service. Again these must be coordinated, harmonized, and brought to a logical and therefore beautiful conclusion. Again, the first is rather in the province of the engineer, while the latter is in that of the architect. The first is simple, the second is complicated. Moreover, it is to be noted that the architect could readily do the former, indeed would consider it very easy; while the engineer would find the latter very difficult if not impossible, because his engineering training has not taught him how to do it.

Let the layman in any large center consider some of the important building operations of which he knows and see whether without an architect such undertakings would have been possible.

Put briefly, when it is a question of building, it is the simpler, less complex problems which the engineer solves; it is the complex ones, often involving the engineers' problems as well, which the architect handles. This might seem to make a claim for the architect of omniscience. Quite the contrary, the architect would be the first to admit that of all the varied sciences which come under his control and direction there is hardly one of which he is a master. His claim to being in fact what his title means, the master builder, is that he has knowledge of all the matters which enter into and make up the modern building, knows what the problems are and how they should be solved and who is best fitted to solve them. Many of the men he needs to help him will be in his own office force, — men who know more about construction, or about plumbing, or about steam boilers, or about design, than he does, — but often the men whose help he needs are outside his organization. It is obvious that no firm can afford to keep in their employ, as a subordinate on a salary, the best structural or the best domestic engineer. An architect can, and probably will, have some men well trained in these lines for ordinary work; but in complicated problems he will know just where to go to get the best advice, and he will get a structural engineer or a domestic engineer who is good enough to have his own force. The architect handles the big and complicated building operations, and he does this by coordinating all the various forces that are needed, and among these are the engineers. The engineer is neither trained by education nor fitted by experience to handle any building operations but the very simplest, and to add an architectural draftsman to his force is certainly not, for the owner, the equivalent of employing an architect.

Under these circumstances one is forced again to inquire why, in this great building emergency of the Government, it is the engineers who have been called in. Put in the baldest way, it is because the public think engineers practical men and architects visionary. There are many reasons for this. One is that architecture, as a complex profession requiring executive ability of a very high order, is quite modern, a growth of two generations,

and the public holds to the 1870 idea of the architect. And another is that the simpler problems—warehouses, mills, and factories—have been done either without architects or with a modern type, which has grown up in response to the demand, of engineers or mill architects. These men do the simpler (and, on a commission basis, the more profitable) class of work, and a type from which beauty has unfortunately and needlessly been eliminated. They have performed these simple building operations thoroughly well—better, perhaps, than the architect has done his very difficult and complicated task—and have gained a reputation for business ability which is generally and rightly recognized, but overvalued. The architect could easily have done the mill, and the public does not readily appreciate this, nor the converse, that the engineer could not have done the architect's task. If architects are to do the work for which their training and experience fits them, it is their part to let the public know what architects have done and are doing.

On many sides now there is evidence that the Government appreciates the fact that there is work, vital to the success of the war, which architects can do, and an increasing use is being made by the Government of architects. One has only to look over the list of architects in any great center of population to find name after name of men who are working here or abroad, in Army or in Navy, or in civil life, and in most cases doing professional work.

England and France were comparatively slow to realize what especial help architects could give. We have been in the war hardly a year and the architects are already doing their part. There is much more that they can and undoubtedly will do, and the profession throughout the country can help by bringing home to its own community an understanding of the particular work that the architect can do better than any one else, and using their influence to see that these professional abilities are fully used.

It would seem that the best way for the profession to win a larger recognition would be for the architects in each large center to make a definite effort to give to the newspapers popular articles on the notable buildings of that place, describing in a non-professional way what the architect had to do before his plans were ready to estimate, and how the work was conducted from that time on.

Take New York, for example, a description of the Public Library, of the additions to the Museum, the story of some great hotel or good apartment house. These could be made very interesting reading and would give the reader, in most cases, a new idea of what an executive manager the architect is and must be.

Boston, Mar. 5, 1918.

R. CLIPSTON STURGIS.

Editors, The Architectural Forum: The question to which you have asked me to respond, "*In what manner and by what means can the practice of architecture be developed in order to win a larger recognition?*", is characteristic of the impatience of our day and generation; one can hardly conceive that such a query would have been propounded in any of the other great periods of architectural activity. The truth is that our profession has not only outstripped, in its rapid development, the public upon whom we rely for appreciation, but in our

progress we have to a certain degree lost touch with earth. A thoughtful analysis of other times will reveal the architect as responding to a pressure exerted upon his faculties by the movement of events in the society of which he was a part, and all architects reacting in a generally similar manner to that pressure; this response, this reaction, issued in Style. When, in any epoch, we find Style, we may be sure that certain prevailing public and private demands were met and satisfied; the general uniformity, the family resemblance of its exemplars, are in themselves proof of this.

It may be doubted whether architects of the present day in America are doing much more than making essays in the historic styles, experiments, models at full size, and in permanent materials; exercising joyously the skill and knowledge which have come to them in such abounding measure in less than a generation, and exercising them less with reference to the actual needs of the people for whom they build than to their own pleasure in doing a certain kind of thing which perhaps they have always longed to do when opportunity should offer. To complicate the situation, the element known as "the taste of the client" is to be reckoned with; in the domestic field it is rarely an American house he wants—he dreams of an Elizabethan house or a French château or an Italian villa. When we add the predilections of our more instructed clients to our own when we have a free hand to suggest the type, and multiply these by the normal volume of work done here, such confusion arises that it is difficult to discern the dominant trend if, indeed, there be any; and the profession suffers in this confusion by the lack of comprehension which ensues and for which it is largely responsible—for the architect is usually able to lead his client along the path he wishes him to follow. There is thus no pressure exerted upon the architect by a general and quite uniformly distributed taste—the product of that general agreement upon modes of life and thought which is the result and the mark of an homogeneous and ordered social state.

Tastes abound—all sorts of tastes—this is to be expected in the fluid condition of the elements of our civilization; that these may interfuse in time and produce Style the writer has no doubt. But let us give them time; let us be patient; the growth of an art cannot be forced nor artificially stimulated; it must have its roots in the soil and grow unconsciously, bending to this or the other influence until, gathering strength, it matures and bends no more, and gradually dies to enrich again the soil from which it sprang.

We architects are prone to be impatient with the building public because we have outrun its comprehension of what we know. And this is hardly fair. There is a quality of the American public in which we should have more confidence—its common sense. Your client is no technician, he could not give you a reason; but take him by and large, if there is something wrong he is very sure to feel it. We yearn for "a larger recognition," by which we may assume is meant also sympathetic understanding. To be complete the understanding must be on both sides. Let us cease to regard our commissions as *projets* and look upon them as human problems. Let us try to understand our public, analyze its fundamental

needs, and satisfy them worthily. Let us not disdain the thousand and one practical details which minister to that satisfaction. I wonder if we have the confidence of the public! I wonder if we have earned it! If we have, we have taken a long step on our side toward the recognition we desire so ardently.

We have heard much about the education of the people in matters architectural. Poor things! They need it. And what are we to do while they are getting it and trying to catch up to us? Shall we mark time or shall we go on, in the rather self-absorbed and rapt way that has become our habit, or in another way which includes the study of our times and people? We must always lead, always be ahead of our public—but we must lead chiefly as interpreters, in the language of art, of the needs and aspirations of our national life. It is the skill shown by our great forerunners in translating social pressure into terms of architecture that has made them forever great. They spoke the language of their time; they did not stammer in alien tongues. Their immediate public was homogeneous, and its needs, its aspirations, its taste, easily discernible.

Ours is a harder task; our public is being welded by the hammer of circumstance; listen as we may, the din of the forging of a nation deafens us. And we whisper or shout in the accents of England or of France, of Italy or of Greece, hoping to be understood. When we learn to speak in the new tongue that shall be American, showing its origins as a word contains its root, but American none the less, we shall be understood. For by that time our public will be American and our art will be American. But this will take time. I repeat, the growth of an art cannot be hurried—any more than can the growth of a nation. In the meantime we can only give the best that is in us, and if our profession does not win full recognition in this generation, the next may see it acclaimed.

H. VAN BUREN MAGONIGLE.

New York, Jan. 18, 1918.

Editors, The Architectural Forum: It is of little importance, it seems to me, whether "the *practice* of architecture wins a larger recognition" or not. That is not what interests mankind. There is, however, another question that does, and one in which the pride and self-respect of our whole nation is deeply involved. It is: In what manner and by what means can *architecture* be developed in order to win a larger recognition?

Unfortunately to too many practitioners, I will not say to too many architects, these questions are synonymous, while in reality they are as far apart as the opposite poles. The practitioner is a business man, the architect is an idealist; the former thinks of the size and value of his practice, the latter of the quality and influence of his work. And because you have overlooked this most important and vital distinction your investigation is, I fear, bound to bring out far less of real constructive value than if you had asked the question as I have revised it. As revised, it is a question of far-reaching importance to the American people, as well as to the profession.

Architecture, it seems to me, must make a greater appeal before it can win a larger recognition. Archi-

tecs themselves must have nobler thoughts, higher spirit, better principles, and finer vision—in fact, they must possess more talent, ardor, energy, and power to enable them to produce an appealing architecture. Prescience is what is most needed now, and as a striking illustration of the lack of prescience and how that lack repels further recognition, let me give just one illustration.

Some years ago a distinguished educator—a man whose life had been devoted to high ideals, a man justly venerated by hundreds of his own pupils, as well as by thousands of the most highly educated men and women of the English-speaking world—died.

With commendable pride the university he long honored decided to erect a building to his memory, and with reasonable judgment the trustees of that university engaged the services of one of the most celebrated firms of architects in the United States to design it. So far so good; and in fairness to that orthodox firm I must confess that I do not know what obstacles the university authorities may have subsequently thrown in its way, but I do know the building that these highly trained men produced is as great a mockery as could well have been evolved had they conceived it with malice aforethought. But they did not, they simply put-the-job-thru-their-efficient-mill, sublimely unconscious of the fact that a commemorative monument was wanted. Why should they have given any personal thought and study to a building to go in the provinces? Their work is always monumental! And as for studying the character and achievements of the man in whose honor it was being erected, they never would have thought of that, were it to have been built on Mt. Olympus itself, since, from their point of view, deep sympathy and spiritual understanding have no place in the *practice* of architecture.

Now this is not an exceptional case, nor is it, fortunately, the rule. But unhappily there are scores of religious and secular buildings, to say nothing of scores of purely commemorative monuments still, alas! being turned out in this same swift, uninspired, cold, and loveless manner. Often, it is true, the technical excellence of such structures is above criticism, and, furthermore, as high-speed productions they may be admired, just as we may admire anything that is "pulled off" or "gotten away with"; but is that the way to woo the public? Is that the way to establish a lasting reputation? Is that the way to gain confidence? I think not. I think it rather a naive confession of low ideals and business cunning. And, therefore, I would remind such practitioners, who are not architects in the higher sense, that

"Man by himself is priced
For thirty pieces Judas sold
Himself, not Christ:"

lines which vividly suggest a lesson, and that lesson is that sincerity of purpose is the first requisite in an architect. He must believe, and then he must make others believe in him and his prescient dreams. To believe, he must have spiritual insight. He must be able to visualize not only the building that is wanted, but the effect it is expected to produce on the minds and hearts of all beholders, and after that, he must feel deeply and work

with intelligent sincerity to command the support that is necessary to carry out his prescient dreams. And thus, having convinced his clients, a larger recognition will come to him because it will then have been deserved.

In short, I contend that so long as the profession, as a whole, has no ideals above *practice*, no ambition beyond supplying the merely practical necessities of the day, and so long as the intensive teaching of soulless design is the chief aim of our schools, so long, then, it cannot hope to win that larger recognition that an eager and responsive people would gladly lavish on it. But fortunately more and more architects are beginning to realize that our people have a genuine longing to be surrounded by structures that will give joyful expression to their thoughts and aspirations, and if some of our leading practitioners do not realize it yet and blindly persist in taking a superior and esoteric stand without attempting to get down to the beating heart of humanity; without trying to ennoble life by simplifying, dignifying, and glorifying the communities in which they practise; and so long as others merely pander to the lowest commercial wants of clients too busy to be critical and discriminating, so long, then, will their poor buildings be denied the recognition real *architecture* has never failed to command. But I must not let this go without paying a tribute of respect to those who are headed in the right direction already; to those self-sacrificing men, architects in the higher sense, who have not yet received the recognition they so richly deserve—ardent, far-seeing men, who are persistently fighting architectural anarchy with a desire to replace it by order and beauty. Thanks to them, it is my belief, that the flimsy, experimental, and wholly commercial building period is nearly over; thanks to them and to our vast wealth as a nation, it is my belief, that the next great building era is destined to be in the United States. And therefore, in the interest of a finer civilization, I venture to make the following suggestions:

First: That we establish an unwritten rule to try and widen the line of cleavage between the mere practitioner and the sincere architect.

Second: That we resolve to do better work and less work, always remembering that architecture itself is much more of an educational factor than preaching architecture; while a vast practice is, nine cases out of ten, the sign of commercial mediocrity.

Third: That we begin to study the tendency of the times and resolve to try and interpret the spirit of idealism that has prompted America to enter the European war.

Fourth: That we use our influence to have the history of architecture taught both in the public schools and to all *belles-lettres* scholars in every college and university, in order that architecture may become part of daily thought.

Fifth: That we discourage the tasteless, flat minded man from entering the profession and especially from teaching architecture.

Sixth: That we make an earnest effort to prevent those hard-working, underpaid architects, who teach in our schools of architecture, from becoming discouraged, by firing them, from time to time, with fresh enthusiasm.

Seventh: That we demand of the daily press as strong, clear, searching, and fearless criticism of our own work

as it bestows upon the work of musicians, authors, actors, and politicians.

Eighth: That we work for the permanent establishment of town-planning commissions and art juries in every town and city where such commissions and juries do not already exist.

Awaiting with interest what the other contributors may have to suggest, and trusting their views and recommendations may be published over their own signatures, and not anonymously, I remain, Truly yours,
Philadelphia, Jan. 31, 1918. ALBERT KELSEY.

Editors, The Architectural Forum: In my opinion the first great step which architects should take to obtain a larger recognition for the practice of architecture would be to abandon for a more virile and aggressive policy the introspective habits which have grown upon the professional organizations in recent years. I would not for a moment advise any weakening of the ethical relations which have done so much to render architectural practice agreeable, nor is there any need to do so. Observance of the Canons of Ethics is the lubricant of professional relations; to eliminate them would be to throw sand in the gears of progress.

But in the recent years of comfortable well-being a tendency has grown up in the meetings of the Institute and its Chapters to dwell unduly upon minor points of professional practice, too much upon by-laws and standard documents, and the relation of the Chapters to the Institute and not enough on the great questions of the relations between the profession and the public. While every day is seeing a new raid on what architects have fondly imagined to be their own particular domain, made either by the engineers, or by interior decorators, or landscape artists, or contracting companies, it is too petty a business for the Institute to concern itself with chastening the small-town practitioner who squares the local paper by inserting his card, or in debating the degree of crime of him who has slipped an innocent water color of a library into the hands of an overzealous board of trustees. While the architects have been saying, "After you, my dear Alphonse," to each other, certain pawky and hard headed engineers who care about as much for ethics as they would for an old cellar wall which might come in the way of their operations, have developed selling organizations for plans, buildings, and all which are rapidly undermining the ground beneath the architects' feet. Nobody orders a new sideboard while his house is on fire; but while the architects have been busy perfecting a new standard contract which shall be more equitable for the suffering contractor, the latter has without consulting them gone ahead with his "cost plus" propaganda which absolutely assures him against loss, and shifts all the risk over on to the owner.

It took the war to bring the country as a whole to see the dangers of its too easy-going acceptance of the cares and risks of national life, and to awaken it to the need of a prompt tightening up and revitalizing of all its manifold activities; and similarly there had to be a war to show architects what the Government thought of them when it wanted cantonments or naval bases built. To employ architects in these works apparently did not even enter the minds of those charged with the care of these

operations. "Give us engineers," was the first cry, and landscape artists and builders took precedence over architects and were promptly promoted to positions of considerable importance.

It was rather a shock, but much good will come of it if it shows architects that the value of their position in the community is an inheritance which, like other precious possessions, needs eternal vigilance to maintain intact.

Already engineers are discovering that their professional life contains more than mere application to slide rules and micrometers. A writer in *Industrial Management* for December, Mr. Charles M. Horton, voices the need of a broader humanity for their outlook, and his remarks, from which the following excerpt is taken, may well be taken to heart by architects:

"Engineers are steadily moving into the forefront of the professions. This enviable position was once held by the clergy, then by the law, and then by medicine. Engineers now are having their turn, or soon will be having it. It is a responsible place in society. To lead, to guide—that is it. Therefore, bearing this tremendous responsibility, engineers should live cheek to jowl and elbow to elbow with society. Engineers should understand humanity,—its foibles, its weaknesses, its governing sciences. Men in the profession should know something besides laws which have nothing to do with society as such. Mathematics never bred cats, for instance, though mathematics might at times be strained to keep count of the kittens; nor has chemistry or physics ever accounted for John's red hair, when John's father and mother both have raven locks."

Architects, it is true, are generally not famous as mathematicians, but neither are they, as a class, over distinguished as diagnosticians of human nature. The public does not demand superhuman accuracy from architects, neither does it ask for conscientiousness in business affairs beyond the average; but it absolutely will not stand for pedantry or self-consciousness, and it wants tangible results, wants them to be good, and wants them as quickly as it can get them. A recent writer in *Architecture* has dilated upon the necessity of good financial backing to enable a young architect to practise without income for the first five or ten years, living, presumably, meanwhile, in a style properly to impress prospective millionaire clients. A better proposition, in my opinion, would be for this architect to try to handle his first few clients' business so well, meanwhile studying their characters and desires, as to make of them automatic advertisers, without the expense of maintaining a William and Mary reception room, joining expensive clubs, or attempting any of the artistic camouflage thought by some architects to be indispensable. Many a young architect who has secretly despised the vanity and crudely expressed ideas of a newly rich client has thereby thrown away a priceless opportunity to study the qualities of hard sense and broadness of view which have not only contributed to that very client's financial success, but have endeared him to other practical men of affairs.

To harmonize artistic design with the constructive side of the architect's work is the one most insurmountable difficulty of our profession; to combine both with a broad and human sympathy with the varying elements

of human nature which form a modern community, ought to be the aim of the profession, both individually and collectively. Let architects cherish and keep alive above all things that first enthusiasm of their early student days, —

"The morning drum call on my eager ear
Thrills unforgotten yet."

Let them realize that they are living in the greatest and most critical age of the world's history—an age not only of invention, science, and warfare, but of romance and modern art as well—and cease to house banks and technical schools in Grecian mausoleums or modern millionaires in Roman villas. Why has architecture alone of all the muses of art, poetry, science, and the rest not felt the breath of futurism? "Let the dead past bury its dead." Honest estimates, designing buildings adapted to their needs, not shackled by the fetters of a creed outworn; simplicity, not pedantry, optimism born of the joy and thrill of witnessing these great days—these are a few of the qualities which will lift architecture into its rightful place among the professions, the "noblest of all arts," as long as it is living and breathing the atmosphere of the present; the most pitiable when it subsists on the dried fruit of the withered past.

Boston, Jan. 28, 1918.

WALTER H. KILHAM.

Editors, The Architectural Forum: There was a time when the architect was really a master of all known branches of building, an engineer, and in the most flourishing period of architecture since the Middle Ages not infrequently a contractor. Sometimes he was also a decorative painter and sculptor.

In the last fifty years the tendency has been to consider architecture as a profession on a par with that of law and medicine. This view has not been altogether successful, owing partly to the fact that there has been until recently no legal standing for the architect dependent upon the enforcement of educational requirements as in the former professions.

The introduction of structural steel, reinforced concrete, mechanical devices, and electricity has developed a new science of engineering of many specialized branches, each of which has a high standard of educational requirement and all of which are a material factor in the practice of architecture in our time. Formerly the owner was in most cases an individual, whether monarch or subject. To-day, owing to the magnitude of many private building operations, there has been largely substituted a collective ownership, and this has introduced into the practice of building a new element involving financing or promotion. This new need has been supplied to a very great extent by the contracting-engineer and by the great construction companies instead of by the architect, and has much to do with the increasing importance of the former in the eyes of the business world. While formerly the architect was the undoubted leader, now his relative position is frequently reversed.

At present the only authoritative basis for the regulation of the practice of architecture in the United States is that embodied in the Code of Ethics of the American Institute of Architects. This code does not sufficiently provide the means to meet the new conditions of building and does not thoroughly establish architecture as a

learned profession. The place of architecture among the arts is not universally acknowledged.

To better existing conditions in the practice of architecture I would —

First: Have the American Institute of Architects, or any representative body, consult with the engineering societies or contractors' associations and agree upon a line of separation of activities, or upon a degree of co-operation.

Second: I would endeavor to establish a national standard of educational requirement for the practice of architecture.

When these things have been done, one might begin to construct a new Code of Ethics consistent with the new arrangement.

St. Louis, Jan. 24, 1918.

THOMAS C. YOUNG.

Editors, The Architectural Forum: Almost every architect you meet seems to have made a recent trip to Washington. He has had an interview with the third or fourth assistant secretary to the Secretary of War. He has been referred to the Major in charge of the Department of Buildings of the National Council of Defense. He has read the admirable and carefully pigeonholed recommendations of the Architects' Committee. He has been politely bowed down-and-out, with the general statement that they all are "very sorry, but —."

He goes to Washington filled with patriotism and a keen desire to do his bit for the cause. He returns, filled with regret, and with doubt as to his reason, if any, for existence.

This condition, as I see it, is not entirely the result of the war. It is a result of developments in the building business that have been following the lines of general business, and in the relations of large contracting and engineering firms to the owner, individual or corporate. It is the result of a carefully conceived campaign of publicity, based first, on big business; and second, on the confidence which large resources directed in harmony with prevailing ideas of management are bound to inspire.

Under present conditions the buildings of public, religious or educational nature, or private enterprises in which an architect is considered indispensable, have been almost wholly abandoned. The buildings for Government purposes and for industries connected with Government orders have been given precedence. In all of these there are just two requirements, — space and speed in construction. "We must win the war."

In all building in recent years the credit for speed in construction has been taken by the contracting firms, who have advertised the fact extensively. They have dwelt at length on "wonderful organization," "wonderful systems of accounting"; they have invented or adopted terms and titles, such as "Industrial Engineer" and "Efficiency Engineer or Expert," and they have assumed full and public responsibility for their success in every instance, and admit its direct relation to the great organization they have built up.

The architect has indulged in no advertising. He even doubted the propriety of allowing his name to be included in smallest letters on the blatant signs by which the contractor announced that he was "it." He has taken no credit for the building under construction,

even though its speed and success were as much, or more, due to him as to the contractor. The public thinks the term "designed by an architect" relates only to some senseless ornamentation or detail, and not at all to the conception of the building in plan, arrangement, construction or composition, or to its success as a solution of a difficult building problem.

Moreover, the architect has, by the nature of his work and by his ideas of professional practice, isolated himself from a direct and absolute knowledge of building costs and responsibility for them. He has assumed an advisory position, and for real ideas of cost has deferred to the construction companies. He has not assumed to have financial responsibility — it is therefore assumed that he has none. He has not assumed to have knowledge of exact building costs — therefore he is not considered a judge. This idea has been unduly advertised by stories, sometimes true, of exceeded appropriations, always without a statement of the causes.

The public does not understand the function of the architect. The public does not understand the reasons for his association (which it terms a trust or union) or his attitude on preliminary service, competition, and professional practice.

The public must be educated, and this can only be done as it has been done in all business lines — by a systematic campaign of advertising. The architect, as an individual, may not do this. There can, however, be no objection to giving the Institute or the various Chapters power to act, and a fund should be raised for this purpose. If the Institute will not do this, the individual must. We know that the architect is better fitted to have charge of any kind of a building enterprise than any construction company can be. Why not admit it? The architect must take a larger part in public affairs. Do you know any architect who is a politician or has ever held a political office of importance? Occasionally one is appointed State or City Architect, but not with any power to act or with any pay commensurate with the work involved.

The code of ethics must be revised so as to permit members of our profession to compete on an equal basis with construction, and engineering companies, and with other architects not so careful of their professional standing. It may not be dignified, but there is a direct tendency toward socialism in present conditions. The architect cannot avoid its influence, and he cannot accomplish anything by an assumption of dignity.

The architect must specialize. He knows he cannot do all things equally well. Why should he not develop his organization and complete his training along certain lines, so that he may be an authority on requirements, cost, and construction of work within those lines? All other professions have come to this conclusion, and architecture is not immune.

And now while the architect is using the long yellow pencil that he used to draw with in trying to figure out how to pay his 1917 income tax out of the evanescent proceeds of a non-existent business, it might be well for him to extend his computations and try to determine just how to obtain for architecture its proper recognition in the scheme of things as they are.

Chicago, Jan. 29, 1918.

W. K. FELLOWS.

The Architectural League Exhibition in New York

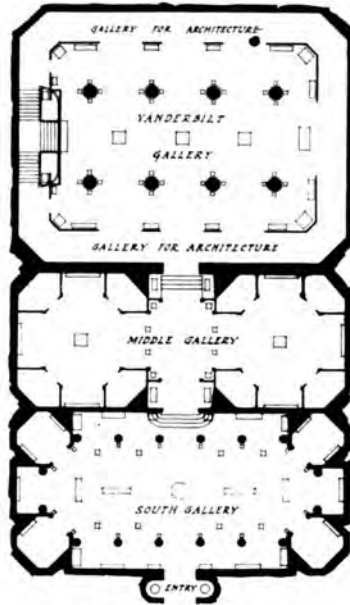
THE recent exhibition of the Architectural League of New York held during the month of February was the thirty-third annual recurrence of this event, and it is particularly worthy of note because of the special endeavor everywhere evident to meet present-day conditions and picture the difficult subject of architecture in a manner directly appealing to the public.

The League has for a long time taken an active interest in the arts and crafts closely allied to architecture. It realized sometime ago that technical plans, elevations, and detail drawings, even though of great interest to architects, held but little attraction for the layman, and as one of the principal reasons for holding these exhibitions is to bring architecture closer to the layman, their character in the past few years has accordingly been broadened to include photographs of completed work, colorful mural paintings, and interesting sculpture, with a correspondingly increased

degree of attention from the public and the daily press.

In arranging the exhibition this year a further step was taken and work from the decorative crafts admitted. The high purpose of the League behind this progressive step is well expressed in the following, from the address of the president, Mr. H. Van Buren Magonigle, on the occasion of the opening of the exhibition:

"It is my privilege to welcome you to this private view of an exhibition unique in the annals of the League,— an exhibition which we hope may mark the beginning of a new epoch, the dawn of a new Renaissance, wherein the sister arts and crafts that minister to the art of architecture shall assume again their ancient dignity. Busied as the architects have been during a generation in recording the technique of their own art, they had but little time to encourage the craftsman; his work has been on the whole sadly neglected in this country. The Architectural League,



Plan of Galleries Showing Arrangement of Exhibition



View in the South Gallery Showing Entrance to Middle Gallery at Right



SOUTH GALLERY LOOKING TOWARD MIDDLE GALLERY

VANDERBILT GALLERY SHOWING ARCHITECTURAL EXHIBIT AT RIGHT
EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK

composed as it is of architects, mural painters, sculptors, landscapists and designers, and workers in glass and mosaic, tile and ceramics, textiles, furniture, is, in our view, the proper body to repair that neglect; as a beginning, therefore, the works of the craftsmen are shown here in the galleries hitherto held sacred to the architect, the painter, the sculptor, and in the worthy setting designed by Mr. Howard Greenley."

The illustrations herewith show how successfully the exhibit was arranged, but they do not convey any sense of the beautiful and striking color combinations or the effective lighting. The three galleries of the Fine Arts Building were entirely transformed from their usual appearance, and the *ensemble* as arranged from the designs of the architect, Mr. Howard Greenley, was a convincing demonstration of his ability to create an interior of striking scenic effect. The dominant color note of the South Gallery was blue of a greenish cast, relieved by touches of yellow and gold in the column capitals and the ceiling fabric. Mural paintings of strong color occupied important positions in the frieze, and groups of decorative paintings lined the walls behind the columns. The alcoves at either end and the whole of the Middle Gallery were given over to exhibits of furniture, textile fabrics, mantels, ornamental metal work, and other decorative craft work of a high order of artistic merit.

The Middle Gallery repeated the color tones of the South Gallery but with the dominating tone yellow and the relieving color blue. The fabric hung walls, the draped ceiling through which strong yellow light filtered, and the boldly stenciled frieze combined to make an impressive approach to the Vanderbilt Gallery in which the architectural work was hung. This room under the decorative treatment given it became an imposing exhibit hall especially well suited to its purpose. The massive columns surmounted by crouching figures supporting the draped ceiling, and the temporary walls so arranged as to form a central court with a surrounding exhibit gallery. Because of the desirability of viewing architectural work at close range, this encircling gallery, which was of a neutral tone and softly lighted, provided excellent space for the architectural photographs and rendered drawings.



Model of Reredos for St. Thomas' Church,
New York, Shown at League Exhibition
Bertram Grosvenor Goodhue, Architect

Some critics have expressed the opinion that the architectural portion of the exhibition lost prominence through its relatively secondary position and close relation to accessories carried out in the strong brilliant colors typical of modern decoration. In some measure the criticism may be justified; but if the decorative end seemed to some observers the main feature, it was not necessarily the fault of the arrangement or the decorative scheme, but due primarily to the lack of imposing architectural work, which is not to be wondered at, for the last three years have seen but little important architecture produced in this country. The grouping of features and decoration of the galleries were planned to explain the interdependence of architecture, decoration, and craftsmanship, and as an initial experiment in making an architectural exhibition popular in character, the objects of the League were fully accomplished.



A Typical Niche Showing Exhibit of Furniture



TWO VIEWS IN THE MIDDLE GALLERY SHOWING EXHIBITS OF ARCHITECTURAL ACCESSORIES
THE EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK

Prisons and Prison Building

By ALFRED HOPKINS

III. THE OUTSIDE CELL

IN designing the Westchester County Penitentiary and Workhouse, described and illustrated in the preceding issue, the second ambition realized by the author was to give each prisoner an outside cell. When the plan was first developed, three years ago, the outside cell was much more a matter of controversy than it is at the present time. The inside cell of the American prison is a type peculiar to this country, and its design is based on the principle that the prisoner is to be retained above every other consideration. Consequently our jails have been designed with what has come to be known as "interior cells," that is, the cells are placed not against the outside walls, but in the center of the building, back to back, separated by a passageway from 3 to 4 feet in width, referred to as a utility corridor, in which all the plumbing and ventilating pipes are placed. The space between the outside of the building and the front of the cells is frequently divided by a steel grille forming two long corridors, the outside corridor being called the guards' corridor, and the inside corridor, next to the cells, the prisoners' corridor. The object of this division was to protect the guard from the prisoner, for this system is devised on the theory that every jail building must be constructed on the basis of making it safe for the worst possible criminal which might ever get into it. Indeed, every once in a while a guard is killed by a prisoner; but so every once in a while a man is killed crossing the street, but this does not mean that our streets are unsafe, if reasonable care is observed in traversing them.

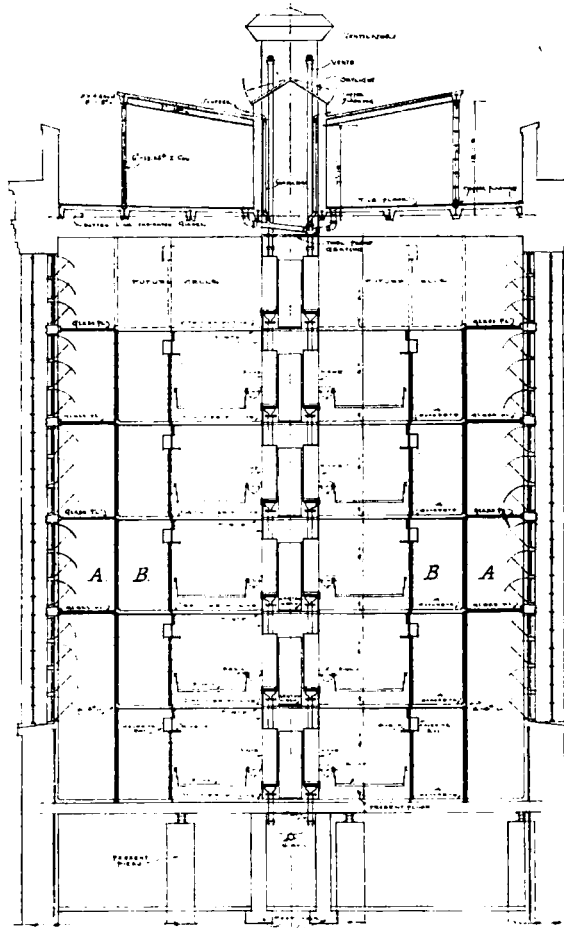
Placing the cells in the center of the cell block makes it possible to fill the outside wall with win-

dows—in fact, a proportion of light area which came to be established was that the outside wall should be 50 per cent glass. The radiation was placed between the windows, which open like louvres, and with an exhaust fan in the top of the utility corridor it was possible to draw the warm fresh air through the cell to the roof, thereby obtaining very satisfactory results in heating and ventilation.

While a good deal may be said for such a prison from the standpoint of its mechanical heating and ventilation, from the standpoint of the welfare of the prisoner hardly too much can be said against it. The great disadvantages of the cage type of cell are the complete loss of all privacy to the inmate, the inhuman and grotesque appearance which it gives to his confinement, and the difficulty of providing really adequate segregation and classification. Important prisons like the Great Meadow Prison of New York State and the prison at Stillwater, Minn., both of which are renowned for enlightened and efficient administration, have this inside cell arrangement. These prisons, however, were constructed when very little was known of the outside cell construction, and many practical prison men were largely against its adoption.

There is really no place in this country where it is possible to study adequately the outside cell, long advocated by our more progressive penologists, so that the author made a tour of Continental prisons for the sole purpose of discovering wherein lay their advantage and how they should be designed to make them suitable to this country and climate.

In the Continental prison the chief difficulty with the outside cell is found in its ventilation. In England the windows are intentionally made loose fit-

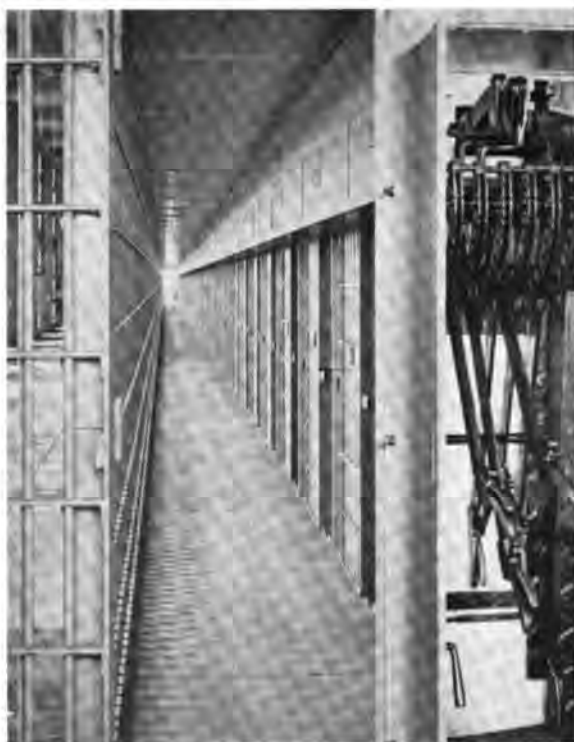


Section Through an Inside Cell Block

This shows the interior cell block with the cells backed up against the utility corridor in the center, the prisoners' corridor (B) and the guards' corridor (A) against the outside wall.

ting so that they cannot be entirely closed. Where it is possible to close the windows tightly, insufficient ventilation invariably results during cold weather because the great majority of prisoners seem to shun fresh air and invariably keep their windows shut.

Two methods are in use abroad for ventilating the outside cell, but neither is adequate. The English way is to build in the front wall of the cell a panel of special bricks which are made with diagonal or curved openings which will let the air through, but which will not permit the prisoner to see through. This arrangement is intended to ventilate the cell into the central corridor; but the central corridor is usually quite as much in need of ventilation as the cell itself. In the majority of English prisons the cell blocks are four tiers high, the cells being on the outside walls reached by galleries with the central corridor running clear through from main floor to roof. This is always bad, as such interior spaces can only be lighted and ventilated through the roof; and while overhead lighting is always questionable, overhead ventilation is still more so. This condition is made worse as the cell block increases in length, and some of them, as at Pentonville, I think, are 175 feet long. This method of reaching the cells from galleries came about as a means of facilitating supervision, for the guard standing on the main floor has a view of all the inmates as they come out of their cells. As



Prisoners' Corridor in the Old-Fashioned Steel Jail

This shows the prisoners' cells on the inside and entirely separated from the exterior of the building. The outside walls may be seen to the left. The space next them is usually referred to as the "Guards' Corridor."



Utility Corridor in the Old-Fashioned Steel Jail

This gives to the practical mind some idea of the expense of these structures

a matter of fact, the top galleries have very little supervision owing to their distance from the guard's station. Better supervision is had and better discipline maintained when the cell floors run through, for then a guard may always be on the same floor with the prisoner. This arrangement also makes for better classification and greater quiet throughout the cell block.

On the Continent, and in some of the older English prisons, the cells are ventilated by ducts or flues built in the walls, each cell with its separate flue, the registers of which are sometimes controlled by the guard from the corridor, but usually by the prisoner from the cell. The results of this method of ventilation, however, did not seem satisfactory to the author on the chilly February days when he was in Holland and Germany, for without exception he found the cell windows shut, in spite of the prison rules requiring that the prisoner shall always keep his window open.

Apart from this one point of ventilation, to the mind of the most casual visitor there can be no question that there is a great advantage in the privacy afforded by the outside cell. The doors are closed and the discipline and quiet of the prison are perfect. There are no cat calls through the night, nor is there the intolerable argument and vile language which are continually bandied back and forth in many American prisons, and particularly in our

miserable county jails. This one thing, the lack of privacy, if there were no other, should condemn the inside cell system for all time. There is nothing in the suggestion frequently made that the outside cell is another name for solitary confinement, except where such a system is intentionally carried out, as formerly was the practice.

As our modern prisons are administered, the men are fed in a general mess hall and not in the cell, and with the work on the farm and in the shops, and in the freedom which is now permitted in the recreation periods, there is not the slightest reason to feel that the inmate has anything to endure in the outside cell at all comparable to solitary confinement.

In New York State the regulations of the State Commission of Prisons are very precise on one point, and that is that each cell must have a toilet and a wash basin. At Westchester vertical shafts were constructed between each pair of cells to contain all the plumbing pipes for those fixtures. The basins are designed so that the prisoner may drink from the flow of water, which is from the outside of the bowl rather than the wall side, thereby doing away with the necessity of a cup. The closet is suspended, fastened to the wall and not the floor, and equipped with a vent connected to galvanized pipes and ducts which are controlled by an exhaust fan, there being one fan for each cell block. This is a simple and effective way of providing against the prisoner's habit of closing his window in the winter. The toilet has been placed behind the wall of the utility duct and is screened in that position. In the usual type of the inside cell block the closet is placed squarely in front of the door, with no screen whatever, and no effort seems to have been made to give it any privacy. The cell doors operate on an

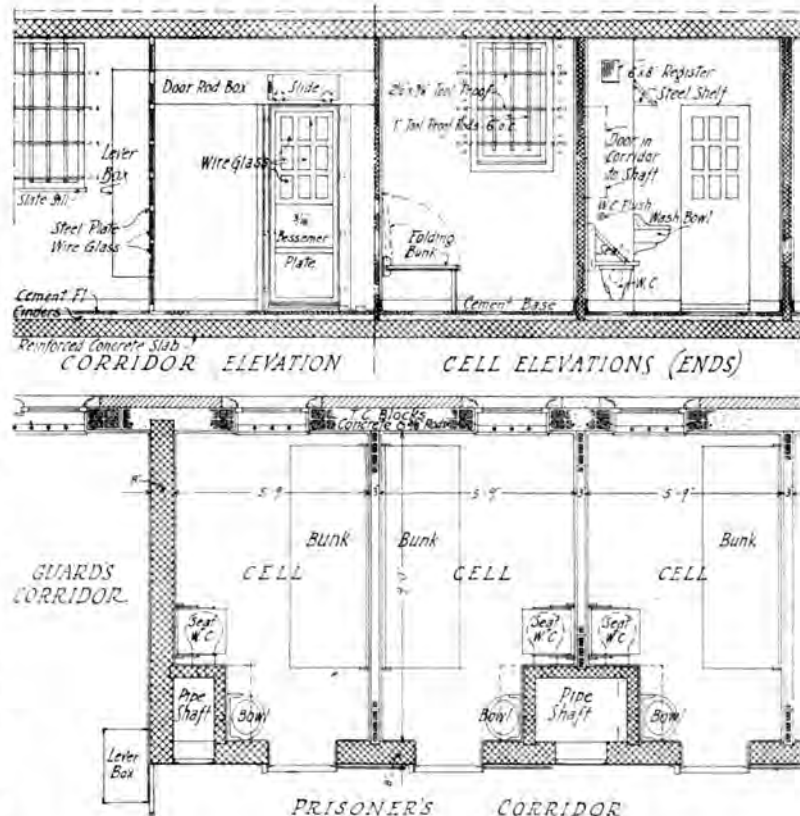


Windows in the Dormitory of a Holland Prison

These windows are of tool-proof steel glazed with heavy plate glass, a small portion of the upper half of the window opening back into cheeks. This would be an intolerable arrangement in our climate, and would not give anywhere near enough ventilation for the summer time.

automatic device, with which it is possible to open all the doors at once, or each one individually. The author's contribution to this device was that they could also be locked 5-inches open. In this way it is possible in warm weather to ventilate the cell into the central corridor; which in turn is ventilated at each end by accessible windows across its entire width. It is true that the prisoners can look out through the 5-inch opening and communicate with one another across the corridor; but if this privilege is abused, the door can be closed separately and the offending inmate may be disciplined without affecting the comfort of the others. In the new cell block at the Eastern Penitentiary at Philadelphia the cells

have been equipped with two doors—one of solid wood and the other an iron grating. In warm weather the grating only is used, and if a prisoner becomes



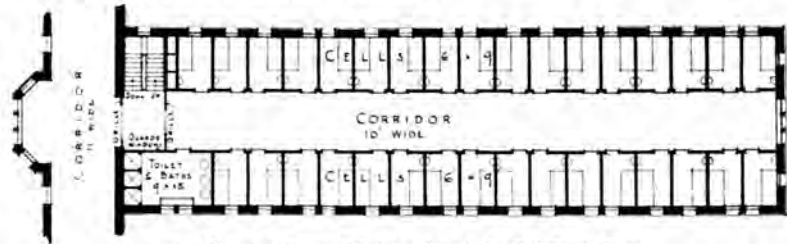
Detail Plan and Elevations of Cells

Westchester County Penitentiary and Workhouse, White Plains, N. Y.
Alfred Hopkins, Architect

unruly or noisy, the wooden door is closed. The upper portions of the doors at Westchester are glazed, as they always should be, because it is necessary for the guard at all times to see if the prisoner is in his cell.

Almost the whole problem of the outside cell lies of course in the window. Our climate is such in summer that it would be almost inhuman to put a man in a cell and shut the door without providing adequate window area. The English cell with its small window opening would be intolerable here. So would those in the Holland and German prisons, where the windows are hinged at the bottom and open at the top. The Westchester windows are steel sash of the usual casement type except that they are pivoted top and bottom 4 inches from the jamb. This enables the window to be readily cleaned on each side. The window opens at right angles to the wall, and the opening is entirely adequate for our weather conditions, the window being 2 feet wide and 4 feet high. The adjuster is a commercial type and will keep the window open at 90 degrees, 45 degrees, and about 15 degrees.

As previously stated, the New York State Prison Commission insists that each cell should have a toilet and basin. This is a natural reaction against some of the old prisons, where the toilet facilities had been notoriously inadequate; but I believe it is en-

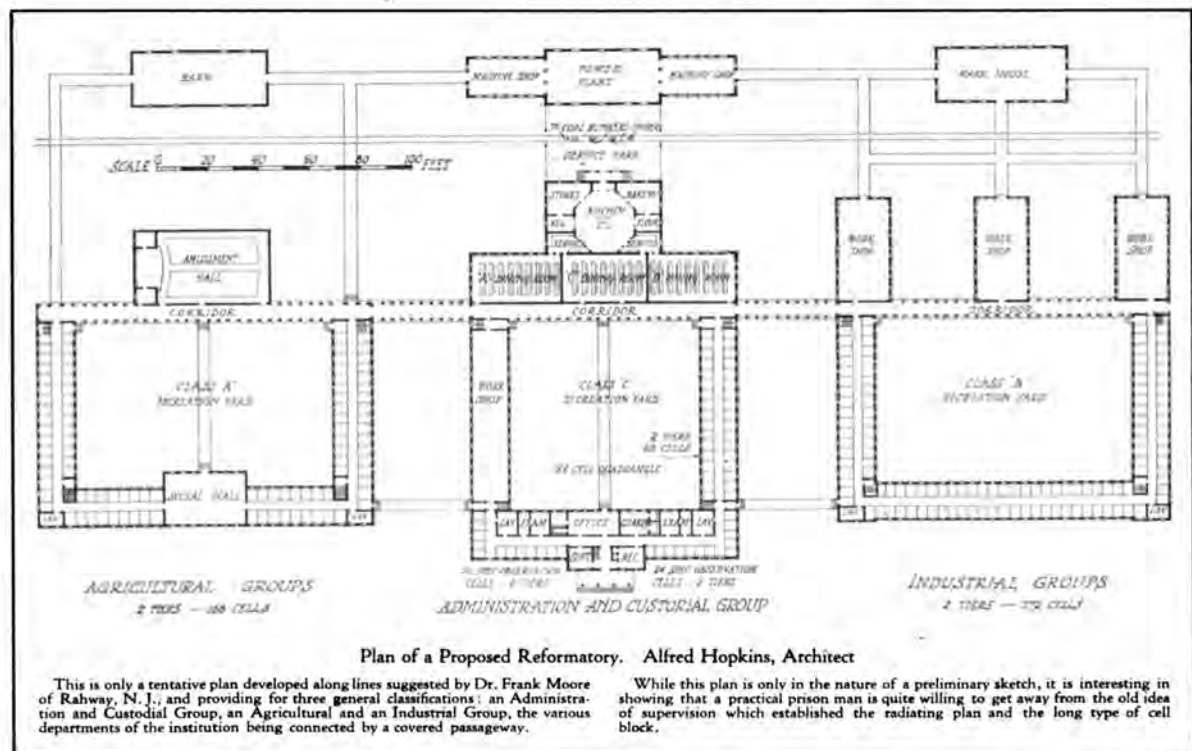


Plan Showing General Toilet and Bath for Cell Block Floor

Prisoners enter behind the grille which closes off the corridor, and a window for the guard on the outside of the grille is provided for supervision. This arrangement would entirely eliminate the toilet in the cell block and very materially reduce the cost of plumbing.

tirely unnecessary to place a toilet and basin in each cell. This makes the plumbing very expensive and it would answer all purposes to design the cell block as shown in the plan reproduced herewith, where the toilets and lavatories are placed at one end of the building and can be easily supervised by the guard from the outside of the prison block if desirable. This would necessitate the prisoner calling the guard, which is not a difficult matter to arrange and which is customary in all the Continental prisons. Such an arrangement would probably be opposed by some wardens, as it was by one with whom the author discussed this plan. "What," said he, "do you think I would have a prisoner calling on my men in the night in order that he may be conducted to the toilet? It would degrade him." (Not the prisoner, but the guard.)

Such an attitude is all wrong, and my friend the warden did not have in proper perspective the mental picture which he had drawn of his vocation.



Plan of a Proposed Reformatory. Alfred Hopkins, Architect

This is only a tentative plan developed along lines suggested by Dr. Frank Moore of Rahway, N. J., and providing for three general classifications: an Administration and Custodial Group, an Agricultural and an Industrial Group, the various departments of the institution being connected by a covered passageway.

While this plan is only in the nature of a preliminary sketch, it is interesting in showing that a practical prison man is quite willing to get away from the old idea of supervision which established the radiating plan and the long type of cell block.

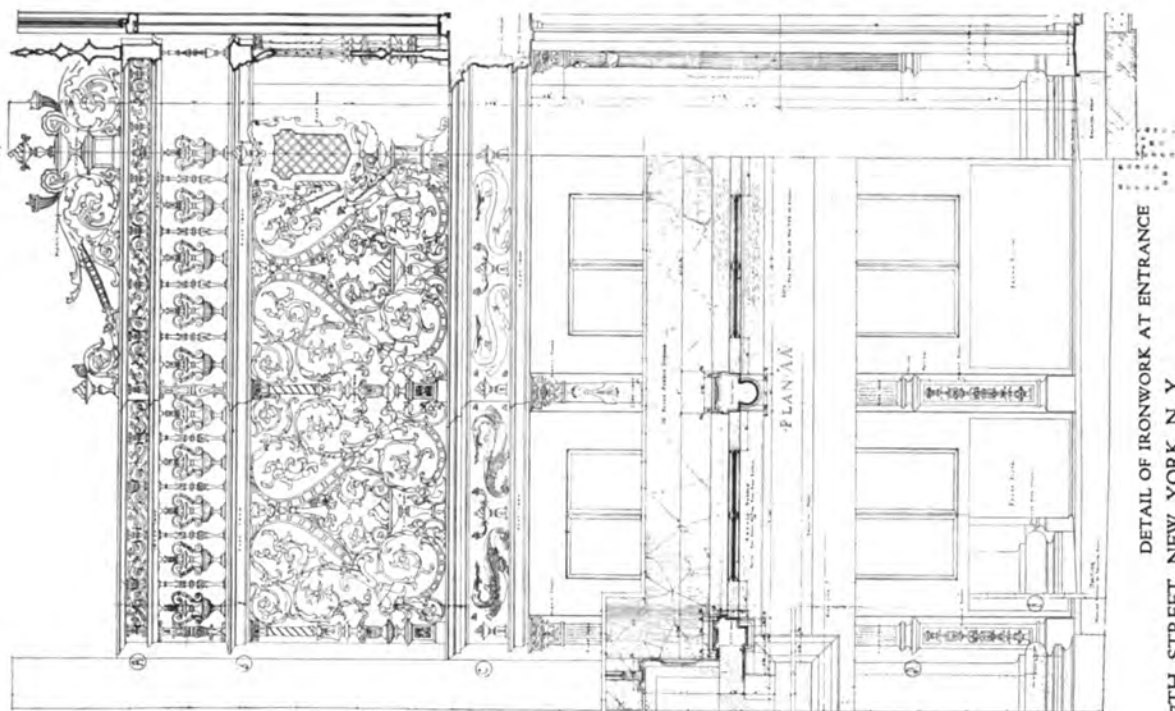


GENERAL VIEW OF STREET ELEVATION

CONSOLIDATED GAS COMPANY BUILDING, WEST 57TH STREET, NEW YORK, N. Y.

WARREN & WETMORE, ARCHITECTS

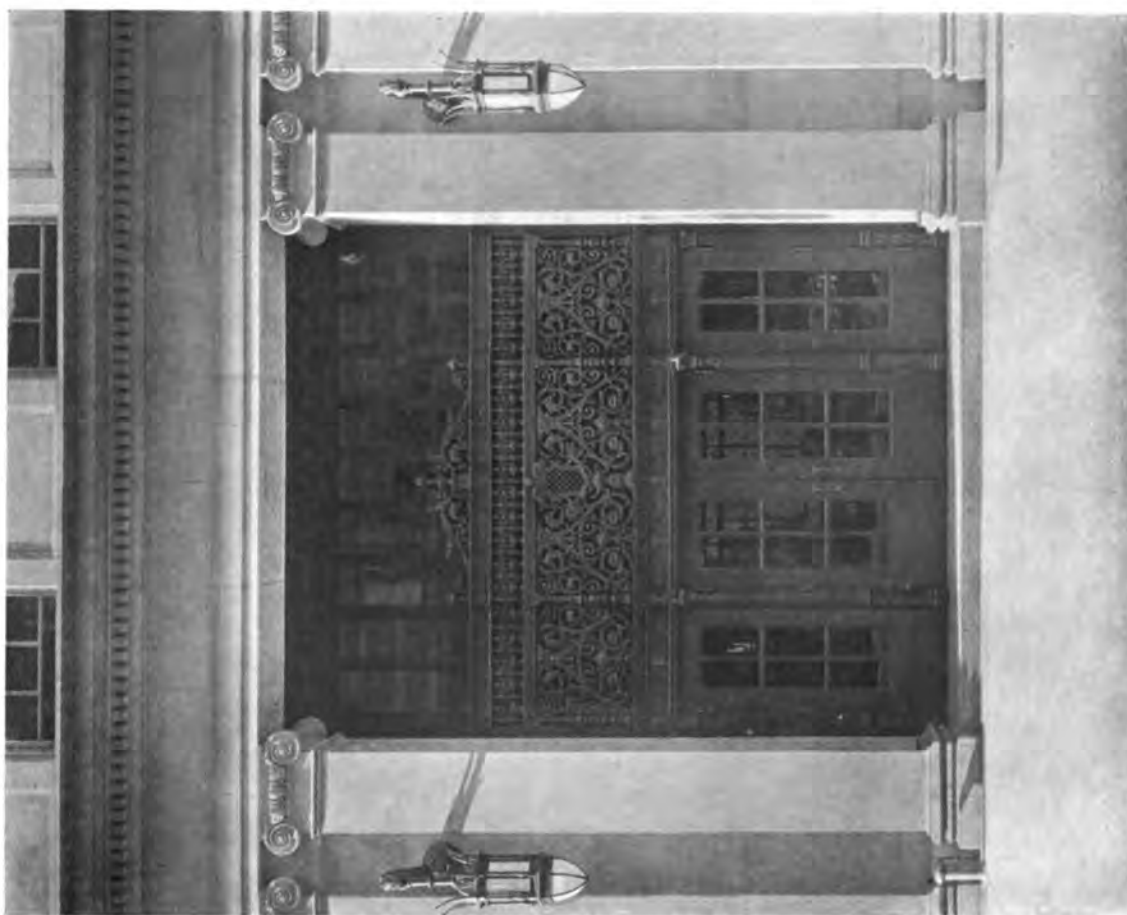




DETAIL OF IRONWORK AT ENTRANCE

CONSOLIDATED GAS COMPANY BUILDING, WEST 57TH STREET, NEW YORK, N. Y.

WARREN & WETMORE, ARCHITECTS

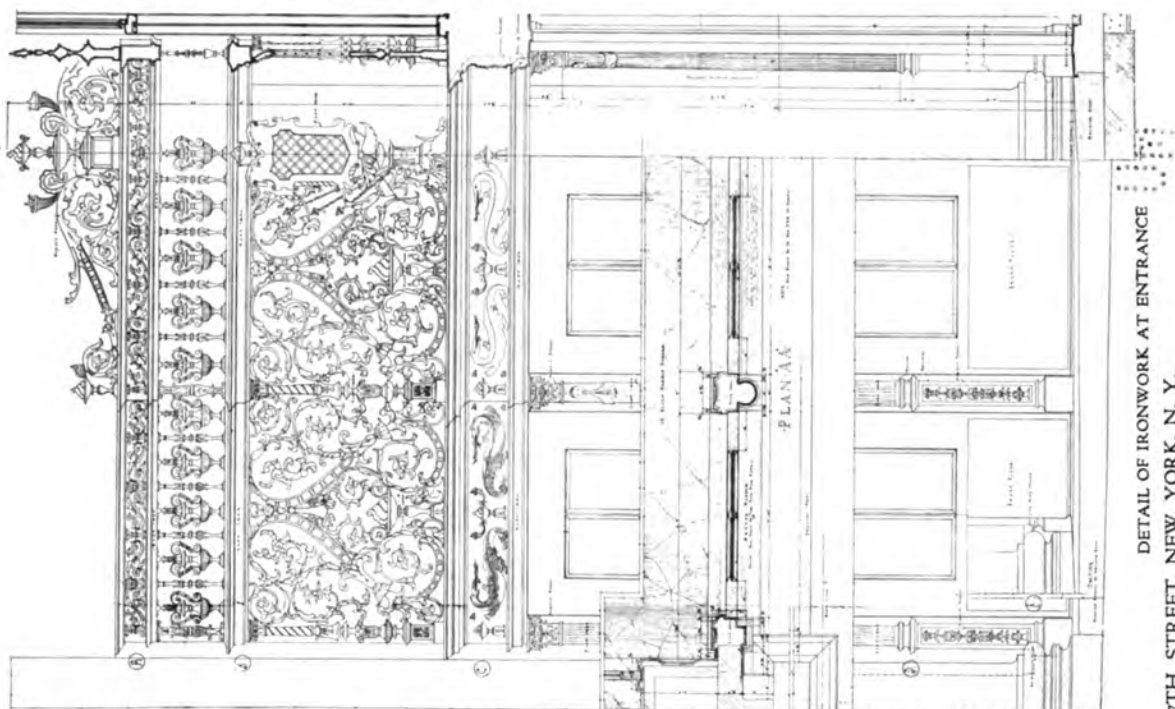


DETAIL OF MAIN ENTRANCE

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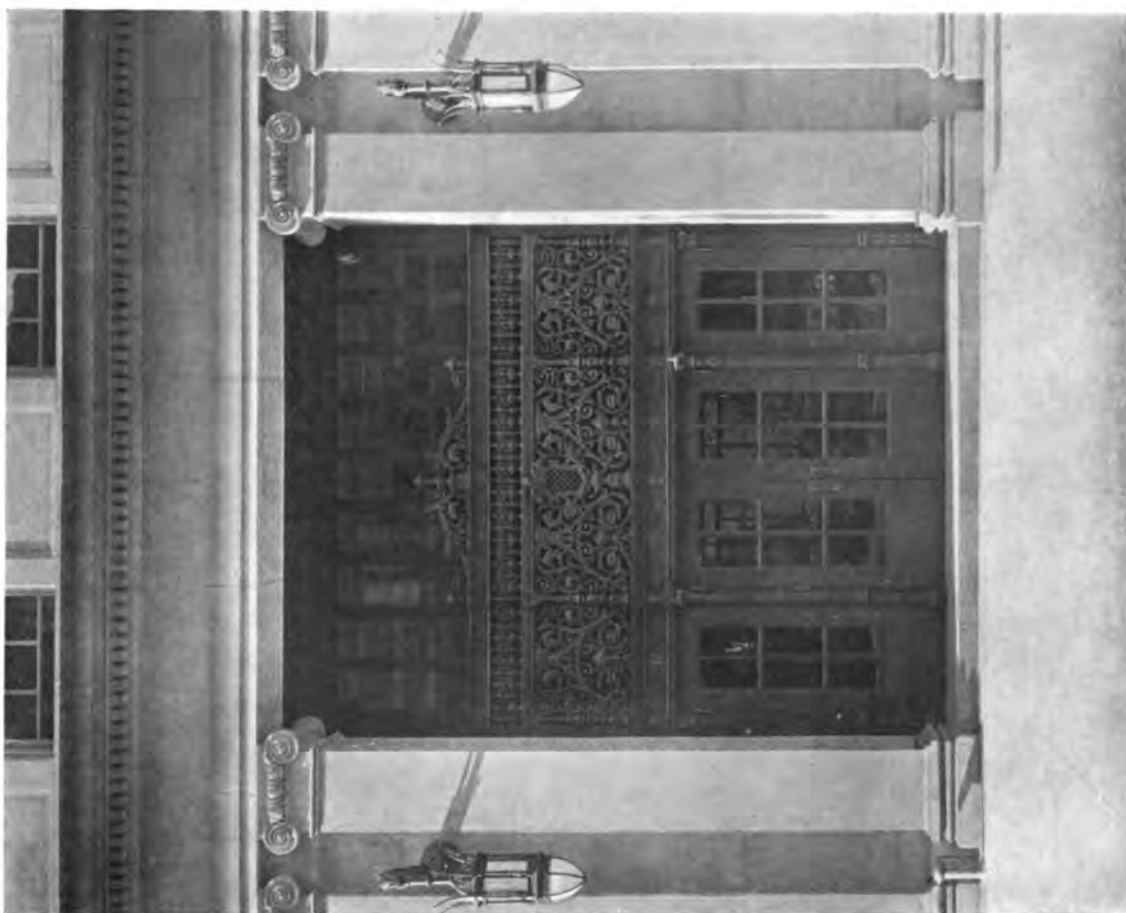
WARREN & WETMORE, ARCHITECTS





DETAIL OF IRONWORK AT ENTRANCE
CONSOLIDATED GAS COMPANY BUILDING, WEST 57TH STREET, NEW YORK, N. Y.

WARREN & WETMORE, ARCHITECTS



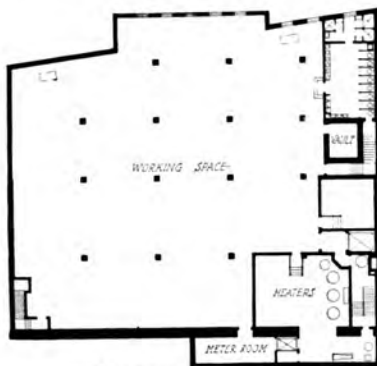
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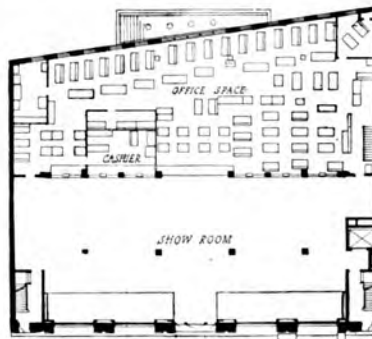




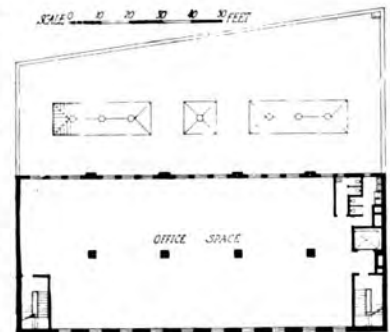
DETAIL VIEW OF SHOW ROOM



BASEMENT FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN

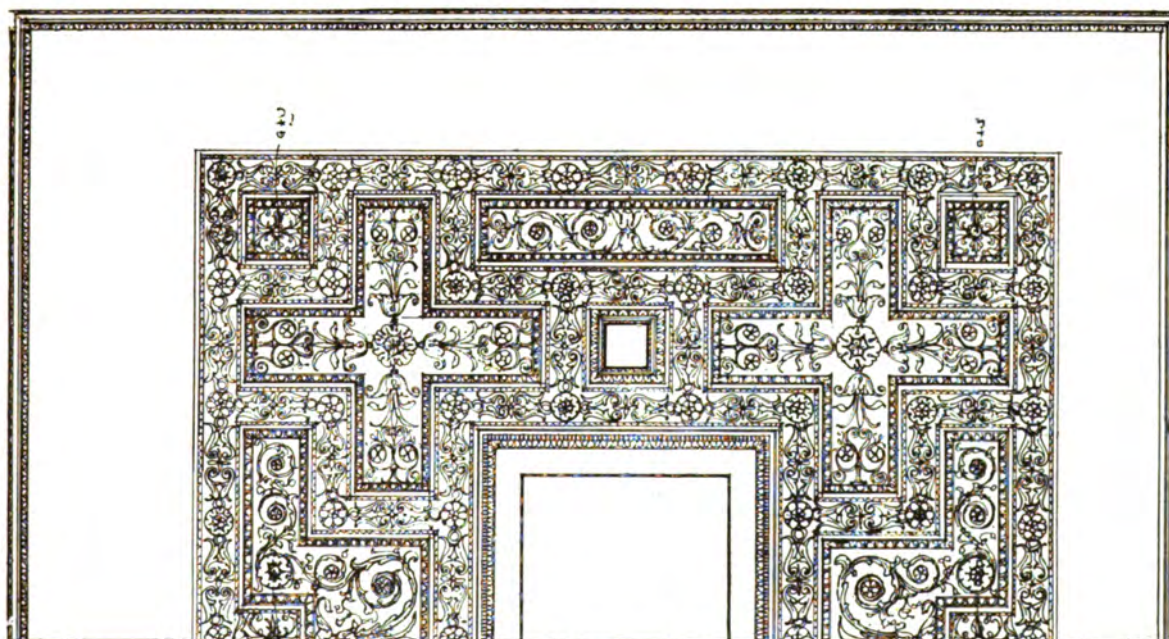
CONSOLIDATED GAS COMPANY BUILDING, WEST 57TH STREET, NEW YORK, N. Y.

WARREN & WETMORE, ARCHITECTS





GENERAL VIEW OF SHOW ROOM



DETAIL PLAN OF CEILING SHOWING ONE-HALF BAY

CONSOLIDATED GAS COMPANY BUILDING, WEST 57TH STREET, NEW YORK, N. Y.

WARREN & WETMORE, ARCHITECTS





SATHER GATE, WHEELER HALL AND SATHER TOWER



VIEW OF SOUTH FACADE

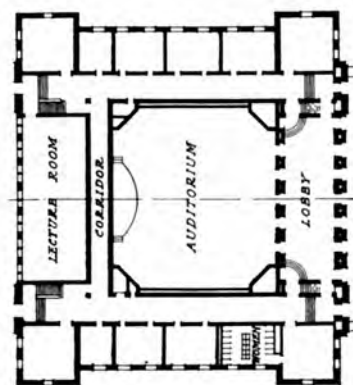
BENJAMIN IDE WHEELER HALL, UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.

JOHN GALEN HOWARD, ARCHITECT

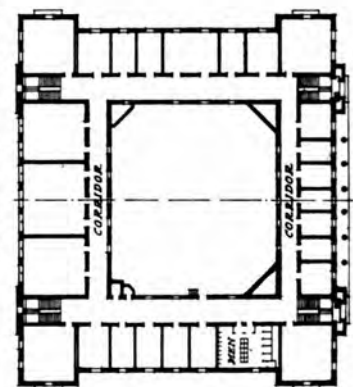
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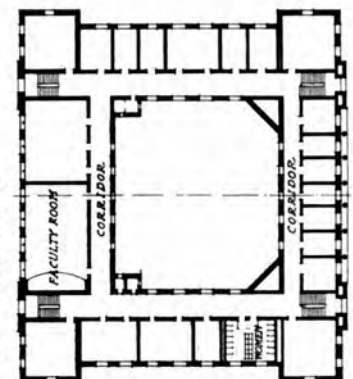
GENERAL VIEW SHOWING UNIVERSITY LIBRARY AT LEFT



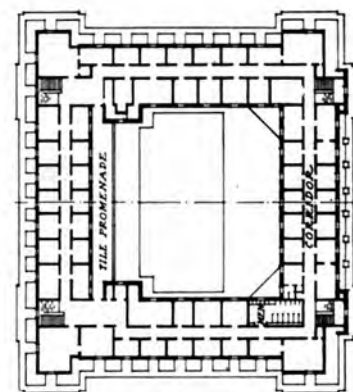
FIRST FLOOR PLAN



SECOND FLOOR PLAN



THIRD FLOOR PLAN

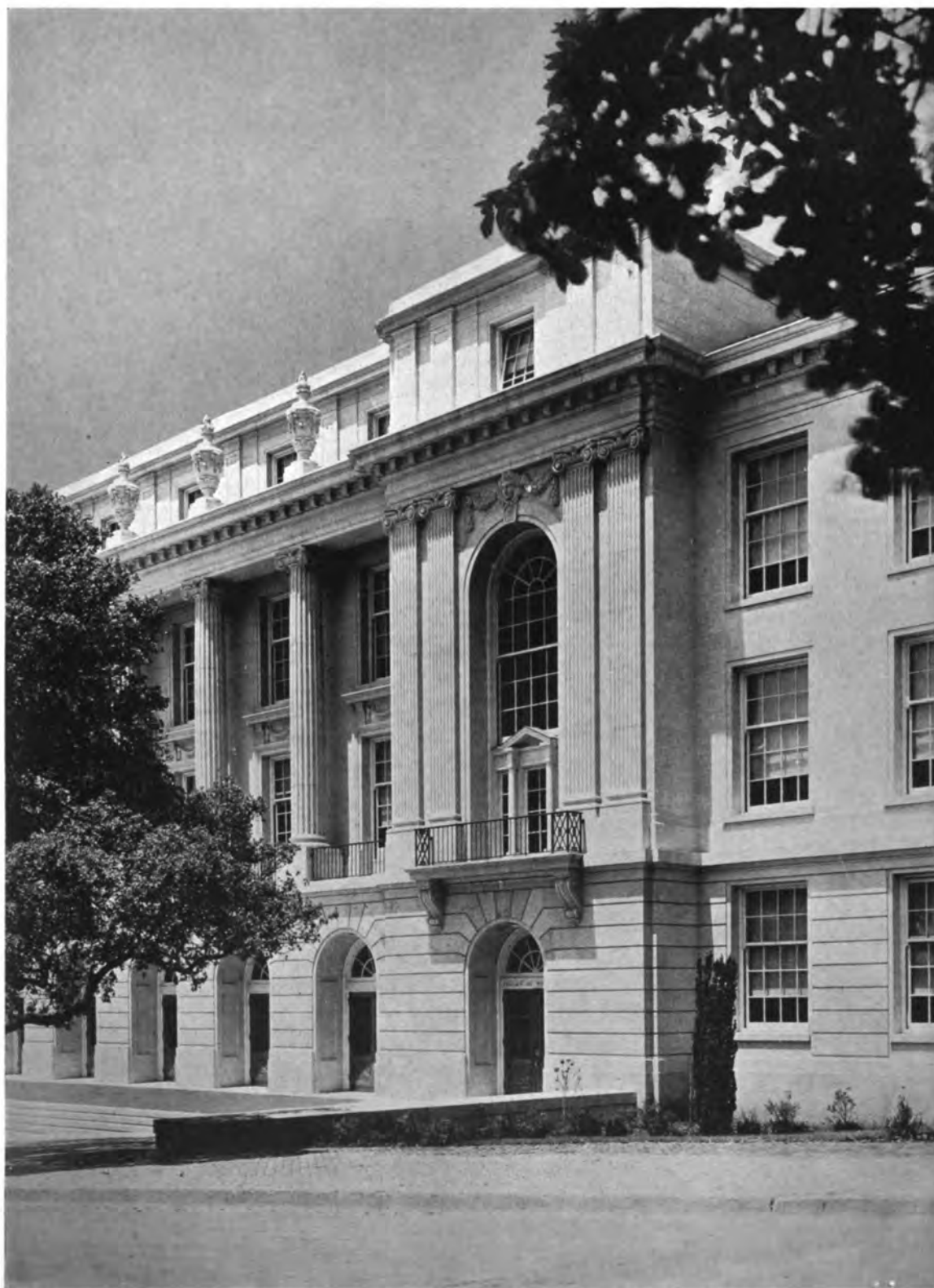


FOURTH FLOOR PLAN

BENJAMIN IDE WHEELER HALL, UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.

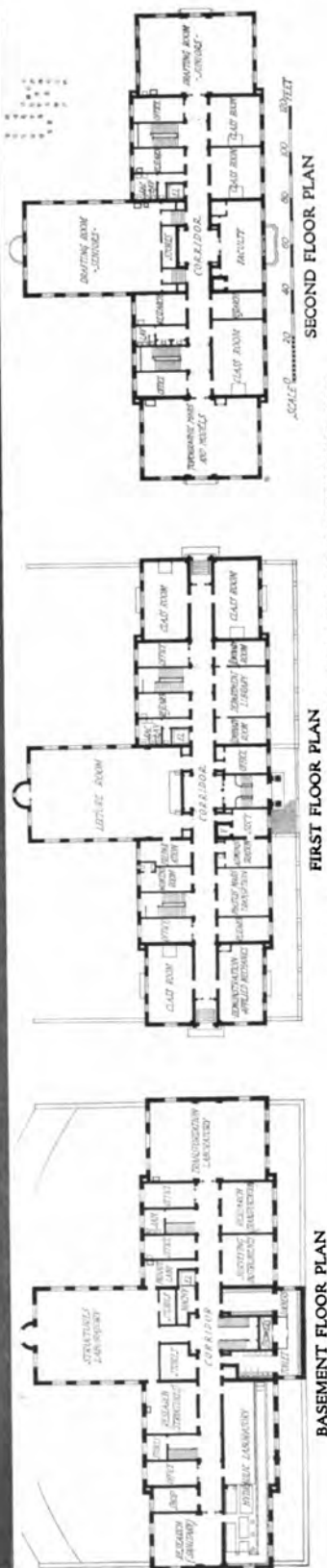
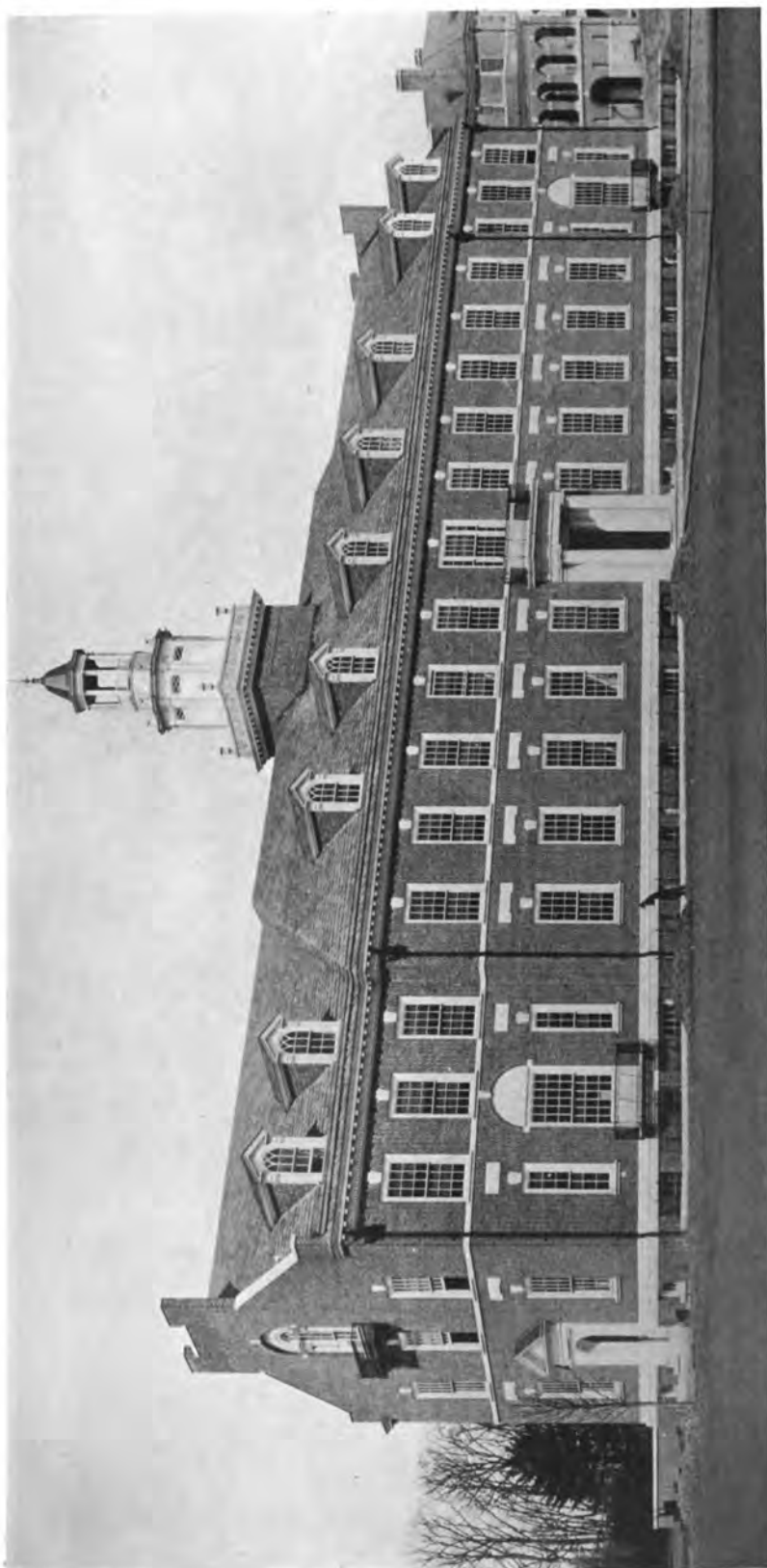
JOHN GALLEN HOWARD, ARCHITECT

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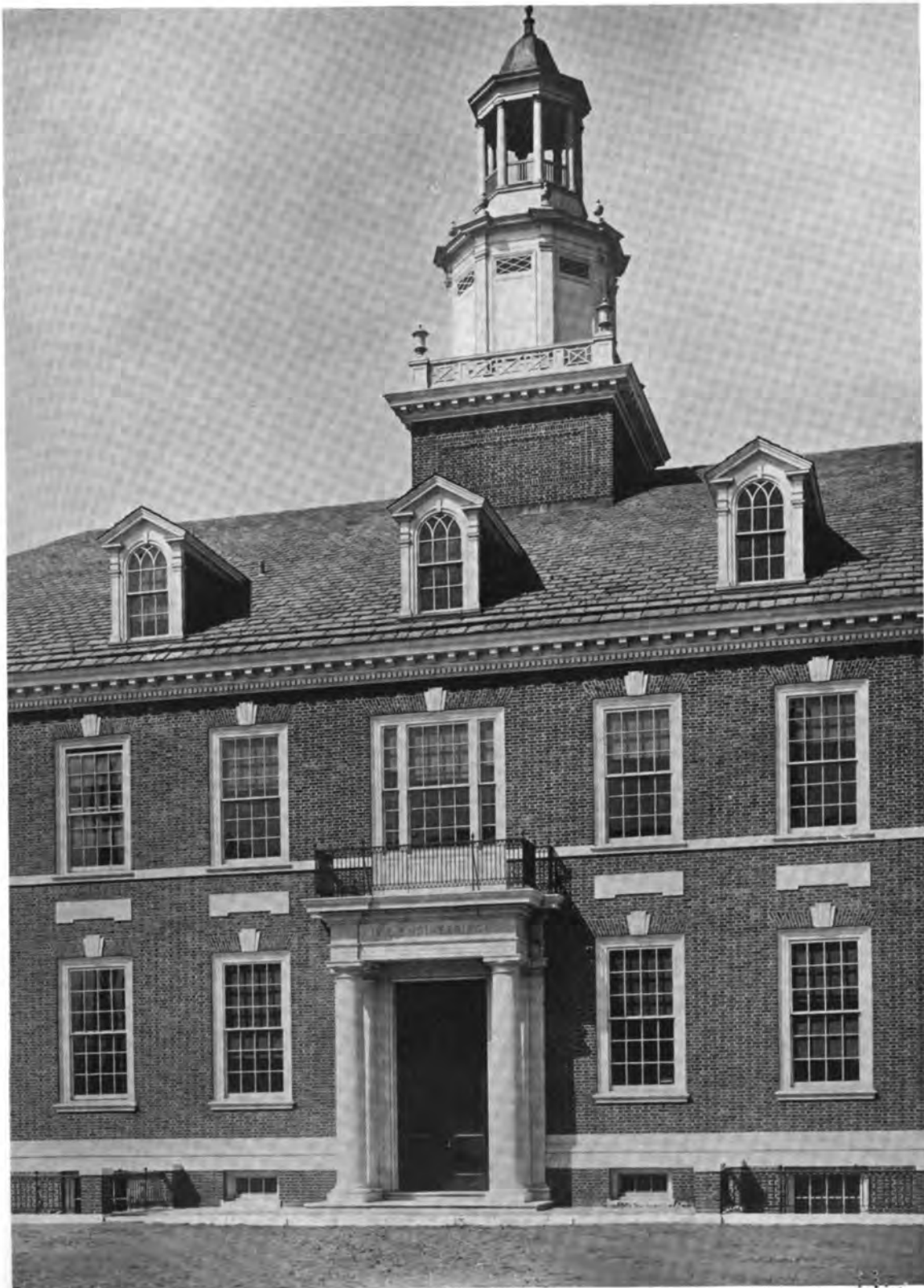
DETAIL OF SOUTH FACADE
BENJAMIN IDE WHEELER HALL, UNIVERSITY OF CALIFORNIA, BERKELEY, CAL.
JOHN GALEN HOWARD, ARCHITECT





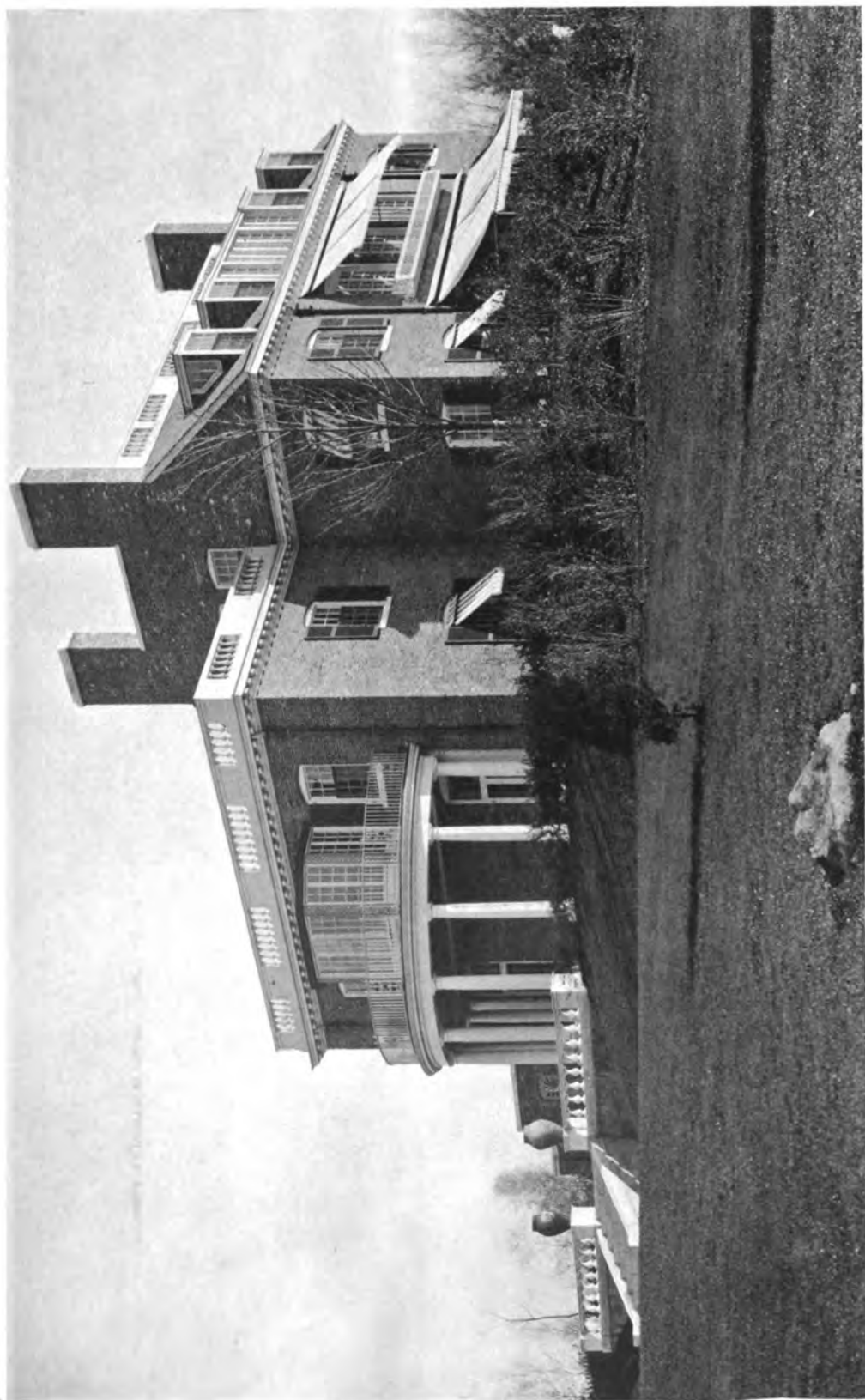
CIVIL ENGINEERING BUILDING, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.
JOSEPH EVANS SPERRY, ARCHITECT

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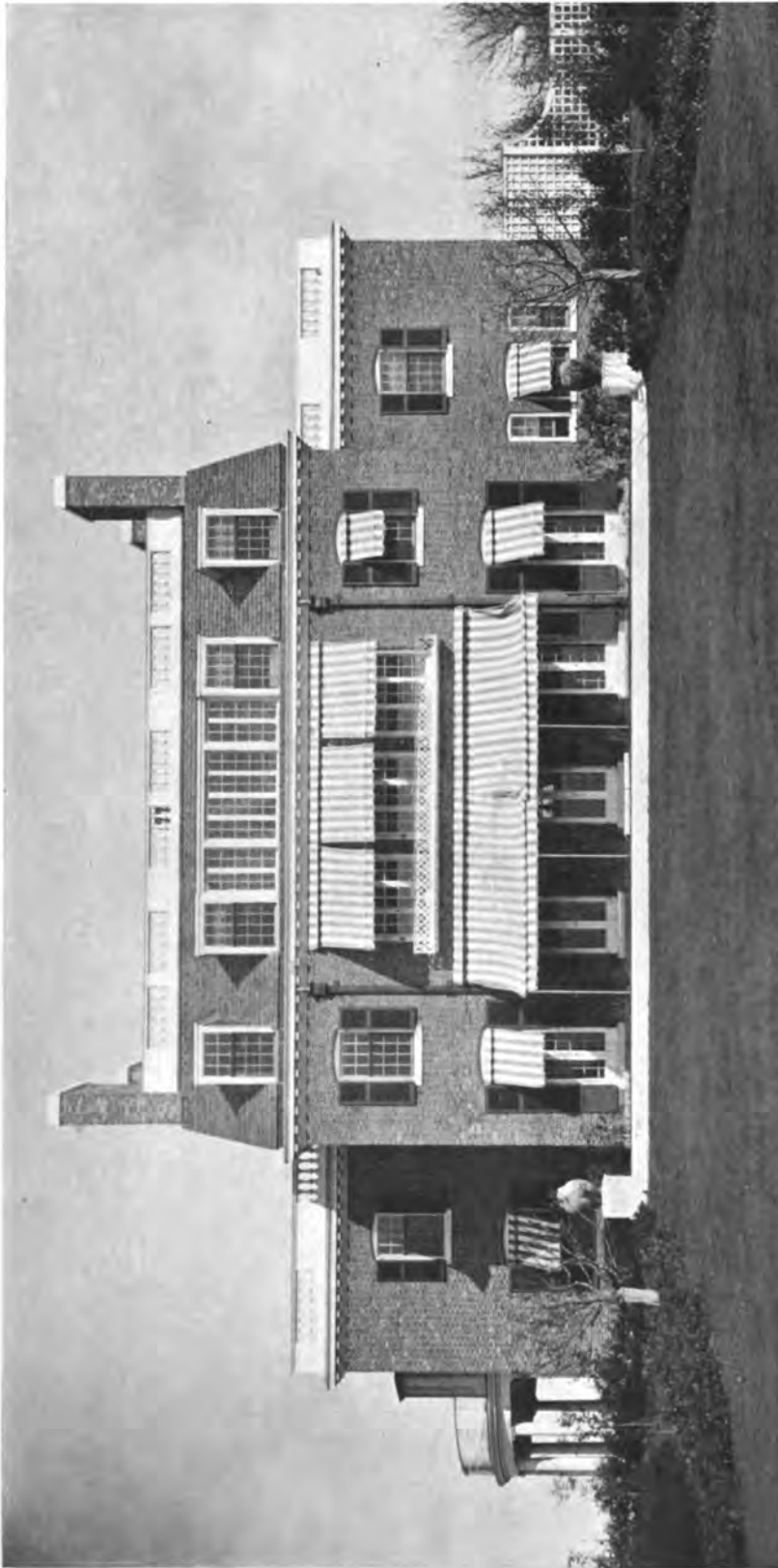
CIVIL ENGINEERING BUILDING, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.
JOSEPH EVANS SPERRY, ARCHITECT





GENERAL VIEW FROM THE GARDEN
HOUSE OF HON. ANDREW J. PETERS, DOVER, MASS.
BIGELOW & WADSWORTH, ARCHITECTS

2



VIEW OF SOUTH FACADE



FIRST FLOOR PLAN



SECOND FLOOR PLAN



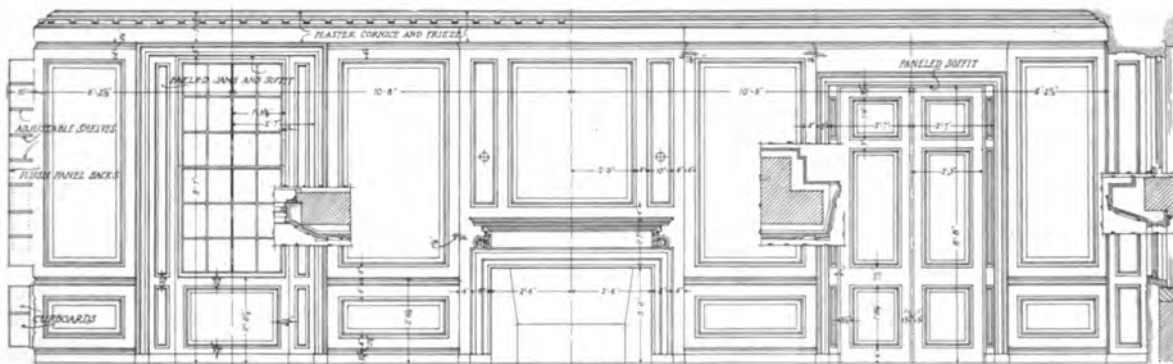
THIRD FLOOR PLAN

HOUSE OF HON. ANDREW J. PETERS, DOVER, MASS.
BIGELOW & WADSWORTH, ARCHITECTS

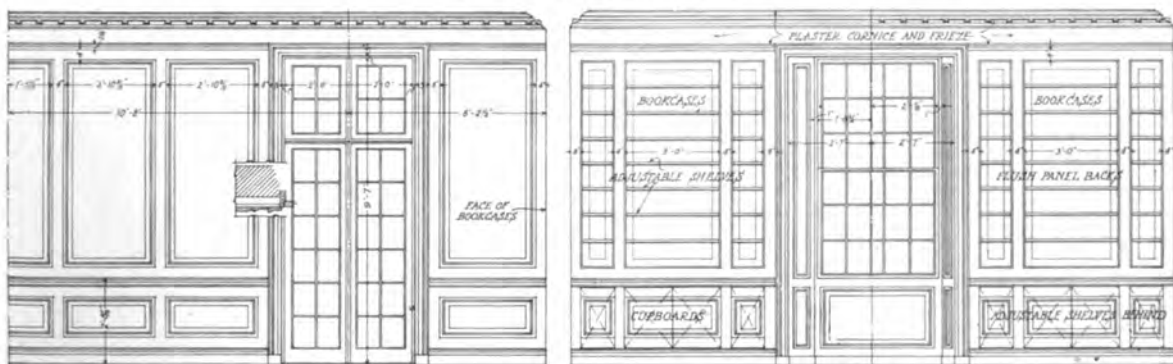




VIEW OF LIVING ROOM



ELEVATION OF FIREPLACE SIDE



HALF ELEVATION OF HALL SIDE

HALF ELEVATION OF ENDS

HOUSE OF HON. ANDREW J. PETERS, DOVER, MASS.

BIGELOW & WADSWORTH, ARCHITECTS



Some Aspects of Industrial Housing

III. THE NEED FOR MAINTENANCE MEASURES

A HOUSING ENTERPRISE AT KINGSPORT, TENN.; CLINTON MACKENZIE, ARCHITECT

By CHARLES C. MAY

ALTHOUGH it involves an unquestionable digression, the writer cannot resist the temptation to set down, in this instalment of the series, some further random notes having to do more with maintenance and administration of an industrial development than with its conception or creation. And while we may appear to be jumping from the beginning to the end of the menu, and to be skipping the most substantial portions of the meal, yet the procedure is not altogether unreasonable.

Administration, upkeep, maintenance, welfare work, mutual service activities, by whatever name the work may chance to be called—these are not patented treatments which may be prescribed after a disorder has appeared in the industrial organism, and which may be externally applied, well rubbed in, and relied upon to effect a cure. Quite the contrary is the fact. A clearly defined, well-considered program along these lines is a growth which must be normally gradual; it cannot be superimposed upon a finished development, nor is aggressiveness its watchword. It is not out of place, therefore, before the houses have been set upon the lots—even before they have been planned in detail—to take preliminary thought upon the after care of the development-to-be. One must not invite the comment, "Now you've got your industrial village, what are you going to do with it?"

Not long ago an architect bethought him of a collection of workmen's houses he had built two years previous, but had not since seen. His only photographs, moreover, had been taken directly following completion of the construction contract, and showed raw foregrounds, porches un-vine-decked, and all the other crudities of a newly completed job. To fill out his files, to renew his acquaintance with the work, and to illustrate what grace the mellowing of time may bring to humblest surroundings, he ordered a new set of photographs.

When they came, they were eloquent indeed, but spoke not of weathered architecture in a ripe setting, but of rack and ruin. No lawns, no trees, no vines, but broken shutters, sagged steps, patchwork repairs, ramshackle outbuildings, and over the whole an air of dismal devastation. And this within the short space of two years! The employer, embarking upon a program of industrial town planning, must understand that such an experience is not the accidental product of a diseased condition, but the normal history of a case discharged without proper after-care. In other words, the best planned village in the indus-

trial world is wholly incapable of maintaining itself; it must be treated as a new-born child. The period of helpless infancy will vary according to grade and nationality of workmen, their shop conditions, their environment adjoining the village itself, the sympathetic co-operation of the central authority. And the greatest of these is co-operation.

A concrete illustration will perhaps best bring out these and some related points. Within a few weeks the writer has visited in some detail a group of newly completed houses in a coal mining town. Some twenty or twenty-five of them had been occupied for about a month, certainly not more than six weeks, yet evidences of the need for guiding hands were already everywhere to be found.

The immediate environment was unfortunate in that its influence was all exerted in the wrong direction. The old "settlement" was occupied by a population of Poles and Italians who had not learned to "live peaceably with all men," notably with any next-door neighbor of differing nationality. The varying traits of the two groups were of the utmost interest, and the intermittent warfare which waged between them held much food for thought. The point at the moment is that the most potent influence of environment being exerted upon the new colony was that of this older group, which, in spite of very extended renovations and improvements in living conditions, was still unregenerate. The new population, therefore, had started out to live, in their new houses, under very much the standards of the old.

The matters of ashes and garbage were cases in point. In the older settlement no system of collection or disposal had been in force, and, in the face of its superhuman task of increasing coal production with a decimated labor force, the company had been unable to establish any system at once for the new. The back yard of each of these cottages, therefore, was already littered not only with the inevitable mixture of ashes, broken glass, tin cans, etc., with which we are all familiar, but—what is surprising in view of the persistent popularity of hog-raising—there was also a large amount of refuse vegetable matter, waiting only for a thaw to become noxious.

The house interiors showed contrasts of comparative housekeeping which were at the one side promising, at the other discouraging to the border of disgust. An Italian woman had permitted her house to fall into a filthy condition, even in these few weeks of occupancy—a condition not, I think, to be explained by the illness of the youngest of her six children,



upon whom she lavished a perfectly uncomprehending gaze. The condition of her house was apparently normal, from the viewpoint of the occupants; its uncleanness was at a maximum in the cellar. This was the receptacle for a remarkable collection of rags and rubbish, but more particularly it was the abode and recreation ground of six or eight hens, confined only by the door at the head of the stairs. The warm air duct from the heater was obviously their popular roost.

Here was, to be sure, a lamentable lack of understanding: this woman had no more idea of the proper care of her new house than of that of the new baby. For the moment, however, we reserve comment except the further inevitable one that the woman herself could speak no English and must be reached through her children.

On the other side of the picture, a Polish woman, a few doors away, showed a perfect passion for cleanliness. Her total array of rag carpets had just been draped on the lines outside, except, to be sure, one which was still soaking in the pan of the shower; she herself was at the moment scrubbing floors in the bedrooms upstairs, not wisely, but too well, in that her unrestrained use of water had already soaked the ceiling below. Here was plenty of enthusiasm, pride of possession, and possibility for further growth.

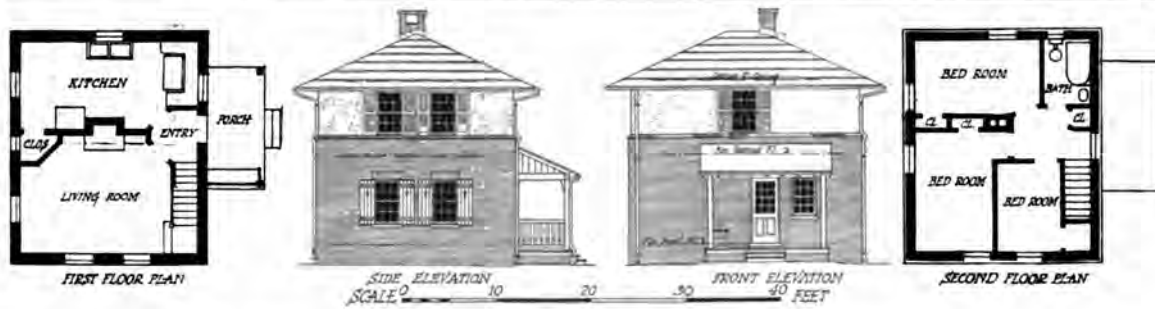
A lack which housing reform has emphasized most prominently within recent years has been that of a proper distribution and arrangement of rooms in workmen's houses, particularly with relation to the question of boarders. Such emphasis is proper, but it, too, can fail if it stops at provision of quarters,

without making certain that the occupant so understands and proposes to make use of them. In each of these little five-room cottages was provided a downstairs room at the left of the entrance, quite independent of access to outdoors, to the rest of the house, and to the toilet facilities. This room was dedicated to the lodger, but in no case had it as yet been so used. On the contrary, it had invariably been decked with paper ikons and stiff lace curtains, and hermetically sealed so far as active usefulness was concerned. The absence of lodgers was probably due to abnormal scarcity of labor in the region, but the alternative use of the room—or rather its disuse—forms one item in a long list of counts all pointing toward the need for a wide educational program. Let me add one or two further instances in point.

A word should first be said, however, regarding the new houses themselves. They were tiny, story-and-a-half cottages containing, on the first floor, besides the boarder's room already noted, a living-dining room across the hall from it, at the rear a kitchen, rear entrance, pantry, and toilet with shower. Upstairs were two bedrooms, each technically a double room. Potentially, then, these were houses of three bedrooms; the monthly rent was ten dollars.

The occupants liked the houses. Only one criticism had been made—they were a bit too small. The houses were too small, yet the following are examples of the way the accommodations were being put to use. A Polish woman (not the super-cleanly one we have been speaking of) was zealous in showing off her menage—all downstairs and one bedroom upstairs. Inasmuch as the former showed an intensive





use of floor space, the obvious suggestion was to look at the other. Great reluctance on the part of the hostess. Investigation showed the second bedroom to be tenanted by a huge, freshly slaughtered hog, with the dissection of which, presumably, her good man was occupying the long winter evenings.

But this, we say, is the ignorance of the foreigner; such things are not to be seen in American houses; the cure for all this lies in Americanization. Now it is manifestly unfair to draw any conclusions from the single incident which followed this other, yet in the actual occurrence it had a certain odd humor. Almost next door we came upon an American family — one of the comparatively few in the group. The arrangements downstairs were much as usual — the household life crowded into the kitchen and dining room, with the parlor quite unused. Upstairs came the revelation. In the one bedroom, where the architect had taken thought to produce space for a double bedstead, in this room were *three* such beds, and in these beds slept father, mother, and five children of both sexes, ranging up to nine or ten years of age. The immediate reaction from this scene was a glance into the other bedroom. To all appearance it had never been used, but stood resplendent in a complete "suite" of colossal golden oak. The bedstead fairly threw the entire development out of scale, so vast was it. Needless to state, this was the "spare room," and it was to preserve this room and the "parlor" below, sacred and inviolate, that the three double beds were jammed into the other poor little room.

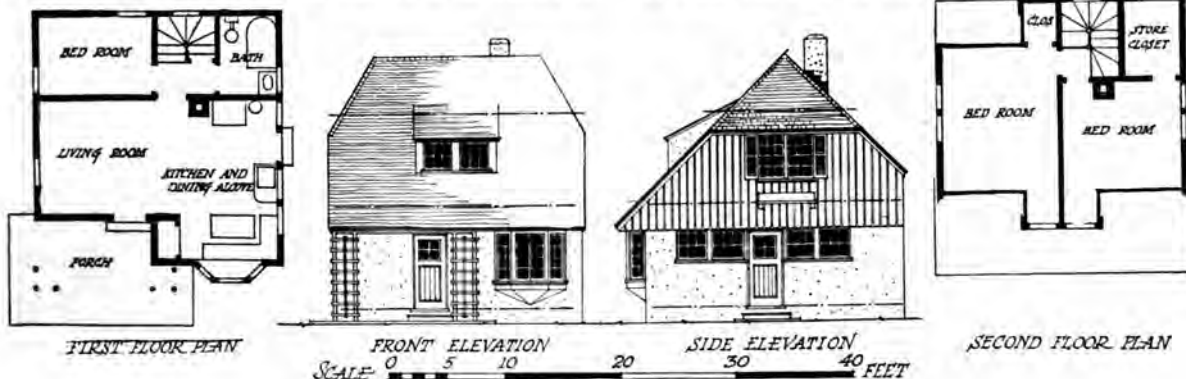
Incidents like the above could doubtless be multiplied indefinitely, depending only upon the extent of

one's travels and observations. It would be more profitable to carry the process only far enough to make certain of one's general classifications and to form a base upon which to build conclusions.

Education, we say, is the great crying necessity; and education, especially, through the children. Shall it be left to the schools, then, to attack such problems as the one we have sketched? Shall the municipality or the state adopt active campaigns of uplift? Shall it be left to the companies, through their welfare or mutual service agencies, to spread within their own ranks the gospel of intelligent living?

We are all familiar with pictures of wonderful work wrought in some such community through the devotion of an able and untiring woman. And, provided there are enough such women to be found, it may be that personal influence at first hand is our best solution. But the requirements are so staggering. Such a woman must be of remarkable attainments. She must be willing not alone to live among the people, but to be one of them; she must be ready to do nothing else, perhaps for many months, except prove herself a good neighbor; for, until confidence of good faith is established, she is an outsider; she must have tact that is infinite, poise that can manage difficult situations, courage in emergency, and, withal, an unflinching good nature and common sense. She should combine the capacities of the kindergarten with those of the district nurse and the domestic scientist; in her community she must be all things to all women.

It is not our purpose here to discuss the possibili-





FRONT ELEVATION OF EIGHT-FAMILY HOUSE SHOWN IN CENTER OF GENERAL VIEW BELOW

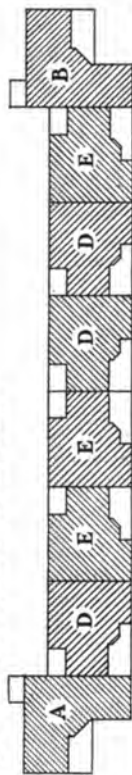
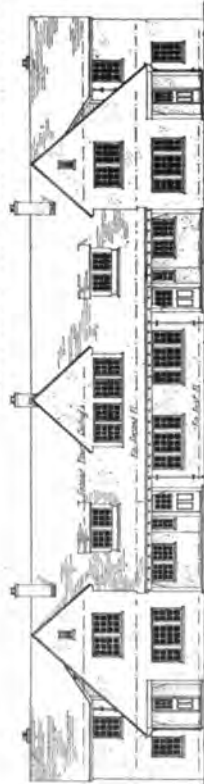
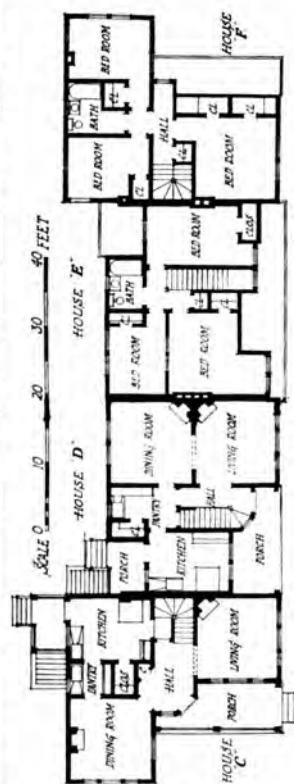


DIAGRAM SHOWING PLAN OF EIGHT-FAMILY HOUSE COMPOSED OF STANDARD UNITS



FLOOR PLANS AND ELEVATION OF FOUR-FAMILY HOUSE



EXTERIOR OF FOUR-FAMILY HOUSE

GENERAL VIEW OF GROUP OF MULTI-FAMILY HOUSES ACCOMMODATING SIXTEEN FAMILIES
HOUSING DEVELOPMENT AT KINGSPORT, TENN.
CLINTON MACKENZIE, ARCHITECT

ties of solution for the problem. We have merely sought to present, in anecdotal form, some few of the difficulties which are certain to prove embarrassing unless the operating company has prepared itself in advance, and is ready with a working program grown up with the new development. In the meantime we shall do well to remember that an industrial village will not function by itself; that its natural tendency is downward, not upward, and that in America, squalor has not even the merit of picturesque.

The city of Kingsport, Tenn., is a striking example of the new industrial activity of the South; it is at the same time an example of the remarkable natural beauty that is sometimes available for the industrial community. It lies within the broad bed of a winding valley through which runs the Holston River, a half mile to the west; this valley is also the route of the Carolina, Clinchfield & Ohio Railroad, and it is along this transportation line that the town has sprung up.

The parent industry of Kingsport is one of the large producers of Portland cement. Four or five years ago, after a period of growth un-

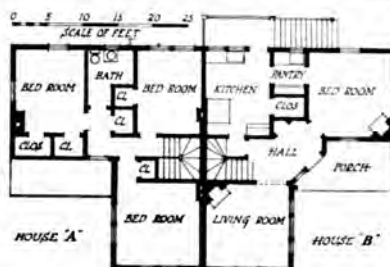
marked by anything spectacular, this company, under reorganization, began to expand at a surprising rate. About the same time other industries became persuaded of the advantages of Kingsport's situation, its relation to clay fields and other sources of raw materials, its possibilities

for easy distribution of finished products. In a word, big industries began to come to Kingsport in numbers far beyond the capacity of Kingsport to absorb them.

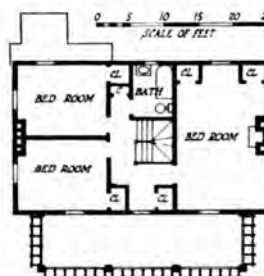
After a period of ineffectual struggle to keep up, the authorities concluded that it was time to call for help. They called for Mr. John Nolen of Cambridge, Mass., and Mr. Clinton

Mackenzie of New York—the former to lay out a general plan for the city, the latter to handle the architectural work. As is almost inevitable in such cases, the program as first laid out by the engineers had already proved inadequate to the rapidly expanding requirements. The problem became, therefore,

in this almost new-born community, similar to that of older cities—a replanning to correct deficiencies in the original provisions. In some sense the plan of Kingsport reproduced in the January issue of THE ARCHITECTURAL FORUM is still incom-



Floor Plans and Exterior of Typical Double House
Single house of similar plan shown at left



First and Second Floor Plans of Six-Room House



Two Exterior Treatments of the Six-Room House Shown in Plan Above
Clinton Mackenzie, Architect

plete in that it does not show certain proposed features that are highly desirable, but not yet assured.

The construction of streets, sidewalks, etc., the provision of public utilities of all sorts, was handled by the engineering forces of the Carolina, Clinchfield & Ohio Railroad, and unit costs on these operations are not at the moment available. It should be said, however, that all such construction has been of the most substantial type. A water supply, for example, has been assured by taking advantage of a remarkable natural formation—a deep notch running lengthwise along a mountain top a couple of miles away. The engineering and constructional work involved were slight compared to the end achieved—a more than adequate supply of soft water for many years to come.

Architecturally, the growth of Kingsport has outdone the mushroom. During the year previous to August, 1916, several hundred houses were built, yet when the writer visited the town the open meadow land was white with the tents of those who had not yet been accommodated. The bulk of these earlier houses were single family and detached; since then there have been provided a number of terrace groups, a boarding house, and a hotel. The central business blocks of the city have also expanded in several directions.

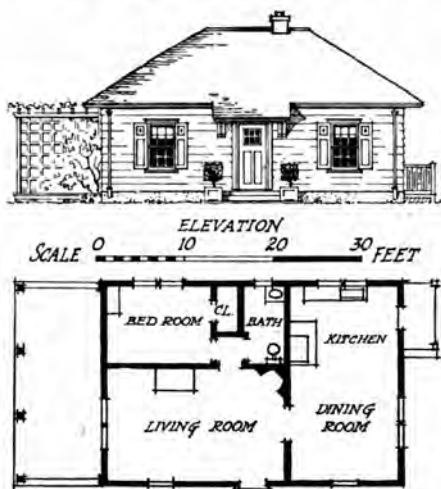
The range of house types is very great, as is the

variety and freedom of architectural style. There are several types of small cottages, even three-room bungalows, and from them all the way up to the pretentious two-story porched house with six good sized rooms; there are Colonial farmhouse types, there are numbers of units which are independent of local tradition, and there are several cottages in which an ingenious, restrained use of vertical bat-

tened boards, together with an overhanging second story, give a look which is reminiscent of Switzerland or the Tyrol as shown on pages 76 and 77.

Such freedom of method and style are usually out of the question in the cheaper grades of workman's house, simply because, being specialties, they must have special attention. They are permissible only where, as in Kingsport, building rates have been surprisingly low. Ask a New York builder the cost of the six-room house—and he would undoubtedly name a price nearer \$5,000 than to the \$2,500 which, in 1916, was its actual

cost in Kingsport. The smaller types ran as low as \$675, the actual cost of the three-room bungalow above. On a cubic foot basis these figures are remarkably low, and would be possible only under conditions as favorable as those at Kingsport, of which Mr. Mackenzie has taken full advantage in producing a group of houses of unusual interest.



Design for Three-Room Bungalow, Kingsport, Tenn.
Clinton Mackenzie, Architect



Perspective Showing Grouping of Single Houses with Plan of Center One Above
Clinton Mackenzie, Architect

The Development of American Architecture

II. THE NATIONAL PERIOD. CLASSICISM AND ROMANTICISM

By FISKE KIMBALL

DURING the Revolution (1775-83) building was almost completely suspended. At its close, although some craftsmen continued their work in the same style as before, the leaders were inspired by very different ideals. They recognized that the colonial style, whatever its merits, was provincial, and they sought to establish an architecture worthy of the new, sovereign, republican states and of the great nation soon welded from them. In all types of buildings connected with political and social institutions, moreover, the republican and humanitarian ideals of America demanded solutions very different from those which were traditional in Europe. For government buildings, prisons, asylums, and other types, new dispositions had to be found. The pioneer in both these movements was Thomas Jefferson, whose political career gave an unexampled opportunity



The Virginia Capitol at Richmond, 1785-98
Thomas Jefferson, Architect
The first monument of the national period and of the classical revival in America

for the realization of his architectural conceptions. He felt that even the forms of detail should not be borrowed from contemporary European styles, although they should command the respect of foreign observers. In this situation he turned to what he felt to be the unimpeachable authority of the ancients, with whose republics the new states were



Engraved after the drawing by Alexander Jackson Davis
The State House, Boston, Mass., 1795-98
Charles Bulfinch, Architect
A mingling of academic Roman and post-colonial tendencies

felt to have their closest analogy. In his design for the Capitol of Virginia at Richmond (1785), the first of modern republican government buildings, he boldly took as his model the Maison Carrée at Nîmes. The Ionic order was substituted to save expense, windows were necessarily pierced in the cella walls, and the interior was subdivided in conformity with the balance of legislative and judicial functions, if not exactly in accordance with the expression of the exterior. It is little realized that this design considerably ante-



Latrobe's Design for the Completion of the Capitol in Washington, 1806
Presented by him to President Jefferson and hung in the White House during Jefferson's term of office. Now in the possession of H. Latrobe Roosevelt, Esq. The design which determined the central features of the present east front

dated anything similar abroad. Classical examples had indeed been imitated in garden temples and commemorative monuments, but never on such a large scale and never in a building intended for practical use. Even Gilly's proposed temple to Frederick the Great (1791) and Vignon's Napoleonic Temple of Glory (1807) were monuments simply, and not until the Birmingham Town Hall (1831) was there anything in Europe really analogous to the first monument of our national architecture.

The seed of a literal classic revival thus implanted, required time to bear its fruit. Meanwhile many buildings of less advanced character evidenced none the less the change from colonial ideas. Engineers, builders, and amateurs, both of native and of foreign birth, united to infuse them with largeness of scale and academic character. James Hoban of Dublin, in his South Carolina Capitol at Columbia (1786-91), and L'Enfant, the French military engineer, in his remodeling of Federal Hall in New York, the first capitol of the United States (1789), both employed the favorite academic formula of a columnar central pavilion over a high basement. William Thornton's Philadelphia Library (1789) and Samuel Blodgett's marble façade of the Bank of the United States (Gi-



The Washington Monument, Baltimore, 1815-29

Robert Mills, Architect

The first example of the use of the Greek Doric column as a colossal monument, and thus the direct ancestor of such recent examples as the Prison Ship Martyrs' Monument and the Perry Memorial.

rard's Bank) in Philadelphia (1795) had similar frontispieces rising the full height of the building. The competitive drawings for the Capitol at Washington (1792-93) showed a determined effort to secure a monumental result. The design of Thornton, which received first prize, was based on the great Palladian layouts of England. More advanced still were the competitive designs of Stephen Hallet, a French professional architect of the highest training, who was placed in charge of the work. In his first study he had adopted the scheme, since so popular in legislative buildings, of a tall central dome with balancing wings, similar in form to the Collège des Quatre Nations in Paris. Various later studies, under Jefferson's influence, were based on the peristylar temple, the Panthéon in Paris, and the motive of the Pantheon in Rome, which remained the accepted central feature. In these studies, also, Hallet anticipated the foreign instances of legislative halls modeled on the semicircular form.

Charles Bulfinch showed both the classical and the academic influences in the Beacon column in Boston (1789), based on Roman examples, and in the Massachusetts State House (1795-98), with its tall dome and its colonnade above an arched basement. Pure French academicism of the mid-eighteenth century appears in the New York City Hall (1803-12), designed by the French engineer, Joseph Mangin, in partnership with John McComb. Here for the first time in America appears a façade recessed between angle pavilions, with a sophisticated wall treatment of superimposed orders, of archivolt and rustication. The complete victory of classicism, even in its Roman phase, did not ensue until after 1815. It was Jefferson, the initiator of the movement, who crowned its triumph with the design of the University of Virginia group. Here long colonnades connecting classical pavilions of varied design lead up to the central rotunda or library, based on the precedent of the Roman Pantheon.



The Sub-Treasury, New York, 1834-41

Ithiel Town and Alexander Jackson Davis, Architects

Built for the United States Custom House. The finest of the American versions of the Parthenon

Long before classicism had carried the day the Roman revival had been reinforced by a Greek revival. The introduction of Greek forms, already used in England and Germany, was due to Benjamin Henry Latrobe, an architect who had the professional training of both these countries. He came to America in 1796 and in his first monumental work, the Bank of Pennsylvania (1799), employed a Greek Ionic order in two hexastyle porticoes which gave access to the domed banking room. In the conduct of the work on the national Capitol, with which he was charged from 1803-17, his principal opportunities lay in the interior, where he created the great semicircular Hall of Representatives (now Statuary Hall), with its Corinthian colonnade employing Greek capitals of the Lysicrates type. His last design was for the second Bank of the United States in Philadelphia (1819-24), in which — encouraged doubtless by the philhellene Nicholas Biddle, later its president — he adopted the octastyle Doric form of the Parthenon itself. The need for additional space in the cella led, indeed, to the suppression of the side colonnades, but even then the building approached the ultimate Athenian ideal more nearly than any European monument so far erected.

Hellenic influence dominated American architecture until nearly 1850. A pupil of Latrobe, Robert Mills, rivaled his master in advanced classicism by employing a Greek Doric column, nearly a hundred feet in height, as the motive of his Washington Monument in Baltimore in 1815, and an obelisk of 500 feet in the Washington Monument in Washington (1836ff.). The temple form was followed in a series of state capitols, and notably in the one-time Custom House of New York (1834-41), now the Sub-treasury — another and more literal version of the Parthenon. The latest and richest example was the main building of Girard College in Philadelphia (1833-47), for which Nicholas Biddle forced the adoption of the Lysicrates type by Thomas U. Walter. For state capitols, however, the type having a dome and wings, with the prestige given it by the completion of the national Capitol (1829), found thenceforth more



Old New York Custom House, 1835-41

Isaiah Rogers, Architect

Built for the Merchant's Exchange. Remodeled and now used for the National City Bank. The colonial motive in one of its best American examples

adherents. Another favorite motive was the long, unbroken colonnade, as used in the original (Fifteenth street) façade of the Treasury in Washington by Robert Mills (1836-39), and in the Merchants' Exchange in New York (now forming the lower story of the National City Bank), by Isaiah Rogers (1835-41). A novelty was the great semicircular portico of the Merchants' Exchange in Philadelphia by William Strickland. When the Capitol at Washington was enlarged to its present form by Walter, in 1851-65, he had naturally to follow the academic Roman ordonnance of the exterior, and thus helped to give



The Lawn, University of Virginia, 1817-26

Thomas Jefferson, Architect

The ultimate American expression of Roman classicism



Berry Hill, Halifax County, Va.

The most magnificent of the Greek revival plantation houses

the later buildings of the classical movement a less Hellenic stamp. By all these designs the state and the nation were endowed with a tradition of monumental and dignified government architecture which has been continued with but slight interruptions to the present day.

In domestic architecture after the Revolution the colonial style was resumed by the craftsmen with little change, so that a large group of buildings may well be described as "post-colonial." An early example is the Pierce-Nichols house in Salem (1782), by Samuel McIntire. The façade differs little from that of the Royall house in Medford, built fifty years earlier, except in the substitution of a heavy Doric order in the corner pilasters and in the bolder treatment of the doorway. Classical influence soon showed

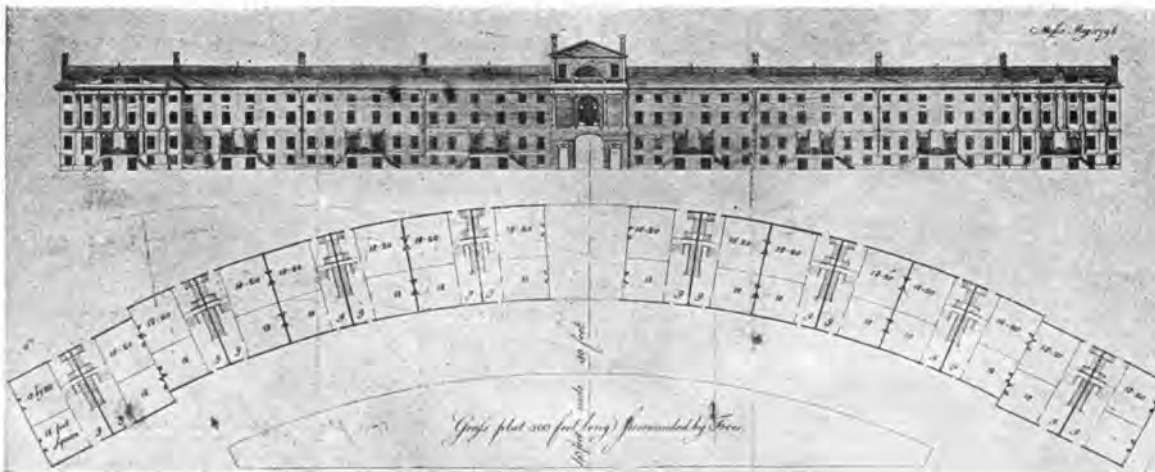


Pierce-Nichols House, Salem, Mass., 1782

Samuel McIntire, Architect

Post-colonial version of the Royall house motive

itself in two quite different ways. One, which still involved no break with the past, was the employment of Adam forms of detail, both in exteriors and interiors. Thus were developed the attenuation of proportions and the delicacy of ornament so characteristic of the later work of McIntire in Salem, typical of New England in the early nineteenth century, and occasionally seen elsewhere. The appropriateness of these forms to execution in the prevailing material, wood, lent them a special attraction. The other classical tendency, which dominated the states farther south, was quite different in its inspiration and direction. It took its departure from Palladianism and from French models, and ultimately sought to assimilate the house also to the ideal form of the temple. From



Franklin Crescent, Boston, Mass., 1793-96

Charles Bulfinch, Architect

The first unified design for a city house block in America

the start the portico or frontispiece of tall columns was common, a prominent example being the White House in Washington (1792ff.). The tall portico became especially popular in Virginia and the South through Jefferson's numerous designs, in which he sought, where possible, to give the effect of a single story, as in the French houses of supposedly Roman cast. In the remodeling of his own house, Monticello (1796-1809), he introduced a dome over the projecting salon to secure a still further resemblance to such buildings as the Hôtel de Salm in Paris. The professors' houses of the University of Virginia, which he designed as "specimens for the architectural lecturer," included imitations of the prostyle temple, and these were widely copied where there were not the same pedagogical motives. Nicholas Biddle, with his customary enthusiasm for things Greek, adopted a model of the Theseum, peristyle and all, for his country seat, "Andalusia" on the Delaware. Even in New England the prostyle temple with Greek forms finally carried the day; while in the South the peristyle with its manifest suitability to the climate was widely adopted. Such magnificent specimens as "Arlington," where the ponderous columns of the great temple of Pæstum were imitated; as the Bennett house in New Bedford, with its hexastyle Ionic main portico and tetrastyle wings; as Berry Hill in Virginia, with two octastyle Greek Doric porticoes and balancing outbuildings of the same order, or as the

Hill house in Athens, Ga., with a Corinthian peristyle eight columns wide in front, show extremes of classicism which have no parallel abroad.⁴ City houses in blocks showed the same tendencies as houses which stood isolated. In 1793 Bulfinch erected for the first time in America a block of unified design, the Franklin Crescent in Boston, with pavilions of academic scheme and Adam detail. Some coherent treatment of the block remained an ideal, although one seldom realized. The most notable later example was Colonnade Row in Lafayette place, New York, which had a free-standing Greek Corinthian order carried throughout its length. The interiors of the classical houses lost in richness through the abandoning of paneling, and through the chaste purism which confined all detail to essential structural elements. The tall, cool rooms, with their occasional screens of columns, served now as neutral backgrounds to rich furniture and hangings.

Post-colonial buildings, differing but little from the more advanced buildings erected before the Revolution, were also common among the churches of the early republic. Here, also, slender proportions came in with Adam detail. Nevertheless more monumental effects, parallel to those attained in public buildings, made their appearance soon after the opening of the nineteenth century. The fundamental work was Latrobe's Catholic Cathedral in Baltimore (1805-21), the first cathedral undertaken in the United States —



St. John's Chapel, Varick Street, New York, 1803-07

John McComb, Architect

The finest of the post-colonial churches closely following St. Paul's, built forty years earlier



L'Eglise du St. Esprit, New York

The ultimate formula of classicism for churches



St. John's Church, Washington, D. C.

Water color by the architect, B. H. Latrobe, now in the possession of Mrs. Lydia Latrobe Loring, and showing the President's house as it appeared in 1816 when the church was built

where it was as novel in its size and ritualistic arrangement as in its classical forms. The plan was a Latin cross, vaulted throughout, with a low dome over the crossing, a western portico of Greek detail, and twin belfries, Hellenized as best they might be. In 1816 Latrobe employed the Greek cross form for St. John's Episcopal Church in Washington. Robert Mills developed the auditorium type of octagonal or circular form in the Monumental Church in Richmond, Va. (begun 1812), and others. The temple form was only adopted later, for instance in St. Paul's Church, Boston (1820), or the Chapelle du St. Esprit in New York.

With its new departures in all branches of government, America soon took the lead in the reform of methods of punishment and of the treatment of the insane. The New York State Prison, built by Joseph Mangin in 1796-98, included provision for the separation of the sexes and of classes of criminals, and the Virginia Penitentiary, built by Latrobe in 1797-1800, was based on the principle of solitary confinement. Later these ideas were more fully applied and embodied in radial plans by the architect, John Haviland, of English birth. By 1835 the American prisons were so favorably known that commissions from England, France, and other European countries came to study them and to introduce their principles abroad.

Although Jefferson, with his underlying vein of romanticism, had proposed imitations of Gothic models as early as 1771, Latrobe was the first to execute a Gothic design in Sedgely, a country house near Philadelphia (1800). For the Cathedral in Baltimore he submitted an alternative



"Sedgely," the Seat of Mr. William Crammond, Pennsylvania
Benjamin Henry Latrobe, Architect
The first design of the Gothic revival in America



Chapel, St. Mary's Seminary, Baltimore, 1807
Maximilian Godfroi, Architect
First church executed in the Gothic revival in America



Trinity Church, New York, 1839-46
Richard Upjohn, Architect
Revived English Gothic, thoroughly understood

scheme which was the first Gothic church design in America. In 1807 Godefroi, a French engineer and architect, carried out the chapel of St. Mary's Seminary in Baltimore with Gothic forms. Other architects soon essayed occasional buildings in Gothic, still inspired less by a conscious principle of eclecticism than by a romantic interest in the style, of which neither the structural principles nor the decorative forms were much understood. A new period in the Gothic revival was opened by the building of Trinity Church in New York by Richard Upjohn (1839-46). Here the design was carefully studied from English examples. These long remained the favorite models, although James Renwick in St. Patrick's Cathedral, New York (1850-79), adopted the traditional French scheme with twin western towers. In the sixties the influence of Ruskin led to the adoption of Italian Gothic detail and to a moral fervor in the advocacy of medievalism which had hitherto been absent in America. Meanwhile, in the forties, the imitation of temples in domestic architecture had been attacked as absurd and impractical, and cottages and villas of Gothic, Elizabethan, Swiss, or "Italian" style had taken their places as more flexible and convenient, more domestic, and more in harmony with the landscape. Individual Greek forms, however, had continued to be employed for the details of other houses, especially in the towns, and thus both romanticism and classicism had been gradually replaced by an eclecticism which chose for each building the style which seemed most appropriate to its use and surroundings.

THE FORUM COLLECTION OF
MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE THREE

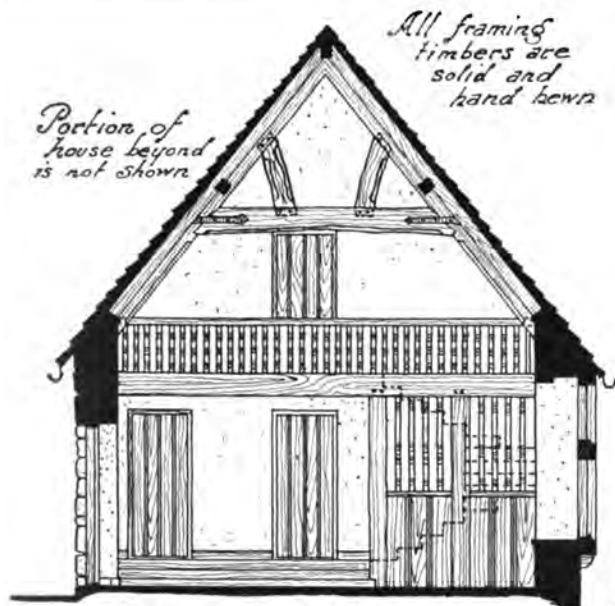


A SIMPLE handling of Gothic detail in residential work. Roof construction and stair framing of solid oak timbers, hand hewn and pegged together.

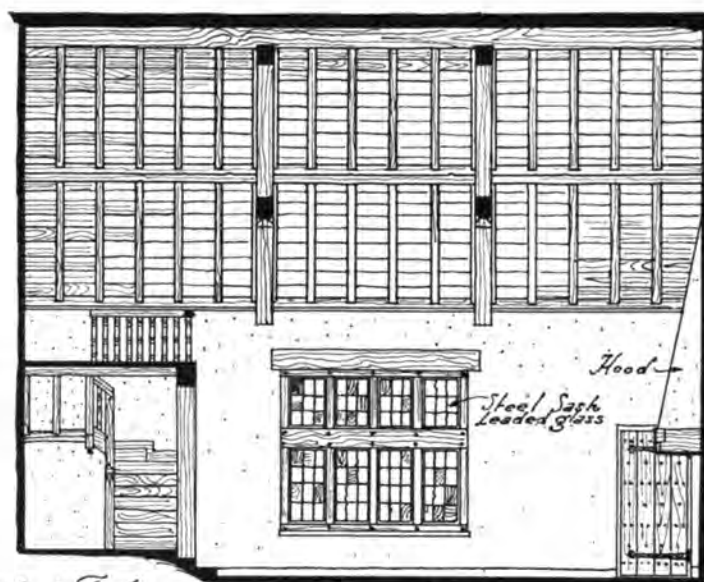
No finish has been applied, the wood being left to color with age. Walls are of rough plaster and the floor is paved with red quarry tiles.

LIVING ROOM, HOUSE OF W. E. ATWOOD, ESQ., EAST GLOUCESTER, MASS.

CRAM & FERGUSON, ARCHITECTS
DETAIL DRAWING BY EDGAR T. P. WALKER ON FOLLOWING PAGE



Transverse Section



Longitudinal Section

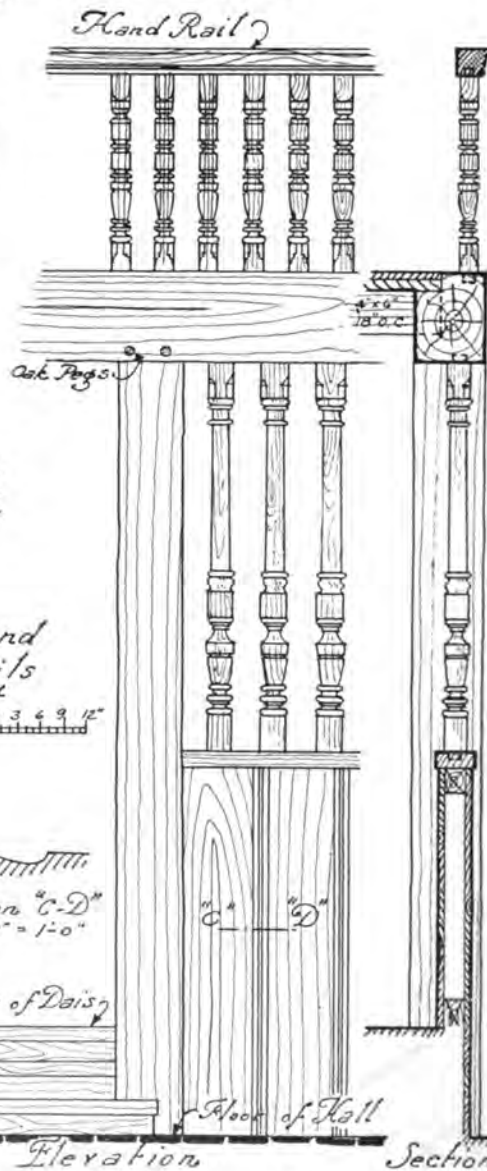
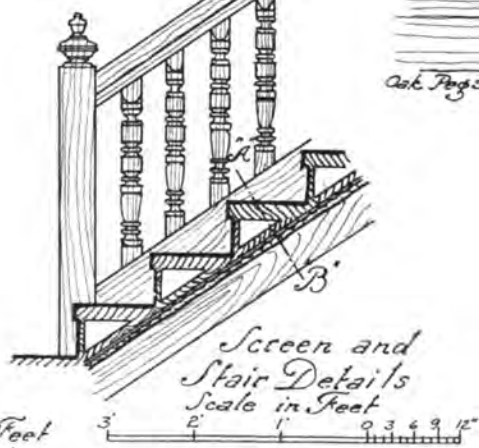
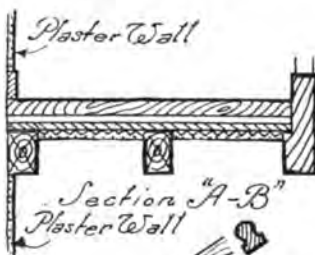


PLATE DESCRIPTION

CONSOLIDATED GAS COMPANY BUILDING, NEW YORK, N. Y. PLATES 33-37. The façade is an unusually interesting development from Italian Renaissance precedents. It is entirely of Indiana limestone, except for a granite base course and copper cornice. Between the modillions at the outer edge of the cornice, gas lamps are installed which cast a flood light over the façade at night. The Italic letter in relief is an unusual way of treating an inscription and is particularly effective when lighted from above at night. The lower story windows are set in cast iron frames, and the decorative grille at the entrance is likewise of cast iron. An interesting construction feature was caused by the necessity of daylight entering from both sides of the show room. The working space behind this room is but one story in height, and a pitched roof was placed over it with the ridge running parallel to the main façade. The bottom of the slope was made low enough to permit the insertion of windows in the show room over the screen.

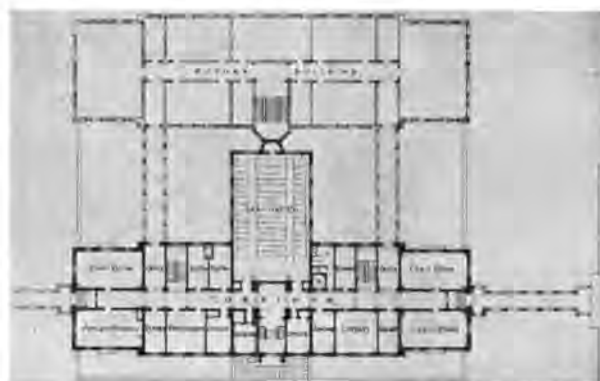
This caused a valley against the rear wall which presented a difficulty in disposing of snow in winter. Perforated steam pipes were run through it, however, and the jets of steam melt the snow as fast as it gathers.

★ **BENJAMIN IDE WHEELER HALL, UNIVERSITY OF CALIFORNIA. PLATES 38-40.** Wheeler Hall, the latest addition to the interesting group at Berkeley erected from the designs of John Galen Howard, houses the departments of Literature, Fine Arts, History, and Languages. It fully meets the many academic requirements from both viewpoints of plan and design. The exterior conception is that of impressive and reserved French classic with a preference for Roman motives. The interior is characterized by simplicity throughout and immediately evident upon entering the main lobby, where a series of simple groined vaults and a moulded break at the wainscot height are the only features of the composition. Remarkable acoustic qualities are one of the particular features of the building.

CIVIL ENGINEERING BUILDING, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD. PLATES 41, 42. The most recent addition to the collegiate group for Johns Hopkins University is the Civil Engineering Building designed by Joseph Evans Sperry. The present

development of building at the university is under the direction of an advisory board consisting of Messrs. Grosvenor Atterbury, Frank Miles Day, and Frederick Law Olmstead, together with an executive architect appointed for each building. This building is located on the south quadrangle and was erected in 1915-16 at a cost of 21 cents per cubic foot. This included all structural costs, plumbing and steam fitting, electric wiring, pipe tunnels, and hydraulic tank in the basement floor, the lift, and architect's and engineer's commissions. Several different types of construction were used that would serve as examples for

class work, and consequently there are floor arches in the corridors, exposed steel roof trusses in the drafting rooms, and reinforced concrete and steel for floor and roof construction in various other parts of the building. The future growth of engineering work at the university has been considered in planning the building, and the present structure is a unit of the complete building as contemplated and shown in the plan herewith.



Plan Showing Future Development of Civil Engineering Building
Johns Hopkins University
Joseph Evans Sperry, Architect

HOUSE OF HON. ANDREW J. PETERS, DOVER, MASS. PLATES 43-48. The design follows sturdy Georgian precedent, the detail of windows, doorways, and balustrades having very much the character of English houses of the period. An unusual feature for the style, and one that is carefully handled, is the large amount of window area on the south façade which provides the main living rooms with a flood of sunshine. The construction of floors and walls is fireproof, the exterior walls being of old brick laid in Flemish bond with a rough gray joint. The brick, of mixed sand and water struck varieties selected at random, were hatchet cleaned and received a sand blast finish after being laid in the walls. In this manner the effect of softly colored, old-time brickwork was secured, and a transparent waterproof coating served to make the walls impervious to moisture. The living room, paneled from floor to ceiling in butternut, was treated with acid and ammonia to produce a gray-brown antique finish. The other principal rooms are paneled in the Adam manner with applied mouldings. The stairway with wood risers and treads is constructed over a steel framework and insulated from the metal with felt, thus counteracting any metallic ring.

EDITORIAL COMMENT

ARCHITECTS who have in vain sought for logical reasons in the Government's disposition to ignore the value of their profession may find some consolation in knowing that the lack of Government recognition is not confined to our own country, but that the architects of England have faced a similar situation and are still attempting to find a solution of the problem.

The effect that the Government attitude may eventually have upon the profession has led to serious discussion among British architects of the means that can be adopted to strengthen the profession's position. We earnestly hope that the present situation in the United States will lead American architects to a similar analysis of conditions and consideration of means that the profession may not lose the prestige which it has laboriously built up, and that, with a resumption of normal peaceful activities it may assume a wider direction of the enormous building program of the country, and enjoy the fuller measure of confidence and respect to which its capabilities entitle it.

At an informal conference of the Royal Institute of British Architects held a few months ago, many constructive thoughts of the leaders of the profession in England were given expression that have great bearing on the situation, both here and abroad. The feature of the conference was an address by Mr. Sidney Webb on the function of an architectural society. The special value of his address was in great measure due to Mr. Webb not being an architect or member of the Institute, but a student of community problems, and he was, therefore, able to bring to the conference a fresh point of view and an unprejudiced consideration of the Institute and its problems. It may be said in passing that Mr. Webb had spent many years in studying trade unionism, and from that was led to the study of vocationalism. The structure and function of professional associations are so closely allied to vocationalism that a keen interest in their organization and ideals was but another step.

His suggestions as to the proper sphere of an architectural society strike such a forward note and are so fundamentally sound that we quote their main points with the hope that they may stimulate similar thoughts among American architects.

"The association is entitled to claim participation in the government of the profession. Every profession needs to be regulated in all sorts of ways—conditions of training, ethical code; it may be registration or what not. And the professional association is undoubtedly entitled—it does not do its duty unless it claims to be entitled—to participate largely in the government of the profession. But I do not think that, from the standpoint of political science, the profession can be allowed to govern itself. . . . It cannot be allowed to

determine the conditions of entry; otherwise it makes the profession a monopoly. We want it to help in deciding what ought to be the conditions of entry, but the State could not allow any profession to exclude any people it chose to exclude, under any conditions it chose. It must help the State to fix the conditions of entry, but the State cannot allow it to fix the conditions itself.

"And now I want to mention two other functions which are not generally thought of, and this is serious. First of all, a very large part of the public function of a professional association seems to me to be one which it has not, to any great extent, yet exercised, and that is it ought to claim the right and the duty of criticism of everything that is done by the Government, or, for that matter, by any public authority, in the lines of its own profession. It ought not merely to make that criticism in an irresponsible way, but it ought to regard it as its duty to inform the Government of the day of the professional opinion upon every kind of act which is done by the Government, or left undone, on which the profession has a distinct opinion. . . . I would like to see it the duty of a professional association to keep constant supervision, and a very critical supervision, over all the acts of the Government, or any Government department, or any public authority falling within the realm of its profession; and to put that criticism publicly on record, and bring it definitely to the notice of all the Government authorities. I think every ministry ought to have an advisory professional council of the profession with which its work is concerned. And whilst that advisory council should have no power whatsoever, it should have a free initiative to say what it liked, the power of publishing its reports when it thought fit to do so, in an uncensored form.

"My third point is this. It seems to me that it is the duty of a professional association to bring to the public notice, and to agitate for, the supply of a sufficiency of its service to the community as a whole. . . . I hope I am not saying anything too hard, but practically, the brain-working professions began as the body servants of the rich, and they have not as yet sufficiently realized that it is their duty to have developed out of that to become the servants of the community; they have not yet managed to make their service available for the whole of the community which needs their service. They still serve, on the whole, Mammon and Mammon alone. And, unfortunately, the great mass of the community still has to go without the services which the professions do render to the rich and ought more and more to render to the community in its collective capacity.

"If you ask me to apply that to architecture, I am in a difficulty. I cannot help noticing that in the early days of your association—to go back to the early Victorian times—architecture was thought of only as a luxury for the rich, and, even to the end of the nineteenth century, that it could be said that 90 per cent of buildings did not require an architect; only those buildings which it was expected and desired should be beautiful required an architect. And that seems to be a totally unworthy view of architecture. It is the duty of architects to claim that they shall be responsible for all buildings, including town-planning. . . . It is a reproach to the profession that any town should be badly laid out. I do not say it is the fault of the profession, but I hold it up, as an ideal, that its business, as an association, is to demand that such arrangements shall be made as may be possible so that the service which the profession can render to the community should be available in sufficient quantity, and of sufficient quality, for the benefit of every person in the community, and not merely as a luxury for a rich class."

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THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

✓ A SPECIAL ISSUE

DEVOTED TO

PLANNING, BUILDING AND FINANCING

WORKINGMEN'S HOUSES

AND

INDUSTRIAL COMMUNITIES

IN AMERICA

APRIL 1918



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THE ARCHITECTURAL FORUM

VOLUME XXVIII

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GROUP OF COTTAGES



THE STAFF CLUB

COTTAGES AT GRETNA — A BRITISH MUNITIONS TOWN IN SCOTLAND

THE ARCHITECTURAL FORUM FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXVIII

APRIL 1918

NUMBER 4

✓ War-Time Housing—A Supreme Opportunity

By ANDREW WRIGHT CRAWFORD

A YEAR ago, before we entered the war, the idea of Federal aid in building homes for workmen was unformulated; the idea of Federal construction of homes was undreamt. Yet now \$50,000,000 has been appropriated for this purpose, and the legislative ship carrying \$50,000,000 more is on the ways, almost completed.

A tremendous advance in one year, this: a greater is now possible.

In the National Housing Association a few years ago there was hesitancy over putting on the program the subject of state or municipal financial aid for housing. Toronto had tried it, the city lending its credit to the extent of 80 per cent of the necessary funds, the chief advantage being the borrowing of money at a much lower rate than otherwise would have been the case. Massachusetts had acted as pioneer in the United States by enabling its Homestead Commission, a state department, to erect houses. Elsewhere state aid was unknown in this country. In less than twelve months the public, the Administration, and the Congress have been educated to the new idea and have acted on it. It is a remarkable product of America's entrance into the war.

It is undoubtedly because of official and legislative recognition of the intimate relation, of the interdependence, between good housing and getting things done, that this forward step has been taken. The labor turnover witnessed everywhere during the past year has been one lever of unusual power in routing up old ideas of what the Government should do. That turnover reached 300 per cent in more than one industry doing war work. Discontented workers mean less production; it does not need statistics to show that contented, healthy workers produce greater results than discontented, unhealthy ones do. It is common sense that physically weak workers cannot produce the physical results that physically strong ones do. Ask yourself how you have felt after sleeping in a room with three or four others: realize that your doped feeling is but the counterpart of the same doped feeling felt by every workman who sleeps under similar conditions.

We expect supreme efficiency in our soldiers, and

we hope for something approaching supreme efficiency in our war workers. Neither the soldier nor the workman who has slept in an overcrowded barracks can reach that height any more than you yourself can.

Lack of recognition of these facts, on the part of both public authorities and of manufacturers, has existed for many years. The initiative toward bringing them to public attention had already been taken, and in the National Housing Association and American City Planning Institute means of educating public opinion and expressing it had been created. It is only articulate public opinion that counts in such matters; the silent vote may count at elections, but housing matters have not yet constituted an issue before the electorate.

In addition to common sense we now have figures demonstrating the effect on physique of slum areas as compared with garden suburb areas to a rather remarkable extent. The following figures are taken from a book on city planning by George Cadbury, Jr., son of the founder of Bournville, one of England's most successful garden suburbs. The figures show the effect on boys and girls, in weight and height, of the conditions in the garden town of Bournville as compared with St. Bartholomew's Ward in Birmingham, only twenty minutes away.

	Age 6 Years Pounds	Age 8 Years Pounds	Age 10 Years Pounds	Age 12 Years Pounds
Weight				
Boys, Bournville	45.0	52.9	61.6	71.8
Boys, St. Bartholomew's Ward	39.0	47.8	56.1	63.2
Girls, Bournville	43.5	50.3	62.1	74.7
Girls, St. Bartholomew's Ward	39.4	45.6	53.9	65.7
Height				
Boys, Bournville	44.1	48.3	51.9	54.8
Boys, St. Bartholomew's Ward	41.9	46.2	49.6	52.3
Girls, Bournville	44.2	48.6	52.1	56.0
Girls, St. Bartholomew's Ward	41.7	44.8	48.1	53.1

Obviously, the taller and heavier boys and girls, carrying the same advantages into their final stature, will work more efficiently than their stunted neighbors of the slum.

The Rev. Mr. Watt, chaplain of the Gordon Highlanders and the Black Watch, said recently, when speaking of one unhappy man: "He had a slum in his mind because he had a slum as his home." John Burns, the labor leader, formerly a member of the

English Cabinet and the man who secured the passage by Parliament of the English Housing and Town Planning Act of 1909, expressed the same thought when he said, "Mean streets make mean people."

The slum affects not only mental and physical stature, but life as well. Mr. Cadbury further gives the following figures, showing the effect on both the infantile and adult death rates of good or bad city conditions:

	Infantile Death Rate per 1000 Births	Ordinary Death Rate per 1000 Births
Bournville.....	55.0	4.8
Letchworth.....	50.6	6.1
Hampstead.....	62.0	9.8
Bournemouth.....	70.0	9.9
Lewisham.....	62.0	10.4
Hammersmith.....	90.0	13.1
London.....	101.0	13.6

It is to be noted that slums disastrously affect the future of the race. If her infant child is lost, the mother may be affected in her physique as well as in her spirits, and later children may be affected also. Some one has said: "Since individuals pass away, parenthood is the supreme factor in the destiny of nations." Parenthood should be encouraged, not discouraged by the death of a small baby after the long months of suffering to bring it to life.

It was with figures such as these, with figures demonstrating the effect of better housing even in reducing crime, that the campaign for improvement was being waged with hopeful, perhaps signal, successes here and there, before we entered the war on April 6, 1917. Then began the more rapid education by bitter experience. It was necessary to house the workers. How should it be done? There was a lack of local capital, or rather not so much an actual lack as fear of future losses should buildings be erected at present high prices, which might be cut in half by the unexpected ending of the war twelve months or six months later, causing a heavy loss because of such capital charges already incurred. This caused an actual decrease of building at the very time that there was an altogether unanticipated and unprepared for concentration of population at centers of war industries.

Philadelphia is, apparently, the greatest example of the combined resultant of these two forces. During 1915 and 1916 about the usual average of 8,000 two-story and three-story dwellings were built. In

1917 the number dropped to 3,000. The usual growth in population of Philadelphia is about 40,000 per year. The actual growth in the last three years is about 200,000, the greater part of which occurred in the last year and the last half of last year; and the likelihood is that 1918 will witness a growth greater yet, especially in the metropolitan district of Philadelphia. In dealing with such centers we are quite literally dealing with a nation in size; for in metropolitan Philadelphia, which includes the city and the area within ten miles of its limits, disregarding all state or county lines, there is a population equal to that of the whole of Norway—a population greater than that of Ecuador and Nicaragua combined.

That the immensity of the problem may be further

illustrated, it may be noted that the mere addition to the population of metropolitan Philadelphia during the two years 1917 and 1918 will be greater than the population of Columbus, Ohio. This means, of course, that the physical plant of the metropolitan city, its streets, its transportation system, its schools, its parks, its playgrounds, and especially its houses,

must be expanded to accord with this increase.

Obviously city and suburban planning and city and suburban building on a huge scale must be undertaken to meet this actual condition that confronts Philadelphia; and the same necessity exists in other communities that have become centers of war-time activities.

And withal there is need for tremendous speed. The bending back of the Italian line, the pressure on the French line, the collapse of the Eastern line, urges speed, speed, speed. And yet the two sides in the world-wide conflict are far more evenly matched than they were when the war broke out in 1914. With Germany forty years ahead of her in preparation, with the actual battle only thirty miles across the channel, with her very existence at stake, England coolly took the time to build for her munitions workers the best garden suburb yet created—the town of Well Hall; Scotland, urged on to haste, built a row of barracks at Gretna, and promptly abandoned their further erection and instead has built a garden suburb for 15,000 workmen. Will America, coming into the war with the opposing forces in men, in munitions, in finances, far more equal than



View of Barracks First Built at Gretna but Later Abandoned for Cottages of Permanent Construction

they were in 1914, when, indeed, matching resources against resources, — and modern warfare is well epitomized in the saying, "Soldiers win battles, wealth wins wars," — the preponderating advantage is decidedly on our side, will America, with the battle line five days away instead of five hours, fail to do as well for her workmen as Great Britain has done for hers? This is the question that the next twelve months will answer.

At first President Wilson, like any other man new to the undertaking would have done, said to build barracks; but he has quickly swung away from that and now favors permanent buildings. Temporary means are unwise, if this war is to last more than six months. It is folly to prepare for less than six years. America can carry on the war for twenty-five years, and the sooner the Huns learn that, the better. Temporary barracks become a permanent slum. Their cost in the long run, financially, is greater than the cost in the long run of the best of housing, because, if well located, there should be little or no loss from the latter; whereas from the former the loss is 100 per cent on the buildings alone. Workers do not like bunks; they do not provide for family life; and now that so much of the rough work has been done at new plants like Hog Island, a better class of workmen — men trained in all sorts of trades — are being called for. The day laborer is giving way rapidly to the skilled workman: the latter can

pay for and can only be retained by adequate housing and adequate means of education and recreation for his family, as well as himself.

The immediate, critical problem is: What standard will the Government of the people and by the people set for the people in its first industrial town? On the answer to that question depends in large measure the standard of American housing for the rest of this century. A tremendous opportunity is at hand. The Government must take the responsibility of refusing the opportunity or of accepting it. Which will it be?

Will the Government accept what has been the standard heretofore, or will it accept the challenge of



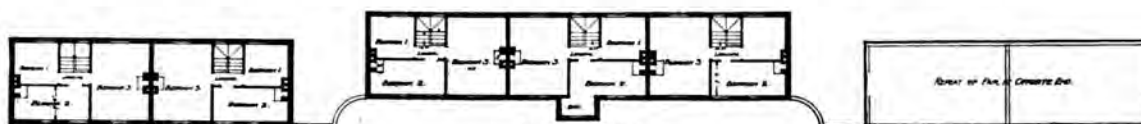
Staff Cottages at Gretna



View Along One of the Streets of Gretna, the British Munitions Town in Scotland



FRONT ELEVATION.



FIRST FLOOR PLAN.

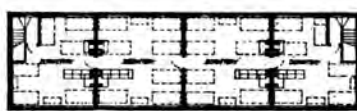


GROUND FLOOR PLAN.

PLANS AND ELEVATIONS OF FIVE-ROOM COTTAGES AT GRETNA



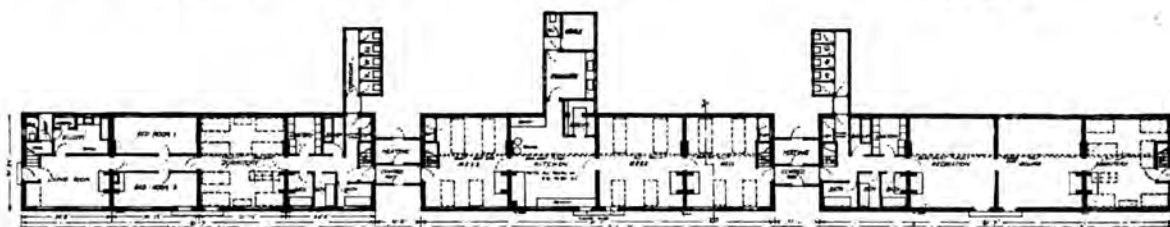
FRONT ELEVATION



DORMITORY PLAN



BACK ELEVATION



GROUND FLOOR PLAN

PLANS AND ELEVATIONS OF "COTTAGE SHELLS" TEMPORARILY USED AS HOSTELS



FRONT ELEVATION

BACK ELEVATION

END ELEVATION



GROUND FLOOR PLAN

FIRST FLOOR PLAN

PLANS AND ELEVATIONS OF SIX-ROOM COTTAGES AT GRETNA

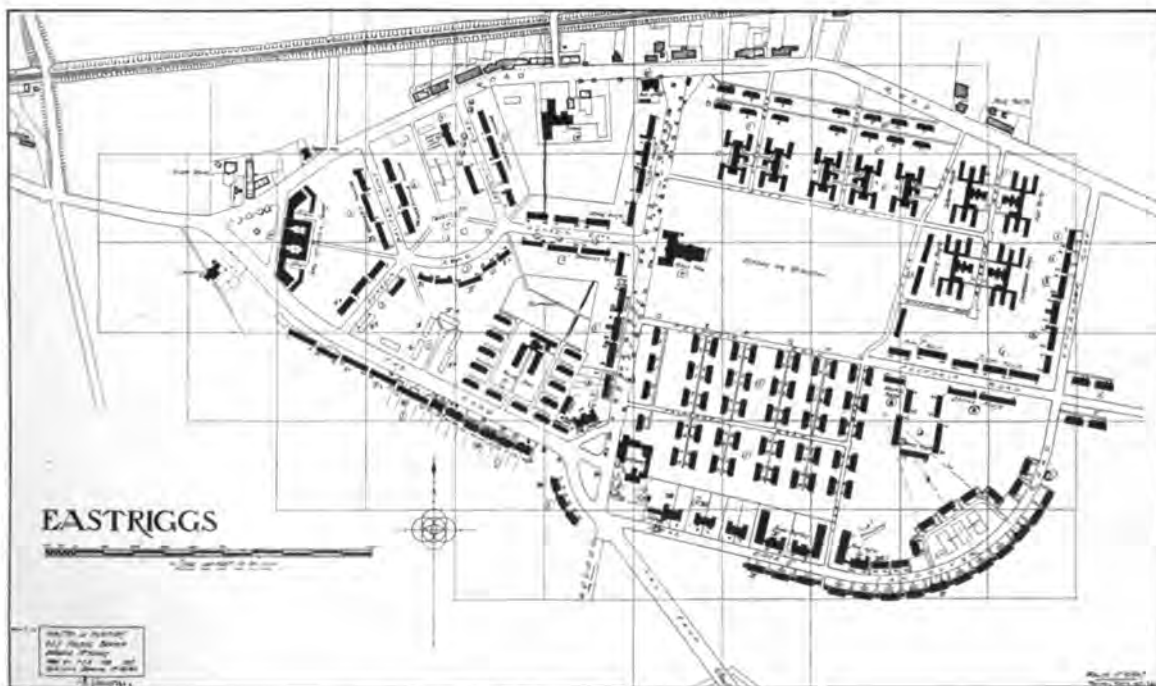
England and surpass Well Hall? Will it do pretty well or a little better than has been done by operative builders heretofore, or will it accept the challenge of Scotland and surpass Gretna? Will it seek housing conditions that will result in 75 or 80 per cent efficiency in its men, or will it follow the example of England and Scotland and aim at housing that will result in 100 per cent?

The method by which the first war town is built, the decision as to whether the houses shall be sold or rented only—I hope that in most locations they will be not only rented but sold, because every home owner is a better citizen than a mere residence renter—he has a stake then in the moral and physical surroundings of his home; if he doesn't own his residence, he can just move out like any other slacker—these questions, these policies, are not to-day the dominant ones for consideration. It is the physical town that the Government is to build that is the question now. It was not only the effect on health and lives, it was the effect on cheerfulness, the effect produced by the charm of the towns of Port Sunlight, Bournville, and Letchworth that enabled John Burns, the labor leader, to secure the adoption of the English Housing and Town Planning Act of 1909. If these towns had not been beautiful, if they had been as hygienic as sani-



Recreation and Assembly Hall at Gretna

tary science could make them, but ugly, that statute would never have been passed. The objects with which they were built, whether for profit sharing or philanthropy and 4 per cent, or as an example of community co-operation, were immaterial; it was the power of the attractiveness of the thing that was done in all these places that produced their counterparts in fifty-five other garden towns and suburbs of England, and that swept over old world opposition in Parliament, carrying the act of 1909 to victory. Whatever way the administrative side is handled, whatever way the ultimate destiny of each house is determined, are minor considerations now. The physical standard that the Government sets for the housing of the laborers of the United States is



Town Plan of Eastriggs, a British Munitions Town in England

the momentous consideration.

War-time housing differs from peace-time housing chiefly in the opportunity to do a finer thing in shorter time. But war brings with it a need for preparation, which the pressure of the war is apt to cause to be overlooked. We are learning by this very need of housing for our war workers how important it is in time of peace to prepare for war.

The danger to democracy, the danger to America by the obliteration of space brought about by increased means of transoceanic transportation, of which the aeroplane is the latest example, will let us never again fancy ourselves safe from attack. Isolation is gone as completely as is the eighteenth century. But in time of war it is necessary to prepare for peace, and particularly to alleviate the suffering caused by the unemployment that will accompany it. The longer the war lasts, the greater will be the number of men who will come back from the trenches without occupation. The longer the war lasts, the greater will be the number of war-industry workers who will be thrown out of employment when those industries slow down or stop with the coming of peace. Every



Street View in Well Hall

month sees more and more women employed in jobs formerly occupied by men. The women will not care to give up those jobs, nor will their employers want them to do so.

The period of reconstruction will be difficult. Now is the time to prepare for it, so that its hardships may be minimized. Always in periods of depression, public work has been stimulated

in order to give employment to the unemployed.

Now, in war time, is the time to plan such work. Public work requires the preparation of city plans, their adoption, and the acquisition of the property on which the public work is to be done. These processes take time, frequently more than a year or eighteen months. Obviously if we wait until the end of the war to begin the preparation of plans, we will be too late to alleviate immediate suffering.

City planning in general is more urgent now than it has ever been and fortunately the war is making that fact evident. But the specific town plans and the definite housing adopted within the next few weeks by the Federal Government for its war workers is of supreme importance.



The Essential Principles of Industrial Village Development

By JOHN NOLEN

AS a result of unprecedented industrial expansion and the necessity to provide for military and naval forces, the subject of housing workingmen has risen to national, or even international, importance. This is partly the effect of the war and the consequent industrial expansion, and partly the expression of a somewhat new social and economic ideal. It is said now emphatically that the war cannot be successfully prosecuted without industrial, as well as military, strength and efficiency. It might appear to be an exaggeration to hold that the success of the American armies depends upon the number and character of workmen's houses in American cities. Yet many believe this is to be the case. And the United States Chamber of Commerce has stated that at the present time the proper housing of workmen is *the most necessary thing to be done to win the war*. This conclusion is a new and striking illustration of an old adage, "For want of a nail the shoe is lost; for want of a shoe the horse is lost; for want of a horse the rider is lost."

The other part of the movement is expressing itself in a genuine desire to improve the living conditions of all who labor, war or no war. The motive in part is unquestionably the welfare of the worker, but it is primarily based upon the conviction that without good living conditions, outside of factories as well as in, of which housing is and must always be the main feature, efficient labor cannot be secured and retained.

The problem of industrial housing in its broader phases may perhaps be best expressed by the term "community development." *It calls for the creation of a complete industrial town or village.* It cannot be solved by the mere building of houses, even though they be of good types. From the first step to the last, the solution of these problems requires special skill and experience. Furthermore, the problems of industrial housing are related to the still wider and more technical problems of city planning, city building, and the proper maintenance and administration of cities.

ESSENTIAL PRINCIPLES

Some of the essential principles of community development generally accepted as sound may be stated as follows:

1. The plan for the subdivision of the property should fit the topography and give due consideration to natural features.

2. Even if the land is relatively level, the plan should nevertheless have interest, good organization, and design. The point of view that leads to a good arrangement on hilly ground is also capable of securing a good arrangement on level land.

3. The use that is to be made of the land should determine its general plan and restrictions. There is no plan that is best for all places, nor for the same place for all time. Merit is largely a question of fitness for its original purpose, and its adaptability for probable future purposes.

4. Thoroughfares, and other broadly related city planning features, should be located first, and within these lines, and in conformity to them local streets and blocks and lots should be defined in the best possible manner.

5. The various standards for various classes of property, the lot widths and lot depths, the block widths and block depths, recognized by the best authorities, should be applied with skill and discrimination. These are by no means absolute or fixed; they are still open to discussion, and in each case are largely matters of nice judgment. Still, there is some law. For instance, the minimum requirements of detached, of semi-detached, and of row houses in which, for this purpose, there is substantial agreement, determine largely the width and depth of lots; the size of lots determines largely the size of blocks; the blocks determine the layout of the neighborhood. These, in turn, react upon street widths, playgrounds, and other public features.

6. An increase of lots or residence sites and of the necessary streets should be accompanied by a corresponding increase of playgrounds, parks, and other indispensable public features required by the probable population of the area when fully built up. The best time to make these reservations of public spaces is when the land is subdivided. The cost should be assessed in accordance with the benefit.

7. The interests of the real estate operator, of the prospective owner or user, and of the general public should be harmonized as far as possible. In most cases this is not so difficult as it might seem. While the immediate interests of the three parties are not identical, they are not in the long run normally in conflict. It is part of the responsibility of the public, acting through well considered and equitable regulation and law, to remove causes of conflict, and thus to define the rights and duties of the several parties.

8. A plan for community development must consider not only immediate use, but also probable subsequent use, administration, and maintenance; and must, so far as possible, forecast and provide for it. This may be done in part by the plan itself, and in part by binding restrictions and conditions, providing for permanency. Or it may anticipate a change or conversion into a different use. Opinions of designers differ as to which is more desirable, — a plan that makes change difficult or one that makes change

easy. Here again it is a mistake to dogmatize. One thing is clear, however, even from a superficial study of land subdivision in its relation to housing, namely, that the worst results have not been due usually to the low standard or the lack of fitness of the development for its original purpose, but to its lack of fitness for the purpose to which there was afterward an attempt to adapt it, or to the lack of public regulation, or the low standard which the city permitted to be applied.

FUNDAMENTAL QUESTIONS

The fundamental questions which should be asked in the planning of an industrial town or village are the following:

1. What should determine the selection of a tract of land for an industrial village development?
2. What size tract is desirable?
3. How important is the relation of the tract to the city plan?
4. What general principles should control the division of the property into zones, that is, the selection of areas for industrial and railroad development; of open spaces and public reservations, stores, public building sites, homes, etc.?
5. What determines the location of streets?
6. What are the best sizes and shapes of blocks and lots?
7. Which are the most desirable house types?
8. Should the tract be designed so as to be convertible, that is, adaptable to a use other than that for which the plan was made?

SELECTION OF SITE

The first step, namely, the proper selection of a site for an industrial village, is one that is often taken without due regard to the purpose of the development and a consideration of its relation to the steps which must follow. The skill and experience which are of service in the laying out of the property would be of even greater service if employed in time to have a part in the selection of the land.

In selecting land for industrial housing, the points of greatest importance are as follows:

Location. Usually it should be suburban or out of town, or actually in the open country. It is an advantage if the section is within walking distance of the factories, which in many cases should themselves be moved to an out-of-town location.

Cost. The value of the land should be low: for unskilled workers, \$500 an acre or less; for skilled workers about \$1,000 an acre.

Size of Tract. In order to provide for a complete local community giving the necessary streets, open spaces, public building sites, and the other features of neighborhood life; also to take care of the cost of the indispensable utilities, such as water supply, sewage disposal, etc., the tract should be usually not less than one hundred acres. Two hundred acres

is even better. In some cases a thousand acres would not be too much.

Boundaries. The boundaries in the case of a tract with a strongly marked character should usually follow the topographical features. Unless streams or water courses are wide, both sides should be included. So also with main streets. If they are located on the boundary of the property, the development should include both sides of the streets and the boundary of the tract run to the back line of the surrounding lots.

Topography. The topographical character of the land is likewise of great importance in the choice of a site. If it is too flat, the result is apt to be monotonous and even ill drained. On the other hand, if it is too broken or steep, the development is inconvenient and costly. A slightly undulating or rolling topography is on the whole best for the purpose. Furthermore, land which is very flat can often be better used for factories, and land which is very broken is better suited for parks and public reservations. Marsh land, if it is to be used, is also apt to be better suited, when reclaimed, for factories or parks.

STREETS AND ROADS

In making a plan for a village, the first act usually, after the choice of the tract and the preparation of the survey, is to study the property with a view to the location of streets and roads. Although a good street system is of primary importance to convenience and economy in a village, its establishment has not usually been presumed to involve any special knowledge or skill beyond that of the surveyor, nor of any different point of view from that of the real estate operator. Most of such planning in the United States has been undertaken from the proprietary standpoint. It has been done for the owners of the land, and largely with a view to early and profitable sales. The importance of the street rests in the fact that it is the channel of all the ordinary means of public circulation and public service; that it is essential to the profitable development and use of property; that only through the opportunities it offers can there be any broad or attractive expression of community life, and that only through a comprehensive, well ordered system of streets and roads can the functions of the town or village be performed with economy and efficiency.

Every decision with regard to the street is important,—its location, its width, its subdivision, its grade, its planting, its lighting, etc. With few exceptions these decisions concern the general public far more than individuals or groups of individuals who happen to reside or own property on the particular street under consideration. Different streets have different functions, and practically every street is related, or should be, to some other street. These varying functions require varying treatment, espe-

cially with regard to street widths. In most communities the area given up to streets is ample, but its distribution has been arbitrary and accidental. The requirements of local streets, in which classification most village streets are included, are different from main thoroughfares, or even secondary streets. The local street should not be broad, and to make it so incurs needless expense for grading and paving, as well as waste of land. If the local street is kept narrow, it, acquires a quality more distinctively domestic. It is cozier and more attractive. There are many good examples of local streets laid out with a total width between property lines of 40 feet or even less, the roadway itself being not more than from 18 to 24 feet.

In planning the street system, opportunity should be sought for creating minor public open spaces and appropriate sites for public and semi-public buildings. The selection and planning of such features, or planning with a view to their establishment in the future, should be a part of the study of the street plan. Both the convenience and the effect of public buildings and small open spaces is largely lost without suitable approaches, giving advantageous viewpoints.

SIZES AND SHAPES OF BLOCKS AND LOTS

The size, shape, and proportion of blocks are of great importance, especially from the economic point of view, and are controlled, of course, mainly by the location of streets and roads. Some variety in the shape and size of blocks is desirable, and often economic. It is preferable, however, to keep them fairly near to a rectangular shape, avoiding sharp angles. The depth of the block should seldom be more than from 200 to 300 feet, and the maximum desirable length is between 500 and 800 feet.

There is a decided advantage in east and west frontages for houses, especially in closely built sections. This applies, however, to northern climates only.

The size, shape, and proportion of lots are, of course, dependent largely upon the size, shapes, and proportions of blocks. Here again, within limits, varieties and differences are desirable, thus supplying different demands. A fair minimum for lot widths would be 14 or 15 feet for group dwellings, 25 to 30 feet for semi-detached dwellings (each unit), and 40 to 50 feet for detached buildings. The minimum depth of lots in these classes should range from about 80 to 100 feet. There is a direct relation between size of lots and the utilization of a portion of the interior of blocks for playgrounds or allotment gardens. This relation should be kept in mind in any attempt to estimate the justification or value of one or the other.

Some examples of American city practice in the matter of lot sizes are given below from a study un-

dertaken a few years ago by the National Conference on City Planning. Village and town development should be more liberal.

Berkeley	50 by 159 ft.
Boston	50 to 80 by 250 to 300 ft. originally 15 to 25 by 50 to 65 ft. now.
Bridgeport	30, 40 to 50 by 100 ft. (few, 125 ft.)
Brookline	40 to 60 by 90 to 100 ft. (majority)
Chicago	50 to 80 by 160 to 180 ft. originally 25 to 75 by 125 ft. now.
Cleveland	40 to 50 by 100 to 150 ft.
Detroit	50 by 100 to 190 ft. 30 by 100 to 125 ft.
Kansas City	25 by 150 ft., and larger
New York	25 by 100 ft., Manhattan, Bronx 20 by 100 ft., Brooklyn, Queens, Richmond
Newark	25 by 100 ft. Few 20 by 100 ft.
Philadelphia	14 to 16 by 45 to 125 ft. mostly 19 to 22 by 75 to 105 ft., few
Syracuse	200 by 200 ft., 33 to 100 by 100 to 200 ft. 140 by 486 ft., 36 by 132 ft., 40 by 120 ft.

HOUSE TYPES

No one house or method should be endorsed as the only one, although the emphasis should be put upon the single family, self-contained house or cottage as on the whole most desirable. The choice of the house type depends upon (a) land values; (b) wages; (c) demand and custom.

All the types recommended should have some advantages of house construction or of lower land cost, and take into account the fact that different people have different tastes and preferences, as well as different needs in housing, as in other matters. What is best depends upon conditions and circumstances and cost.

The schedule given below shows the relation of the cost of lots and houses to wages and rent. Workingmen receive approximately from \$15 or \$16 to \$25 or \$30 a week. If they receive, say, \$15 a week, and we assume that they can afford to pay \$15 a month rent, the total investment in house and lot should not exceed \$2,000. This allows about \$400 for an improved lot (say, 40 feet in width) and \$1,600 for the building. If regular savings are to be made toward the purchase of the house, the wages should average higher than the figure quoted. The investment would thus yield annually the usual 10 per cent gross, or from 5 to 6 per cent net, according to local conditions. The same comparisons can be made with the other classes shown on the schedule receiving wages of \$20, \$25, or \$30 a week, or intermediate amounts.

This schedule is based upon a minimum annual wage of \$800. Bulletin No. 76, Treasury Department, U. S. Public Health Service, makes the following statement:

"Several studies by various authorities on actual conditions in workingmen's families tend to agree very closely that unless a family of the average size

(father, mother, and three dependent children) has an annual income of \$800 or more, it cannot maintain a healthful standard. This conclusion is apparently confirmed by statistics of expenditures in workingmen's families which show that the point of adequate subsistence is not reached until the family income is approximately \$800 or more."

GENERAL SCHEDULE SHOWING RELATION OF THE COST OF
LOTS AND HOUSES TO WAGES, RENT, AND SAVINGS

Lots, Improved (except paved roadway).....	\$400	\$500	\$600	\$700
Houses	1,600	2,000	2,400	2,800
Total house and lot.....	2,000	2,500	3,000	3,500
Wages				
Per week.....	15	20	25	30
Per year	800	1,040	1,300	1,560
Rent				
Per month	15	20	25	30
Savings				
Per month.....	4	5	6	7

MINIMUM LOT AND HOME FOR NORMAL FAMILY

Minimum Lot	
Terrace Row ...	15 to 16 ft. wide, 80 to 100 ft. deep (alley)
Semi-detached (each).....	30 to 40 ft. wide, 80 to 100 ft. deep
Detached.....	40 to 50 ft. wide, 80 to 100 ft. deep
Minimum House	
4 rooms : living room, kitchen, two bedrooms, and bath.	
5 rooms preferred : living room, kitchen, three bedrooms, and bath ; allows for separate bedrooms for older children of different sexes.	

HOUSES PER ACRE

It is not practicable to fix any absolute limit to the number of houses to the acre. Very much depends upon the sizes of the houses and the arrangement. Furthermore, it is not easy to weigh the disadvantages that might arise from enlarging cities to such an extent as would give a much lower number of houses to the acre. One may safely say, however, that the desirable maximum would be between ten and twenty houses to the net acre, that is, the building land used for house-lot purposes. Twelve houses to the net acre has proved to be about the right number for cottage development. This figure has been fairly well tested in the garden villages of England, as well as in this country. For houses built in rows or short groups, the density should not usually exceed a maximum of twenty houses to the net acre.

COST PER ACRE FOR DEVELOPMENT*

	Per Lineal Foot	House Connections
Sewer	\$.50	\$28.00
Water	1.25	18.00
Sidewalk60	---
Rough grading streets and curbing	1.65	---
	\$4.00	\$46.00

Terrace Row Type

House on 15-foot lot at \$4.00	\$60.00
House connections	46.00
16 Houses per acre at ...	\$106.00
	\$1,696.00 per acre

Detached House Type

House on 40-foot lot at \$4.00...	\$160.00
House connections	46.00
6 Houses per acre at	\$206.00
	\$1,236.00 per acre
(Depth of lot assumed to be about 100 feet.)	

* Estimate based on figures for Akron, Ohio, September, 1916.

BUILDING DISTRICTS AND RESTRICTIONS

Districting or zoning is, after all, little more than an extension and wider application of the principle of restrictions. This principle is well understood, and has long been applied by private owners of property, and to some extent by the public authorities. It is a principle that is particularly well understood in the United States by real estate operators. The restrictions placed upon the purchaser in the conveyance of property often include a long list of the kinds of business which are classified as nuisances, and which may not be established or maintained upon the property. These restrictions also include regulation as to stables and garages, fences and walls, setback of buildings from the street and from lot lines, the minimum cost of buildings, easements, and rights of way for public utilities, and in some cases even the approval of house plans and specifications. The point of view with regard to these restrictions is indicated by the fact that the real estate operator now often refers to them as "safeguards."

LOVELAND FARMS YOUNGSTOWN OHIO					
JOHN HOLEN LANDSCAPE ARCHITECT HARVARD SQ. CAMBRIDGE MASS					
STATISTICAL STATEMENT					
LOTS	ACREAGES	PERCENTAGES	LOTS		
Residential	16178	97	Number of House Lots	868	
Business	1481	6	Houses per net acre	5.31	
Total	17659	73	Average Lot Area	188 Acres	
SEMI-PUBLIC PROPERTIES			Normal Lot Size	30 ft x 120 ft	
Churches	71	3	Houses per gross acre	5.58	
Total	71	3			
PUBLIC PROPERTIES					
Schools	28	1			
Playgrounds	829	3.6			
Parks	68	3			
Fire Station					
Total	1177	49			
STREETS			STREETS		
Main	1643	68	Main	Length 2 miles	
Local	3650	15.0	Local	Length 6.7 miles	
Total	5293	21.8	Total	8.7	
TOTALS	242.00	24200	100	100	

Remarks: — Principal playground located beyond limits of Loveland Farms. Lots larger than usual. Village intended for higher paid foremen and superintendents. Poland avenue, a boundary street, is a main thoroughfare to city.

It has become evident, however, that we cannot depend upon private restrictions in deeds imposed by the landowner. At best his action is applied only to very limited areas, and even when most public spirited is not always intelligent. His chief motive must be profit. He cannot be expected to have consistent and permanent concern for the results of his methods upon the future occupants of the property, nor upon the general public. Furthermore, no matter how large his holdings, he has only the legal power of a private citizen.

One of the most approved forms of restrictions is that of a building line establishing the setback for the buildings from the street. In some places this setback is considered a part of the street and publicly owned. In others it is restricted private property. The width of this strip ranges from 5 to 25 feet, or more. If too deep, it would be wasteful and out of proportion to the size of the lot. It would

also make service connections expensive. It appears to be generally agreed that this building setback should not be uniform throughout the property, but should vary in relation to the width of streets and the depth of lots. Sometimes it should vary on the frontage of a block, giving a varying arrangement of setback to the houses, and increasing the interest of the street scene. There is fully as much reason to establish distances between buildings on the side line as on the street. A good standard is 18 to 20 feet between buildings, that is, an average of 9 or 10 feet from the building to the side line.

In the investigation of the National Conference on City Planning referred to above, some of the effects of restrictions in various parts of the country were stated as follows:

Berkeley	Voluntary restriction works well toward increasing values.
Bridgeport	Lack of restrictions permitted bad housing conditions to grow.
Louisville	Colored problem has dictated restrictions.
New York	Lack of restriction as to per cent of lot area covered has been detrimental.
Newark	Restricted districts have increased in value; others have not.

TYPICAL STATISTICAL STATEMENT

An important test of success in the laying out of an industrial village is the percentage of property used for various purposes, — lots, semi-public properties, public properties, and streets. An example here reproduced of this type of development is given

in Loveland Farms, a development of the Youngstown Sheet & Tube Company.* It will be seen that the lots comprise 73 per cent of the property, the streets 21.8 per cent, and the public and semi-public properties 5.2 per cent. The principal playground is located beyond the limits of this particular tract, which reduces somewhat the percentage of public property; and the main thoroughfare is a boundary

street, which brings the street percentage slightly below the normal average, which is about 25 per cent. The number of house lots is 868 — 5.37 per net acre. These lots are above the normal lot size, the village being intended for the higher paid foremen and superintendents. In the long run it can be shown that good planning pays, provided everything is taken into account.

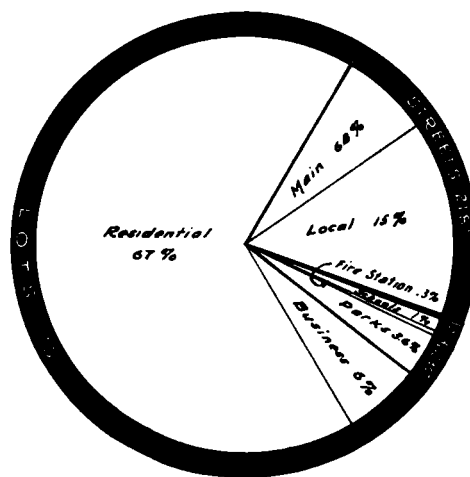


Diagram Showing Percentage of Property in Loveland Farms for Various Purposes

SUMMARY OF STEPS

The steps for a complete community development may be summarized as follows:

1. An accurate topographical survey at scale of about 50 feet to the inch, with contours at intervals of from 1 to 5 feet, according to circumstances, is the fundamental basis of the plans.
2. The reservation of public lands, playgrounds, open spaces, parks, etc. An important part of this reservation would usually be the natural features of the property.
3. The subdivision of the area into blocks of well dimensioned lots, according to requirements.
4. The setting aside of appropriate sites for public and semi-public buildings, and for community centers.
5. A system of roads with sidewalks, planting strips, etc., differentiated into main and minor streets.
6. An electric car or motor bus service approaching within a quarter of a mile of every lot.
7. A complete system of sanitary and storm water sewers, — water, gas, electric light, and telephone pre-arranged. If financially possible, wires should be located underground.
8. The establishment of building lines and other suitable restrictions throughout the property.
9. The reasonable regulation and control of the location of buildings and of their architecture.
10. The detail planning for all roads, parks, street intersections, and if possible, also, of the private property.

* See also plan of Loveland Farms, *The Architectural Forum*, January, 1918, page 10.

In conclusion can we not be reasonably sure that the industrial town or village of the future will make better provision for an orderly development; that it will provide for the convenient circulation of men and goods; that it will exercise a larger measure of official control in so vital a subject as transportation; that better standards of public work will increasingly prevail? May we not also safely predict that recreation will be better understood and provided for, and that all the problems of preserving and enhancing child life will become almost the main care of society? The characteristic American home of to-day, as we see it almost anywhere is not, we can be sure, to be the characteristic home of the future.

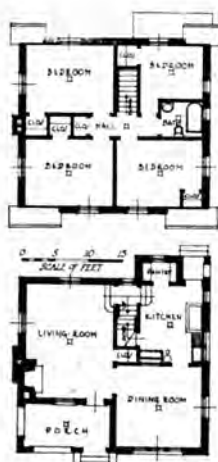
If these changes are to come about, they must not only be forecasted, they must be patiently and defi-

nately planned for; and difficult problems of design, of construction, and of distributing the great cost thereof must be met. Just such problems as industrial housing involves, problems also of the adjustment of one interest to another, and of the reconciliation of individualism and collectivism, or even socialism, must be met with courage and ultimately mastered.

No one who has worked on such problems can fail to realize that if we are to march steadily forward in community planning and community building, we must recognize afresh that radical changes in our practice can be brought about only by changes in public opinion. Therefore we must find more and better ways of forming intelligent public opinion and of giving it effective expression.



Street Elevation Showing Placing of Mechanics' Houses to Fit Contour of Land



Floor Plans of House at Left



Perspective Showing Houses for Superintendents of the Company



Typical Plans of Houses Above



Elevation Showing Grouping of Houses and Hotel at Foot of Montclair Avenue

Any special grouping of houses with varying set-backs was largely eliminated by the steepness of the grades, but great care and study were expended in the grouping of different types on each street to make attractive street views and vistas

DEVELOPMENT OF THE MIDVALE STEEL COMPANY, COATESVILLE, PA.

W. Leslie Walker, Town Planner and Architect

The Development of the Midvale Steel Company, Coatesville, Pa.

W. LESLIE WALKER, ARCHITECT AND TOWN PLANNER

THE Midvale Steel and Ordnance Company in deciding to undertake the work of providing an industrial town did so with the idea of providing not only houses, but making a town complete in all its appointments, and in such a manner as would contribute in the greatest degree to the health and happiness of its residents in the full

realization that such conditions not only make better citizens but more efficient workers.

The only site available for this town was a steep hillside farm of approximately 100 acres, lying a quarter mile distant from the works and adjoining the city of Coatesville. The problem as it was presented to the architect was in many respects an exceptionally difficult



View of Development under Construction Looking Up Montclair Avenue

one. The entire site, for example, had not a tree on it; moreover, the natural slope of the property was exceptionally steep, from 15 to 20 per cent grades, public utilities of every sort had to be supplied throughout the tract.

In other respects Mr. Walker was fortunate—the company wished to do the work on a broad gauge policy and selected

him as their town planner and architect, entrusting him to the full responsibility for town planning, utilities, and buildings necessary for creating a well planned village, and they were willing to accept Mr. Walker's advice that, in the solution of their problem, practicability and sound economy must come first, and then architecturally it should be made as good as the conditions would permit.



Plan of Industrial Town for Midvale Steel and Ordnance Company



General View of Exterior



Lounging Room



Dining Room

MIDVALE HOTEL, INDUSTRIAL TOWN OF MIDVALE STEEL COMPANY, COATESVILLE, PA.

W. Leslie Walker, Architect



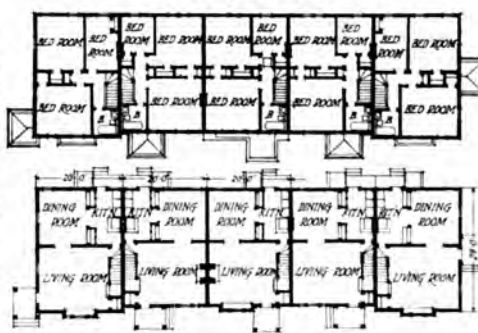
Perspective Showing Typical Mechanics' Houses of Six Rooms and Bath

These two points—that they were willing to embark upon a broad gauge program of real town-planning proportions, and that they were ready to centralize authority and responsibility—were of the greatest possible significance in making for the success of the project.

The town plan, which must obviously be considered only in relation to the topographical map, was studied from every angle so that the site might afford the best possible grades and circulation, the most advantageous disposition of lots and open spaces, and the easiest gradients for thoroughfares. The plan of this section known as the Midvale Development



Group of Five Houses



Floor Plans of Group House Shown Above

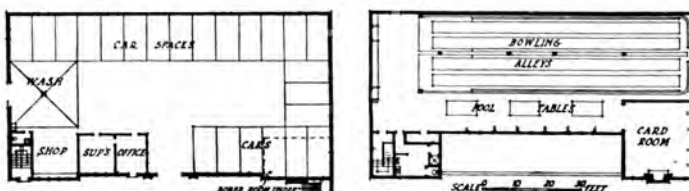
shows the residential streets generally following the contours, with no grades heavier than 10 per cent, even on the parkway which sweeps up over the hill to connect with the street system of Coatesville itself. Street sections are varied in width according to use, with a range from

50 feet for the narrowest to 90 feet for the parkway. Especial interest attaches to the 30-foot wide parked walks, which give cross connections through the middle of blocks. Too steep for streets, they give exactly the needed access for men going to and from the plant.

All items entering into street construction reflect the policy



View Showing Mechanics' Houses Grouped on Steep Grades



Elevation and Floor Plans of Garage and Community Club Building

of building for permanence and low upkeep, rather than for low first cost. Such items, for instance, are concrete curbs, macadam asphalt pavements, a complete and modern sewage disposal system, storm water drainage system, water, gas, and electric mains (the

latter all run underground), provision of open spaces, including a six-acre hillside park, and a broad tree and shrub planting program which will ultimately make up for the deficiencies of the natural site in these respects.

Mr. Walker, in charge of town planning and the utilities, retained Mr. Charles W. Leavitt, the landscape engineer, in carrying into execution the engineering features.

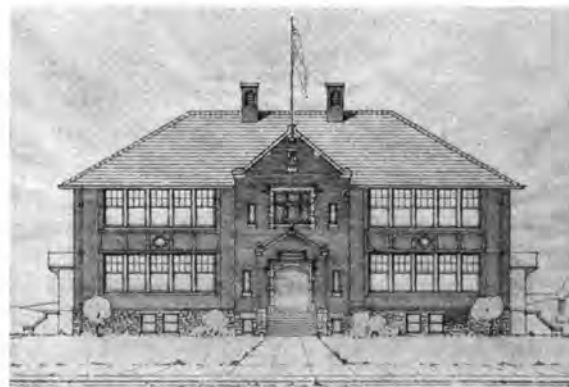
Provision has been made for much more than the demands already in sight. While the initial building program included only 70 houses and a hotel,—a home for over a hundred of the unmarried men, as well as a meeting and dining room for the staff superintendent and his staff—the general plan for the village shows accommodations for about 500 houses; it shows, too, reservations for

the buildings of a public and semi-public character which must presently be supplied and sketches for which have already been made.

For the houses themselves the policy of the company, backed by the advice of the architect, eliminated frame



Perspective of Public Library



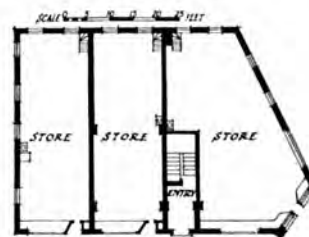
Elevation of Midvale School



Perspective of Store and Apartment Building



Second Floor Plan

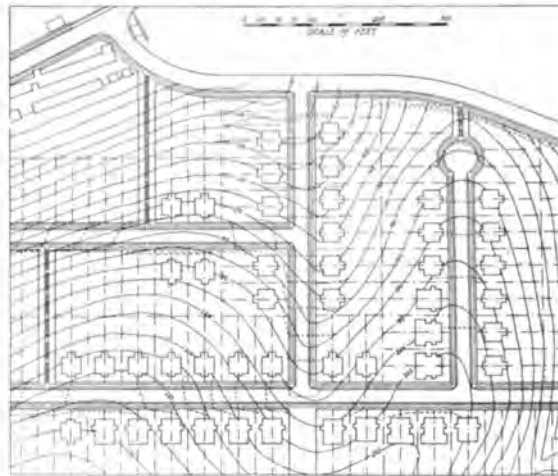


First Floor Plan

construction at the beginning. After careful consideration of the various materials the decision was fixed upon brick for exterior walls and slate for roofs. Another point of policy dictated the use, in this first development for skilled workmen of only single family, detached houses. The lots are of considerable variety in size, from 40 by 100 feet at the smallest to 60 by 150 feet at the largest. The houses themselves are of two general types, one a six-room house with bath, and complete in all details down to copper screens. The other is a larger type, designed for occupancy by the superintendents of the company. In both cases, ingenuity has been used in creating variety through different exterior treatment and roofing.

The steep grades make it practically impossible on a majority of the lots to provide private garages. To supply the need which will presently become a general one, designs are being made for a community garage. It will be centrally placed, and, besides its primary function, will afford, on the upper floor, general recreation rooms, with bowling alleys, pool tables, etc., for the use, first, of the men who live in the hotel-club nearby, and second, the other members of the community.

On another slope at the opposite



Plot Plan of Laborers' Housing Development

side of the plant is a second group known as the Brandywine Development, where foreign labor is being provided for. These houses are of 4, 5, and 6 rooms each, arranged as semi-detached buildings, in lots 25 by 100 feet for each family. Otherwise the accommodations are virtually those of the houses in the other, more spaciouly planned group. Seventy-five of these have already been built—they were all occupied before completion, and more houses as well as stores and other necessary buildings are to be started at once. In this development the houses are of hollow tile, and efficiency of plan and low maintenance have been the controlling factors. Both here and in the Midvale Development the costs have been kept at a surprisingly low figure. And, curiously enough, the unit prices in the two groups are almost exactly alike, viz., 19 cents per cubic foot for the houses complete, with decorations, screens, and electric fixtures, and including walks and finished grading.

The equality of cost in two groups of somewhat differing accommodations is explained by the increase in prices during the six months which elapsed before the second and simpler group was undertaken. Additional work contemplates the use of a type suited to the steeper grades as shown below.



View of Laborers' Development under Construction



Two-Family Laborer's House



View of Street in Laborers' Development Looking toward Mills

The Architect's Relationship to an Industrial Housing Development

By PERRY R. MACNEILLE

GENERALLY speaking, it would seem that any discussion of this subject might begin and end with a consideration of the æsthetic factors of town-planning and building design as they relate to the problem of an industrial housing development. A more careful analysis of the problem, however, and of the many factors which bear upon its proper solution, will show that the function of the architect reaches a far broader scope.

As a realization of this fact crystallizes in the minds of those who are about to undertake the provision of homes for workmen the demand for the services of architects who have specialized in this branch of the profession becomes more insistent.

From the æsthetic standpoint the value of an architect's services may be judged by simple comparison of housing developments which have been carried out with and without architectural supervision, and little comment is necessary on this particular phase of the subject.

Aside from the solution of the problem from an æsthetic standpoint, the architect who would successfully undertake an industrial housing problem must be possessed of a thorough knowledge of what should constitute proper living conditions for the various classes of workmen whom he is about to house. He must know their national characteristics, their likes and dislikes, and their various conceptions of what a home should be. He must study the factors of segregation, welfare, and community existence, striving always to produce homes which, harmoniously grouped, will result in the desired encouragement of proper community life, insuring a healthy and contented working population.

Space and time prohibit the detailing of the many factors which enter into the proper development of such a project. Sufficient to say that the selection of site, the layout of streets, the provision of community facilities, recreational features, and the design and equipment of homes all bear importantly on this subject. The policy of the owning company must be determined upon, whether their houses are to be sold or rented. Provision must also be made for the maintenance of the village after it is completed, and well defined policies must be clearly established and firmly adhered to if full success is to be attained. It will readily be seen, therefore, that in addition to the proper equipment for town-planning and home-designing the architect must be possessed of a thorough knowledge of the social conditions and needs of the workmen in order that he may enter his broader relationship to an industrial housing project.

In an organization for the carrying out of a large

industrial housing project it is obvious that there must be a central executive charged with responsibility for the successful working out of the whole plan, who will report directly to the official appointed by the owning company. This executive can be the architect, the engineer, or the contractor; but since the bulk of the work to be done is of an architectural rather than of an engineering nature, and since the contract for the performance of the work places responsibility on shoulders higher up than the contractor's, it is logical that the architect should be the one in supreme charge.

Admittedly, the architect who would properly relate his functions to the solution of a housing problem must take on many activities outside the usual architectural scope — activities for which he must be especially prepared and equipped through the means of careful, analytical study of every feature and development in this special field. A brief outline of the general method followed in making an analysis of housing conditions and needs in a certain locality will serve as additional proof of the importance of an architect's relationship to a housing problem.

Housing problems usually develop in connection with individual manufacturing enterprises or in industrial centers where several factories maintain a large labor population. The need for relief is shown by a high percentage labor turnover, and by a constantly shifting labor force, which seriously handicaps production and efficiency. At this point, when the need is distinctly felt, the architect who is also a housing and social expert should be called in.

His first activity is to analyze conditions so that intelligent relief may be given at the lowest possible expense.

Where a house shortage exists, there are several methods for obtaining relief which should be applied before actually constructing houses. Among these are the questions of bettering existing transportation facilities or providing new facilities and encouraging local interests, such as builders, building loan societies, and similar enterprises, by giving rental guarantees or through other means. The question of transportation involves a careful analysis of possible existing housing in surrounding towns which might be used if better transportation facilities were provided.

In other words, every possible means for providing housing without expense to the manufacturer should be carefully gone into and utilized wherever feasible. After such action has been taken, and all existing forces toward a bettering of conditions have been set into coordinated action, the actual housing problem will automatically present itself.

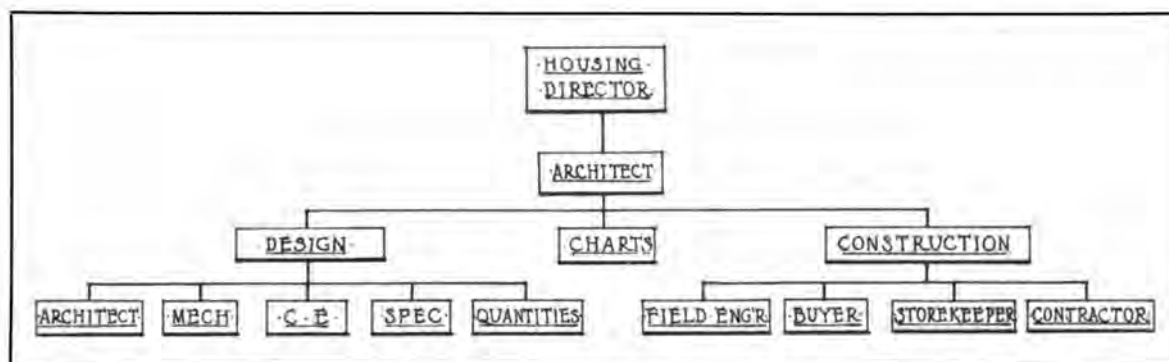
At this point there enters the real estate aspect, which includes the selection of properly located tracts of land, bearing in mind relative distance from the factory and from community facilities, such as stores, churches, and recreational activities. The natural possibilities of available tracts of land are next for consideration. These include topographical features, nature of soil and drainage, general adaptability, also sewage and availability of public utilities. Thereafter the subjects of town-planning and design, together with organization, follow in logic sequence.

In order that the importance of the architect's relationship may be fully realized, and to give some understanding of the broad functioning which this

of materials, the stores keeper, and the contractor.

The superintendent of construction must be responsible for scheduling and planning the work. This scheduling should be done graphically and in a manner to show the complete plans for the conduct of the work in advance. These graphical charts should be available for the use of the buyer, who can make detailed charts of his purchases to meet the needs of the contractor. Perhaps the most important function of the superintendent will be to see that these charts are made far enough in advance to enable both contractor and buyer to perform their respective functions on schedule time.

Furthermore, the charts referred to should be laid



Graphic Chart Showing Proper Organization for Conducting Housing Developments

entails, the following paragraphs will outline the general organization and methods which have been evolved for handling large industrial housing projects.

The functional chart shown in conjunction with this article will serve to explain graphically the general organization necessary for handling a large project.

In the first place, the architect should be put in supreme charge of the project, reporting only to an official or committee appointed by the owning company. The architect's work can then be sharply divided into two classes:

- (a) That which has to do with design.
- (b) That which has to do with construction.

The design should be in charge of the chief designer in the architect's office, and he will have under him a force of draftsmen, civil and mechanical engineers, and specification writers, as well as a quantity surveyor. The chief designer's duties will be to prepare plans for the architectural and mechanical portions of the work, to write specifications, and to prepare lists of materials. This work should be performed by experts in each line, and the final design should be submitted for approval of the official appointed by the owning company.

That portion having to do with construction should be in charge of a superintendent of construction, who will be served by the field engineers, the buyer

out so that they will give weekly information upon which executive action can be taken. The object of these charts is not to record past accomplishments, except insofar as this aids future activity. Their subject is mainly for the purpose of indicating in the most condensed form what is to be done and to point to weak points in the work. They are a means of greatly multiplying the capacity of the executive by showing him where his effort is needed, and saving him from spending any time on those portions of the work which are moving satisfactorily.

Quantity surveying must be carefully carried out for estimating the quantities of each kind of material entering into the work. These estimates should show not only the total quantities but the quantities for each building and the rapidity of supply, *e.g.*, the quantities needed each week. These estimates should serve not only for making purchases but as an insurance against wasteful use of the material. The quantity of materials needed should be accurately estimated and, as they are delivered at the site, they should be receipted for by the stores keeper. As they are distributed from the yard to the different buildings, he should be credited and the local foreman should be charged. Then, and then only, can the responsibility for waste be fixed.

There has been no intention in this article to lay out definite rules for organization or for an analysis

of a housing project. On the other hand, its particular purpose has been to show that the relationship of an architect to an industrial housing problem can be developed to a high point of efficiency. During the past years much of the housing of workmen which has been done in this country has been carried out with little regard for æsthetic values, and without carefully analyzing cause and effect in important labor problems which have, as a definite factor in their solution, the proper housing of industrial workers.

Much of the housing which has been provided has been through the unregulated activities of speculative builders, or through the employment of contractors who construct long rows of unsightly, boxlike structures, entirely devoid of architectural merit, or any recognitions of the highly important sociological problems.

As we investigate our various industrial centers, the unfortunate results of such indiscriminate housing stand as indisputable evidence of what the relationship of the architect to the question of industrial housing should be. The proof consists in paralleling the two distinct types of results. We may do this by

considering on one hand the unrestricted developments which have degenerated into slum sections; the unattractive and inefficient housing of the average industrial section where little thought has been given to the comfort of tenants and to proper maintenance, and the many rapidly depreciating groups of industrial houses which form eyesores in the neighborhood of many of our factories, and which represent large sums of wasted investment. On the other hand, we may consider the attractive garden cities of England and a few of the better developments in this country, where the dwellings are occupied by a healthy and contented working population, which serves as an excellent nucleus for the stabilization of working forces and at the same time guarantees investment return and serves in a manner beneficial, rather than detrimental, to the community.

The distinct relationship of the architect to any industrial housing problem is, perhaps, most easily shown by the natural question which comes to mind when one enters an attractively designed and prosperous industrial community :

" Who was the architect? "



IT IS sometimes of equal value to know " what not to do " as to know what to do. The above illustration is given as an example of the former. These houses were built some years ago by a manufacturing company for their employees. They are in barrack-like groups, accommodating ten families each and totaling approximately 250 families. They represent a tremendous waste of invested capital as they have

depreciated to such an extent that it will soon be necessary to remove them entirely. This is due, in large measure, to the fact that so little constructive thought was expended in their development that their influence is depressing to the occupants rather than inspiring as it should be. They rent for \$6 a month per family and are occupied by foreign works. — The Editors.

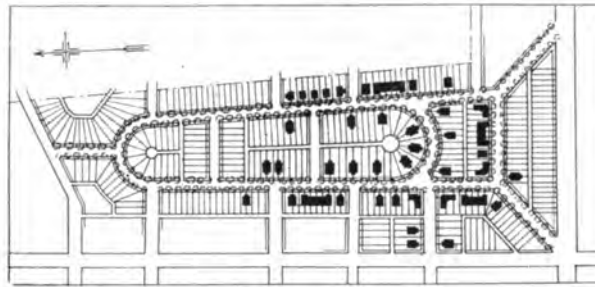


, Elmwood Park, Bethlehem, Pa.

GEORGE S. WELSH, ARCHITECT

THIS development at Bethlehem, Pa., is the outcome of successful welfare work carried on by Weston Dodson & Company, coal operators, in connection with their mines in Pennsylvania. Mr. T. M. Dodson, vice president of the Company, has for fourteen years been interested in the work and

his success prompted the Company to extend its efforts beyond its own mining territories. For this purpose the Dodson Realty Corporation was formed. The present development has no connection with the coal mining industry, but was instigated by the great demand for housing workmen of the Bethlehem Steel Company. The enterprise is not connected with that company, however, although its employees are occupants for the most part



General Plot Plan of Development

of this group of houses.

The area developed comprises 16.60 acres, of which 12.41 acres are in lots, 3.51 in streets, and .68 in alleys. There are twelve lots to the acre. The land development has been completely done and the costs per acre for various items are as follows: sewage disposal, \$1,980; con-

crete sidewalks, \$242.31; concrete curbs and gutters, \$252.41; street lighting, \$148.20; street construction, \$903.61; cinders in alleys, \$48.19; planting, \$36.44, and hedges, \$69.27, making a total of \$3,680.43 per acre. The cost of sewage disposal was more than would ordinarily be incurred and was occasioned by special conditions. There are no sewers in Bethlehem which made it necessary to use sumps. Underlying the town is a lime-



General View Looking Across Curved Street at Northern End of Development



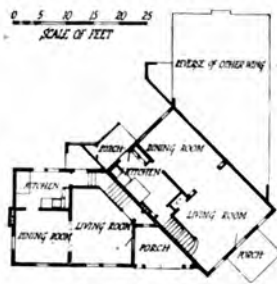
General View Showing Location of Group and Semi-Detached Houses

stone formation which provides perfect drainage if a crevice can be found. In this instance a septic tank was installed underground near the house and a few feet from it a 6-inch hole drilled until a crevice was found. This necessitated drilling sometimes to a depth of from 40 to 125 feet. The method has been particularly successful but

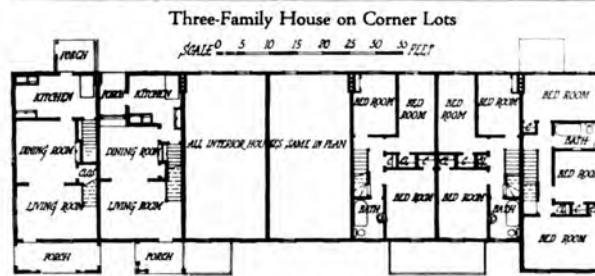


naturally expensive. When the cost of street lighting and other items has been refunded by the city, the development costs will be reduced to about \$3,000 per acre. There are in the development 5,659 feet of streets, 8,380 feet of sidewalks, 4 feet wide, and 3,800 feet of alleys.

The houses are in most cases semi-fireproof in construction. The found-



First Floor Plan of Three-Family House



Floor Plan of Seven-Family Group House



Second Floor Plan of Three-Family House

Principal Elevation of Seven-Family Group House
George S. Welsh, Architect



Views of Typical Semi-Detached Houses of Similar Plans

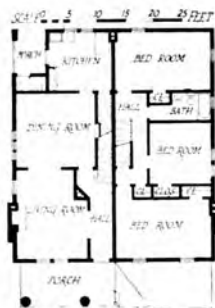
dations are of 8-inch interlocking hollow tile and have proved satisfactory under various tests, while effecting a saving of \$25 to \$50 on each foundation over other methods typical of that locality. The exterior walls are mostly of brick textured hollow tile. For variety of effect some houses are stuccoed, and dormers on others and a few single houses are of white painted



Stucco Finished, Semi-Detached House

shingles or of wide siding.

The work has been carried out in four different groups and the buildings total 167. The first three groups were built by contract and the last group of sixty was constructed by the Company's own force in order that they might secure actual costs and accurate data. The house shown at the extreme right of the illustration on the top of page 112,



Plans of Semi-Detached House Opposite



Group of Two Semi-Detached Houses



Plans of Semi-Detached House Below

General View Showing Grouping of Semi-Detached Houses in Center of Block
George S. Welsh, Architect



Single Houses of Seven Rooms Having Similar Plans

and also a variation of the same in the center of the illustration at the bottom of page 113, cost in October, 1915, \$4,040, and in March, 1916, \$4,272. The estimated cost on April 1, 1917, was \$4,856, and the actual cost Nov. 1, 1917, was \$4,943. These prices are for one semi-detached dwelling. The same proportion holds throughout the development and is a very fair average in showing the increased cost in the last few years.

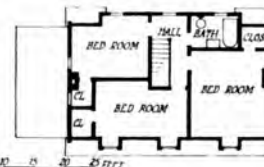
The houses are sold on the following basis: \$150 is required as a first payment and monthly payments thereafter, amounting to \$1 for each \$100 of principal until the mortgage has been discharged. The payment on a house selling for \$3,500, with lot, would



Floor Plans of Single Houses Above

be, for instance, \$35 per month, which includes all expenses, such as taxes, interest, water rates, etc. The selling prices range from \$3,000 to \$6,000.

The houses are of an agreeable type of architecture developed from the traditional Colonial types of Pennsylvania. They are mostly of the semi-detached type, although a number of attractive row houses with 16 feet frontages and an interesting three-family house for corner lots are introduced. The group house has been found the most economical in construction, affording larger rooms and better methods of building than single dwellings of equal cost, and its effect in street elevations is much more valuable.



Floor Plans of Single Frame House Below

General View Showing Location of Single Houses at Ends of Blocks
George S. Welsh, Architect

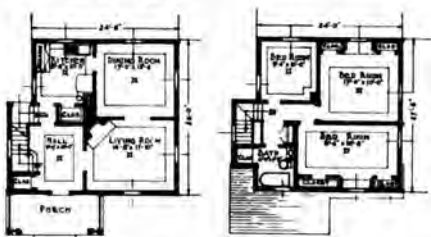
Housing Types for Workmen in America

By CHARLES C. MAY

IN attempting any sort of survey of the various types of house which have been and are being used to house the workmen of this country, a distinction must be made at once between housing as it is and housing as it should be. Certain types of detached house built by companies even within recent days of comparative enlightenment are too primitive to meet any set of minimum standards; certain other types, like the wooden three-decker, are in themselves obnoxious and will presently be legislated out of existence. On the other hand, it must be recognized that the virtue of a type of house is by no means necessarily in proportion to its number of rooms. Some of the largest houses have been planned with least care for convenience and for proper standards of living. There have sometimes been little regard for the prime essentials in working-man's house design—that is, for economy, for simplicity, for suitability.

Virtually every planning problem is a combination of architecture and economics. The proportions vary from pole to pole, from the play-palace of the millionaire, where the limitations are chiefly those of the architect's imagination, to the minimum dwelling for the laborer, where architecture is at every point circumscribed by economics, and the fanciful has no place. The architect's province in industrial housing is that of the planner who must show that his habit of mind, his training have fitted him to grasp the economic as well as the æsthetic side of the problem; to prove that comprehensive planning, both in the community and in the house, conduces toward good design, a sound investment and a satisfying result.

The type of house is bound up with the value of the land it is to occupy. It has been said that generally the poor man lives on expensive land and the rich man on cheap land. What the well-planned industrial community should do is to reverse the poor man's side of the proposition and give him the chance of living on cheap land. It is generally agreed that the goal toward which we should aim is the possibility of home ownership for the workman,



Single House of Frame Construction
Estimated to cost \$4,000. 19,432 cubic feet
Mann & MacNeille, Architects

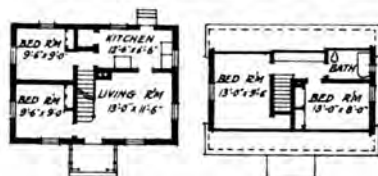
and that in its best form this means an individual plot of ground, a detached house, and a bit of land on which to practise gardening. This ideal, so far as land is concerned, is sometimes more easily attained for the lowest paid wage-earner than for the skilled mechanic of twice his earning power—simply because of the discrepancy in land values. The common laborer in a southern mining town can, likely enough, occupy four times as much land as the fabulously well-paid munitions worker of Bridgeport. In some fortunate instances the land value is so small as to become a negligible factor in determining the type of house to be used. Here we may attain at once the ideal above mentioned,—individual plot and detached house. Yet a small house on a big lot is

not without danger where land is likely to increase in value. The land may after a time become too heavy a burden for the worker to carry, and he may see in his abundance of real estate a chance to relieve the load by putting another house on the same lot with his own. Unless restrictions prevent, this tendency is always present, and it has in the past produced some of our worst slum conditions. Even where land is cheap, then, the area given to the individual house should be carefully proportioned to the grade of workman and to his capacity to handle it.

In the majority of cases, however, the land value is a vital factor. Given its first cost, add an estimated charge for development, including amenities of planting, finished grading, etc., and a figure is obtained from which may be worked out the cost to the workman of a lot of the size proposed. Roughly, it may be said that the proportion of land cost to house should be from about 15 to about 25 per cent. In another way, working back from the price agreed upon as the maximum advisable for total selling price of land and house, there may be determined the number of square feet that can properly be allotted to each house, and, therefore, since depths of lot are usually determined beforehand, the typical lot width. Here the land value begins to bear directly upon the type of house. So long as the lot may be of a normal width, and the prospect does not

point toward a jump in land value, the detached single-family house may properly be used. Where land is more expensive, the possible lot width becomes so narrow as to force that condition which we deplore in so many of our factory towns—rows of houses set so close together that the space between is a dark slit, of worse than no value to any one. The conditions may be helped somewhat by variety of grouping—different setbacks and different facings; but generally speaking we may say that when the lot size is forced below, say 35 feet, it becomes wise to reapportion the lotting so as to include semi-detached and group houses on narrower lots, thereby giving extra space to be used for detached houses on adequate lots. The variety thus gained is, besides, a great asset architecturally, producing groups of better mass and scale than can be had by indefinite spotting with the tiny single house units.

For the dwelling itself, suitability is the prime essential. It must be, first of all, suitable to the nationality of the worker, and since our common



Single Frame Houses,
Kistler Industrial Village, Pa.
Mann & MacNeille, Architects
Size of house, 20 by 28 feet. Size of lot,
40 by 100 feet. Cost, \$1,000 in 1916

labor is largely recruited from foreign lands, this corresponds somewhat to the grade of worker. Distinctions in the several grades of house occur largely in the living quarters, since in essentials a bedroom is a bedroom, whether the occupants be Hungarian or Italian, Pole or American.

The point that is sometimes overlooked is the craving of the workman for the monumental in bedsteads. One is under the necessity, then, of either providing a wall space wide enough and high enough to take the high head of the double bed, or do as is now done in many parts of our country—install the built-in, disappearing type of bed as part of

the household equipment.

It is in the kitchen that the greatest variations occur. Its size and importance in the family life may be said to vary inversely with the grade of the workman. When cooking, eating, and washing all go in the one room, to say nothing of whatever supervision there may be over the smaller sizes of children, it is easy to see that the room should be



Floor Plans of House Below



THE house at left was built in 1915 and cost \$2,698. House at right built in 1916 and cost \$1,134. Cubic foot cost .176 and .187, respectively. Both of frame construction, with steam heat and cellar under entire house.



Floor Plans of House Below



Two Houses at Indian Hill, Development of the Norton Grinding Company, Worcester, Mass.
Grosvenor Atterbury, Architect

of ample proportions. When eating takes place in a separate dining room, when washing consumes a smaller proportion of the housewife's time, the kitchen is used more nearly for its primary purpose and may be correspondingly cut down in size.

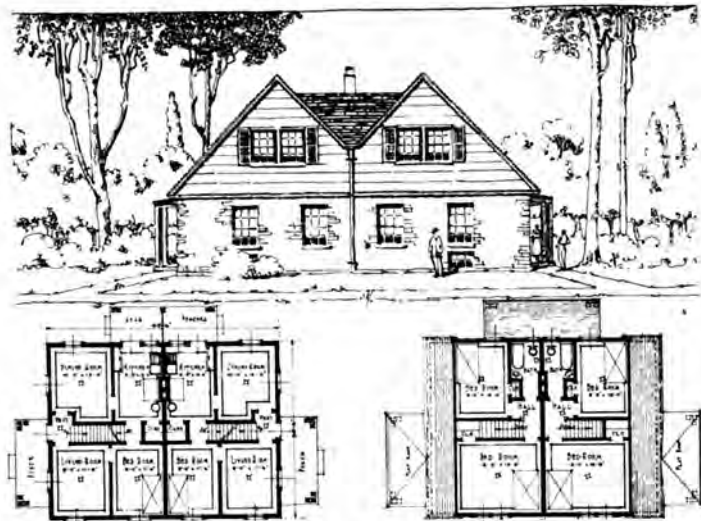
If we could always assume an intelligent use of space provided, the English arrangement would be most acceptable. We should have a small scullery—we might probably call it a kitchenette—in which would go on all the cooking and dish-washing, and nothing more. The large living room would then have one end dedicated to dining, and such a room would be really utilized through all hours of the day. It is an excellent arrangement, and it would work well—if the workman would so use it. But as yet the craving for a "best parlor" has not died in his breast. For the present the scullery, with living-dining room combination, will appeal far more strongly to the higher grade mechanic or clerk with small family than to the majority of workmen with larger families and greater kitchen activities.

Another feature which is somewhat affected by nationality, but is a pretty general requirement for all classes of workers, is the rear entry. A laborer

or a miner, just so soon as ideas of decent living standards are adopted in his household, loses the privilege of entering the house proper, even the kitchen, direct from his work. The rear entry is his first stop, and there he must have hanging space for the grimeiest of his working outer garments, before going inside to "wash up."

The house must, in the second place, be suitable for the locality. Obviously the housing problem in a copper mining town of New Mexico is a far cry from that of a New England munitions town. This affects, in every particular, the matter of construction, with which we are not primarily concerned now, but it affects also the type, size, and shape of the house. Where land cost is low, where the amount of winter heat required is at a minimum, it is as cheap or cheaper and perfectly practical to omit cellars, to spread out over the ground, putting a four-, five-, or six-room house all on the one floor. In a northern climate the discomfort and heating cost of such a type would render it quite out of the question. Similar considerations affect the matter of roof slopes, eave projections, etc.

The workman's house must, furthermore, be suitable in size for its purpose. There is a growing conviction that the general average of low-cost houses are too large rather than too small. Superfluous space always suggests a boarder to occupy it. Heretofore no general attempt has been made in planning the



Semi-Detached House Built in Syracuse, N. Y., 1917
Cost about \$3,000 per family. Tile and frame construction. Cellar and heat
Mann & MacNeille, Architects



First and Second Floor Plans



Semi-Detached House for Highland Road Land Trust, Brookline, Mass.
Brick walls, slate roof, cellar, and hot air heat. Cost in 1916 about \$3,000 per family
Kilham & Hopkins, Architects

house to make proper provision for the boarder, with the result that his presence has invariably tended toward lowering standards of household living. Mr. Ham, of the Bridgeport Housing Company, advocates making it possible for the worker's house to grow up with him as his family and presumably his income increase. This he would do, not by building successive additions to the original house, but by providing houses of graded sizes, with a larger proportion of small ones (that is, of five rooms or less) than is usual at present, and by making it easy for a man to change his holding as the need arises.

The Bridgeport Housing Company has done this very thing, at least so far as the provision of the several sizes is concerned, in their Connecticut avenue group, where the range reaches a minimum size apartment of two rooms. These occur in a low, two-story group. In their future enterprises, however, they will probably include very few, perhaps, none, of these two-room units. The tendency is to attract the floaters, who move in and out at no notice, cause

damage and depreciation to the property, and prove generally undesirable; while the young married couples, or the older ones without children, take more kindly to the three- or four-room units.

For the single family detached house the four-room unit comes near to being the irreducible minimum. And here, speaking always of the family group with children of both sexes, the rooms should be arranged as one large living-kitchen and three bedrooms. The program lends itself to good architectural treatment for conditions where one-story houses are advisable; it is, of course, very difficult, architecturally, where two of the bedrooms must be on a second floor.

The five-room house is the first grade where size and arrangement give some degree of latitude in planning. Accepting for the normal family the three-bedroom requirement, puts the sleeping rooms in a majority over the living, and this seems unavoidable unless the boys may be permitted to sleep in a transformable day room. When we advance to the six- and seven-room houses, we enter the range of actual



Exterior View of Three-Family House



Second Floor Plan



First Floor Plan

THESE houses were erected in a development of 105 houses for the Pittsburgh Reduction Company at Massena, N. Y., during 1907. Basements have 10-inch concrete walls, upper walls of 9-inch common red brick furred. Second story walls on some houses of frame, sheathed, papered, and covered with stained cypress shingles. Trim of cypress painted. Roofs covered with cedar shingles dipped in stain. Interior finish of cypress stained. Floors of hard pine. Cost about \$2,000 per family.



Exterior and Plans of Four-Family House
Albert H. Spahr, Architect

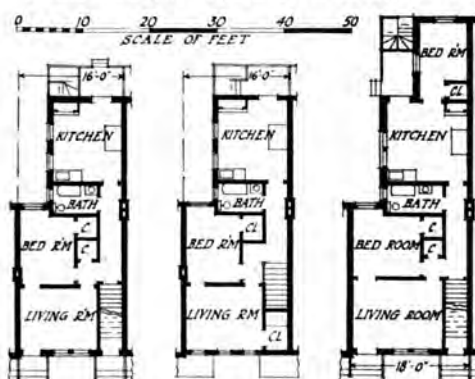
architectural planning, with a multitude of given conditions and requirements, which, taken with the economic side of the case, challenge the most skilful designing. Up to the present there has developed a wide variety of plan and arrangement, but some few features are common to the best of them. The all-inclusive requirement of simplicity is one that must apply to every detail: to the shape of the building (for a given area, the square has the least exterior wall); to framing of beams and rafters; to layout of partitions—the least possible number of breaks and jogs; to disposition of plumbing, so that the piping may be most direct and shortest; to the stairway, that the run may be easy to frame and put together (a straight run



CONSTRUCTION of stucco on frame, slate roof. Division and stairway walls of brick. Built 1915 and cost \$1,970 per family, or 13 cents per cubic foot. Both floor plans alike.



Four-Family House for Naumkeag Steam Cotton Co., Salem, Mass.
Kilham & Hopkins, Architects



First and second floor plans of three-room flats at left
Cost \$2,250 per family
Four-room flat at right. Cost \$3,000 per family

is of course the cheapest); to hall spaces, that they may be so small as to be economical, but not so cramped as to be a nuisance and a damage; to closets, that they may be properly placed in relation to the rooms they serve, and of a shape to give maximum service in minimum space.

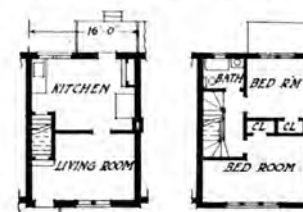
The greatest variation among low-cost cottages exists in the placing of the stairway. Probably a majority put it along one side of the living room on an outside wall. This is often a pleasant feature in a room which tends to be featureless, but



General View of Houses in the Connecticut Development, Bridgeport, Conn. Schenk & Mead, Architects
Erected in 1917 at average cost of about 30 cents per cubic foot



First and second floor plans of two-room flats. Cost \$1,500 per family



First and second floor plans of single house in blocks costing \$3,250

it has disadvantages: the room requires more heat, and is always subject to drafts; it makes the living room a passageway, and in the case of a boarder, usually involves giving him one of the family rooms. The next most frequent placing of the stair is in a little entrance hall at one side of the house, with access to living room at the other side. This results, in houses of three living rooms, in an impression of ample scale, because the rooms may be thrown wide open into each other and count at their biggest. On the other hand, these stairs occupy one of the good corner exposures of the house, thereby preventing its use by a bedroom. This exposure is sometimes stolen back by gaining a high silled, recessed window in the bedroom above, in as wide an alcove as head room on the stairs will permit.

If we are willing to accept the small house as a small house, and not try to magnify its apparent size by throwing its first floor all together, the central stairway has decided advantages. It gives a minimum first floor hall, openings to living-dining room at one side, to parlor (or bedroom) at the other, and a straight run of stairs. Its economy of hallway is at a maximum in the house of only two bedrooms on the second floor. There the hall at the top is like that below, with merely turning space into the bedrooms and bath.

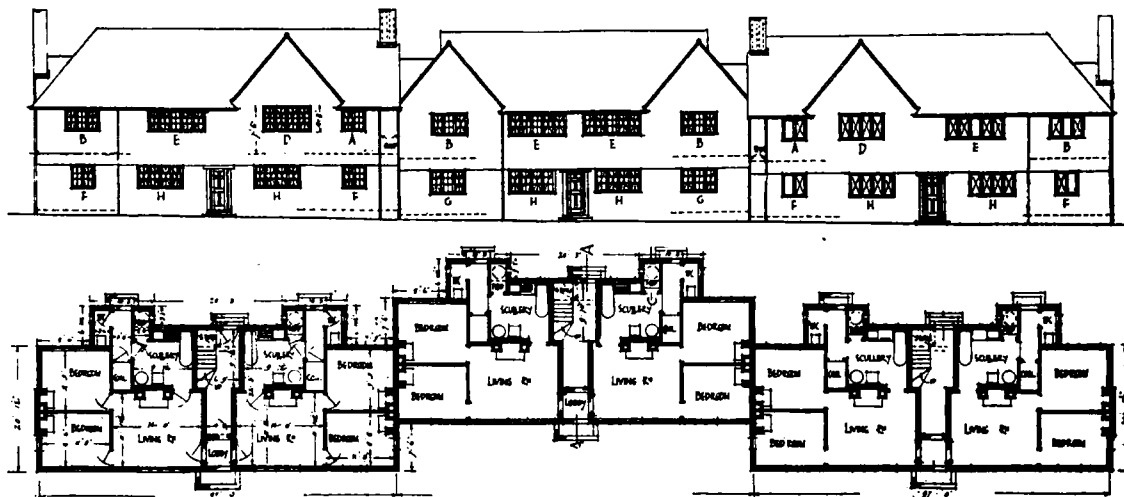
For the semi-detached house, most of the accepted types are derived more or less directly from corresponding grades of detached house. There are, however, several points at which the existence of the party wall raises special points. If houses are for rent only, it is desirable to concentrate plumbing into one stack for the two houses; it is well to get stairs next the division line where light is least, thereby saving the good exterior corners for living quarters; it gives better privacy to keep living porches away from the party line, so that each family may have oppor-

tunity to live unto itself insofar as it wishes to do so.

The semi-detached house is, in most cases, superior from the housing standpoint to the two-family house — from the architectural standpoint, vastly so. The lessened sense of privacy, the usual difficulties of access and responsibility, are compensated only by the most exceptional circumstances and the most careful planning.

The group house, or terrace type, is becoming more nearly standardized than any of the others. It is generally agreed that such houses, with light and air confined to two sides, should not be more than two rooms deep. Anything more results in the pocketing of the interior room, and shutting off cross-drafts from the others. Here again the stair arrangement is the crux of the planning problem. A very compact and economical plan is that in which stairs go up directly from the main entrance, with a parlor-bedroom at the side and a single room, the living-kitchen, at the rear. Upstairs is equally direct and simple. The difficulty seems to lie in the use made of the downstairs front room. If as a parlor, well and good; but if as a bedroom, the necessity of passing through it to get to the kitchen from upstairs is a serious defect.

Another type places the stairs in the center of the house, running crosswise. This has the advantage of not requiring much framing of beams, and it gives the front bedroom of the second floor the benefit of the entire width of the house. On the other hand, to get the separate access to the living-kitchen, there must be a hall leading back to it the full depth of the front room. While on plan this appears a waste of space, every one must realize the necessity, even in the minimum sized house, of a certain amount of hanging space for coats, etc., which will be so used, in any event, in the rooms themselves if no other space is available.



Plans and Elevation of Flat Building Accommodating Twelve Families
British Government Housing Development at Well Hall, England

Jefferson Rouge, the Development of Solvay Process Company, Detroit, Mich.

MANN & MACNEILLE, ARCHITECTS AND TOWN PLANNERS

THE housing development of the Solvay Process Company is especially interesting in showing to what extent the proper subdivision of land is essential to the success of a housing enterprise. The land on which these houses have been erected borders the river Rouge and is about two miles from the center of Detroit. The growth of Detroit in manufactures has been so great in recent years that all land possible of development for this purpose is held at a high figure. In the present instance houses for the workers of the Solvay Company were badly needed, but in the plotting of the land nothing better than \$1,000 per lot had been obtained, which was, of course, excessive, and the whole project was in danger of being entirely abandoned.

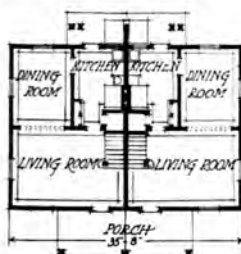


General Plan of Jefferson Rouge Development

When Mann & MacNeille were engaged to study the problem, they first took into consideration the future growth of Detroit and apportioned streets which would be continuations of Detroit's main thoroughfares. The land abutting these streets was then reserved for commercial development and a corresponding value placed upon it. This reduced the cost of the remaining land to the

equitable basis of \$300 per lot, and the development was then carried out in accordance with the plans reproduced herewith, a large portion of which is completed.

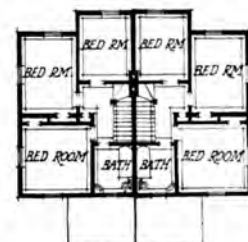
In the construction of the houses the architects were able to take advantage of an existing contract the Company had for building brick which was not further required for its original purpose, and a system of brick veneer



First Floor Plan



Two-Family House, Costing \$2,700 per Family



Second Floor Plan



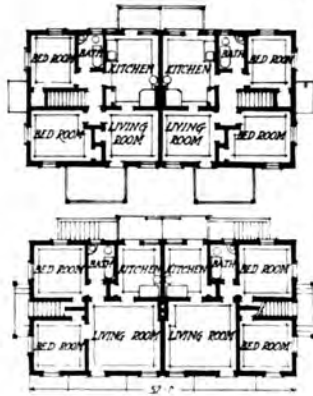
General View of Henley Street Looking toward Blackburn Street



Three-Family House on Dorset Street, Costing \$2,400 per Family



First and Second Floor Plans of Three-Family House



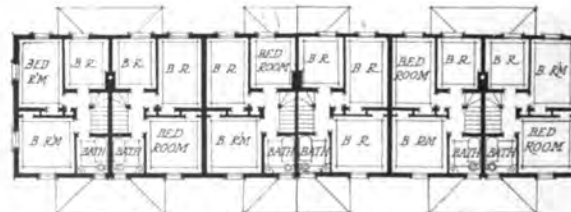
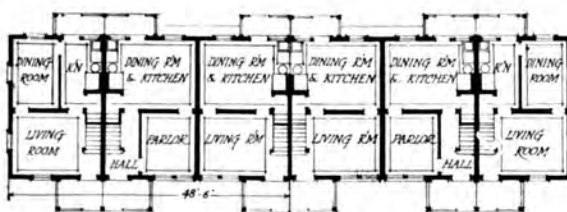
First and Second Floor Plans of Four-Family House



Four-Family House, Costing \$1,875 per Family

on frame was adopted as the most economical form of construction under the special circumstances. For variety of treatment, stucco on wire lath was introduced and a dull red asphalt shingle was used for all roofs, thereby welding the whole into a harmonious composition but sacrificing nothing in interest or variety of effect.

The development is characterized by group houses

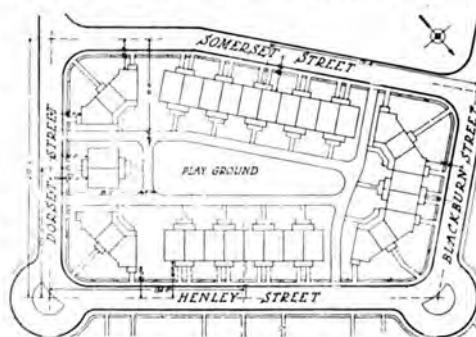


Floor Plans and Exterior of Six-Family House, Costing \$2,400 per Family



General View of Central Block from Corner of Blackburn and Somerset Streets

instead of single dwellings, the family units ranging from four to six rooms in size and from \$1,875 to \$2,700 in cost. All houses are provided with cellars and a heating system, bath-room, and sink with hot water boiler in kitchen. The houses of the central block, between Henley and Somerset streets, follow modern English precedent in their architectural treatment and show a pleasing grouping about an interior playground. They have been placed low on the ground to give them a comfortable, homelike appearance, and the consequent difficulty of admitting sufficient light to the cellars has been solved in a novel manner. The cellar windows have been placed directly under those of the first floor, and a bulkhead, serving the purpose of a window seat, built into the first floor rooms, permits the light to enter the cellar. This



Plan of Block between Henley and Somerset Streets

scheme is less expensive than outside areaways, which are generally used under similar circumstances, and also eliminates the difficulty always attendant with their proper maintenance.

Two boarding houses operated by families and each accommodating fourteen single workers are another unit of the development. They are located at each end of Henley street, frontage on the circular parked spaces.

Although a very economical use of land is evident from a study of the plan, the care expended in the placing of the houses, with varying set backs, and the special grouping at the intersections of streets have contributed a sense of spaciousness to the entire development, and with the completion of the planting program, the village will have many picturesque and attractive qualities.



View of Model of Block between Henley and Somerset Streets Showing Interior Court

Methods of Economy in Housing Construction

By CHARLES A. WHITTEMORE

IN considering the question of economy as applied to the housing problem, we are likely to lead ourselves into the common error of thinking that economy means the "least possible amount" as referred to expenditures. To any one who gives this subject careful consideration, the fallacy of such an idea must be apparent. True economy and false economy are as far apart as the poles. Unless we get the correct viewpoint, our whole discussion is likely to be distorted.

Economy in house building comprises various elements. Not cheap, shoddy construction whose life may be but a span of years. Not the cheap tar paper, shingle covered, temporary construction. Economy means low cost for materials of real value, with construction methods as good as may be; omission of unnecessary elements and luxuries and simplification of all possible processes.

Even though we are not now considering the phase of "economy" as applied in the psychological sense, we must here record the fact that there is no real economy in building a cheap shack, glossed over with a superficial dressing of shingles, clapboards or the like, and presented to a workman for his family to occupy at a price at which some real construction might be obtained.

Nor must we lose sight of the fact that the evolution of labor is not complete. The cycle is but partly rounded. The effect on labor of the shoddy houses, their attitude toward an employer who rents them such an apology for a home and who, rather than help them improve their condition, offers them accommodations no better than the slums they know so well, must be most carefully worked out. The immigrants of yesterday may be skilled labor of to-morrow.

There are so many phases of the housing problem that one can only express ignorance of it all in claiming a complete solution. England spent time and money in solving it; the United States may profit by England's experience, although the conditions are so radically different. Up to the present the housing efforts may appear to have been conducted on the principle of "grab it all and get something done," rather than "offer the best solution."

A broad, general, comprehensive plan should be adopted and the Government developments made along these lines. Once this has been established and the right type of development determined for each locality—Macon, Ga., does not require the same type as Erie, Pa.—the question of real economy is encountered.

For the purpose of this discussion we will assume the type selected to be the proper type for the place,

and that all the details of the development which do not enter into the actual construction are happily arranged.

One of the first considerations is the magnitude of the operations. None will question the greater economy in a large building project of say one thousand houses over a development of only two hundred. In the interest of this greater economy the Government plans should be so laid that the houses be built in as large numbers in one contract as possible. Not that the numbers should be carried beyond or even quite up to the actual demand, but rather that the housing groups in territory as nearly contiguous as possible should be under one general constructive control. The net saving to the Government, if such a method were adopted, would be large and would offset some of the expenditures in other directions which may seem unnecessarily extravagant.

In carrying on the development of one of these groups, an efficient organization is a vital necessity. No house can be built as a single, separate unit without the skeleton of an organization, and the functions of the unit are manifolded in the group. The organization may be called upon to purchase, sell, lease, mortgage land, buildings, real estate, etc.; may loan money, build roads, sewers, streets, etc.; may develop all the functions of a municipality and still be in the pursuit of economy in the general development. Such an organization must comprise many divisions and branches, and each of importance. Not the least of these would be the material purchasing department and the contracting and building department. On these two actually must rest the return on the investment. In their control lies the possibility of gain or loss from the standard of maximum economy. They must, therefore, be carefully selected and efficiently managed. If the development be large in scope and number of buildings, the purchasing becomes more nearly a wholesale rather than a retail function. It might even be more economical to purchase standing timber instead of builders' finish. The extent of the possibilities in the direction of purchasing is limited only by the magnitude of the operation.

It will at once be recognized that the purchasing department must be guided by some other influence than the cost of each grade of material. Oak finish might be offered at a low, attractive figure, but might not be economical in the general construction. Pine may be quoted at such a price that when bought in quantities oak, ash, or chestnut may be not only better but also cheaper. These conditions must be determined by the contracting department

under the guidance of the general planning head, and thus does the organization build itself.

As has been noted, the careful selection of materials is of utmost necessity in order to construct houses such as should be built for the workmen at the various ship-building and munitions plants in the most economical manner. Careful selection does not, necessarily, mean selection of the grades of materials, so much as it refers to the kind of material which is most easily available in large quantities and which can be produced and delivered with the least possible delay. In this item again the purchasing department of the organization plays a great part, but before this matter reaches the stage of the purchasing department it must be very carefully investigated in laying out the original work. For example, in some localities stone is easily available for foundation work; while cement means additional transportation and, under the present conditions, the transportation problem is in such shape, that this factor should be eliminated in so far as possible. Stone, if available, can easily be hauled over the road by teams; while cement invariably means not only car-load but train-load lots if the development is of any magnitude.

So it is, also, with the roof materials, with the outside finish, and with the outside structural materials. Brick makes an excellent outside wall, either used structurally or as a veneer on a wood frame. It has this advantage over almost any other material,—that the low priced bricks can be made to present a pleasing appearance and, once laid, the maintenance cost is at an end. Other materials, such as stucco or wood, require more or less attention. In this particular instance the first cost is not necessarily the item to be the most seriously considered.

The materials having been carefully selected, the next important step in securing the best results from the standpoint of economical construction is in the nature of standardization of materials and details. It is not necessary, nor is it advisable, nor would it make a good development, to have all units exactly alike. A change of units can readily be effected without militating against the standardization of materials. In one development, for instance, there may be but two sizes of floor timbers used, these two sizes being of different lengths. The mill getting out this lumber could get them out in the exact lengths, and thus eliminate much of the hand work at the building. With an arrangement of this kind the rooms which would be of the same size in many units may be placed in different relative positions, and each house still have a very satisfactory plan.

The doors and windows can all be of standard form, detail, and size, so that one mill order put through in large quantities would produce the material for a very large operation. The classification of the ma-

terials at the building would be very much facilitated because all of the units, being of the same size and interchangeable, would require less scheduling and arrangement on the lot. So it is with the inside finish, which can be of a standard detail and yet varied in a large degree in its arrangement.

The flooring, the kitchen and closet fittings, the outside trim, fireplaces (where such occur)—all of these can be standardized, so that the same materials and the same sizes can be used in all different parts of the building development and eliminate a large amount of mill work. This same thing is true of all the different elements which enter into the house, such as the ranges, the plumbing fixtures, the piping, electric fixtures, hardware, etc. It is obvious that purchasing the same type and style of a commodity in large quantities possesses a great advantage over purchasing the same quantities of different types.

After the standardization of the materials has been effected, so far as the plans are concerned, a vital necessity is the elimination of useless and unnecessary rooms. In a private residence for an owner, when the residence is built as a unit by itself, many features which may be classed as luxuries can be added which, while not absolutely necessary, make toward the more pleasurable enjoyment of the residence as a dwelling place. Because these units are not essential, they may easily be eliminated in a development which is purely commercial and which is to provide houses for a class of workmen who have not previously been accustomed to the comforts and conveniences which even such a type of development will offer.

An architect frequently finds in laying out a private residence odd corners which are called storage closets or by some other name, but it must be a matter of careful study in the planning of housing developments to eliminate all odd corners and to make every inch of space in the house available for the actual living necessities. This, of course, will tend to reduce the size of the house and to eliminate some of the expense of the building.

Instead of kitchen pantries and butler's pantry and rear entrance, etc., arrangement can easily be made to accommodate all the materials usually served by these rooms in another way, without necessarily increasing the size of the house. For example, the kitchen walls may be built with cupboards, similar to what is known in the profession as a "Dutch kitchen." These cupboards do not take up valuable space and in many cases utilize space which otherwise would be wasted. So it is with linen closets and cold closets in the basement, etc. It may be of psychological value to allow the man who occupies one of these houses to build his own storage closets, creating a more personal interest in the house by the labor of his own hands. The unnecessary rooms and

unnecessary closets and storage places count a great deal in the reduction of the cost of building.

The heating, plumbing, and electric systems may be laid out on a very economical basis, or may be extravagant without being any more efficient. This requires careful investigation in order to determine the most economical layout of these various functions. In some cases it may be wiser to use the hot air type of heating system rather than steam or hot water. Location, weather conditions, climate—all have an important bearing on this work. In the colder sections of the country steam may be used, while in more temperate localities a furnace may answer all needs.

In laying out the heating system, effort should be made to use as few chimneys as possible. If two houses are built side by side with a single wall between,—the type known as “semi-detached,”—the chimneys may be built in this wall, and one chimney used not only to serve the heating plant, but also the kitchen stove in each house.

There also comes to mind the question of a central heating system, whereby one plant would distribute the heat to various buildings. This, of course, is desirable and economical where houses are built in blocks, and may even be desirable in the case of detached dwellings. The increased cost of laying pipes in the streets and underground to the buildings, as well as the heat loss due to imperfect insulation, and the fact that a flaw in the heating plant would inconvenience so many tenants, is likely to make it not so available in the cases of single dwelling units as in other types of development.

There are in existence now in some cities central heating plants which supply heat over a radius of miles, and in some cases these are economical as an investment, but, undoubtedly, the merit of an installation of this kind is in the magnitude of its operation, and would not necessarily be available where the heat demand is small.

The plumbing system should be of the simplest type, but should be complete. In some housing developments the lavatory, usually placed in the bathroom, is omitted, and the occupants wash at the kitchen sinks. In the judgment of many who have studied this problem this is a case of first cost economy which does not prove wise. The people who occupy, or are likely to occupy, houses built under the program now in consideration are people who may not have been accustomed to the same type of living conveniences as those who now occupy a relatively higher station in life. They should, however, have an opportunity to acquire the better methods of living, and this can be afforded them without a prohibitive increase in the cost of the house development.

In installing the electric system three-way switches should be entirely eliminated, as the convenience of

this construction is greatly overestimated, and the cost does not warrant such an installation in any economical plan. The usual heating plugs and receptacles may also be eliminated, because the majority of the workmen not only do not understand, but probably would not require, devices of this sort. Where receptacles can be installed without any additional cost beyond the cost of the box and cover itself, it may be advisable to place one or two of these in convenient places in the house, but such installation would not be advisable if it means additional running of wires.

The simplification of all of the elements entering into house construction should be the uppermost thought in the mind of those who are making the development layout. Standardization alone cannot accomplish as much as may be required, while standardization accompanied by simplification will undoubtedly produce results which are eminently desirable.

It may be advisable in some instances where the development will warrant to use floors of fire resisting material such as concrete; to use plaster which will not readily deteriorate or dent—such as the patent hard plasters. The use of these materials immediately permits of the adaptation of the hard plaster, etc., to the jambs and trim around doors and windows. The concrete may also be carried up to form the base around the room. Where concrete floors are used, however, there must be some other surface for a walking surface, and in this case wood or linoleum can be readily adapted.

There is a type of floor construction on the market which is not only economical, but which has all the merits of concrete construction, together with the peculiar characteristic of being of great tenacity in holding nails. A wooden floor may be laid directly on this material without the use of sleepers. The expense of this is very slightly more than the cost of wooden construction, and it presents a possibility of plastering directly on the under surface, eliminating furring and lathing, as well as the nailing strips for the upper floors. Materials of this kind should be carefully investigated and, undoubtedly, many adaptations of structural materials not now considered in the plane of economical construction may be used to advantage.

Inasmuch as the class of occupants in these houses, as a rule, will be those who have been more accustomed to the tenement house and less desirable living conditions, it is advisable to eliminate to as great an extent as possible all interior and exterior woodwork which can readily be damaged. Not that the occupants will not take so great care of the materials, but that the children, not being accustomed to conditions in which they now find themselves, are likely to be less easily controlled and, inadvertently, to introduce a maintenance cost factor which will work

against the development as an investment. In a recent development in the Middle West some very nice, artistic houses were constructed and rented to workmen, but, after having been occupied about a month or two, the piazza railings and wooden steps had entirely disappeared. To a large degree this wood may have been used for fuel, but certainly, to some extent, the carelessness of the children caused damage. Metal finish for bases and trim can be easily acquired and is now being seriously considered for these developments. These metals are not easily dented or injured in other ways, and a little paint can readily repair the damage and make the finish as good as new.

The economical construction of houses in such a development does not end with the careful selection and standardization of materials, nor with the consideration of the various details and elimination of the unnecessary features. This forms only the first step, and when the construction work is commenced, a very great factor for waste enters in. The actual construction work must be intelligently laid out, so that there will be no lost motion and no waste effort. As an illustration, consider a development on both sides of a single street, which we will assume to be large enough to accommodate say one hundred houses. If the work is carefully laid out, the excavation will be started at one end of the street and carried to the other limit as rapidly as possible. As soon as one excavation has been completed the foundation work will follow and be carried through to the limit of the development. With the completion of the foundation of one house, the carpentry, framing, etc., will start in and follow through. By the time the masons have completed the last foundation work, the first house will be ready for plaster and chimneys. It will be seen that in this way a smaller crew of men may be maintained on a development, and will accomplish, with systematic employment of labor, as great results in a given space of time as though a much larger force were employed with less intelligent direction.

There are, undoubtedly, a great variety of ways in which the work may be laid out differently from the example cited that may produce as efficient results, but it is obvious that the minimum number of workmen must be employed commensurate with economy of operation, and necessary to the elimination of waste effort or loss of time. This can be effected only by a very careful plan. A large corporation carrying on work of this sort would have differently organized "gangs" of men for each part of the work, and these men would proceed with their respective functions in one portion of the development, pass on until the whole work is completed, and then on to a new location, and, in this way, become so thoroughly accustomed to the type of work and the best manner of executing it that there would be

considerable saving of time and effort in the final result. Intelligent planning of labor, as well as intelligent planning of material, must be a large factor in the house development.

In any organization for handling workmen of such a character as is here being considered, it is vitally essential that there should be close, intimate co-operation between the contractor, the laboring men, and the material man. A particular effort should be made to maintain an equitable, harmonious arrangement in all these branches of the work. The tendency of the times under existing high costs is to make the labor element somewhat restive, and any dissatisfaction on the part of the laboring man necessarily will produce results which are not of the character to be desired in the finished work. Every effort should be made, therefore, to see that the laboring men in connection with these developments are properly paid, are well cared for as regards their own living accommodations during the construction, and that the surroundings and employees in other branches of labor may be made as harmonious as possible.

The magnitude of the operation enters vitally into the cost, as it is obvious that the greater the number of duplicated units the less will be the individual expense. There is, however, an economical limit where this may not hold true. Such a limit would be in the instance of one organization handling large developments of, say, one thousand houses, in various locations at the same time. Here the increased cost of shipment to the various localities of the different items entering into the construction might operate seriously against the lower cost for each locality, were it being constructed as a unit by itself.

It may not be inappropriate to call attention to various forms of contracts which are being considered in operations of this character. The "cost plus" type of contract is being superseded, to a large degree, by types of contract which are more favorable to the speedy, economical completion of the work, without a possibility of friction between the owner and the contractor.

In the "cost plus" system by itself there is no limit to the expense, and this fact is reflected through all of the various sub-contracts. It is undoubtedly true that the present high prices of materials are directly due to a large extent to the existence of "cost plus" contracts.

A better form of contract is one where the cost of the operation is established; where the contractor is given a fixed profit, plus a proportion, say one-third, of the net savings he may make below the contracted amount. This form of contract has operated very satisfactorily in private professional practice, and has the advantage of giving the contractor an additional incentive in that, as the cost of the work decreases, his remuneration increases.

Another form is a contract in which the construction price is established and the contractor allowed a certain percentage. If the cost exceeds the contracted price, the profit to the contractor is reduced by a fixed proportion. If, on the other hand, the cost is less than the contracted price, the profit to the contractor is proportionately increased. The only disadvantage of this latter type lies in the fact that no special provision is made for extra work which was not contemplated at the time of the contract; while in the "cost plus" type and in the "first cost plus percentage" type this contingency is well cared for.

The net result of the tremendous housing operations which are now, or soon will be, in full swing will undoubtedly be a readjustment of prices for labor and material, and a rearrangement of contract forms which will do away with the old gamble which contractors are called upon to assume. No contractor estimating work hurriedly, and particularly without very keen competition, will put in the contract prices which do not include a safe allowance for possible contingencies which may arise. The newer forms of contract eliminate the necessity for this gamble on the part of contractors submitting bids.

In this whole housing problem one thing of extreme importance which must be kept in mind is that the development should be arranged so as to be a permanent addition, if possible, to the locality in which it takes place. To do this, the houses must be made of a sound, reasonable construction and character, and provisions must be made to render the developments sufficiently attractive as to warrant a permanent investment for the laboring man. Primarily these developments are undertaken with the idea that the laboring man will purchase his own home and become a citizen of the community in which his work is located. It must also be borne in mind that as civilization progresses, the laboring class are being educated to a point far beyond that which they previously enjoyed, and a development of this sort must not in the least degree tend to reproduce the living conditions to which the laboring man was formerly accustomed. The psychological effect of making the laboring man feel that he is an essential part of the community in which he lives, and that he is wanted rather than despised, will go far toward making a stable, economical building and manufacturing condition in the country which no other course could possibly produce.

First Floor Plan at Right of a Group of Four Houses



Two Detail Views Showing Different Exterior Treatment. Group of Houses at Oakenshawe, Baltimore, Md.

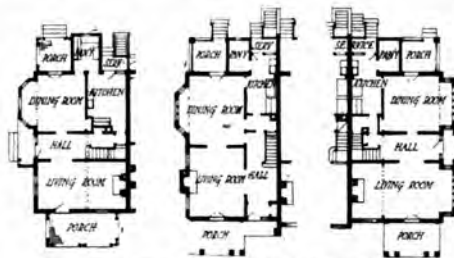
Flournoy & Flournoy, Architects

, Group of Houses at Oakenshawe, Baltimore, Md.

FLOURNOY & FLOURNOY, ARCHITECTS



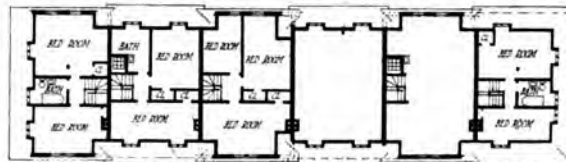
THESE houses occupy both sides of Guilford Terrace in Guilford, the later development of Roland Park in Baltimore. They are built in five groups, —three containing six houses each, one containing four, and another five. They are 21½ and 22 feet wide, and the lots are 100 to 105 feet deep. The walls are of dark red brick, relieved by occasional stuccoed bay windows, white porches, cornices, etc. The roofs are surfaced with bluish gray slate, laid 8½ inches to the weather. Porch floors are of red quarry tile with brick borders. The interior finish is yellow pine, generally painted



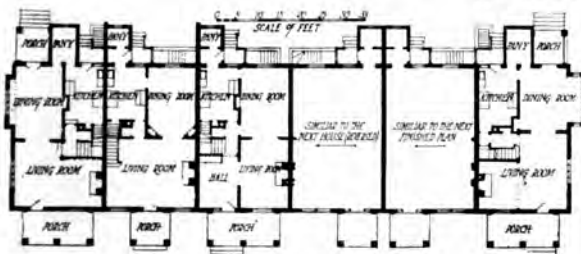
First Floor Plans of Three End Houses Showing Variations in Treatment

white. Interior doors are birch or fir with mahogany finish.

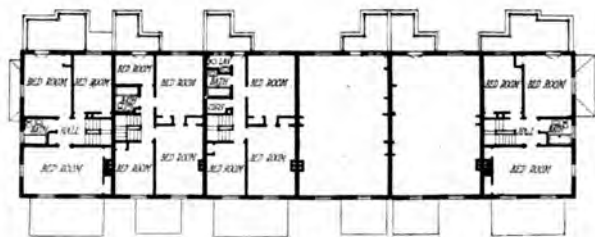
The architects endeavored, as far as was consistent with economy, to obtain as much variety as possible in the design of the houses in both exterior appearance and arrangement of rooms, there being but few duplicate plans in any one group. Although these houses were built for sale, the construction and finish are decidedly superior to the average house of this type, and the cost was less than might have been expected. The large groups, erected in 1916, averaged 15½ cts. per cubic foot, and the others, built in 1917, 17½ cts.



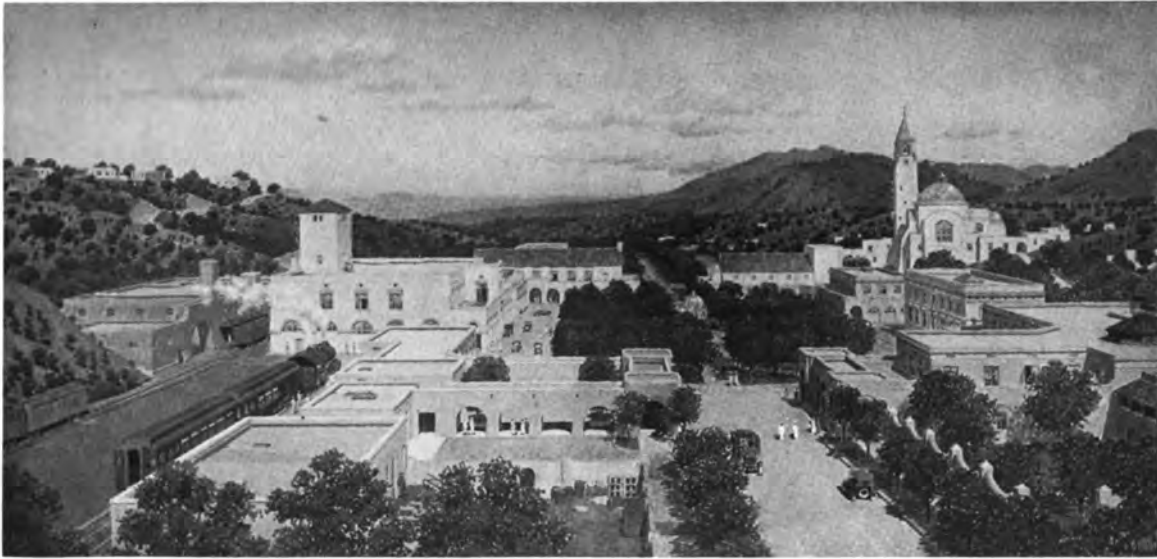
Third Floor Plan of Six-House Group



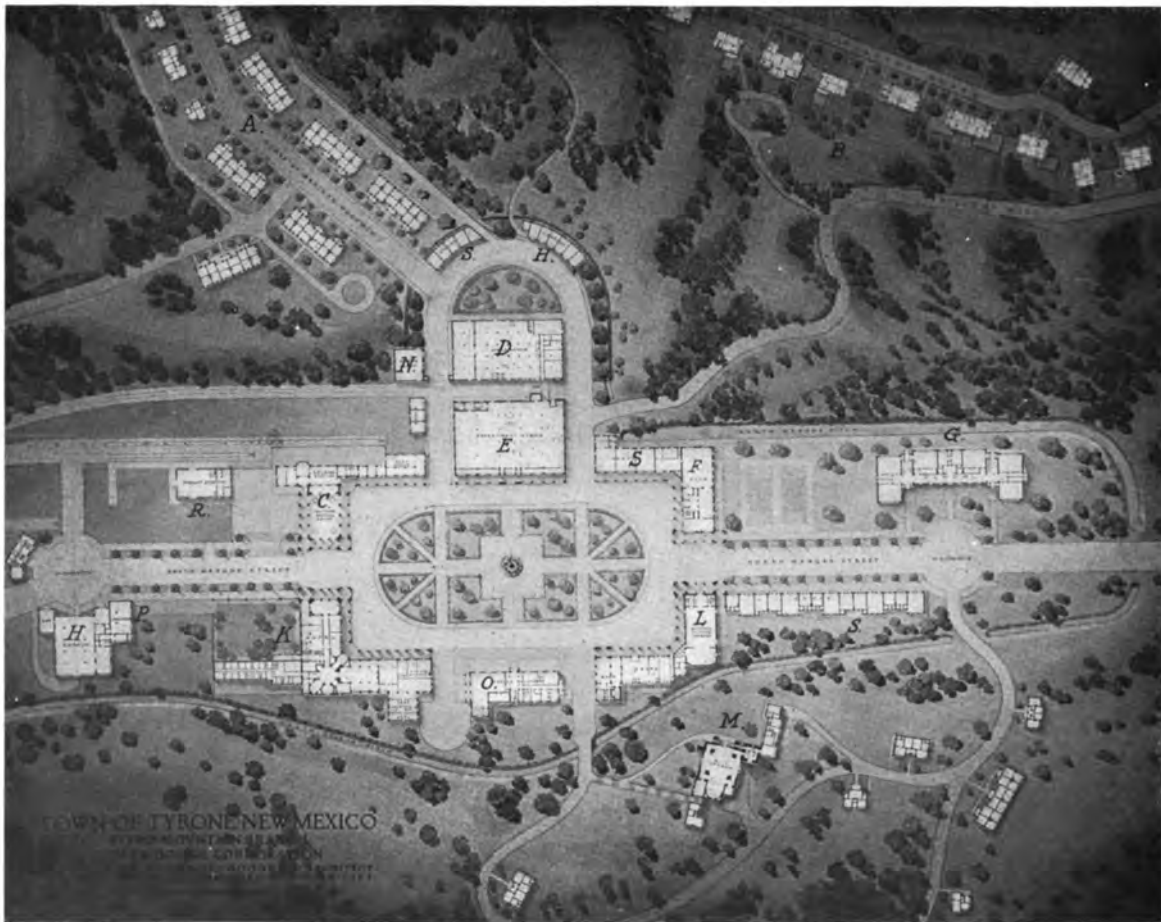
First Floor Plan of Six-House Group



Second Floor Plan of Six-House Group



Perspective View of Town Center



A Mexican Houses
B American Houses
C Railroad Station
D Warehouse

E Department Store
F Club
G School
H Garage

K Hotel
L Theater
M R. C. Church
N Heating Plant

O Offices
P Saloon
R Freight
S Shops

TYRONE, NEW MEXICO, DEVELOPMENT OF PHELPS-DODGE CORPORATION

Bertram Grosvenor Goodhue, Architect and Town Planner

Tyrone, New Mexico, the Development of Phelps-Dodge Corporation

BERTRAM GROSVENOR GOODHUE, ARCHITECT AND TOWN PLANNER

AT Tyrone, in southwestern New Mexico, the Phelps-Dodge Corporation is building an industrial development which is entitled in several respects to the overworked adjective "unique." In the first place, its character is most unusual for an industrial village as pictured east of the Mississippi—the flat roofed, Spanish mission type of architecture is foreign and likewise not suited to eastern and northern conditions; second, in its reliance for effect upon rough textures, broad surfaces, an entire absence of applied ornament, and especially upon abundant use of integral color, it stands quite alone; third, its method of procedure is different. Ordinarily, the company puts up groups of houses, larger or smaller as the case may be, and follows, usually with some tardiness, by supplying the more general community needs. In this case the two classes of building have gone on simultaneously.

The development at Tyrone is a flat city just as truly as was Gary—the classic example of American city building. And it is by no means in criticism of the company to say that their provision of community buildings was forced upon them by circumstances, for there was nothing whatever of the sort when the building program was entered upon, and we know that even a copper-mining town must have its nucleus of municipal activities. It was, therefore, virtually a clean slate which was handed to Mr. B. G. Goodhue of New York, on which he was to trace the outlines both of town-planning and of housing.

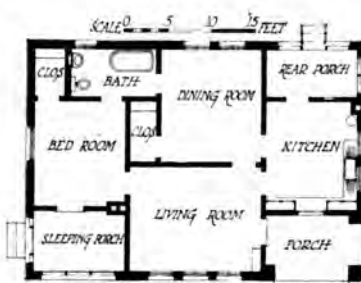
The site for the town is a rarely beautiful one in a valley between mountain ranges, about a mile and a quarter from the mine. A railway terminal brings the passenger directly to the village center, the mail to the receiving platform of the postoffice, and freight to the doors of the warehouse.

Around the rest of the perimeter of the village square, at present about half of them built, are the department store, hotel, office building, bank, moving picture theater, a num-

ber of shops, and a clubhouse. This club, by the way, is to be run on a basis of pure democracy, its facilities open alike to the American engineer and the Mexican miner. The hotel, it should be said, is projected to accommodate, not so much the transient public as the resident bachelor, and its planning is particularly to suit his needs. On a rising ground outside the center is a large schoolhouse. Its furnishings were supplied by the township, of which Tyrone is a part; but like all the other buildings for community use, except the railway station, it was built by the company itself. Buildings such as the shops and the bank are leased to individuals or companies for operation. The company activities, not stopping here, include also a plant for generation of electricity, and a central heating plant which will take care of the buildings about the central square as well as some few outside.

Of the town-planning features of the project it is not here possible to speak; that must be reserved for separate treatment. At the moment we may merely call attention to some of the points of interest in the matter of housing. The dwellings divide themselves naturally into two main classes,—those for Americans and those for Mexicans, the nationality from which practically all the common labor is drawn. For the Americans, the accommodations are much the same as those to which the East is accustomed, except that only one house, that of the mine superintendent, has a heating plant aside from stoves and the kitchen range, and except that all the houses have but one floor. Plumbing is a complete installation, with sewer connections; electric lighting is everywhere provided. Many of the house plans show the convertible room feature—that is, a large living-dining room, with a smaller room which may be a dining room or may be rented out to a lodger without prejudice to the privacy of the family itself.

Another feature which verges upon



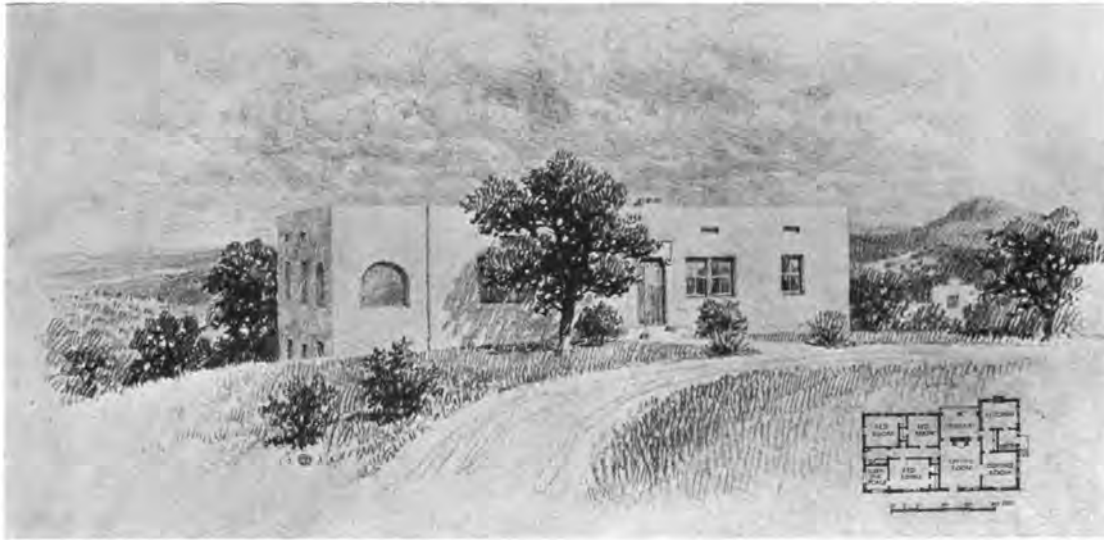
Floor Plan of Houses Below



American Detached House, Type O2



American Detached House, Type O



COST OF AMERICAN HOUSES (FIRST SERIES)

Type	Cubical Contents	Contractor's Estimate	Wiring and Fixtures	Fence	Hardware	Extras	Total	Cost per Cu. Ft.
B	18706	\$2642.00	\$67.80	\$50.00	\$18.00	\$25.00	\$2802.80	14.9
L	17481	2469.70	78.70	80.00	25.00	25.00	2678.40	15.3
M	23897	3434.20	88.60	80.00	25.00	25.00	3652.80	15.2
N	22423	2894.80	79.70	80.00	25.00	100.00	3179.50	14.1
O1	15501	2378.60	64.40	50.00	15.00	25.00	2533.00	16.3
O2	15501	2392.20	64.40	50.00	15.00	25.00	2546.60	16.4
P	13926	2001.80	57.65	50.00	14.00	25.00	2148.45	15.4
R	15439	2201.40	76.55	50.00	15.00	25.00	2367.95	15.3
R1	15887	2268.20	76.55	50.00	15.00	25.00	2434.75	15.3

Total number of houses 15 Appropriation \$40,650.00
 Total number of families 20 Average price per cu. ft. 15.2
 Cost of 15 houses \$40,608.05 Houses completed March, 1916

COST OF AMERICAN HOUSES (SECOND SERIES)

Type	Cubical Contents (feet)	Contractor's Estimate	Electric Fixtures	Fence	Hardware	Extras	Total	Cost per Cu. Ft.
S1	16121	\$2556.35	\$50.00	\$65.00	\$18.45	\$26.00	\$2715.80	16.9
S2	17456	3111.90	50.00	65.00	18.45	32.00	3277.35	18.8
SS	34500	6119.80	100.00	130.00	36.90	63.00	6449.70	18.6
U	16573	2604.45	50.00	65.00	18.45	27.00	2764.90	16.6
V	54326	8970.95	150.00	160.00	55.35	83.00	9419.30	17.3
W1	33207	5550.25	100.00	120.00	36.90	55.00	5862.15	17.6
W2	33207	5550.25	100.00	120.00	36.90	55.00	5862.15	17.6
X1	19155	3049.75	60.00	65.00	22.15	33.00	3229.90	16.8
X2	19155	3017.25	60.00	65.00	22.15	33.00	3229.90	16.8
Z	16530	2647.90	50.00	65.00	18.45	27.00	2808.35	16.9

Total cost of 15 houses for 20 families \$60,417.45 Average price per cu. ft. 17.3
 Houses completed March, 1917



SKETCHES FOR AMERICAN HOUSES, TYRONE, NEW MEXICO

Bertram Grosvenor Goodhue
 Architect and Town Planner

James Perry Wilson
 Delineator

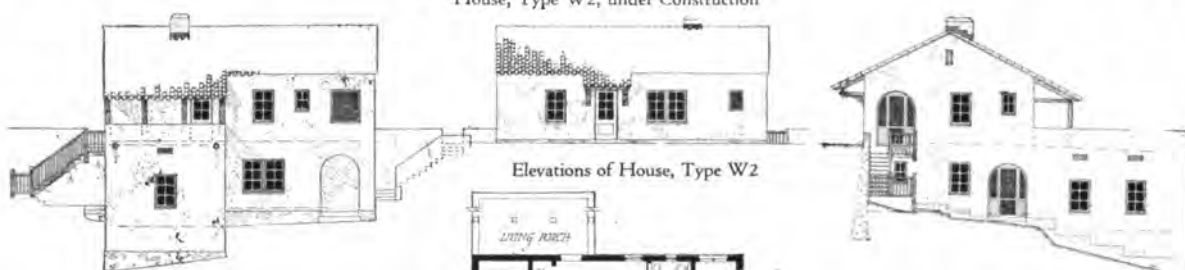
the "unique" is the manner in which a virtue has been made of necessity in adapting the house plans to the excessive grades of the side hill where they must be placed. The solution is made possible because these houses are, as we have noted, confined to one floor. On some of these slopes a normal house placed in its natural relation to the street level at the front has necessarily such high foundations at the rear as to give a perfectly well lighted and ventilated space adequate for another family. And so they have been built. The



House, Type W2, under Construction

on the blocks, the waterproofing being applied as an integral part of the stucco. The same is true of the color—that is, the third coat of stucco contains the color as part of its own mixture. Interior finish is everywhere flat and simple. Roofs, where flat, are 3-ply asbestos, laid in tar; where sloping, which is the case only where accents of brighter roof color were needed, they are of tile which was brought east from California.

The houses for Mexicans, as indicated by the plans reproduced, are



Elevations of House, Type W2

sole practical disadvantage in the lower level entrance is the loss of the one exposure where the structure beds itself into the hillside.

The houses are further interesting from the structural standpoint. All exterior walls are stucco, most of them on terra cotta block, though recently trials have been made with an adobe brick which promises well economically. Interior plaster is directly

smaller and more compacted than those for the Americans. They are not as yet provided with sewer connection, nor have they the bathroom facilities of the larger houses. For the rest, they are of the same substantial construction and the same rough breadth of finish. Their floors, however, are of cement marked off in



Floor Plan of House, Type M2

Lower Floor Plan of Type W2

Floor Plan of House, Type N1



American Semi-Detached House, Type M2



American Semi-Detached House, Type N1

large squares and finished at the walls with a low cement wainscot instead of the hard pine which is used throughout the American houses. The porch floors in all the houses are likewise of cement. The ceiling heights in general are 9 feet in the clear, and air spaces with vents opening in the outside walls are provided beneath the roofs for ventilation.

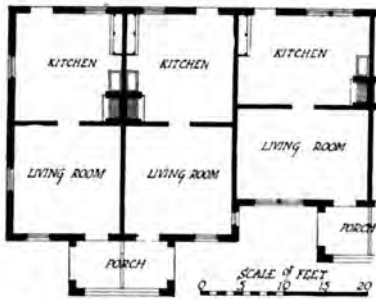
The particular charm of these



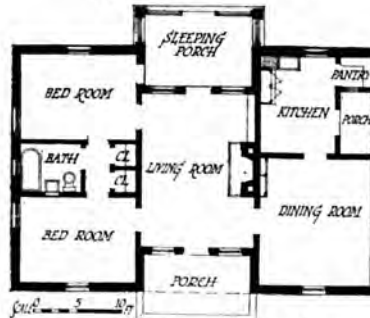
Type X2 under Construction

to their sloping sites remains to be done, but sufficient development has already taken place to indicate the picturesque character that will eventually be attained. The site of the town is one of great natural beauty, and the architect in his disposition of the community features on the lower level and the residential streets on the hillsides above has neglected none of the opportunities it afforded.

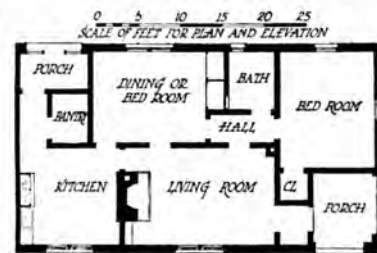
As in other developments, the



One-Half Floor Plan of Group of Six Mexican Houses



Floor Plan of American Detached House, Type X2



One-Half Floor Plan of Semi-Detached House, Type SS

houses is their suitability to the country in which they are located. Their broad stucco surfaces, on which there is a refreshing absence of effort to secure even planes and rigid angles, are extremely restful in the brilliant light. The simple exterior details and arched openings furnish strong shadows, giving the necessary points of accent. The color is intensified here and there by projecting porch roofs and hoods surfaced with red tile and supported by corbels and beams of rough hewn timbers. The windows, which are of the casement type throughout, add another feature of interest. Planting which will tie these houses



Rear Elevation of American Semi-Detached House, Type SS

Tyrone colony has been building against a rising market. The two schedules reproduced show very strikingly the condi-



Plan of House, Type R1

tions of 1916 as compared with those of 1917. They contain, too, significant data for prophecy concerning the current year and the difficulties to be met by the Phelps-Dodge Corporation. It is to be hoped that it may be found possible to carry on an ambitious program auspiciously begun, in spite of the handicap of rising costs, for a development of the complete character of Tyrone is sorely needed in America to emphasize the value of well ordered, town-planning principles in industrial communities.



American Detached House, Type R1



American Detached House, Type P2

The Financial Aspect of Industrial Housing

By C. STANLEY TAYLOR

NOT only in written expositions of the various phases of industrial housing, but in their discussion by civic bodies and by individual manufacturers, the most carefully avoided subject has been the difficult question of financing. Writers have side-stepped this important issue because of a lack of definite knowledge, or the means of gaining that knowledge. Manufacturers have generally avoided it because to them its consideration has offered but one solution — to provide the money as part of the plant investment, and this the stockholders have been unwilling to do. Bankers, having given cursory analysis, have passed it by, classing it as risky and unattractive collateral. Perhaps this has been a just decision, when we consider the spirit of *laissez faire* which has characterized the housing of American workmen in every stage of our industrial development.

In all the years since the establishment of great manufacturing industries at strategical geographical points has brought about a centralization of industrial workers, the human machinery of industry — labor — has been neglected. With a few striking exceptions, the energy and capital of industry have been directed toward a perfecting of inanimate machinery and sales efficiency. The master hand controlling the law of supply and demand has been that of the financier and organizer, and the strength of that hand has always been dependent upon its ability to temper the wind of supply to the shorn lamb of demand. Just so long as potential supply in our commercial markets exceeded demand could the balance of power be retained by capital.

During the time when supply exceeded demand, the factor of production played a minor part in the great game of industry. But labor has been inherently an integral part of production, bearing no tangible relationship to finance. Thus, with the balance of power in the hands of financiers, whose interest was not in production, it has been but natural that labor should align itself against capital.

What labor wanted — reasonable hours, better pay — it obtained only through organized resistance and insistence. Ultimately, then, better housing for industrial workers must have waited through the years for the demand of organized labor, had it not been for the sudden industrial upheaval resulting from the unnatural demand of a world war. To-day the law of supply and demand lies shattered at the feet of war emergency. Production, and not demand, is the word of the hour. Thus labor has become a supreme need.

As before stated, the problems of most manufac-

turers are no longer those of selling. Their entire energy is now directed toward increased production — the betterment of their animate machinery has become a definite object. Labor turnover, being far above normal, is a subject of grave concern, bringing in its wake the wastes of "breaking in" new hands, mechanical depreciation, and lowered plant efficiency. The difficulty is not so much in getting labor as it is in holding labor. To the manufacturing plant comes the greatly needed mechanic, until the number of employees has been doubled and redoubled, and all available local housing has been exhausted. Transportation means are overburdened, the workman has difficulty in finding a home for himself or his family, and he naturally drifts on to another plant. Thus the percentage of "floaters" is greatly increased through the lack of housing.

Almost over night the need for industrial housing has made itself felt to such an extent that it has become a national issue. Congress has for some time been considering the question of Government aid for the housing of workers at shipyards and munition plants. Already \$50,000,000 has been appropriated for housing at shipyards, and at this writing a bill is in committee appropriating another \$50,000,000 for housing at war *matériel* manufacturing plants.

At this time, when the financing of industrial housing is being considered on a large scale, it seems logical that manufacturers and bankers should give careful study to the subject of seeking a means through which an elastic system of real estate credit for this purpose may be established. Through logical economic reasoning we have established the soundness of industrial housing as a greatly needed investment. Production is the need of the hour, and will continue to be the need for many years to come. Labor is the need of production, and proper housing is the need of labor and the means of holding it.

What other argument is needed to establish in the minds of the community, the manufacturer, and the banker the soundness of this collateral? Is not the indirect return on this investment of such incalculable value that it merits a place as part of plant investment, and is not plant investment the basis for a vast total of money loans?

In Great Britain the affirmative answer has taken form in an expenditure by the Government of \$700,000,000 in one year to house the workmen. In addition to this amount many millions of private capital have been wisely invested in this manner. This is the message from across the seas, and in considering the financial aspect in industrial housing we cannot well overlook it.

The next question, and one which bears directly upon the financial success of a housing investment, is that of the wise expenditure of this money. During the years before the war, when little attention was given to this subject, the speculative builder reaped a golden harvest. Into our community life, through his unrestricted building activities, he thrust the ugly eyesores which to-day constitute our tenement and slum sections. Utterly devoid of architectural merit, insanitary, poorly constructed, the average housing of our industrial classes stands as a mute testimonial to our monumental folly in allowing the speculative builder to spend annually at least 20 per cent of our national industrial payroll. He has betrayed his trust, and the day of fire-trap, health menacing, and heterogeneous home-building is drawing rapidly to a close.

To make the investment in industrial housing one having financial, as well as social and æsthetic merit, the housing expert is being called in — the doctor of homes, if you will — to diagnose and prescribe in order that we may establish a proper precedent for the years to come, and create the basis of a sound investment. Thus the financial value of the service of an architect, who is at once a town planner and a student of social and labor conditions, is definitely established.

* * * * *

At the present time, owing to the high cost of building material and labor, together with rapidly increasing land values around most industrial centers, it is impossible to make a definite statement of the direct financial return which may be expected from an investment in housing. At the recent One-Day Conference on War Housing held under the direction of the National Housing Association at Philadelphia, the statement was made by a representative of shipyard labor that the workman could afford to pay up to 22 per cent of his monthly income as rent. Using this logical figure, the best we can do is to analyze present-day costs, relating them to the income of the average workman in order to gain some idea of what might be expected in the way of direct financial return.

Under present conditions it is extremely doubtful whether a 5 per cent return could be realized on a rental basis if the income is to be limited to 22 per cent of wages. In practically every case the types of labor which it is necessary to house are skilled labor and mechanics. In general, the industries which are to-day in great need of housing do not employ a large percentage of common labor. The presence of gang labor engaged in yard and building improvement is usually for a period of a few months only, and the housing of this labor is of the bunk-house and barrack type of temporary nature.

In the matter of permanent housing, therefore, we have usually to consider no lower class than that

of the skilled laborer and the mechanic. These men are earning at least \$20 per week in almost every case. Considering this as a minimum, we have an annual income which will allow them to spend approximately \$220 per year on rent.

In order to determine the gross income necessary to provide 5 per cent earnings on capital investment, we find that general experience has shown that this should be at least 10 per cent. With the minimum present-day consideration, a rental of \$220 per year, we have available for investment \$2,200 to pay the cost of the cheapest houses which we may consider building, together with the costs of land, street improvements, recreation grounds, etc. After deducting from \$2,200 the cost of land, improvements, expert architectural and engineering advice, we have usually insufficient money to construct a suitable house at the present scale of building material costs.

But is there not another way in which this matter may be handled and a sound investment provided for the mutual benefit of manufacturer, workman, and banker?

We have already referred to the indirect return which the manufacturer enjoys through the stabilization of labor, resulting from the provision of proper industrial housing. What is this worth to the manufacturer? Surely it is fair that he should bear the cost of recreation centers, expert advice, general improvements to the property, and even the cost of land. This is a small investment for which to obtain a well housed working force, and in the course of a very few years the savings which would be realized on overhead expense of the factory would not only pay a high rate of interest, but would cause a return of the principal.

With these costs assumed by the manufacturer, taking his return through saving in his own plant, the success of the investment in the construction of houses would not only be assured, but the project would be easy to finance. In addition to this, employees would be encouraged to buy their homes, and the attractive selling prices and rentals would serve as the best form of labor insurance.

The individual banker or loaning institution does not usually profit directly by the greater stability of labor and the increased efficiency resulting from proper housing. This profit comes directly to the manufacturer, and for this reason loaning institutions cannot reasonably be expected to require less conservative security than is now the custom in building operations. These institutions have always to consider that the demand for housing may fall off with production demand. In view of this fact no better guarantee can be offered by the manufacturer, who above all others is to profit by the operation, than his direct assumption of a part of the financial responsibility. In addition to this, when application is made for an industrial housing loan,

much depends upon the care with which the plan has been worked out and upon its presentation.

The question is often brought up as to whether labor unions will interfere with the purchase of homes by workmen. It is naturally assumed that they would because the purchase of homes renders labor less flexible. A deeper analysis of this subject might, however, show little loss of flexibility because workmen's homes are not usually provided except in industrial centers where available housing has been used up. These industrial centers include many manufacturing units, and a man is not usually dependent upon one job for a living, as he could undoubtedly find work elsewhere in the community. It might, therefore, be more fair to state that organized labor would object to the workman purchasing his home in a "one-industry community." On the other hand, it would probably be found that in the average one-industry community the policy of the owning company would be to maintain control through renting instead of selling. Above all, we must consider the home-owning instinct which is born in every man, and which reckes not of the wishes or prejudices of the labor union or of the manufacturer. If he is given an opportunity to do so, a man will always buy his home if working conditions and community life are satisfactory to him. What he wants is comfortable living, sure pay, educational and community facilities.

Realizing that the provision of industrial housing is of great economic importance and exercises a beneficial influence upon industry (which, after all, is the basic collateral of all loans), it behooves bankers and loaning institutions to give careful study to the question of providing the money for the large investments required. It must be realized that industrial housing constitutes a permanent investment; and that where it does not constitute a permanent investment -- in other words, where it is certain that the demand for housing will fall off -- buildings of a temporary or portable nature only should be provided. Such projects are not expected to interest loaning institutions, their attention being directed only to the financing of permanent housing.

Since we are asking the workman himself to assume ultimately the cost of his house, either through direct purchase or through the payment of sufficient rental to write off depreciation, we must realize that the usual short term, real estate loan is not sufficient. This, then, is the banker's problem. Interested in maintaining industry upon the highest possible financial plane, he must devise a more elastic system of real estate financing. This would involve the policies of long term loans, reasonable interest rates, and amortization, thus enabling the workman to bear lightly the burden of the roof over his head. To this might be added the encourage-

ment and further development of building loan associations, and for this purpose municipalities and even states might render invaluable aid by the securing of popular support for a proper housing propaganda. Thrift should be made the national watchword, and thrift is ever conducive to home-building and home-owning.

* * * * *

In considering financial methods of operation, we are limited to generalities by the active factor of existing conditions in each individual case. There are, however, three distinct methods of operation, each of which has special merits for individual application, and each of which has proven successful in some cases. These are:

1. The housing company organized by manufacturers or other community interests, but operating independently.
2. The copartnership scheme, such as has been successful in England, in which the workman does not buy his home, but buys shares in a co-operative company which owns and operates the industrial village.
3. The paternalistic method, such as that of the great community of Port Sunlight established by Lever Brothers in England. In this general method the employer provides and operates the village for the benefit of employees.

Considering the first operating method, the most obvious fact is that usually there must be a definite profit, the cost of which will be borne by the workman. Such an organization is that of the Bridgeport Housing Company, which buys land, builds and sells, or rents homes. This is an excellent method, provided it does not degenerate into a purely speculative venture which can be avoided by the maintenance of control by manufacturers who are most directly interested in the housing of employees.

A company of this kind is usually financed by a group of manufacturers who hold the controlling stock interest. Enough capital is provided for organization and to furnish the equity for the first operation. After that the business is carried on in the regular manner of an operating real estate and building company, arrangements being made with loaning institutions to provide building and permanent loans. Houses are sold on easy payment plans and rented where deemed advisable.

The second operating method, that of copartnership, is one which is not well understood in this country. It is, however, logical to believe that it will come into vogue in many places during the next few years. In carrying out this method the first organization is completed by those interested in providing housing. A stock company is formed in which the ownership of all land and buildings is placed, and the person who wishes to live in this community buys sufficient stock on the easy pay-

ment plan to place at his disposal a house which he may select. He does not own either land or house, but he does own the right to occupy the designated land and building. In this manner all increment in land values resulting from the centralization of population accrues to the benefit of stockholders, as well as any income which may be derived through the rental of stores, manufacturing sites, and from other concessions.

This plan has the merits of equality in community profit-sharing and offers a flexibility which cannot be gained in any other manner. If a tenant wishes to move away from the community, his is but a stock-selling proposition; and if the operation is properly managed, the ownership of the stock is so attractive that it can easily be disposed of in the same manner that railroad and mining stocks are handled.

This method will overcome any objection which labor unions may have to the ownership of homes by workmen, as it in no way interferes with the flexibility of labor.

The third method involves a larger, permanent investment and is weak in that it induces a spirit of paternalism which might well be avoided. It is always wise to maintain a separate organization for housing in order that complications may be avoided. The paternalistic idea does not take well with the better class of workmen in this country.

As to methods used in carrying out this scheme of operation, it may be found in modified form at Good-year Heights, the industrial village of the Goodyear Rubber Company at Akron, Ohio. This operation may prove interesting to those manufacturers who wish to handle the matter directly.

A mortgage loan of approximately 50 per cent of the value of land and houses was obtained at 6 per cent from large Eastern financial interests on a long term basis. The houses were then constructed and sold to employees, subject to the mortgage of the above mentioned financial interests, and no preliminary cash payment was required. The second mortgage for the balance of purchase price is carried by the Goodyear Company at 6 per cent interest and semi-monthly payments are made by the purchaser. These are applied to both second and first mortgage, so that the second mortgage is paid off in twelve years and the first mortgage in three years more. The purchaser can make extra payments to reduce the maximum period of payment, and those made during the first five years are on the basis of the real estate value of the property, which is determined by adding 25 per cent to the actual cost. This method is adopted to prevent speculation and after an employee has lived in his house for a period of five years, and shown his willingness to maintain his interest, the additional payments are credited to him.

There is left for discussion only the question of the relative advantages of renting or selling company-built houses. The Dupont interests do not in any case sell a company house, preferring to retain absolute control. This means a permanent investment which many concerns would find it difficult to carry, but it has the value of a constantly available housing supply. Generally speaking, the easy payment selling plan seems to produce the most favorable results in stabilizing labor.

In selling homes to workmen they should be given every possible advantage to purchase economically. The terms of sale should be made easy, extending over a long period, and selling arrangements should in no manner be complicated. They should be easily and thoroughly understood. The confusion resulting from details such as interest, taxes, insurance, and payments on principal should be avoided by working out stipulated regular sums, payable in the same manner as rent. In addition to this it is well to provide some form of insurance which will protect the interests of the worker in case of sickness, death, or a slack working period.

Below are given two selling plans adopted by manufacturers that have proven successful in practice.

SCOVILL MANUFACTURING COMPANY, WATERBURY, CONN.

PAYMENT PLAN FOR \$2,750 HOUSE

<i>Terms:</i>	
Cash	\$300.00
1st Mortgage	1,800.00
2d Mortgage	650.00
	\$2,750.00
\$18 per month, \$2 per week saving fund	
<i>1st Year:</i>	
Interest on 1st Mortgage at 5%	90.00
Interest on 2d Mortgage at 5%	32.50
Taxes	35.00
Water Rent	10.00
Insurance	2.00
Total Yearly Expense	\$169.50
Yearly Rental	216.00
Saving Fund	104.00
Income	\$320.00
Expenses	169.50
Net Saving	\$150.50
2d Mortgage	650.00
Payment	150.50
Balance Due on 2d Mortgage at End of First Year, \$499.50	

At this rate of payment the second mortgage is paid up in two years and nine months. There then remains the first mortgage of \$1,800, which may be handled in the usual manner and entailing an expense of \$137 per year, or \$11.42 per month, representing \$47 for taxes, water, and insurance and \$90 for annual interest.

INDIAN HILL COMPANY, WORCESTER, MASS.

This extensive community development plan was inaugurated by the Norton Company and the Norton Grinding Company, both of Worcester, Mass., for the purpose of properly housing their workmen.

Terms: 10% cash, 90% mortgage held by company.

Payments: Regular monthly payments will take care of all expenses such as interest on mortgage, taxes, fire insurance, etc.

\$14.10 payment per month on a \$2,800 property
\$17.20 payment per month on a \$3,700 property

It is necessary that the purchaser reduce the mortgage as much as possible during the first twelve years of his ownership.

The company recommends that the purchaser take out five shares in a co-operative bank (\$5 payment per month), which at the end of twelve years will be worth \$1,000. If this is applied to 90% mortgage, it will reduce it to 60%.

The responsibility of the company here ceases. The owner can secure a first mortgage from a savings bank for 60% at 5% interest, or he may take an additional five shares in a co-operative bank. In the latter case, at the end of the next twelve years, he will be the owner of the property.

The company provides insurance on the lives of the purchasers. In the case of the death of the purchaser, the company will pay the difference between what has been paid on the house and 60% of its value.

Interest on the 90% mortgage held by the company has been calculated roughly and found to be about 3.5%. This figure was arrived at in the following way:

$$\frac{\text{Annual income}}{\text{Total investment}} = \% \text{ gross income,}$$

\$14.10 monthly payment, or \$169.20 per year, which is about 6% of \$2,800. If 6% is the gross income and includes charges for taxes, repairs, etc., which expenses probably amount to about 2.5%, the difference between 6% gross income and 2.5% expenses leaves 3½%.

The question of financing is one which is unpleasantly familiar to the few American housing experts whose activities have extended through the past few years. Manufacturers, Chambers of Commerce, and other interested bodies have called upon them from time to time for lectures, reports, and other constructive advice. These have become enthused, but nothing so dampens enthusiasm as the cold water of financial necessity. Local conditions in various parts of the country have been carefully studied by housing experts, and various projects have been made

ready for full fruition — but always, with few exceptions, the money to carry out the project has not materialized.

Those who have had the proper solution of this question at heart have looked forward toward a distant but gradually approaching millennium when friendly co-operation between labor and capital should result in broader industrial achievement. The statement is well worth repeating, that the first factories of the world were in the homes of the people, and to-day production is suffering because the homes have not been kept apace with the factories. As we spend money to house and protect mechanical machinery, are we not under obligation to spend money for the housing and protection of the human machinery, without which the other is useless and cannot even come into being?

Here is food for thought and constructive action on the part of the manufacturer who would cut down his overhead costs and increase his productive capacity; for the banker who would protect production, and for the community which would attract and maintain the payroll disbursement which flows like new blood through its commercial arteries.

It is significant that through information received from the president of one of America's largest title guarantee companies it has been learned that investments in German housing bonds have held their value during the war better than any other type of investment in Germany!



Old Tenants' Hostel, Kennington, London, England
Adshead & Ramsey, Architects

This building is part of a housing development recently carried out in a poor section of London. It contains small apartments of three rooms on each floor and is built about a large, central court from which entrance to the apartments is gained.

Goodyear Heights, Akron, Ohio

THE DEVELOPMENT OF THE GOODYEAR TIRE & RUBBER COMPANY

GEORGE H. SCHWAN, ARCHITECT ; WARREN H. MANNING, LANDSCAPE DESIGNER

THIS development is the second undertaken by the Goodyear Tire & Rubber Company for the benefit of its employees. It is a continuation of the previous development known as Goodyear Heights and lies along the east side of Brittain Road and adjoins the city reservoir on three sides. The site is approximately one-half mile from the Goodyear factories and two and three-fourths miles from the business center of Akron. Goodyear avenue, which begins at the Goodyear factory and is the principal thoroughfare of the original Goodyear Heights, crosses the new development from north to south. The street railway system will be extended along this avenue, bringing all parts of the property into convenient access with the city of Akron and connecting the two developments.

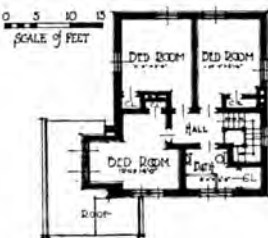


General Plan of Goodyear Heights

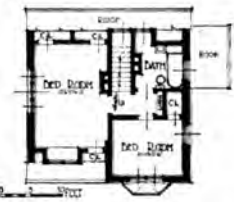
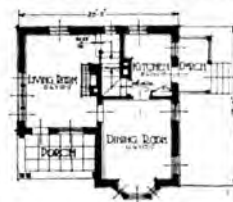
of land, commanding good views in all directions. Certain parts of the land, notably the southwest portion, are heavily wooded and only sufficient trees for street openings have been removed. All other trees that lend themselves to the development of the plan have been preserved, and before the work is completed all streets will be suitably planted with trees and shrubs.

The streets are laid out to conform with the future growth of Akron and are 50 and 60 feet wide, with the exception of Goodyear avenue, which is 70 feet wide. All streets are to be paved and stone curbs and concrete sidewalks will be provided. The blocks have been so arranged as to avoid the use of alleys. The average lot is 50 feet wide and 115 feet deep.

The houses themselves are permanent in character and present a wide diversity of exterior treatment and inge-



THE two houses shown below at the left are of brick construction. The plans of the larger one are opposite at left. It cost \$1,860 in March, 1917. The house with plans at the right is constructed of brick on backing-up tile and cost in March, 1917, \$1,865.



Types of Single Houses at Goodyear Heights with Floor Plans Above



Exterior and Floor Plans of Five-Room House Costing \$3,840 (March, 1917)

nuitly in planning. They are single, of five and six rooms, and cost from \$2,400 to \$4,450. The materials of construction are brick on backing-up tile, and stucco on hollow tile. Occasionally the second stories are of shingles to afford variety. The roofs are slate, porch floors of brick and concrete, and other details of similar enduring character to ensure a low maintenance cost.

The houses are equipped with hot air heating, sanitary plumbing, and electric lighting systems.

There are 525 houses now under construction. They are sold to employees of the Goodyear Company on a simple and easy payment plan, the large building operations of the Goodyear Heights Realty Company, the organization in charge of the work, making the price to

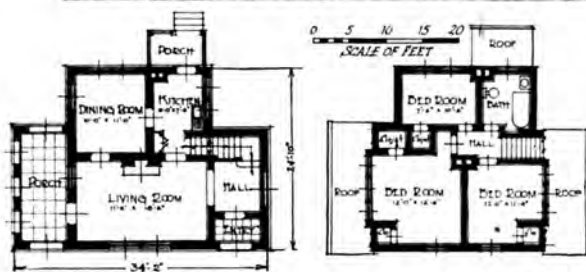


Two Views Showing Grouping of Houses for Interesting Street Elevations

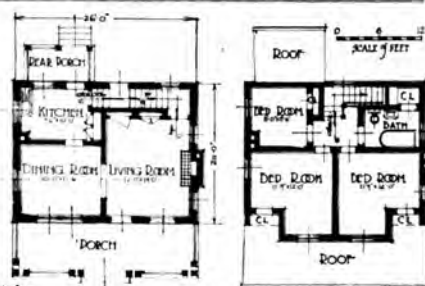


Exterior and Floor Plans of Six-Room House, Stucco on Hollow Tile, Costing \$3,750 (March, 1917)

George H. Schwan, Architect



THE house shown in plan at the left is of hollow tile with stucco surface. The illustration shows it incomplete. Its cost in April, 1917, was \$3,800. The house at the right is brick on the first story, and frame with shingles on the second. It cost in January, 1917, \$3,360.



Two Single Six-Room Houses at Goodyear Heights

the purchaser much lower than if he were to build his home individually. The selling plan is as follows:

Two mortgages may be placed upon a property. The first mortgage is for one-half of the cost value and is carried by the Metropolitan Life Insurance Company of New York, the payments due them being made to the Goodyear Company. A second mortgage is given the Goodyear Company for the balance of the purchase price. A payment of 2 per cent of the purchase price is required at the time of purchase. Semi-monthly payments will pay off the second mortgage in ten years and

the first mortgage in ten years more, the rate of interest being 6 per cent per annum.

To discourage speculation, the payments for the first five years are based on the real estate value, which is 25 per cent higher than the cost value; but at the end of the fifth year, if the purchaser is still in the employ of the company, and retains title to the property, the difference between the two values and the interest paid thereon is canceled by crediting his account with that amount. All payments thereafter are made on the basis of the cost price of the property.



Five-Room Single House, Stucco on Hollow Tile, Costing \$4,300 (March, 1917)

George H. Schwan, Architect

Broader Economy in the Maintenance of an Industrial Village

By HORACE B. MANN

IN A general analysis of the proper and economical maintenance and management of an industrial housing group the subject naturally divides itself into two aspects for consideration as follows :

- (1) Physical maintenance, involving inspections and timely repairs in a constant effort to check depreciation.
- (2) The human element in maintenance, taking advantage of deliberately induced psychological reactions and commonizing the interests of tenants and the housing company.

A definite reason to which may be ascribed the failure of many promising housing projects has been the inability or unwillingness of the original owner or developer (usually a manufacturer) to realize the great importance of properly maintaining the community, socially as well as from the purely physical viewpoint.

This general attitude on the part of American manufacturers has in many cases resulted in a termination of direct interest, once the houses were built and tenanted. This has been partially due to their unwillingness to attempt an apparently expensive program of supervision, although in reality if such supervision were placed upon a systematic, commonsense basis, it would repay the cost many times over in the saving on depreciation and mechanical cost, and in maintaining the intrinsic and social value of the community. The problem of maintenance is not a burden to be cast aside, but constitutes the often unrecognized basic factor of the success or failure of the entire project.

Maintenance is not so difficult a problem as it may seem on first approach. It offers as an inducement for its successful solution a fair return on invested money ; increased labor efficiency ; closer co-operation of employer and employee, and the fostering of proper pride on the part of both in good living and working conditions. This helps to reduce labor turnover and contributes its quota to increased plant efficiency. These are the greater dividends on housing investment, and only through maintenance may they be kept up.

THE PHYSICAL ASPECT

In taking up this subject it is well to note that very often a slightly increased initial cost will more than repay the additional outlay through reduced cost of maintenance. For instance, it has been found by the careful analysis of accurate records on several industrial housing projects that the annual saving in masonry construction is approximately as follows :

Renewal of painting7 per cent
Deterioration of wood2 per cent
Reduction of insurance1 per cent
<hr/>	
Total maintenance saving of masonry as against frame ..	1.0 per cent annually

In general, it is safe to state that the maintenance cost on wooden buildings will run between 3 and 6 per cent, while on masonry buildings it will average from 2 to 4 per cent. Relative depreciation costs are approximately 2 per cent annually on masonry and 5 per cent on frame.

A case in point is that of a coal company in eastern Pennsylvania, which has recently thoroughly overhauled a group of several hundred frame houses approximately forty years old. The real estate manager of this company stated that the original cost of these houses was \$700 each and that the cost of overhauling them was approximately equal to that amount. In addition to this, the maintenance cost in ordinary repairs has averaged about 4 per cent per year. In this case a large sum of money would have been saved had the buildings originally been of better construction.

Immediately upon the completion of a group of industrial homes it is absolutely necessary to establish a definite policy of maintenance. Only the most inexcusable shortsightedness would permit the making of a large investment and trusting to the occupant's interest to keep up the property. In one comparatively recent development, where the group of houses was not large, no attempt at maintenance was made by the owning company. These houses were of excellent construction, having masonry walls and partitions ; but in one year doors and windows were broken, water froze and damaged plumbing, woodwork was ripped out for fuel, and in all the depreciation for the first year was 10 per cent ; whereas it should have been practically nothing. The cost of supervision would have been a trifle—probably not more than 10 per cent of the loss. It was noticeable that two or three houses in this group were attractive and well kept at the end of the year, having practically no depreciation. Upon inquiring into the reason for this, it was found to be merely because the women in these particular families were good housekeepers.

The close supervision of the property can best be done by a social worker who has the confidence and trust of the tenants. This question will be considered further in later paragraphs. There should be a regularly established repair crew, or if the village is a small one, a single "jack of all trades" could be employed. Reports of needed repairs will be made to the crew or to the official in charge by the social

worker and by the tenants themselves. In addition to this the crew should be instructed to make regular inspections at least monthly, and following the example of large real estate management companies a regular inspection form should be provided for report. Tenants should be educated to promptly report needed repairs, and a line should be distinctly drawn between needed repairs and alterations and additions to suit the tenants' taste. Changes and alterations which the tenant desires may well be made as a premium for the prompt payment of rent or neatness in which the place is kept.

An interesting method of keeping down repair costs, and inducing the tenant to make his own minor repairs, has been carried out by the Gerard Estate, Philadelphia, Pa., by the Octavia Hill Association, Philadelphia, Pa., and some others. If the tenant keeps the property in good repair and pays his rent promptly for eleven months, he is not required to pay the twelfth month's rent; any repairs needed are deducted from this rebate and the balance remitted to the tenant.

Another method of maintaining repairs is to make a monthly arrangement with a local firm to inspect the property and handle all repairs upon request from the owner. In making such arrangement it is best to have inspection reports made by this concern, showing needed repairs but allowing no work to be done except on direct orders from the company.

Promptness in making needed repairs means a large saving during the course of a year. A small leak in the roof if neglected would entail replastering ceilings and repairing other damage done by the water.

Following are some suggestions which offer money-saving possibilities in the maintenance of an industrial village:

After heavy storms look at the ceilings of the top floor for traces of water indicating leaky roofs.

When building is vacated, be sure the water is turned off, and in cold weather drain it from the pipes, not only in the plumbing system but where steam heat is used, from the steam heating or hot water system as well. Water should also be syringed out of traps.

See that the grading around the building is such as to shed surface water away from the building rather than bringing it into the cellar and around the foundations, with ensuing deterioration throughout the house.

Empty houses should have all rubbish removed and blinds shut and fastened on the inside and shutters over the windows. These should be inspected regularly to see that all doors and windows are locked. Very frequently a house is badly damaged by mischievous boys.

See that tenants do not drive nails into plaster or woodwork.

Picture mouldings should be furnished for hanging of wall decorations, and it has been found wise to supply each house with free picture wire and hooks.*

Periodic inspection should be made of plumbing fixtures. Leaky faucets should be repaired. Proper chemicals should be poured down kitchen sinks. This should be done in laundry trays as well, as much grease accumulates at this point.

At the end of the winter the heating systems should be gone over and smoke pipes taken down and cleaned. This will greatly increase the life of pipes.

Outside masonry should be kept pointed up, especially around the tops of chimneys.

Frequent painting of exterior woodwork not only keeps the house looking fresh, but costs no more in the end, because when neglected the wood dries out and has so increased in absorptive power that one or two extra coats have to be put on to overcome this. Buildings should be repainted at least once every three years.

Wooden structural members should be replaced wherever signs of rot appear. Rotted porch floors and steps are due to being built so that they hold rain water instead of shedding it. Porch floors should never be tongued and grooved as water is retained in the groove and rotting quickly sets in.

An important question for consideration is whether maintenance should be handled by the housing company or by an association of the tenant owners of the property. This brings up the question of the human element in the maintenance of an industrial village.

THE HUMAN ELEMENT IN MAINTENANCE

If the tenants are generally of an intelligent type, it is well to let them handle practically all matters of maintenance through a community organization. In this organization the housing company should maintain a vote of at least 25 per cent. Where houses are sold, this control is often kept by retaining the ownership of streets, parks, and playgrounds. This association may maintain a repair crew and will also cover public maintenance, such as the keeping up of lawns and parking spaces, shrubbery and trees, leaving the back yards in care of individual tenants. Where public utilities and road repairs are not maintained by the city of which the community may be a part, the community association usually has charge of these and also the shoveling of walks in winter.

*One company which recently built a large number of very cheap bungalows for foreigners has found the question of substantial plastering a most important item. The plastering in these houses was very cheap and thin, and was soon badly broken in many places. Substantial plastering in this case would have stood up much better and saved the cost of entire replastering. In these houses the evidence of the value of a properly trained social worker was soon shown. Many of the workmen and their families did not know how to live in a decent house. They destroyed interior woodwork, burned the interior doors, and in other ways caused rapid depreciation which educational work on the part of the social worker could have prevented.

the removal of garbage and ashes and other sanitary maintenance. The cost of such maintenance may be distributed against the property as a tax, or it may be carried on at the expense of the owning company until such time as the tenants may become educated to bearing their proper share.

For extension and improvement of public utilities, various methods are followed, one being to assess against individual property owners in the usual manner, another to add this potential cost to the land before resale, and still another by popular subscription. It is often found that the general community may be induced to maintain the roads and parks and to put public utilities into the housing development.

Where the class of tenants is not capable of handling such affairs they must, of course, be kept within the control of the housing company. The advantage of the community association plan is self-evident. It creates community co-operation and inspires better individual maintenance.

A trained welfare worker is perhaps the most valuable adjunct to the proper and economical maintenance of an industrial village. Among the ignorant and foreign classes, education will go a long way in preventing deterioration. Frequently tenants of the foreign common labor class are unfamiliar with the use of toilet-room facilities, and clog the drains through ignorance, resulting in much damage. In one housing development at Bethlehem, Pa., attempts were made to remove these stoppages by taking a crow-bar and punching a hole in the porcelain. This undoubtedly cleared the stoppage, but incidentally discharged the sewage under the building.

Proper welfare conditions exercise a most beneficial influence on the problem of maintenance. We usually find that the higher we go in the various classes of city dwellers, the less is the damage done to houses by tenants or through carelessness. Bearing in mind this inverse proportion, welfare work which develops thrift, a high moral tone, and good fellowship, with the establishment of a co-operative spirit between tenant and owner, will result in direct financial benefit.

Good fellowship may be encouraged by introducing sports and social functions under the auspices of the community organization. Thrift and moral tone is spread through the medium of contagion by carefully selecting families which possess these qualities, encouraging them, and locating them so that they may act as proper examples.

As before stated, the welfare worker will be a great aid in reporting needed repairs. Rent collecting should be handled carefully, and it is always better to designate a period from the first to the fifth of every month when the tenant may come to a central office and pay rent voluntarily rather than to have a rent collector call at the individual houses.

For final consideration we have the interesting subject of community farms and gardens which should always be encouraged. If a village can be arranged with allotment gardens distributed in specially designated plots throughout the village, it has the advantages of increasing the space between buildings, bringing each individual garden nearer the owner, grouping them for common plowing and fertilizing, and decreasing the size of back yards. In case a tenant does not wish to maintain a garden, he has not a large back yard space to be neglected and filled with rubbish.

A possible development of the village association would lead to the maintenance of a farm, supplying products to the village, and distributing the products which they may raise. This farm may be carried on for educational purposes and can be made to pay its own way. The farm organization could plow the allotment gardens or even individual gardens which should be arranged so that boundary fences do not interfere. The farm organization could also manure the ground. Having a farm organization different tenants could specialize on special vegetables as assigned to them. The farm organization would collect the crops and keep proper book accounting records. The Canadian Government is working out a plan for rural community developments to provide proper home sites for returned soldiers. This plan includes farming and gardening on the co-operative plan.

The arrangement of allotment gardens has greater economic value than the same space given over to individual gardening, which must be worked by hand. Many men who are fond of gardening are often discouraged by having to do the heavy work by hand. With the allotment garden, plowing, harrowing, and similar operations can be carried out by machinery and sprinkler systems may be installed for watering.

The question of maintaining property which has been sold in a village is a very important point to be considered. Certainly, unity cannot be preserved if property owned by private parties is allowed to deteriorate at least in those respects where it comes in comparison with properly maintained property, such as the sidewalks, curbs, front lawns, and street planting.

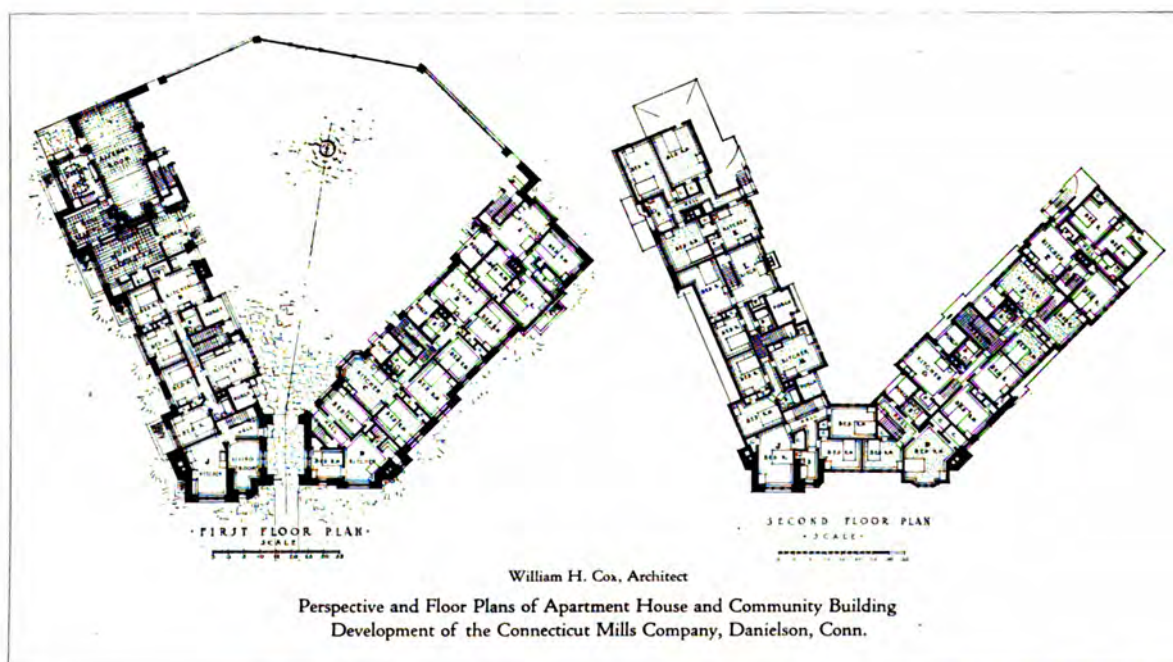
The best method of solving this problem, and one which has worked out most successfully at Kensington Gardens, Long Island, N. Y., is to impose a tax in the way of a restriction to be paid by every owner for the proper maintenance of streets, sidewalks, and planting. It was found at Kensington Gardens that a few cents a running foot of lot, amounting perhaps to \$8 or \$10 a year, would take care of this for each property owner.

Architectural unity is another element in making for the success of a village. The best way to obtain

this is, of course, to have all the buildings designed at one time, either by one architect or by several in consultation so as to secure unity in design and especially in grouping. If this cannot be done, but the policy of the property owners is to sell lots for individuals to build their own houses, then some form of restrictions should be made, not only as to the position of the house on the lot, the setback from the street, the height of the house, and the location of the garage, but even in the material and color of the

house itself. At Forest Hills, Long Island, the roofing material was restricted to one material and color — a red shingle tile. Almost any material could be used in the house itself, but unity of roof was insisted upon, and the result most successful in maintaining the unity of the *ensemble*.

The importance of maintenance cannot be overestimated, and some form of community maintenance has proved to be in every way the most efficient and economical.

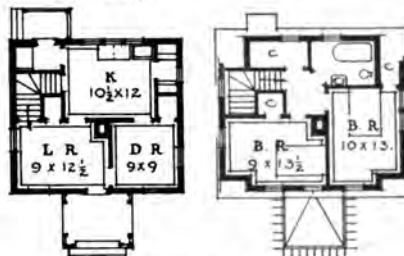


The Development of the Connecticut Mills Company at Danielson, Conn.

WILLIAM H. COX, ARCHITECT

THE necessity for securing and holding contented workers was the sole factor in influencing the Connecticut Mills Company to undertake the construction of dwellings for their employees. It was due to the broad, sympathetic view of the vice-president, Mr. R. J. Caldwell, who realized that proper housing must be obtained regardless of first cost, and that the return on the investment must come in the resulting greater efficiency of employees, that the Company adopted from the beginning a plan of action following the best practices of community planning.

The property is located in gently rolling country about a mile from the center of Danielson and is bounded on the east by a main thoroughfare having street-car service and on the west by the mills and the steam railroad. The land slopes from all sides to the center of the tract where there is a small body of water which will be developed as a community feature with opportunities for swimming and other outdoor recreation. Along the rising ground from the lake small stone cottages will soon be constructed, the living rooms on the lower level overlooking the water, and the

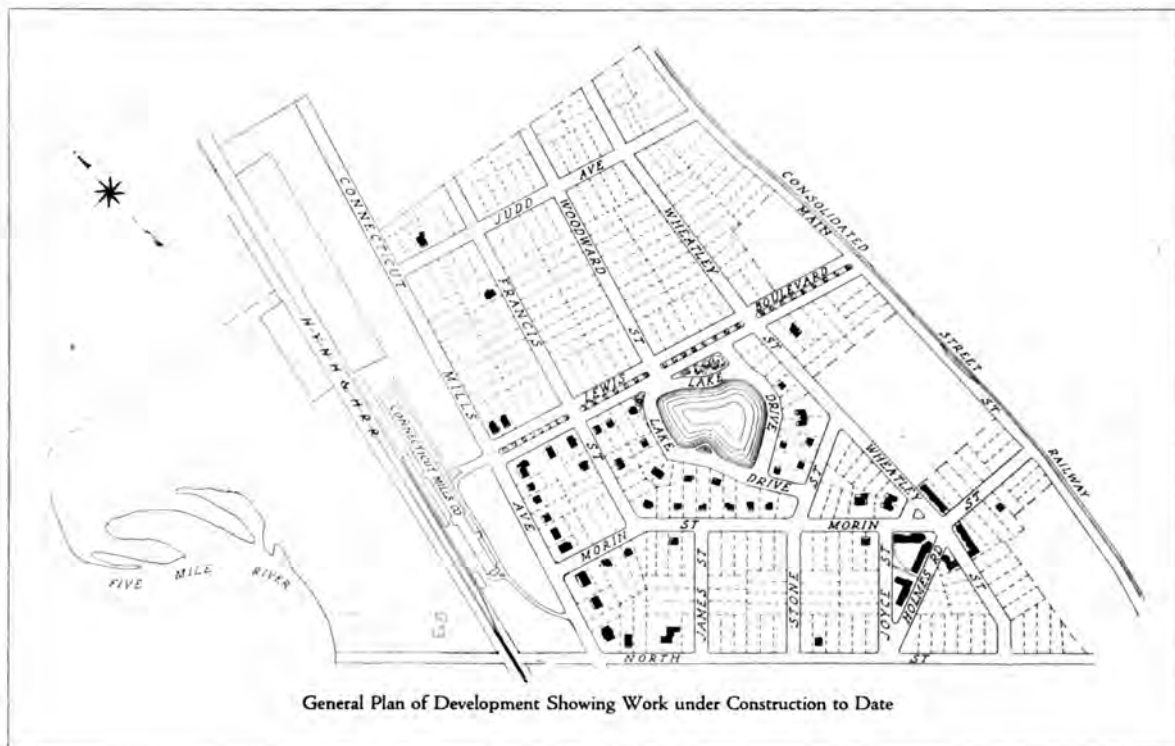


Single Frame Cottage with Shingle Exterior

rear being but one story high to fit the grade.

Another part of the plan of special interest is the community center, of which the first building, Connecticut Gables, is now under construction. This center is being developed at the junction of Wheatley and Morin streets with Holmes Road, and if the remaining buildings to be erected attain the high standard of the apartment house shown on page 146, the group will be the most charming and picturesque to be found in any industrial community of the country. The buildings of this group are to be designed in character with the apartment house and will be of field stone, which is found on the property, and stucco and half timber work.

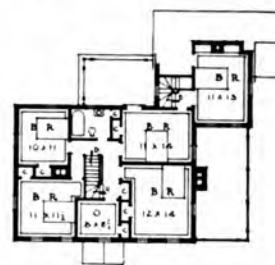
The left wing of the Gables is given over to a community club on the first floor and contains an assembly hall, reading rooms for men and women, and a barber shop. The floors are tiled and the walls are paneled in cypress with hand-hewn beamed ceilings. The court is given a picturesque character by the outside stairs giving access to the second floor apartments, which range from three to five rooms with bath and kitchen. Adjoining the

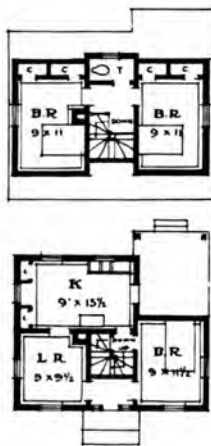


General Plan of Development Showing Work under Construction to Date



GENERAL VIEW OF WELFARE WORKER'S HOUSE

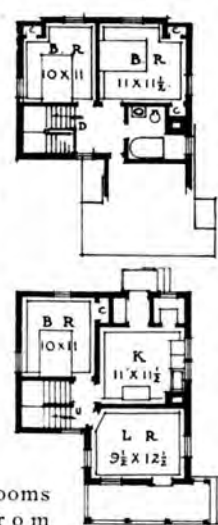
GENERAL VIEW AND FLOOR PLANS OF SUPERINTENDENT'S HOUSE
WILLIAM H. COX, ARCHITECT



Single Cottage with Floor Plans at Left. Frame and Shingle Construction. Toilet. Heated by Stoves.



Single Cottage with Floor Plans at Right. Frame and Shingle Construction. Bathroom. Heated by Stoves.

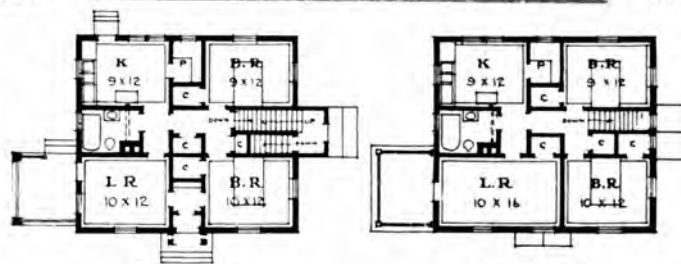


apartment on Holmes Road there is to be a school carrying out the long, low lines of the latter, and the remaining space at the corner of Wheatley and Morin streets will be devoted to store groups, the buildings to be connected by an arcaded treatment extending over the streets to form a square.

The houses are mostly of the single family type and of frame construction, though there are a few semi-detached types, a four-family house, and a two-flat house. They vary in size from four to



seven rooms and from \$1,500 to \$2,300 in cost for single houses and \$3,000 to \$3,600 for semi-detached houses. They are rented to the employees at a figure approximately 10 per cent gross of the cost for the yearly rental. Most of the houses have a minimum of three bedrooms, as the workers are of chiefly French, English, and Italian nationalities, with a small percentage of Americans, and all having large families. The Company is desirous of secur-



First Floor Plan Second Floor Plan
Two-Flat House. Frame Construction. Cost \$3,000 in 1917

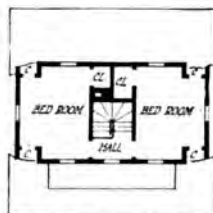
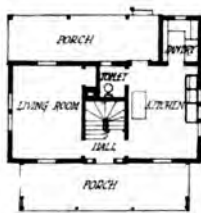


Floor Plans and Exterior View of a Two-Family House at Danielson, Conn. Frame and Shingle Construction. Cost \$3,600 in 1917

William H. Cox, Architect



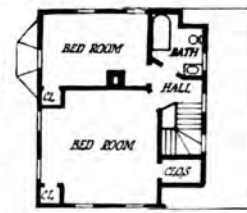
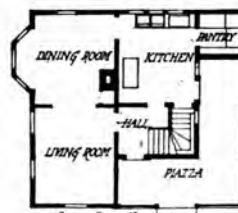
Low Rental Frame House



THE house shown at the left is typical of the smallest built. It has no bathroom or heat, but the usual plumbing in kitchen with a toilet. It cost in 1917, \$1,900. The house at the right cost in 1917, \$2,300 with heat.



Labor Superintendent's House



ing married workers and for that reason no special accommodations are provided for single men and women, those that are employed readily finding accommodations as boarders in the homes of the married workers.

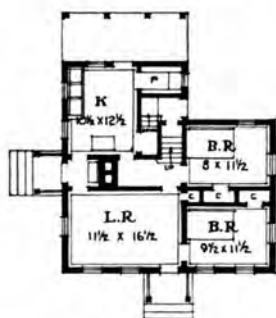
The single detached house with space for a garden has been found by the Company to be the most generally desirable. The lots vary in size from 40 to 50 feet by 100 feet deep, permitting space for gardens, and in addition allotment gardens are provided for those who want them, and the Company assumes the cost of preparing the land for cultivation. To maintain the interest of the em-



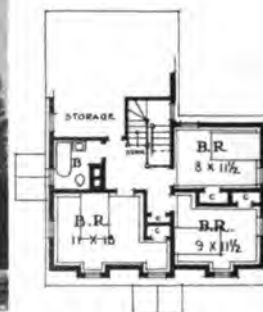
Single Frame Cottage with Bath. Heated by Stoves

ployees and encourage a spirit of friendly rivalry prizes are offered each year to those who have the best looking yards and gardens.

The fact that the superintendent of the mills and the welfare worker have their homes on the property, tends to raise the tone of the development and also bears an influence upon its proper maintenance. The welfare worker is the person in close touch with the conditions of employment. In her home there is a kindergarten class for the young children and also an assembly room where lectures are held, besides class work among the young girls.



First Floor Plan

Single Frame House Designed for Large Family or for One Keeping Boarders
Built 1917. Cost \$2,300

Second Floor Plan



Housing the Low Paid Workman

THE INITIAL EXPERIMENT IN GOVERNMENT AID UNDER DIRECTION OF
THE MASSACHUSETTS HOMESTEAD COMMISSION

KILHAM & HOPKINS, ARCHITECTS

By WILLIAM ROGER GREELEY

WHEN the Governor and Council authorized the Massachusetts Homestead Commission to arrange for the purchase of a certain tract of land in Lowell, Mass., within easy walking distance of the business and industrial center and near many of the large mills, for the purpose of constructing groups of workmen's cottages, to be sold upon their completion to operatives in the Lowell mills, there was formally launched the first governmental attempt in America to solve a difficult problem, namely, to prove that workingmen's houses may be built attractively, comfortably, and with fair profit at a reasonable figure.

We have imported millions of men and women to work for us as operatives in mills and as laborers in the fields, and we have kept them at work all day, and paid them off, and sent them away from the mill. They have found themselves in a strange land and without a home. We have left them to themselves

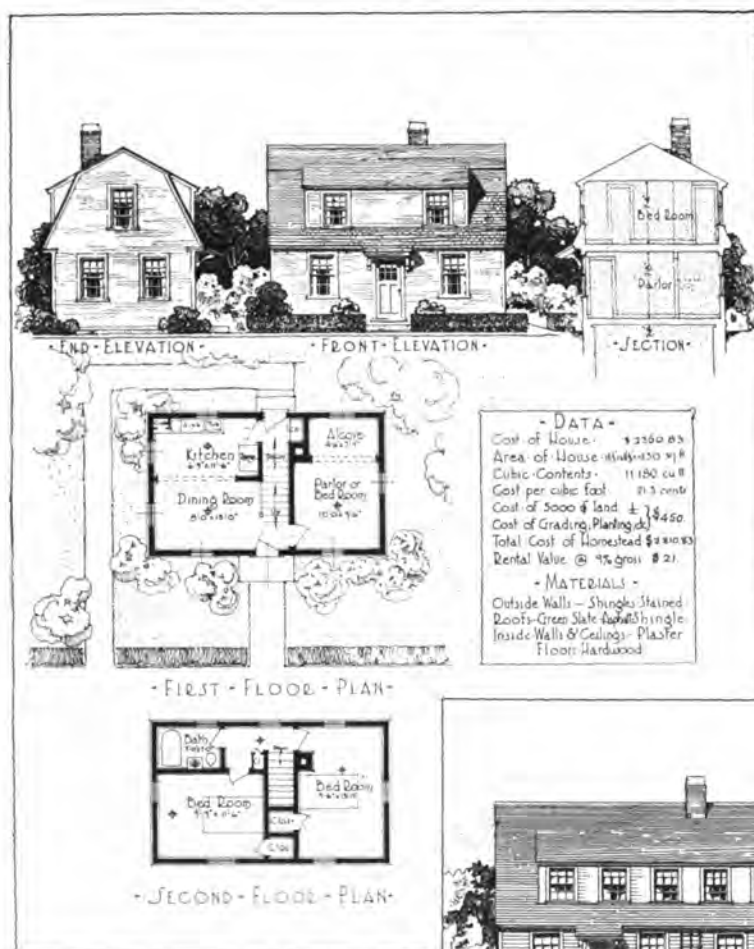


Fig. 1. Plot Plan Showing Houses Built to Date

and the mercy of ruthless landlords to find a place in which to live.

Years ago in Europe people began to feel it a duty to help the poor operative find a decent home. New Zealand, in an attempt to render such aid to her working classes, has so wonderfully succeeded that she puts \$500,000 a year in the public treasury.

Last year Massachusetts, although carrying the heavy load of a war budget, gave heed to the recommendation of her Homestead Commission and appropriated \$50,000 to help secure homesteads for her poorer citizens. By this action the United States joins the group of nations pursuing this enlightened policy. Massachusetts is steering clear of paternalism or state ownership, and intends to constitute herself a laboratory for working out the housing problem, and an agent for securing houses for the people. In the words of the Commission, "The State should experiment to learn whether or not it is possible to



(Above) Fig. 3. Single House Built for Massachusetts Homestead Commission

build wholesome dwellings within the means of low paid workers."

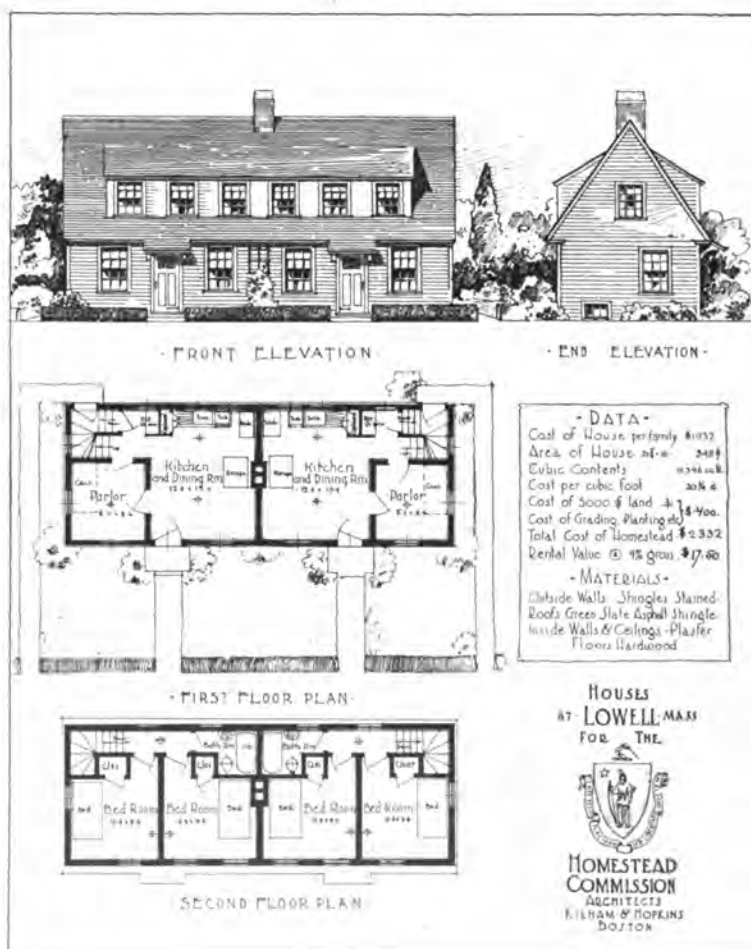
In Massachusetts there were, early in 1917, 258,000 grown men working for less than \$15 per week; of this number 98,000 receive indeed less than \$10 a week. As the Commission says: "Every consideration of public health, morals, well-being, and progress and stability of civilization demands that the children of these men be brought up in wholesome, healthful homes. Yet almost the only dwellings available to them are the tenements, into which they are flocking in increasing proportions."

In determining the size and character of a house a family can afford, one-quarter of the monthly income is accepted as the standard for monthly rent. The rent is com-

puted as about 9 per cent of the selling value of the homestead. A man earning \$25 a week (\$108 per month) could pay \$27 a month as rent. This amount would secure for him a \$3,600 homestead. Land and improvements over and above the cost of the house itself can be secured for \$400 or \$500 in most localities, leaving \$3,100 or \$3,200 as the cost of the house. This price will permit the construction of a 6-room house, even at the present market prices. There is no baffling problem for the architect here. In fact, he is already solving the housing problem for families receiving \$25 or more per week, and solving it well.

The more perplexing part of the problem is the working out of a plan for the man receiving not more than

(Below) Fig. 2. Double House Built for Massachusetts Homestead Commission



\$15 per week. Unfortunately, there are more of this class than of any other.

This part of the housing question has been the one to which the Homestead Commission of Massachusetts has addressed itself in all seriousness and devotion. The results so far are interesting, but the problem is not yet solved.

First the Commission undertook to analyze the needs of the family, and arrived at conclusions differing in some respects from the standards developed and tacitly accepted by housing interests. They agreed in the major divisions of the house, — living room, kitchen, three bedrooms, and bath, but differed in the matter of height of rooms, believing 7 ft. 8 in. and 7 ft. 4 in. to be high enough for first and second floors, respectively. There is no virtue in the slight additional amount of air contained in a room 8 ft. high when it is sealed up with closed doors and windows, and there is much gained in appearance by the lower stud, as it gives increased apparent size owing to the improved proportions of the small rooms. It also justifies itself in the saving in cost, and the more attractive exterior lines of the house.

The standards agreed upon, by housing experts for the one- and two-family house for mill workers, are in part as follows:

Number of rooms normally, four.

Size of rooms.

Large bedroom, 10 by 12 ft. to 12 by 14 ft.

Small bedroom, minimum size, 80 sq. ft., minimum width, 7 ft.

Parlor, 10 by 12 ft. to 12 by 14 ft.

Dining room, 10 by 12 ft. to 12 by 14 ft.



Fig. 5. Workmen's Houses at Salem, Mass.
Kilham & Hopkins, Architects

Kitchen (where there is no dining room), 10 by 12 ft. to 12 by 14 ft.

Where there is a dining room, a kitchenette 80 sq. ft. in area with minimum width of 6 ft. is acceptable.

Ceiling heights. Minimum, 8 ft. clear.

Cellar. Well lighted, cross ventilated, dry and paved, minimum height, 6 ft. 6 in. clear, not essential under whole house; where omitted, house to be set upon posts, stones, or wall, with 2 ft. clear space, drained and ventilated.

Windows. Each room to have at least one, two where feasible; minimum size, 9 sq. ft. Heads as near ceiling as practicable.

Ventilation. By windows, transoms, or doors for all rooms.

Closet. One to bedroom, normally at least 22 in. in one dimension, and preferably with a door.

Plumbing system. Set wash tubs, preferably two in kitchen; if demanded by local custom, to be permitted in well lighted, dry, and ventilated cellar. Sink in kitchen, rim about 36 in. above floor. Bath tub.

Water closet — modern type orifice of easy clearance, inside house, in well ventilated compartment, with window to open air of 3 sq. ft. minimum. Preferably impervious floor slab. Set wash-bowl, preferably in bathroom.

Heating. Individual system. If cellar is omitted, heat bath from kitchen stove.

Lighting. Electric or gas.

Cooking. Gas range.

Material of walls. Brick, tile, or concrete preferred.

Roof. Fire-resisting material for surface.

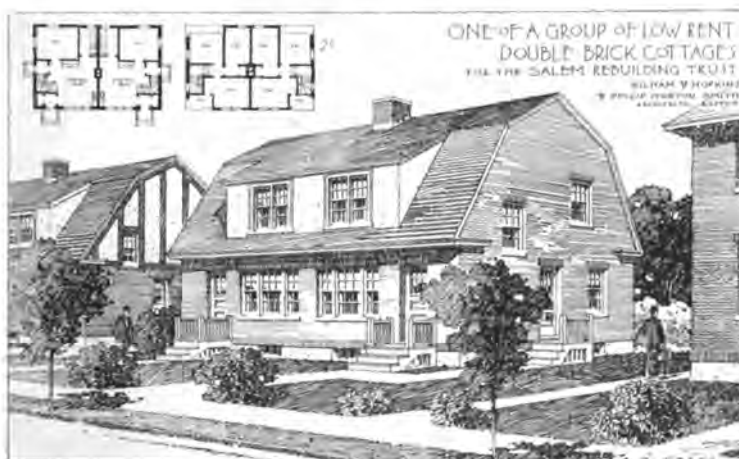


Fig. 4. Workmen's Houses at Salem, Mass.
Kilham & Hopkins, Architects

The question of materials is important. Evolution and experience have pointed to the frame house as the "fittest survivor" of the exacting conditions existing in New England. It is cheap, warm, dry, easy to build, to enlarge or alter. It is practically as safe from conflagration as a house with exterior walls of masonry if built with fire-resisting roof and with proper space between houses. No other kind of construction offers the same combination of advantages for this lowest type of house. Masonry offers less resistance to cold and heat, as engineers have proved. It is not so dry. It is more difficult to enlarge or alter and presents more work in building, especially in winter. It costs more, although somewhat cheaper to maintain.

The Commission, however, invited proposals on masonry types and on ready cut houses as well as the wood frame. The figures submitted showed the old fashioned frame house in the lead.

Contracts were let for a number of houses of three types, as follows:

Semi-detached, 4-room — 16 by 22 ft., \$1,932.00

Single, 5-room — 18 by 22 ft. 2,313.00

Single, 5-room — 16 by 26 ft. \$2,360.83

The houses were designed with two types of roof, as shown in the general perspective view, the roofs being covered with slate surfaced asbestos shingles. The contractors included complete cemented cellar, plumbing, hot and cold water, electric lights, hardwood floors, plastered walls and ceilings, paper on walls at 15 cents a roll, double hung windows, special frame, double thick glass, firestops, trap door and vents to attic, and four plumbing fixtures and sill cock.

The illustrations show two of the types under contract at Lowell: one (Fig. 2), the 4-room, semi-detached house costing \$1,932; the other (Fig. 3), the 5-room single dwelling at \$2,360.83. For the sake of comparison we have shown two houses constructed in 1915: one (Fig. 4) with 5 rooms; the other (Fig. 5) with 4 rooms. These were built for the Salem Rebuilding Trust at Salem, Mass., after the big fire of June, 1914, and are of brick with slate roofs. The 5-room house cost \$1,888 — \$44 less than the 4-room wood frame house with asphalt slate shingles at Lowell. The 4-room house at Salem cost \$1,736 as against \$1,932 for the Lowell house — an increase of 11 per cent plus the difference between materials.

A third type of house is shown in Fig. 6. This is the result of an effort to build, at present market prices, a house costing only \$1,870, and yet conforming to the required standards. It is intended to meet the needs of the lowest paid workman's family. Such a family cannot be Americanized at one fell swoop. This plan gives them a cellar, hot and cold water in sink, bath tub and wash-bowl, hardwood floors, electric lights, etc., but permits them to follow their former habits in the matter of eating in the kitchen and heating the house by the coal range. They are helped to avoid disorder by the substitution of an alcove or a wall space for the closet ordinarily provided in a bedroom.

Just a word may be ventured here on the matter of the kitchen. The source of the greatest ill health in a family is the unnatural dryness of the indoor air in winter. In the housing field there is only one economical humidifier — the tea-kettle. Moisture, as a by-product of cooking, costs nothing extra, but is a fine health promoter. With a gas range and a furnace this advantage disappears.

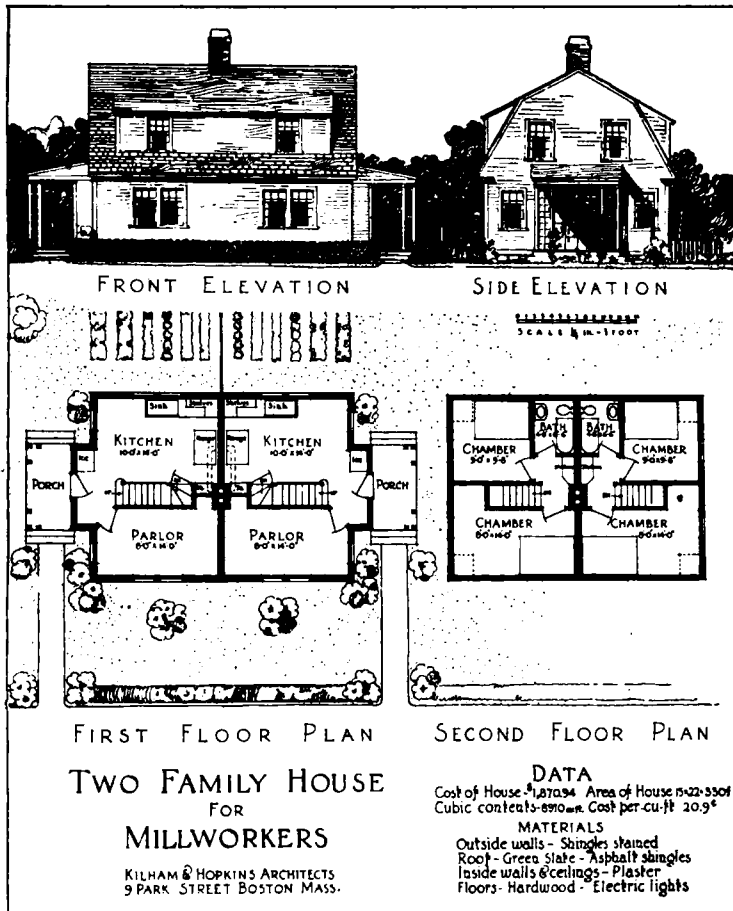


Fig. 6. Low Paid Workman's House to Cost \$1,870 per Family
Kilham & Hopkins, Architects

House Types in Industrial Communities

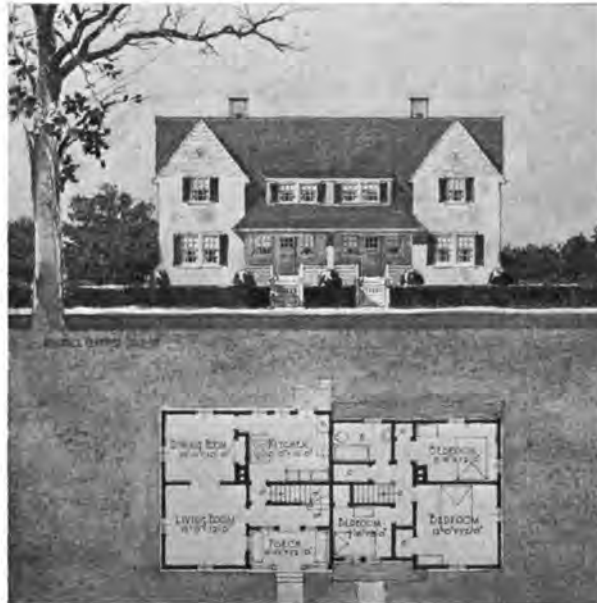
PREPARED FOR CLIENT COMPANIES OF INDUSTRIAL SERVICE AND EQUIPMENT COMPANY

GEORGE F. MARLOWE, CONSULTING ARCHITECT

THE accompanying drawings of workmen's houses have been selected from a series made by the Industrial Service and Equipment Company, George F. Marlowe, consulting architect, in part, for use by housing associations in the communities where mills of the American Felt Company and the Daniel Green Felt Shoe Company are located. These localities embrace Saxonville, Hyde Park, and Franklin, Mass., Glenville, Conn., and Dolgeville, N. Y.

These companies, with whose ownership Willett, Sears & Co. of Boston are identified, employ an unusually high class of labor, and an obvious attempt has been made to provide houses of a type somewhat better than that of the usual industrial housing development of this country. They are by no means extravagant in any manner, but are of sufficient size and attractiveness to meet the special conditions.

The tracts to be developed vary in size from a few acres to a hundred, and in each case they have been carefully studied as a definite part of a town planning project in connection with existing local conditions.



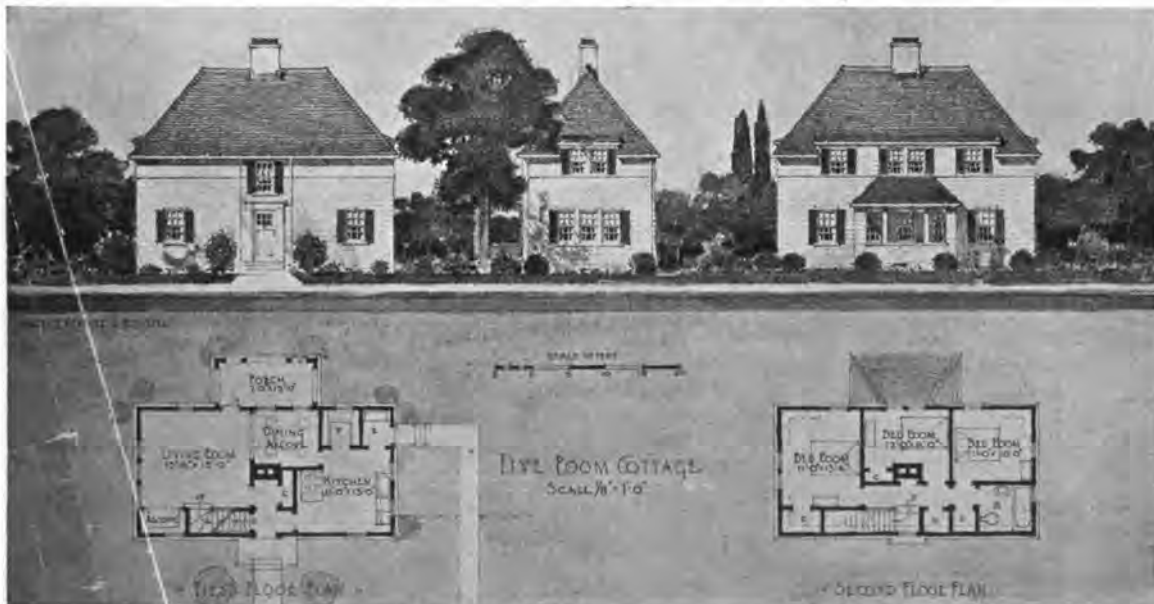
Design for Six-Room, Semi-Detached House

It is the intention to standardize plans, specifications, and materials so far as possible. The varying uses of similar gables, dormers, porches, etc., as shown by the drawings illustrated, effect pleasing compositions and do not reduce the architectural treatment to monotony. The houses are designed generally to be of clapboards or shingles painted white, or in some cases stucco. The larger houses for foremen and superintendents are to be heated with small hot air furnaces, but the simpler types are so arranged as to be heated by stoves. All houses have bathrooms

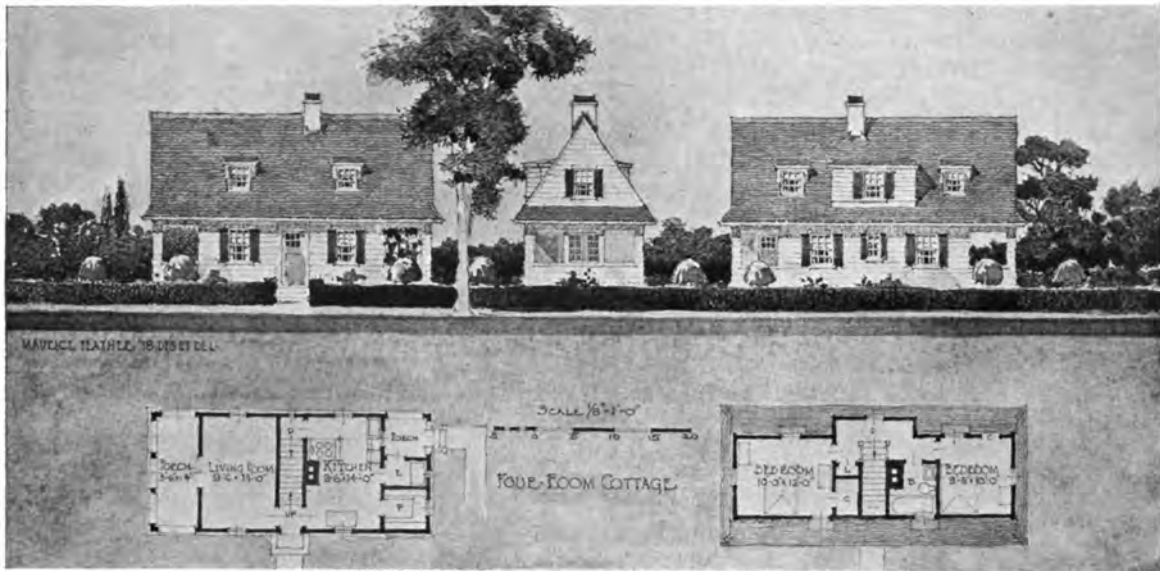
equipped with three fixtures and the kitchens are to have soapstone laundry trays and sink, as well as built-in dressers in houses where no separate pantry is provided.

It is the intention to do a certain amount of planting of hedges, shrubbery and trees in each of the developments; in fact, to obtain as much as possible of the attractive quality of the English garden villages.

The houses have been figured to cost from \$1,800 per family for the four-room units in blocks up to \$3,000 and \$4,000 for the more pretentious single houses.



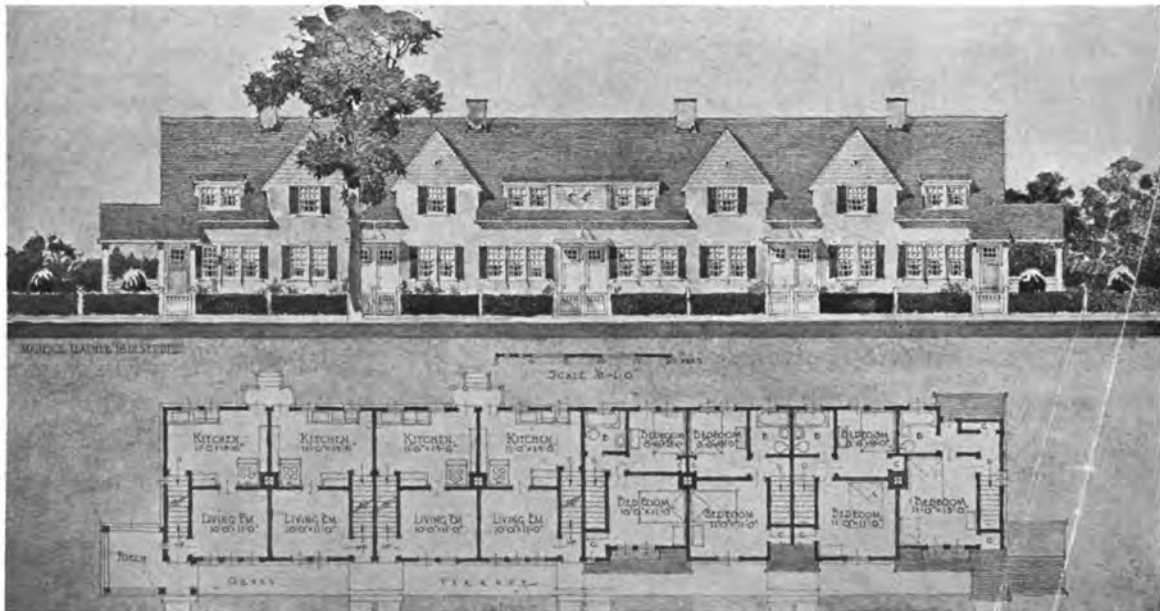
Design for Five-Room, Single Cottage of Frame Construction



DESIGN FOR FOUR-ROOM COTTAGE OF FRAME CONSTRUCTION



DESIGN FOR GROUP OF FOUR HOUSES SIMILAR IN PLAN TO THAT BELOW



DESIGN FOR GROUP OF EIGHT FOUR-ROOM HOUSES

GEORGE F. MARLOWE, CONSULTING ARCHITECT FOR INDUSTRIAL SERVICE & EQUIPMENT CO.

Living Close to the Melting Pot

SUGGESTIONS FOR MEETING THE CONDITIONS OF HOUSING
IMPOSED BY FOREIGN-BORN LABORERS FROM INTIMATE OBSER-
VATION OF THEIR HABITS AND NATIONAL CHARACTERISTICS

By MARGUERITE WALKER JORDAN

AN adequate description of the living quarters occupied by the single men and women workers of our industries would occupy more space than is put at my disposal—to do it briefly and truthfully would mean the combined swear words of many languages. I will therefore only sketch conditions as they are found in many parts of the country and indicate the chief national traits and customs of the various workers that must be recognized in planning industrial villages and boarding places that will enlist their interest and produce the results in increased contentment and decreased turnover so much needed.

To begin with, almost every plant owner has a boarding house or two somewhere about his plant; just where in many cases he doesn't know, for he has certainly never visited it; yet he would visit anything or anybody who would show him how to get twenty-five or fifty good workmen. As a rule, men come to a manufacturing or mining place alone, try the work for a while, leave, or send for their families. Their whole first impression is largely formed by their boarding house. This is usually run by a man who has no responsibility to the company, outside of paying his rent and being well "cussed," if most of the men leave at the same time.

As you enter this average boarding house, built on those familiar, ugly, oblong lines, you come into a long, narrow passageway. Through the dirt of the side walls and the smoke of the ceiling you are barely able to distinguish that white was the original color of the plaster. To the right is a room whose principal object of furniture is a dirty, red-hot, eggshell stove, or a radiator which doesn't radiate; around the walls are a few greasy, narrow, high benches; the windows are nailed shut and are so dirty that you can't see out. This is true of the entire house, where the air can be cut with a knife. The dining room

is furnished with more greasy benches and one long, narrow, home made table. Brown oilcloth may or may not be there; but regardless of its covering or lack of covering, the table still needs its maiden bath. It is littered with scraps of food, chunks of bread, white boiled beans, and huge piles of greasy, hard fried meat. There are greasy plates as well, whose weight in the hands of an irate boarder make them dangerous weapons.

It is eleven o'clock; in the kitchen an old hag is slouching about, boiling beans and frying more meat. Half washed clothes are in one corner and dirty, discarded working garments piled over and under a dozen or two beer cases. Behind the stove some Slavs are trying to steal enough water from a pot of boiling clothes to get their Sunday bath. If the floor space is sufficient, you may open the back door, for a breath of fresh air would be agreeable; but as you behold that which is apparently the town garbage dump, you find that you were mistaken.

You hastily turn and begin to climb the stairs, which, by the way, are so

built that every ray of light is successfully excluded. All the bedrooms are just the same. If this boarding house happens to be in a mining town, the palatial chairs are powder cans. The beds are wire cots with heaps of ragged, dirty, cotton comforts. When the beds fail to go around, the inmates sleep on the floor, which looks equally inviting. Two years ago men were paying \$30 a month for such quarters, and yet the combined brains of a powerful organization were frantically putting forth every effort to get employees.

Sometimes the men live in small shanties, where they cook their own food, or get it at a nearby "hash house." Nobody knows how many men sleep in a room.

The presence of the foreign laborer greatly complicates the living problem, but many times his superior



Unfortunately many workers are accustomed to living quarters like these—so it takes a little time and education before the advantages of the better home or boarding house are appreciated.



A family that still shows the effects of its late environment. The restfulness of curved streets, comfortable cottages, and other community features have not been felt sufficiently long to create an interest in gardening and flowers.

efficiency or continuous labor makes his contentment worthy of serious consideration. Whether foreign labor is in small or large groups, the Roumanian, the Italian, and the Slav make three distinct and separate classes, and experience has proved that they will not live together. They are united on one thing, however, and that is the great underground railroad of good and bad news which they feel is their only means of defense and education. If one Italian has been unjustly treated, every other foreigner knows it and feels it, says nothing, but remembers. One day, to a trusted friend he will announce that he is leaving that night or in the morning. Heretofore you have thought that everything was all right; but he will tell you grievances that he has been brooding over for two months, and moving is apparently no hardship to his family — or to any class of labor, as far as that is concerned, for "They fold their tents like the Arabs and as silently steal away." Their life is largely made up of many little things; and if you are in position ever really to know them, you will be surprised by the importance which they attach to the simplest things.

I was once suddenly made responsible for the dormitories of the "Floating Gang," and bedclothes became a sore trial. Cotton comforts, after one washing, became an unusable, soggy mass of wadded cotton and faded calico, so that there was no warmth in them. Blankets they would not use, and the men had to sleep in their working clothes. I knew this condition was affecting their efficiency. One day I happened to think of the feather beds which came over in the steerage, and I realized that, even in this country, wealth is sometimes rated by the number of feather beds. So we immediately bought a quantity of feathers and set all the available foreign women to work making big feather comfortables, improving upon the foreign custom by making covers of unbleached domestic, firm enough to keep the ticking and feathers always clean. The men were delighted. One great big, homesick chap said to me, with tears in his eyes, "O nica lady, it littl lika

home." The fame of our beds went everywhere and it was called *Mallerassi di penna* (Feather Bed House) until at length everything about the company, to the disgust of the august general manager, was prefixed with the title Feather Bed.

Taken as a whole, foreigners are simple but heavy eaters; huge loaves of bread are put right on the table and every man helps himself. They have adopted the American custom and have become heavy meat eaters, but this meat is always put into a thick, highly flavored soup. Then there are goulashes of various descriptions. They are extremely fond of pork and garlic, consuming it in unbelievable quantities. The Macedonians must have strong coffee, preferably Turkish. Arbuckle's has been the real, though unsuspected, reason for many a Macedonian getting a new job. The Italians, of course, have their macaroni with, if possible, the best Roman imported cheese; olive oil, green peppers, tomatoes, and parsley are used in many combinations. If they have their own garden plots, they will raise bushels of tomatoes. When these are very ripe, they are cooked and spread out in the sun to dry until a paste is formed, which sometimes is stored in jars, or when very dry is rolled and cut. I have been in homes where the very walls were literally covered with these rolls; sometimes just before it goes into the soup, the dust and cobwebs are washed off. If they do not have this home-made product, they buy an expensive imported paste.

The manufacturer or plan towner who must house large numbers of foreigners will find many difficulties; for our foreigners are not naturally inclined to the large boarding houses. The tendency of such places is overcrowding and "railroad rooms," such as gave rise to the disgraceful "Hungary Hollow" of East St. Louis, Ill. Places like these are largely responsible for the antipathy which the average foreigner feels toward a big boarding house. They want and seek the "hominess" that comes through a small family group. They prefer to board in a family where the "boarding missus" does the washing and cooking and "for stays" the Polish, or whatever food they are used to. At the end of the month they divide the bills among themselves, beer included, allowing so much for the "boarding boss." Sometimes these boarding houses are of a low order, and the men invariably sink to the type of the house they live in. The morals of the Italian and American are about on a par, the Russian and Polish are not so good, while those of the Transylvania Slav are possibly the best. As a rule they get along very nicely, settling any quarrels among themselves. If, however, a complaint ever comes in "Missus too much dirty" — beware, for what they consider unclean, we would consider unspeakable.

This preference for home life is discussed merely as giving us a working knowledge of foreign charac-

teristics. It is not advisable to keep boarders except in houses particularly planned for such purposes. The entrance to the boarders' rooms should be separate from the family apartments, the dining room being the only common meeting ground. Two boarders to a home is best, four the maximum.

There are many attendant boarding house evils, particularly the terrific infant mortality, largely due to the overworked "boarding missus," who hasn't the time to care for her own children.

If conditions are such that you must provide living quarters for large numbers of foreign workmen, plan from the beginning to take care of your three groups: Italian, Roumanian, and Slav in separate quarters. Such buildings need to be homelike and comfortable. No matter how simple, or what class of workmen are to be housed, have the lines pleasing. Let the design inside and out be attractive and the colors good. Pleasing appearance is a tremendous factor, affecting even the roughest men. Such an appearance is dependent more on good taste than large expenditure. Although the average manufacturer would hoot at it, a decorator with a little forest green stain, some lattice work, and a sprig of ivy can impart to the dingiest place that atmosphere so dear to the heart of the Italians. If the walls are finished in washable paint, they need not be dark. The Roumanians and Italians are accustomed to brilliant colors, which if properly handled need not be garish.

For unskilled workmen it is particularly desirable to have all toilet facilities on the ground floor conveniently accessible to the entrance; this saves repairing of plaster and also helps keep soiled clothes out of the bedrooms. Ample light and ventilation must be provided; if it cannot be secured on the ground floor, then first floor space must be used, for such facilities are vitally related to health and ultimate efficiency. The best plumbing pays, and no matter how dirty the rest of the house becomes, the toilet and washroom must be kept immaculate; otherwise the place will be dreadfully abused and finally fall into disuse. The men prefer shower baths, but it is well to have one or two tubs. Hot water must always be provided.

To maintain a boarding house of this kind requires intelligent supervision, and, by the way, I don't consider the company plain clothes man suitable for the job; it needs the co-operation of a person whom the men can really trust and like. There is a certain type of woman who is admirably suited for this work. The foreigners respond warmly to a little interest in their personal affairs, and if the thing is handled right, the men will take as much pride and interest in guests being shown through their living quarters as do the superintendents who are responsible for them. If there are several boarding houses, a little healthy rivalry can be stimulated which will accomplish wonders.



This is the kind of house in which foreigners like to board; the young couple have two boarders, the house being so planned that their rooms are separated from the family apartment. This is a double house, with entrances on opposite sides.

Recently, while in Colorado, the social worker whom I was with asked a man if his wife could knit. He immediately became excited and with hands, eyes, and tongue said, "My wife—lady—she can knit, she can knit like the devil." His partner, heretofore ignored, immediately joined in, "Lady—my wife—she can knit—she can knit like two devils." Of course it's possible that such a spirit may be due to that Western atmosphere; but regardless of geographical limitations, friendly rivalry is a valuable trait quite capable of development even in people whom we may have thought bouvine.

In an all American boarding house, especially for unskilled labor, the cafeteria system of serving food is the easiest and most practical.

The recreation facilities in these houses are important, though often a difficult feature. The skilled men will need a smoker and pool room on the first floor; on each bedroom floor a small writing and reading room. If this is the only building of its kind in the town, gymnasium facilities should be added. Foreigners and unskilled laborers need a general living room. A pool room is not usually considered necessary. If there are groups of these boarding houses, a municipal amusement and recreation hall is best. If the town is small, or greatly scattered, such facilities must be provided by the company or an independent organization. The most successful ventures of this kind which have come under my observation were operated by the industry direct. In planning the activities of such an amusement building it is well to hold in mind that Sunday is the wage earner's day of recreation, and that our foreigners are accustomed to the Continental Sabbath.

Recreation for men is so dependent upon local conditions that it is most difficult to lay fixed rules. We know, however, that it must be provided in order to obtain the maximum efficiency from any class of workers.

The problem of providing living quarters for women is unrelated to that of housing men. Present conditions, however, are making it acute, and we know

that England has increased the production in her munitions factories by providing suitable living quarters for women workers. In this country several attempts to do it have been unsuccessful. The failures are due to unattractive houses, groups too large for adequate supervision, and lack of consideration for the girls' work and social life.

English experience has proved that it is neither wise nor liked by the girls to house more than 150 in a unit; the problems of management are increased, and the social and moral difficulties are great. The minimum number should not be less than 75, as it is essential for these houses to be entirely self-supporting; and on the amount of board proportioned to the girls' wages this cannot be done with a smaller group. The non-English-speaking girls should never be housed more than 75 in a group until they become used to the American customs. Many older women object to the larger group because of the noise, confusion, and consequent lack of rest. Colored girls and women must always live by themselves. Younger girls will need social life and an opportunity to entertain visitors.

In addition to providing an excellent housekeeper there must be a social head to these houses, a woman of tact, experience, and personality, with a sincere interest in all girl life and girl problems.

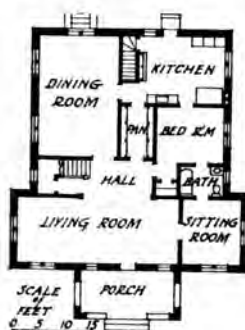
A building of this kind should have an attractive, homelike entrance, with the office on one side; opening out of it several small parlors. One wing of the building may contain the recreation hall and dining room, this space so arranged that it can be used as one room. In the dining room it is well to have the serving table at one end, cafeteria service can be used

at noon; but as a diet of pie, cake, and salad does not tend toward increasing efficiency, it is better to provide a set menu for two meals each day. Near the dining room there should be a lavatory so that girls coming directly from their work can wash their hands before eating. The general living room should have a stage at one end and a fireplace on the side wall; this room can also be used for gymnasium and general social purposes. Recreation the girls must have, and without it they will be neither happy nor contented. A coat room for men, as well as a retiring room, will be needed on this floor.

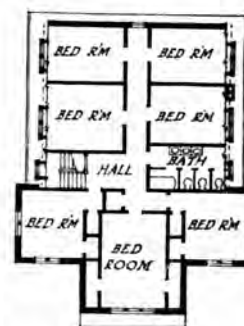
It is best to have the bedrooms all single, about 8 by 12 feet. On each floor there should be a small work room, equipped with sewing facilities, adjoining a sitting room for use of the girls only, and separated from the halls by arches or pillars.

In providing living quarters for industries' single men and women, the one thing of most importance, judged from the experience of social workers, is a human viewpoint — an appreciation of the other fellow's vision.

There is one little story of environment and ignorance often told before, but it helps us to get a proper attitude. An Italian woman of New York's East Side saw some roses. At first she didn't think they were real, and when finally convinced she sang out, "Roses from Italia," and to all arguments she answered, "No — Italia — no roses in America." The population of the whole block, which is about that of a village, crowded around the flowers, each one carrying away a petal or a leaf. And the discards of a florist shop called forth a surge of song, "Roses from Italia," "Roses from Italia," which was like a song of home by a lost people.



First Floor Plan



Second Floor Plan

Two of these houses are located in the industrial village of the Viscose Company, one for women workers and the other for men. Each accommodates fourteen persons, two occupying each room. They are

conducted by a matron who has an apartment on the first floor. The construction is of brick with slate roofs. Other views and plans of complete development were published in *The Brickbuilder*, December, 1916.

Boarding House, Industrial Village of the Viscose Company, Marcus Hook, Pa.

Ballinger & Perrot, Architects

Housing the Single Worker

By WALTER H. KILHAM

BEFORE the war the designing of lodging houses on a large scale for single industrial workers had not been developed or even discussed to any great extent. Some establishments located in towns where suitable boarding places were lacking found it necessary in order to retain desirable single men and women in their employ to provide reasonably attractive buildings near the mills, where they could be comfortably lodged and fed and be at the same time more or less under control. The employees sometimes remained permanently at these boarding places, but more often the accommodations were found most useful for the worker who had newly arrived at the plant, and needed time to look about for a permanent lodging. These boarding places were apt to be conducted in old buildings whose construction often dated from the early days of the plant and they offer little of the present-day interest.

To keep up with the present industrial expansion it is found that comfortable quarters for both male and female single workers are absolutely essential. It was at first thought that these people who often left fairly comfortable homes to go to the industrial centers would be contented to occupy rooms in such private homes as would be patriotically, or otherwise, opened to them. The "take a roomer" campaign had a brief and inglorious career, however, for neither the men nor women workers showed any keen desire to share the restraints of private family life, not to mention the variable quality of such cooking as they might encounter. Workers of both sexes desired first, freedom to go and come without too much question; and second, to mingle with one another rather than with persons of other occupations. The construction of modern boarding and lodging houses, therefore, has become a feature

of the new housing movement and one which still needs more study before the final solution is achieved.

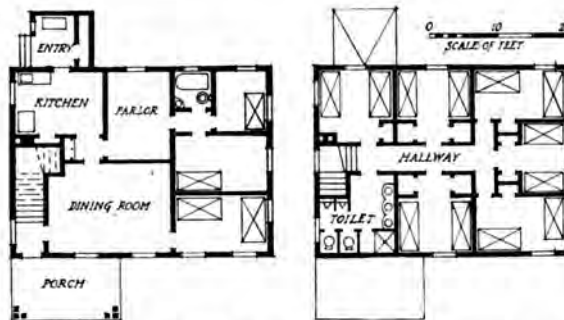
The English "hostel" comes first to the front for consideration. This may be taken in general to mean either a regular dormitory, with numerous beds arranged along the walls of a single long room, or the same system arranged in cubicles about 6 or 7 by 8 feet, with dwarf partitions around each bed, each cubicle having its own window. In England some of these projects were so designed as to allow of the barrack-like buildings being later converted into row houses.

Study of this proposition, however, brought out the opinion that these hostels would never attain the desired objective which was to bring about the formation of a body of workers who would be sufficiently contented to remain at the plant in preference to looking for better conditions elsewhere; in other words, such a stabilization of labor as would insure the plant against the ill effects of the dreaded "overturn" — the bane of war-time industrial expansion. It became evident that the workers would not only want actual rooms of reasonable size, but finally that they must be single rooms, as otherwise the inevitable disagreements between roommates would nullify

the good results of the whole proceeding. The size of each room it seemed, ought to be 70 square feet, if possible, and the width should not be less than 7 feet. A minimum of 60 square feet with a width of 6 feet might be permissible, but is not advocated.

So far the present conclusions are alike for men and women. Being agreed that separation of the sexes is desirable, the question of what variations in plan are necessary comes up for study and with it the various matters of minor detail.

Next to the bedroom arrangement comes the question of toilets. Private baths are not yet a feature of



Exterior and Floor Plans of Boarding House at Jefferson Rouge, Mich.
Development of Solvay Process Co.
Mann & MacNeille, Architects
Conducted by family; accommodates 14 men

the industrial boarding house, although judging by present and prospective wage increases they may become so in a not too distant future. Until such time the proportion of fixtures to be installed may be taken as for girls about 1 shower for 10 girls, 1 water closet for 6 girls, 1 bowl for 10 girls, 1 tub in each bathroom. For men about the same proportion with the possible change of substituting 1 water closet and 1 urinal for 10 persons. The tubs, water closets, and showers should be in separate compartments so as to allow the fullest utilization of the facilities of the room. In men's boarding houses the wash bowls may be in the open room; in women's they may be in one room, but should be separated by stall-like partitions, about 2 feet deep and 5 or 6 feet high. Syphon jet water closets are not as desirable as those having an orifice of easier clearance. The great question of tubs and showers still remains at the front. Evidently one or more tubs should be installed in any case in either type of toilet room for the use of elderly persons or those slightly indisposed. Beyond that men will soon become accustomed to the overhead shower and enjoy it. Women object to the overhead shower on account of wetting the hair and say they need the horizontal or "body" type. Even at that some protest against them. A lady at

the recent conference of the National Housing Association caused some amusement when this question arose by stating that women over thirty preferred tubs, while showers were desired by those under thirty, thus creating a rather entangling situation which most architects would doubtless be anxious to avoid and "pass the buck" on to the social worker.

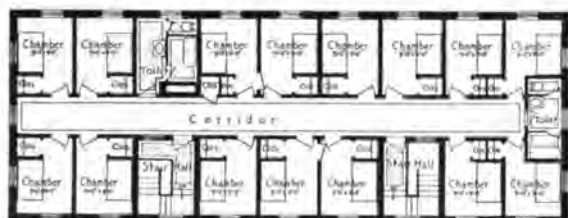
A good sized cheerful general living or recreation room is essential, which to save space may, if desired, be entered directly from outside like the office of an hotel. In cold climates, however, a vestibule ought to be provided. For women workers one or more separate small reception rooms are essential for the entertainment of male visitors, so as to obviate the necessity of the use either of a bedroom or the street corner for this purpose. In either case the entrance to the bedroom portion should be clearly visible from the living room or office. It is far better, particularly with women, to have the place constructed so as to be easily and quietly supervised than to enforce restrictions and rules which only serve to irritate the lodgers, and perhaps drive them to questionable locations.

The amount of recreation facilities naturally will depend upon the size of the building. If it expands to several hundred rooms (700 has been set as a tentative maximum), it becomes evident that certain luxuries may be added beyond the carrying capacity of a small establishment. Thus a lounge, with open fireplace, billiard room, bowling alleys, etc., may be added for men, and good dancing facilities for women; in fact, these latter ought to be provided in some form for women in any case. Halls for entertainment, lectures, or picture shows are clearly within the scope of a large establishment, but they form a special problem which would usually be provided for in a separate building, open to the dwellers in cottages as well.

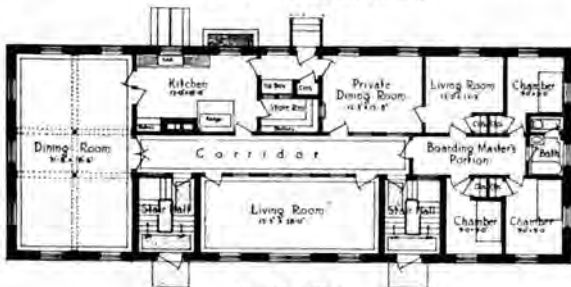
Women of whatever condition have a natural desire to do a little cooking, even if of a rudimentary sort, and a lodging house of any size ought to provide on each floor a sort of kitchenette where fudge, molasses candy, or other forms of light edibles can be prepared and enjoyed on nights and Sundays.

Closets in bedrooms are still a matter of discussion. "Welfare" workers deplore the enclosed closet with a door, saying that it is dark, close, and harbors vermin, and advocate either a shelf with a curtain or at least the omission of the door. Others say that the lodgers are entitled to a regular closet the same as any other people. If the door is provided, it would seem as if the top and bottom panels might be open to create a circulation of air. In all cases the bed and bureau space with the position of the electric light must be carefully studied.

Cross ventilation of rooms should be provided by placing transoms over the doors and placing doors opposite each other across the corridor. Slat panels



Second Floor Plan (Third Floor Similar)



First Floor Plan

Boarding House for the Naumkeag Steam Cotton Co., Salem, Mass.

Kilham & Hopkins, Architects

Conducted by company; accommodates 30 men; brick and frame construction; stairways fireproof. Cost \$20,150 in 1914

in doors may also be worth considering for obtaining ventilation.

The kitchen, pantry, and dining room require no especial description at this point, as their disposition must depend upon the size of the house, whether cafeteria service is installed or not, etc. For women a convenient and cheerful sewing room with sewing machines and electric flat-irons ought to be included.

In houses designed for either sex a laundry with set tubs and drying and ironing facilities should be provided for the use of lodgers, together with the assurance of plenty of hot water.

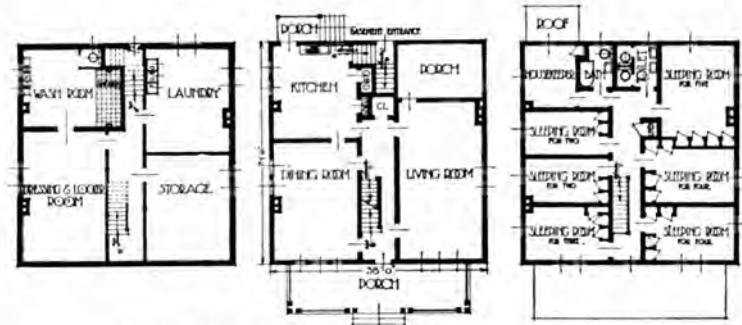
A suite of two or three rooms with bath and dining room (which may be served from the general pantry), with an entirely separate entrance from outside, has to be provided for the boarding master and his family, and probably accommodations for the servants according to local conditions, and of course the usual provisions for linen, brooms, mops, etc., on each floor are understood. A dry room in the basement or attic for the storage of trunks ought also to be included.

Some of the plans for medium sized boarding houses seem not to have well considered the question of proper fire exits. A house even of ten or twelve rooms is no longer a private residence, with the conventional (but absolutely inadequate) single stairway; it becomes an embryo hotel and subject to the dangers of a habitation containing a number of strangers of varying habits and temperaments. Two or more stairways are necessary, enclosed in doors separating them from the corridors, and if needed fire escapes must be added. Fire-proof construction should be obligatory if the building is over three stories and is recommended in any case.

The Young Women's Christian Association has done some constructive work in developing a type of building which would be suitable for the accommodation of women workers. Their pamphlet of "Suggestions" contains interesting hints on "How Girls should be Grouped," from which the following may be quoted:



SCALE 0 10 20 30 40 50 FEET

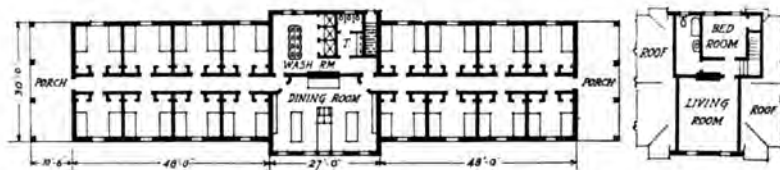


Boarding House for the Ohio Steel Foundry Co., Bucyrus, Ohio
George H. Schwan, Architect

Accommodates 20 foreign workmen and housekeeper. Rooms have double decked iron beds and individual lockers ventilated through ceiling. Basement, above grade, contains showers. Erected July, 1917, and cost complete \$6,300 for frame construction.

1. Younger girls should live in groups where they can have social life and an opportunity to entertain their friends, but still be under some of the restrictions of the home.

2. Older women want independence of living. Many of them object to living in large groups because of the noise and confusion and ensuing fatigue.



Boarding House for Rome Brass & Copper Co., Rome, N. Y.
Mann & MacNeille, Architects

Accommodates 32 foreign workmen, who furnish their own food which is prepared in dining room. Master's suite on second floor. Exterior walls hollow tile with textured surface. Partitions and roof frame

3. In every case, colored girls and women should live by themselves, and provision should be made for their social life.

4. It has been found that it is more successful to house the non-English-speaking foreign girls in small groups, until they learn English and become used to American customs. A social worker should be employed to work with them.

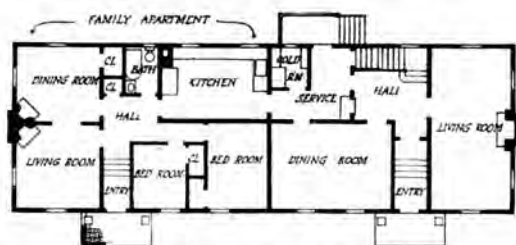
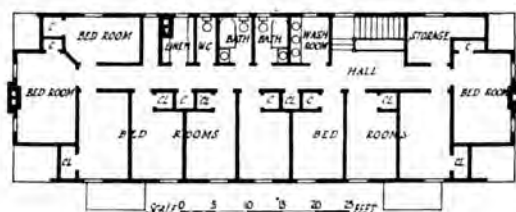
The pamphlet describes the "Type A" building designed by Duncan Candler of New York, and reproduced on page 166, as follows:

Type A building, the permanent structure that the Y. W. C. A. is building as a demonstration in Charleston for girls working in the naval uniform factory, is designed for use in places where only one building will be erected. It includes not only living and dining rooms, but also recreational facilities. There are adequate fire escapes outside the building, as well as two fire walls inside.

The dining room and recreation hall, several parlors, and bedrooms for 44 girls are on the first floor. There is but one entrance for the residents. This makes it possible for the matron or social head of the house, who is in the office near the door, to see every one who comes in or goes out.

The entrance hall is attractive and homelike. Opening out of it are several parlors separated from the hall by arches. To the right is an entrance to the wing containing the recreation hall and dining room. These rooms are so arranged that they can be thrown into one for a large social gathering.

The dining room is reached also by an entrance from the porch outside. This makes it possible for people to go to lunch in the cafeteria without passing through the house. There is a lavatory



Boarding House at Kingsport Farms, Tenn.
Clinton Mackenzie, Architect
Accommodates skilled workmen; living quarters on first floor; all sleeping rooms on second; family apartment on first floor

with wash bowls and toilets adjacent to the dining room, giving an opportunity to the girls who come directly from work to wash their hands before eating. This is important both from the point of view of cleanliness and for the sake of the girls' health.

The dining room is arranged with a serving table at one end, that can be used for cafeteria service at noon if desired. For the other two meals a set menu should be provided, as the girls choose very unwisely if left to themselves.

The recreation hall has windows on three sides with a set stage at one end. There is a fireplace in the side wall. This room can be used for a gymnasium and for social parties. It can also be arranged in

such a way that several classes can be held at the same time in different parts of the room.

In order to get to the sleeping rooms on the first floor, it is necessary to pass the office. Next to the office is a room with a private bath for the head of the house. The bedrooms are all single, 8 by 12 feet.



Dormitory for Remington Arms Company, Bridgeport, Conn.
Hiss & Weekes, Architects

Accommodates 135 girls. Entertaining facilities on first floor. A restaurant, the use of which is optional, is in the basement. Six dollars per week is the average cost of board and room

Each room has a single bed, dresser, chairs and table, and closet. Single rooms not only give the privacy and quiet which girls working hard every day need, but also make the management of the house much easier.

There are bedrooms for 51 girls on the second floor. There is also a sitting room separated from the hall only by pillars. This is for the use of the girls only. Next to this is a small sewing room with facilities for sewing.

Toilets, wash bowls, and bath are grouped on each floor. There is one toilet to every 10 girls, one wash bowl to every 6 girls, and one shower to every 10 girls. There is at least one tub on each floor. Shower baths are more sanitary than tubs, and there is much less difficulty in taking care of them. They should be body showers. Each toilet, shower, and tub is in a separate compartment.

On each floor is a slop sink, a closet for brooms and pails, and one or more linen closets.

There is also on this floor a kitchenette with a gas plate, sink, and cupboard for the use of the girls.

A place should be provided either on this floor or in the basement where girls can do as much of their laundry work as they wish. This laundry should have several set tubs, a drying closet, irons, ironing board, and a gas plate.

There are bedrooms for 6 girls on the third floor. There is also an in-

firmary and a private bath. This room has a cross draft and is in the quietest part of the house. There is a storage place for trunks on this floor.

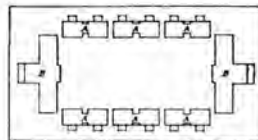
The recreation and dining room wing of the house is one story high. All sleeping rooms are removed from noise and confusion.

The Y. W. C. A. states that building units of not more than 150 girls are most successful. Larger units mean greater difficulties of management and supervision. At the same time the minimum number of a group should be not less than 75. Houses holding less than this number they believe cannot be self-supporting on the amount of board that the girls can and should pay. It is essential that these houses be completely self-supporting.

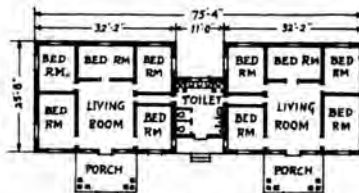
The boarding house of the Naumkeag Steam Cotton Company in Salem, Mass., was built after the great fire of 1914, to replace an old structure which had served for many years and is a good solution of a purely urban development, being located in a closely built section of the city. Special attention has been paid to the exits, which consist of two brick enclosures containing concrete stairs, isolated from the rest of the building by fireproof doors. Though a little severe in treatment, they give a satisfactory feeling of security. Although designed and built before the war had called general attention to the subject, the plans contain most of the features which have



Typical Elevation of Bunk Houses



Plan of Block



Floor Plan of Bunk House (A)



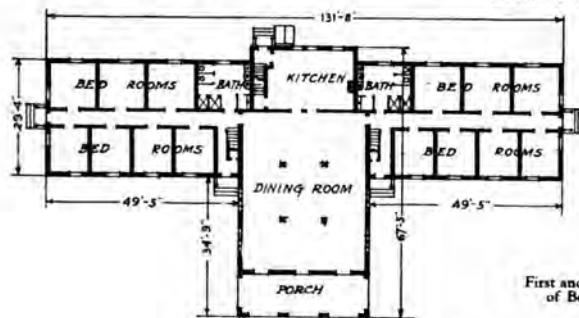
Alternate Elevation of Bunk Houses

FIVE blocks of these structures are already completed and arranged similar to the plan above. The bunk houses (A) accommodate 20 men each, 2 to a room, for a charge of \$1.50 per week. Each man has an individual bed and steel locker. Their cost is as follows: temporary, \$3,771; frame, \$4,215; permanent \$4,557, exclusive of cellar and heating. Cellars

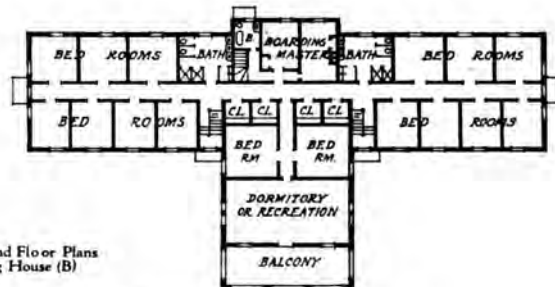


Elevation of Boarding House (B)

estimated at \$700 and hot air heating, \$400 for temporary and \$300 for permanent buildings. The larger units (B) contain dining room service sufficient to accommodate all the men in the block. The cost of (B) is \$15,788 for temporary and \$18,389 for permanent construction, exclusive of cellar and heating. These items are estimated at \$815 and \$1,852 respectively.



First and Second Floor Plans of Boarding House (B)



Buildings for Single Workers at Plant of Merchant Shipbuilding Corporation, Bristol, Pa.
Mann & MacNeille, Consulting Architects; P. R. MacNeille, Supervising Architect for Emergency Fleet Corporation

been generally adopted since. The boarding master's suite uses one of the tower entrances, but is otherwise quite well isolated. Its dining room utilizes the pantry of the main kitchen. There is a living room and general dining room on the first floor. The bedrooms are all single and have closets, and the proportion of toilet fixtures is what later investigations have shown to be correct. There are no showers. As the purpose of the building is mainly to accommodate newly arrived operatives, and as

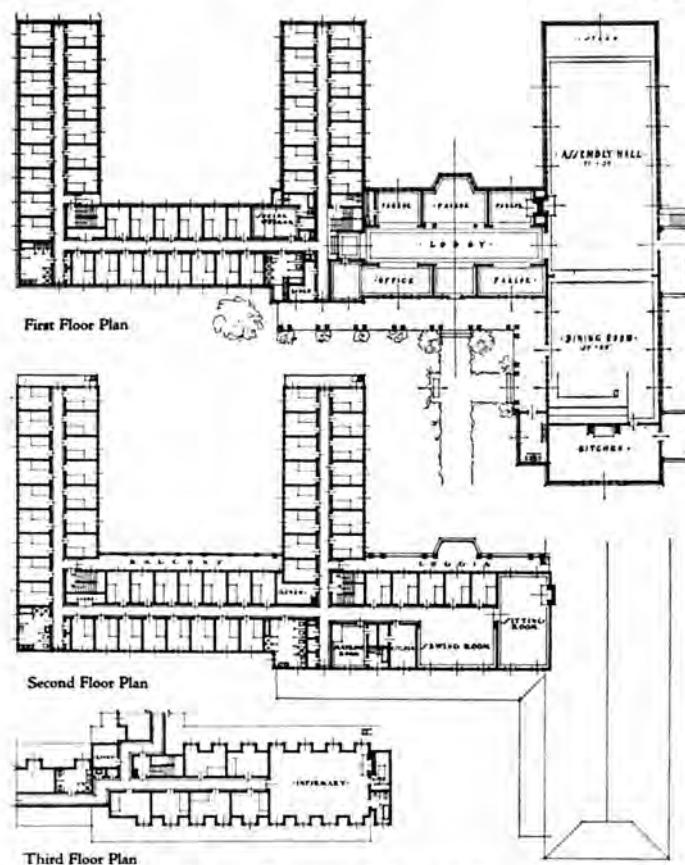
the city of Salem contains sufficient housing to absorb any overplus of employees, there was no need of a large building.

There is a certain present tendency toward a smaller class of structure, possibly of the bungalow type, with a living room and kitchenette (which may possibly be combined in one room), bathroom, and three or four bedrooms. These can be utilized by small groups of women who thus obtain a more homelike environment, although their supervision would seem to be more difficult. These bungalows may be built near a common kitchen and dining hall. Plans of some buildings of this type are illustrated herewith.

Then there is the type of private boarding house, operated perhaps by some workman's family who is able to accommodate several (say 5 or 6) boarders. It seems desirable in this case to group the family's private apartment on the first floor, providing a special entrance and stairway for the boarders whose chambers and bathrooms are all on the second floor, the only room where the family and boarders meet in common being the dining room. This type is probably as much open to suggestion and local experience as any. It certainly seems as if this house in particular is entitled to have some sort of a piazza for hot weather.

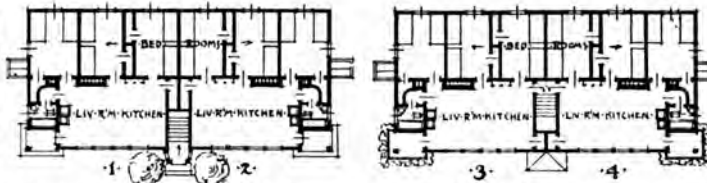
The question of balconies, roof promenades, etc., must be taken into account in all cases and settled according to climate and local conditions, remembering that the primary object of war housing (and it ought to be the object of any kind) is not only merely to shelter human beings from the elements, but to keep them just as comfortable, happy, and contented as the men higher up. If the new housing does not do this, it is a failure and the nation will be the chief sufferer.

My experience in housing has led me to the conclusion that the attempt to design industrial dwellings from the top down is open to the perpetual danger of misunderstanding between the designers and the occupants. It is easy to say what sort of places another class of people ought to live in and be thankful for, but it is also desirable to put one's self in their place, particularly the wife's, and see how these well intentioned buildings really fit. I think there has been too much effort to reduce costs of industrial housing, to reduce sizes of rooms, to cut out everything not essential to bare existence, and to forget that



Building for Housing Committee of War Work Council, Y. W. C. A.
Duncan Candler, Architect

side by side with the theory that the worker is part of the plant, needing sanitary oversight to protect his health just as the machine needs lubrication to protect it from wear, ought to go also the idea that his house is likewise a part of the plant, to be scrapped when no longer suitable, and not to be subject to the bug-bear of "ten per cent gross" calculated on the exact visible return that each individual house may be expected to earn. A number of manufacturers have already

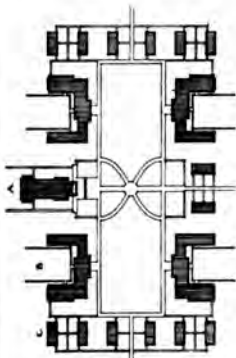


Type C. Single Building with Four Apartments. Unit of a Group for Housing Committee, War Work Council, Y. W. C. A.

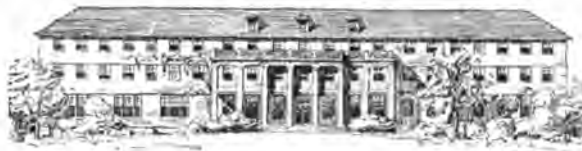
realized this and are providing dwellings for their employees which measure above the standards now generally accepted for this type of work. Labor is not only better paid each year, but is learning through better educational facilities the desirability of higher standards of living and is rapidly arriving at a position where it will dictate its own terms, and when that time arrives it will not be satisfied with any form of housing but the best.

THESE buildings designed for the Housing Committee of the War Work Council of the Y. W. C. A. are intended for varying needs. Type A is complete in itself; Types B and C are units of groups. Type B accommodates 150 girls and has provision for dining and sitting room space. Type C is arranged as a four-family apartment and is intended for older women who wish to live independently, or for foreign girls who are not sufficiently

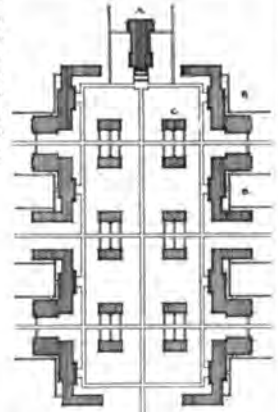
Americanized to mingle with others than those of their own nationality. The plot plans at either side show alternate schemes of grouping; the wings of Type B can be varied in their position to form different courts. In the larger groups a recreation building (A on the plan) is provided for social life, for in a large group some means of recreation aside from the living rooms is an obvious necessity.



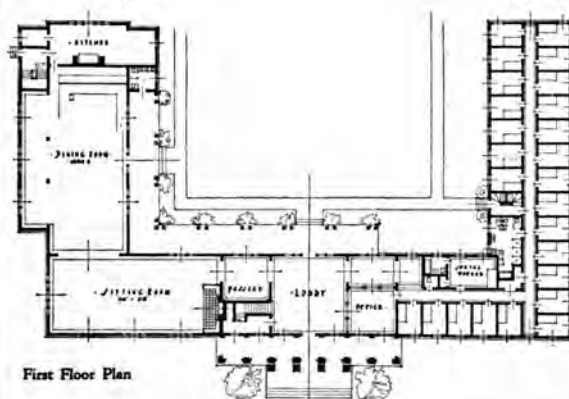
Group Plan



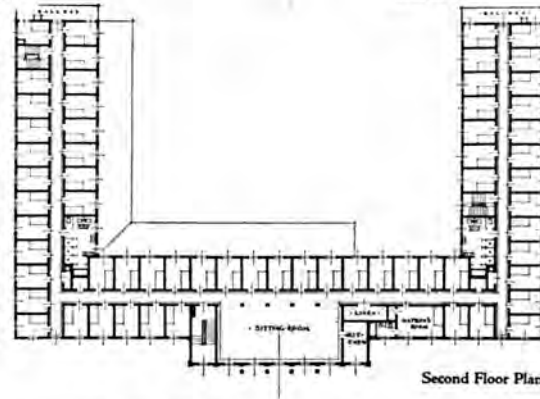
Elevation of Type B



Group Plan



First Floor Plan



Second Floor Plan

Type B. Unit of a Group Designed for Housing Committee, War Work Council, Y. W. C. A.
Duncan Candler, Architect

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Edward L. Palmer, Jr., Architect

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EDITORIAL COMMENT

IN the editorial comment appearing in our February issue we stated from reports contained in the daily press that Secretary of the Treasury McAdoo had requested "the building of houses and other private structures be postponed until after the war." Later authentic information has shown that we misinterpreted the Secretary's request, which fact we deeply regret. The request was in no manner intended to impose difficulties on architects or any branch of the building trades, but was meant to apply only to the building of lavish houses for which there could be no necessity except the gratification of luxury, that could in all fairness be withheld till after the war.

There has been some misunderstanding concerning the request, and we are glad of the opportunity to present excerpts from a more detailed statement contained in a letter from Secretary McAdoo to Samuel Gompers, President of the American Federation of Labor, which we are permitted to quote :

"I have said that building operations which are not required to protect the health or provide for the comfortable needs of our people, or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war, should be postponed.

"As you know, I have no authority to direct that building operations be curtailed. I have merely suggested that unnecessary work of that kind be postponed until the end of the war. Such postponement would, I am sure, help win the war, but every patriotic man must be determined by his own conscience in the matter and must decide for himself if he can postpone the erection of a contemplated building until the war is over. Compliance with this suggestion may cause some inconveniences which are to be greatly deplored, but such inconveniences are an unavoidable incident to war. The situation must be viewed from a national and not from a local standpoint."

Architects most certainly appreciate this viewpoint, and their patriotic and unselfish offer of service to the Government, wherever it might be used, stands as proof of their eagerness to submerge private interests to the Government welfare. For the last three years the constantly rising costs in building have practically reduced new building to terms of absolute necessity — in fact, building has been so much curtailed that in our larger cities there is to-day a serious shortage of hotels, apartments, and all buildings of residential type. The great part of the work to supply these needs will for economic reasons be postponed till after the war, but in the meantime there is need for many types of building that are essential to the proper progress of the war. The Government in its vast building program has exceeded the largest figures of private work, but it has not been carried on through the same channels, and it is only natural that certain trades and certain sections of the country should find many disadvantages in the change. It is to be hoped that this unfortunate circumstance will be minimized as much as possible through a larger and more widespread use of existing agencies by the Government instead of creating new organi-

zations or increasing to mammoth size those already very large, which can only be done at the expense and discomfiture of the smaller units.

THE most pressing need for buildings required to further the war, though one not yet fully appreciated by Governmental authorities, is housing for the industrial workers. Production of manufactured articles not considered essential to the war is gradually being curtailed, and the workers in those industries are told their patriotic service is to seek employment in war industries, and if necessary move to new districts where this work is to be had. This immediately brings to the forefront the housing problem. The great war industries have been concentrated principally in sections of the country already thickly populated, and the great demand for living quarters in these centers is constantly being increased and will, by the time we reach the rate of production hoped for, be so evident that the lack of housing facilities will be apparent to all.

Although the first bill carrying an appropriation of \$50,000,000 for housing the workers in the shipyards has been enacted into law now for some weeks, the delays which seem to be inevitable in our war preparations are already in evidence here. Notwithstanding the convincing example Great Britain has furnished of how the problem should be solved and the earnest exhortations and advice of men in our own country who have made industrial housing an important part of their study, rival bureaus in Washington are advocating widely different and opposing plans for treating the problem, and the matter of permanent construction which is so earnestly recommended by all who know the dangers to be avoided has been actually turned down in many cases.

As we go to press the progress on the second housing bill carrying an appropriation of \$60,000,000 to be expended under the direction of the Department of Labor has met opposition in the Senate that would indicate absolute ignorance of the need and of economic conditions governing building in the country to-day. The bill was described by one senator as "the most obnoxious that has ever come before Congress," who added that under its provisions the Government could continue housing work after the war and thus enter the field of private enterprise. We are being looked to by our allies for the ships, guns and ammunition, food and other supplies which will sustain the armies fighting for the safety of democracy, and yet the shortage of living quarters for the industrial army required to produce these things — a national emergency — must wait upon discussion in Washington of its effect upon private interests and upon differences of opinion between rival bureaus charged with the execution of the program.

The Adaptability of Metal Lath to Industrial Housing Work

COMPARATIVE COST FIGURES SHOWING GREAT ADVANTAGE OF SOUND CONSTRUCTION OBTAINED AT ONLY SLIGHT INCREASE OVER TEMPORARY WORK

THERE is no doubt that the need for living accommodations for workers, which has reached an acute stage in various localities, due to the natural concentration of war and other requirements with which our country shall "do its bit" in the Titanic struggle for mastery between unprincipled autocracy on one side and true democracy on the other, has done more to call the attention of the American people to the possibilities of making such industrial housing more protective to the occupants of the buildings than has been accomplished by all the manufacturers of fire-resistive materials, all the efforts of fire-preventive societies, and all the figures of underwriters' reports for the past twenty-five years.

The interest evinced in this subject by the various architectural publications and the space given to articles by men of high authority has been a source of gratification to those who have in the past paid out good money for space in which to advertise fire-resistive materials. Let the good work go on, and the American artisan will soon be housed in a building that will give him fire protection and afford him comfortable and hygienic living conditions; while the stupendous fire loss of the American nation amounting to \$250,000,000 per annum will correspondingly be reduced to such an extent that it will no longer be a reproach to our people nor an evidence to the world of the prodigality of our expenditures.

It will interest the architectural profession to know that the officials in charge of the Government industrial housing have had results of investigations furnished to them that show unmistakably the possibilities of using a progressive, fire-resistive, and hygienic construction at a very slight extra cost over the ordinary flimsy and easily burned type of house that experts unanimously condemn.

For instance, figures were given which practically offered to furnish stucco on 26 gauge, 2½ pounds per square yard metal lath on 16-inch center studs, using composition board for the interior at a cost of \$.154 per square foot of wall, and stucco on 26 gauge, 2½ pounds metal lath on 16-inch center wood studs for the exterior, metal lath and plaster interior, ¾-inch cement stucco, outside coating at \$.206 per square foot of wall.

Considering that the cost of wood studding spaced 16 inches on centers, ⅞-inch sheathing by 4 feet, and compo board above 4 feet, including two coats of paint outside, would be \$.1684 per square foot of wall, it surely has been proven that there is no item

of cost to prevent not only the Government and industrial concerns who are building for similar purposes, but the average man who builds his own house, from adopting the same class of construction.

Another comparison that will be interesting is that the figures for cheap cantonment buildings on wood studs 8 feet on centers and 4 feet under windows, ⅞-inch sheathing, tar paper, and battens, are \$.123 per square foot of wall; whereas the offer was made to produce buildings, stuccoed on metal lath outside and back plastered, instead of sheathing, tar paper, and battens, interior construction to be of compo board at \$.1372 per square foot of wall.

There is a further consideration in connection with this subject, whether the contemplated building is for private or public enterprise, and that is the question of the transportation of materials. The material to be transported for 100,000 square yards of stucco construction can be hauled to destination in fifty cars. To transport the material for wood-frame construction to give the same service would take eighty-six cars, and the haul would average about double the length. For the interior plastering to cover the same space the wood lath required would need seventeen cars to haul to destination, whereas metal lath would need only seven cars. There is thus a balance in favor of fire-resistive construction by the use of metal lath of a total of forty-six cars. With the present car shortage, railroad congestion, and the imperative need of getting supplies to the seaboard for the use of our armies and Allies, this is a point worthy of further consideration wholly aside from the intrinsic merit of the material itself.

Bostwick "TRUSS-LOOP" metal lath, which has been advertised in architectural papers for more than a quarter of a century, is a material with special characteristics which is available for a wide variety of constructions. It is a self-furring metal lath that is attached directly to the studs, giving the necessary radiation space without the need of furring; it is easily erected, and secures for the owner and builder a lower price for the finished metal lath and plaster surface than is possible with other types of material.

The Bostwick Steel Lath Company may be addressed at Niles, Ohio, and will be pleased to give details of the large finished stock that they have on hand ready for immediate shipment upon a priority order, and to show any architect interested in industrial housing projects the possibilities of the service they are in a position to render.

A Revision in Plan — and Opinion

FOR six solid weeks, with hardly enough let-up for meals, I'd been grinding out details of the heating, lighting, and plumbing plans of one of our biggest jobs of the year. It was literally designing a whole town — four hundred and fifty small, model houses for the Deep Water Dock Company, and the whole thing was in our hands, — streets, sewers, lighting, heating, plumbing, etc.

It was impressed upon us that the completed town must be a model for convenience, comfort, sanitation, simplicity; but withal it should also be artistic — and designed to be "reasonably inexpensive."

Being an engineer, not an architect, I had charge of heating, lighting, plumbing.

Some job! While it was right in our line of work, none of these big assignments is ever a cinch. They tax experience, endurance, and brain to the limit, especially when they absolutely must be completed in double quick time.

The Chief pointed out to me the "reasonably inexpensive" warning.

"These people are big operators," he said. "That expression gives you some leeway; but I am very anxious to produce this job at the lowest possible cost consistent with sound principles. It absolutely must be right; but keep down the cost all along the line as much as possible."

To make a long story short, I finished the job. On heating I had called in the engineer of a boiler manufacturer whose line I'd found O. K. and been specifying for some time. We worked out the details of individual steam boilers, ample radiation, and all that,

but always keeping down costs.

Plan and specifications were all O.K.'d by the Dock Company, everything was ready for signing the contracts, and I felt the satisfied relief of a good job well done.

Early in the morning of the day before Colonel Arthur of the Dock Company was coming in to go over the plans for the last time the Chief sent for me.

"George, I have a suspicion that I'm going to ask you to reopen the question of heating plans on

the Deep Water Dock Company's job. Last night at the Club I met a Mr. W——, an officer of the International Heater Company of Utica, N. Y. We were discussing business, and I was telling him of the Dock Company's job and the four hundred and fifty homes. Naturally we talked heating and I told him we specified the steam boilers.

"Well, sir, he offered a suggestion for heating these homes with an altogether new system that interested me considerably. It's that furnace idea that uses only one pipe to heat a whole house — the One-pipe Heater they call it. You'll remember our discussing it once. I know we didn't think it worth a tinker's damn; but what W—— told me last night has got me guessing.

"He didn't try to sell me anything, but was merely offering a suggestion; and also he frankly admitted how they themselves, a few years ago, when this new heater appeared on the horizon, were skeptical. He said their engineers undertook it originally as a system only for small farmhouses to displace stoves.

"Well, it seems it took like wildfire among the farmers, did the trick for them so much better than stoves that all over the country they scrambled to get these new heaters. The disease spread. First to bungalows, then stores, then churches and schools. Finally, without any particular pushing on the part of the manufacturers, it reached into cities; into small individual homes, not only to displace stoves in old dwellings but for new houses as well.

"The system has apparently, by sheer reason of a merit not originally anticipated even by their own engineers, forced itself into the market on a rather big scale. From the many varied instances that W—— referred to, evidently this heating system has made good beyond anybody's expectation.

"Mr. W—— suggested the advantages of this system for the Dock Company's town: A good saving in first cost and yet using high grade equipment; a good saving in fuel to occupants of the buildings; no risk of damages by leaks, breaks, freezing, etc.; no space taken up in rooms for radiators; and yet the house is heated as well — and he ventured to prophesy better heated — than with steam.

"I asked Mr. W—— if he would come in and explain the proposition to you. He argued he was no salesman and had no intention in his suggestion of upsetting our plans or bidding for business. I assured him I should not consider it a breach of club rules, and so he's coming in at 10.

"I wish you'd look into it and let me have your ideas."

Well!

Of course, nothing to do but comply. Besides, I

Adv.



INTERNATIONAL ONEPIPE HEATER

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began to feel a little curious myself about these single pipe propositions. Up to then, I admit, I hadn't given them more than cursory consideration — on the very face of it, they didn't look like anything more than a makeshift contraption, outside the pale of a good engineer's specification pencil. None of the boys I believe had ever taken them seriously enough to even go into preliminary details.

Mr. W—— arrived — a very decent chap, who I found knew under his modesty a very great deal about heating. I explained the problem and, after a bit, showed him the plans. He figured the cost on the steam, and surprised me by his close accuracy. He came within \$25 of our best estimate.

Then he figured the other system, basing it on cost of International Onepipe Heaters for all except the five duplex houses and the arcade, for which he suggested the steam boilers as planned.

The difference in first cost was about \$40,000!

By this time I was too interested to be startled. Nor did I feel chagrined at not having known more about "Onepipes" before. He "sold" me completely on the idea; his store of overwhelming evidence in its favor was inexhaustible.

Late that afternoon I went in to see the Chief.

"Well, George, anything to those renegade furnaces?"

"I guess there are possibilities. Perhaps \$40,000 worth and then some, maybe!" I replied.

I showed him a new set of plans for the heating, in the rough.

"What, gone that far, have you?"

"Yes," I answered. "There's not much more to do. I'm going to see him again in the morning to go over it and check up. I'm satisfied. It's rather a revelation. Possibly a revolution. Here's the estimate as we doped it out together. I guess that's doing the trick 'reasonably inexpensive'!"

I could see the Chief was pleased. I could tell he too was "sold" — more than he had seen fit to indicate.

And Colonel Arthur!

Of course it was the result of extreme diligence and effort on our part in his behalf — a sort of eleventh hour spurt. All that remains unsaid in my little tale is that the town will be built this summer and International Onepipes used.

We just passed through a severe winter. I've watched a dozen or two different homes heated in this manner as a cat watches a mouse, and I've never seen anything like it for efficiency. I don't believe that anywhere in this country you can find a single village, township, or city that will be as uniformly and economically heated as that private burg of the Deep Water Dock Company.

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This picturesque and successful development owes a great part of its variety to the harmonious coloring of the shingles with Cabot's Creosote Stains

Artistic Color Schemes for Housing Developments

COLOR TREATMENT OF GREAT IMPORTANCE IN HARMONIOUS RESULTS

IT IS no exaggeration to say that the external appearance of a housing group is of vastly more importance to its success than many other elements of comfort or convenience that seem to be more essential. Time spent in developing picturesque and harmonious exteriors is therefore well spent, and no other item of exterior decoration is quite as important in this problem as coloring.

In the old-fashioned corporation boarding and tenement house the finishing touch of monotonous dreariness was given by the expressionless coating of drab paint. Modern housing is studying individuality and producing artistic, harmonious color schemes that add immensely to the success of the operations. The cheapest kind of houses can be made attractive by artistic coloring, and an almost infinite variety can be obtained in small frame buildings by using the lumber in various ways and staining it in various tones. Dressed or rough siding, rough boards, clapboards, as well as shingles and other lumber, can be laid in different ways on houses of the bungalow, chalet, or cottage type, and the entire surface stained with Cabot's



One of the Akron Units

Showing use of shingles on second story and roof, making a surface for artistic color-treatment that adds greatly to its attractiveness.

Creosote Stains at a cost for the whole exterior that is far less than any other finish.

The stains give rich, picturesque coloring effects that bring out the beauty of the grain of the wood, and the creosote penetrates the wood and preserves it. The stains are much more suitable for buildings of this type, because they color the wood transparently and retain all of its beauty, while paint would produce a uniform expressionless coating.

Besides being much more artistic than paint, and thoroughly preserving the wood, Cabot's Creosote Stains cost less than half as much as good paint, and can be put on at half the cost. The work can be done rapidly, and any intelligent laborer can do it, so that skilled labor is not essential. The colors are strong, rich and lasting. For the small house, therefore, these stains are vastly more appropriate than any other colors, and with their aid artistic and beautiful housing groups can be developed by the use of the cheapest materials. The money will go farther and the development will be more successful. For houses partly or wholly finished with stucco, Cabot's Waterproof Stucco Stains give similar results.



Unit of Carbon Fuel Co. Development

This simple, homelike bungalow is more attractive than many costing twice as much, because the rough siding is capable of such rich and beautiful coloring with Cabot's Stains.



Unit of New Durham Development

A "Simpson-Craft" house, by John T. Simpson, Architect, of Newark. Stucco stained with Cabot's Stucco Stains, and trimmings with creosote stains. Stucco needs variety as much as any material.

Adv.

THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

A GROUP OF STONE HOUSES AT ST. MARTINS, PHILADELPHIA

From Designs of
Edmund B. Gilchrist
Robert Rodes McGoodwin
Duhring, Okie & Ziegler

IN WHAT MANNER AND BY WHAT
MEANS CAN THE PRACTICE OF ARCHI-
TECTURE BE DEVELOPED IN ORDER TO
WIN A LARGER RECOGNITION?

An Expression of Opinion
By Representative Architects
On a Vital Question of the Hour

MAY 1918



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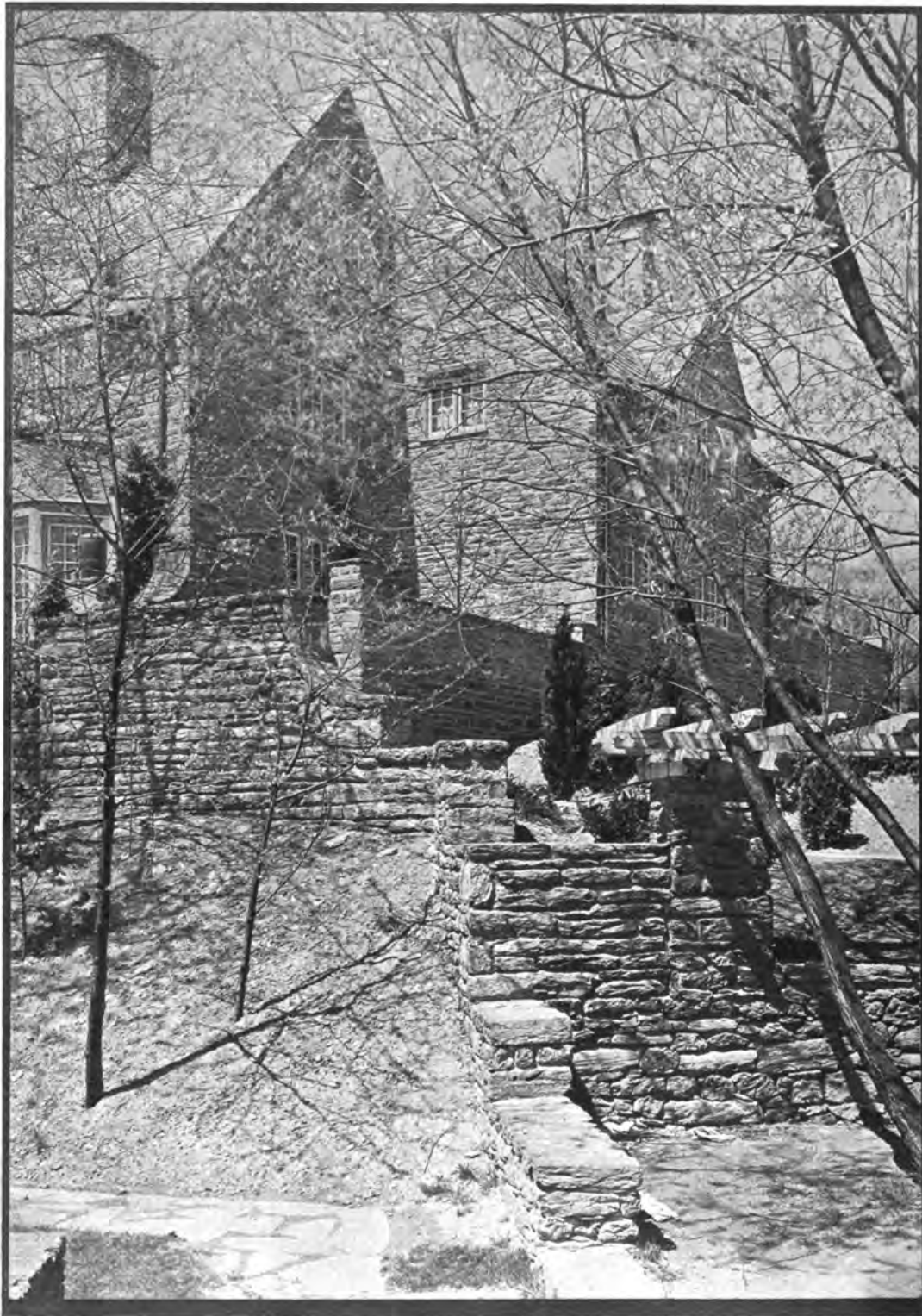
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APPROACH TO TERRACE, HOUSE OF SPENCER ERVIN, ESQ., ST. MARTINS, PHILADELPHIA, PA.

ROBERT RODES MCGOODWIN, ARCHITECT

THE ARCHITECTURAL FORUM FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXVIII

MAY 1918

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In What Manner and By What Means Can the Practice of Architecture be Developed in Order to Win a Larger Recognition?

WE have enjoyed an enthusiastic response from the members of the profession in reply to the above question, and the letters reproduced herewith, emanating from men in widely separated sections of the country, show a unanimity of high ideals with respect to the duties architects are capable and desirous of fulfilling that presages service to the public of such enduring quality that recognition because of intrinsic merit cannot be withheld. In spite of these hazardous times which menace the progress and appreciation of art, evidence is not lack-

ing that in Government circles and out a new balance is being struck, and that out of it will come a full and complete estimate of worth based on actual value, in which case architects may confidently expect to be called upon to render important service for which they alone are equipped. They must continue and increase their contact with humanity and be fully cognizant of the changes which are rapidly taking place in our economic structure, so that at all times they may readily assume the leadership for which their profession fits them. — THE EDITORS.

Editors, The Architectural Forum: Recognition, that automatic register of public approval, is seldom withheld except for cause, and if a majority of architects is convinced that our efforts and ideals are not appreciated, it behooves us, rather than become discouraged, to take stock and discover, if possible, the reasons for our tribulations. It may be possible that, as a class, we have failed in rendering a public service expected of us; it may be possible that architecturally satisfying buildings are too infrequently erected to arouse public interest in the art; it may be that there is room for improvement in conducting the business of building.

Service is the watchword of the world to-day and, as a professional group, architects have, I am afraid, rendered precious little unselfish public service. Not until the American Institute of Architects, through its public service arm, the *Journal*, had presented the attitude of the profession toward city-planning, and again recently pressed the matter of governmental housing of wage-earners (thus compelling a sure and quick recognition), have architects conspicuously appeared as being seriously interested in large national affairs. In but few cases, as far as I know, have local chapters of the Institute or other organizations of architects taken a large part in the solution of public problems such as local city-planning, for instance, or architectural harmony in neighborhoods, and barring a few architectural exhibits little or nothing has been done by the profession toward popularizing a love for the beautiful. Surely there is a large field which only architects as a body can adequately cover, and efficient, unselfish effort and a reasonable success will as surely win recognition.

Is recognition withheld because we are, shall we say, casting proverbial pearls? Among our so-called "intelligensia" there is but little lack of appreciation for the really splendid work produced by the modern masters. A discriminating discernment even of the qualities which bring this building or that into the realm of art is no longer the rare possession of the cultivated American that it was years ago, and there is no more reason for our disconsolate frame of mind than that there should be discouragement among musicians because thousands prefer a Jazz band to Jascha Heifetz. We must not forget that architectural gems are not being daily produced by every office in the land; that familiarity with inspiring architecture is difficult, and it is hardly fair of us to expect a public, whose taste we have never striven to cultivate, to be deeply interested in so subtle a manifestation of art as is ours. No, if we have failed of recognition, it is not because our art standard is thought to be low, — or, for that matter, too high, — but because we have been quite generally charged with business shortcomings sufficiently grave to cast doubt on the value of the entire profession. That the charge is unjust, is of little moment. We ourselves have apparently failed to recognize that we are being held to account for conditions over which we have little or no control; we have certainly not tried to defend ourselves, and the charge stands.

The dominant note in present-day manufacturing is organization. Through it alone are team work and elimination of waste made possible; through its expansion and refinement have producers been able to give larger, better, and cheaper service. In the manufacture

of buildings, however, disorganization is too often the dominant note from start to finish, and the consequent annoyances and failures are all laid at the feet of the architect. In the producing of a building we start with the architect's organization, however perfect or imperfect that may be, as the first unit. The initial step having been taken, we proceed (in each separate operation!) with the building up of another unit, a temporary hit or miss organization, formed of unrelated smaller units, chosen largely because of cheapness and in themselves but parts of other more or less complete (contractor's) units. Team work, under such circumstances, is only in a measure possible, elimination of waste becomes a matter of chance, and the architect, the nominal head of the new machine, exercises practically only such control as the issuing or withholding of certificates of payment grant him. Were his duties to end with the preparation of specifications and plans, present office organizations would be all sufficient; but the building public is not buying plans but buildings, and in the vast majority of cases looks to the architect as commander-in-chief and blindly trusts that his organization can carry on the work expeditiously and efficiently up to the point of occupation.

We are all too familiar with the usual results to dwell on them. To a manufacturer the system is absurd to the last degree, and it is not without good cause that well organized building concerns have erected a large number of factories and are now branching out in other directions. Most owners, I am sure, are interested only in the final result and want it with the least cost to themselves in money, time, and annoyance, and when they get all that under the present methods of procedure it is largely luck and not the architects who have accomplished the almost impossible.

It may be possible that the best artistic results are procured under the scheme of contracting which obtains to-day, but that has yet to be proven. Certainly the proportion in the number of well designed buildings to the mediocre mess which passes as architecture is not such as to warrant a fear of change. And certain it is that when the architect becomes again the master-builder as he was in Gothic times, when he is more than the designer and superintendent, when his organization includes not only engineers, artists, draftsmen, and accountants, but also a tried-out team of craftsmen of various kinds, will there be an approach toward what a large number of American business men seem to be looking for. Whether the desired results are most surely gained through large building organizations of which architects, the master-builders, are to be the presidents, or whether the present system will continue in use, altered so as to secure sufficient coördination of the many necessary elements to make greater efficiency possible, need not concern us at this moment. Both methods will no doubt be put to a thorough test, and experience will determine which is the better.

If we have really failed of recognition, it must be largely because we have persisted in attempting in this day and generation to give service through inadequate organizations over which we have had only partial control. We have failed, at least in a large measure, to give satisfaction, and others not restrained by profes-

sional considerations have in many instances taken our place. The answer is obvious. Those of us who like to think of the practice of architecture as a pursuit of art, pure and simple, rather than as a business, will not be pleased with it, but we may be sure that unless the art of architecture is to be produced on modern business lines, buildings without art are likely to be the rule more than they are even to-day.

The war has taught us much about the value of organization, and the war will upset many a standard to which we adhere to-day. It is not at all impossible that our standards of architectural practice will go to the discard pile with hundreds of others, and that in their place, as the years pass by, there will be developed a scheme by which the profession of architecture will be able to render service equal to the best of all the ages. When that has been accomplished, the larger recognition will have been won.

WM. H. SCHUCHARDT.

Milwaukee, Wis.

Editors, The Architectural Forum: What architect has not considered this question in the past two years, during which period he has been classed as a non-essential and a luxury? We ought to take stock at a time when we are unable to take commissions. About 60 per cent of all the building executed is made up of very small units. These are usually of poor architecture, and the credit is generously given to our profession. The small commissions need our protection most, and we are not organized to execute them profitably. We should find a solution. For larger commissions, and especially commercial work, the Institute can be helpful in reorganizing our practice to meet the ever changing conditions.

That which begets work for an architect is what he has achieved as an artist, which is the result of training. That which proves him an architect is his business ability, acquired by experience and experiments on owners. Most owners would consider almost any design agreeable if it were profitable and the execution conducted on business lines.

Specifications and drawings, as a basis for contract, cannot be given too much thought and study. Contractors complain too often, and justly, of over elaboration of details after contracts have been based on less elaborate scale drawings. This has been responsible for the custom among contractors of rating architects on a percentage basis. This percentage is added to the normal cost and profit to cover this elaboration and is dependent upon the architect's usual practice. These evils can only be overcome by more businesslike methods on the part of architects and a better working basis between the architect and contractor.

All building can be summed up in three principal items: size, material, and cost. The owner, in his lack of technical knowledge, usually fixes the size and cost. The architect, by skill, can somewhat regulate size and material. Cost is fixed by the contractor and sometimes at the expense of material. Size and material are the architect's function and control cost. The owner, if cost is not satisfactory, and after usually consulting the contractor, places the responsibility of cost on the architect. The net result is that too often the architect and archi-

ture are judged by cost. Under present conditions of practice the architect cannot and does not assume any responsibility for the cost.

The cost of a building from the standpoint of the contractor can be divided into two groups: first, material and manufactured articles (forming sub-contracts common to all general contractors); and second, labor. Under labor the contractor works out his profit and shows his judgment and ability in the installation or erection of those things grouped under the first heading. If a simple, satisfactory method could be devised whereby the architect could present the first and second items to the contractor, it would remove the game of chance in contracting, and the architect would be in a position to analyze cost. The size, material, and cost of a building could then be controlled with more knowing results by the architect.

A group of architects and contractors of recognized ability and with experience in different sections of the country could, I believe, place building contracts on a less hazardous basis and relieve the architect of much guess work. It might result in fixed quantities or a guaranteed price and profit, but surely not the extravagant cost-plus system. Would not the client, or should not the client, take our ability on the purely technical and architectural side for granted? It is really our *raison d'être*. Do we not, as a class, overemphasize it and imply a lack of good taste in our clients? To-day, unfortunately, all things are judged on a business basis. Let us then convince our client of our business ability, which is the thing he knows. This will bring faith, the great opportunity for better design in architecture, with little or no hindrance. Larger recognition will come naturally, for in building, good architecture is good business and will stand the test of time.

FREDERICK W. GARBER.

Cincinnati.

Editors, The Architectural Forum: For the common good how can every real architect be kept busy at the work which he is fitted to do, and in proportion to his real worth to the cause of an increasingly better and more beautiful architecture?

To the extent that men spend their days at ungenial, trivial, or inadequate tasks, to the extent that men anxious to work are idle, we all lose.

Our problem is only one phase of the larger economic problem of under-employment, of bringing together the man and the job under modern complex conditions of production and distribution, of inequality of opportunity, of an imperfect democracy.

Under the stress of our war to preserve so much of true democracy as we have already attained, this desperately earnest struggle of force against force to preserve the freedom of democracies to develop toward a higher goal is bringing us all closer together.

It is substituting unselfish co-operation for selfish competition. With our sons in the trenches or preparing to go in, the spirit of individual effort and personal sacrifice for the common good becomes strong within us. We are inspired by the thought of a better world after the war, in which every individual may enjoy not only the ordinary necessities and comforts of existence, but may have his share of beauty.

In the truer democracy of the future, it will be the serious concern of our profession that beauty, as well as comfort, enter into the construction of the smallest cottage; that the coal miner and mechanic be no longer housed in monotonous rows of flimsy, ugly houses; that the humble farmstead be no longer a blot on the landscape.

We shall worry less as to the profitable business of building skyscrapers, and be more concerned with the types of building which are needed in every small town—the types which come close to the people everywhere.

Trained by the team-work of war, every community should be ready to co-operate enthusiastically in schemes of town planning and public improvements conceived in a liberal and far sighted spirit.

Now is the time for architects to study their own community needs, and to prepare for the improvements that will be needed after peace comes. Unless we get closer to the people, the people will not get closer to us. We must study their needs and spare no pains to satisfy these needs in terms of beauty—in an inventive and creative spirit.

If we architects cannot afford, as individuals, to design many cottages and farmhouses, we can get together and in various ways help the man of humble means to the fruit of our most painstaking study in the housing field. We can teach him to see that we can solve his small problem in a better way than the builder, the plan factory, and the "ready cut" mill.

The majority of "successful" architects has looked with disdain upon the small house, relegating it without a qualm to the hands of the carpenter and builder. As one of them put it: "There is house building and there is architecture—and house building doesn't pay."

But we cannot get close to the people unless each of us is willing to do a certain amount of work that "doesn't pay." Doctors treat penniless patients, and lawyers defend impecunious clients. Architects enter so-called competitions and do all sorts of work gratis in order to secure profitable commissions. Why not give something to the betterment of house building, where architecture in its simpler and humbler aspects touches every man, woman, and child?

As long as the average home is lacking in real comfort and beauty—as long as the majority of houses is either commonplace or ugly—so long shall we bewail the general lack of architectural taste and appreciation.

Architecture as a living, national art must spring from sturdy roots which spread among the masses of the people. It must be a democratic art, flowering at the top in our great public and commercial buildings. It must be an honest, straightforward art, free from the illogical pedantry and stylistic affectations of the schools. It must express the joy of the architect in doing creative work instead of the soulless technique of the timid and conservative fashion-monger.

In the meantime what remedies can we apply to professional weaknesses, to public apathy and ignorance?

Most of our future architects will be trained in technical schools. We can and must improve these schools. The American public is a newspaper and magazine reading public. We can enlighten it as to architecture and architects through sustained publicity, using the cinema

screen as well as the public prints to illustrate and interpret good architecture. We can be more friendly and intimate with our draftsmen, treat them as pupils, co-workers, *protégés*, firing their enthusiasm, encouraging evident talent, expanding their opportunities for learning all sides of our practice. For they are the architects of the future, and the influence and training of the office often goes farther and deeper than that of the school.

Training draftsmen implies keeping them steadily employed, not "hiring and firing" with the fluctuations of business. How can we keep ourselves and our draftsmen busy so that we can all be steadily giving to the public the best that we have? If we are real architects, we need have no hesitation or false pride in selling the services which we are able and ready to render.

The mooted question for men of all professions except the favored few who enjoy a liberal and steady patronage is: "How can we secure the recognition and the opportunities which we deserve?" Advertising in the old sense of printed laudation is under the ban, and properly so.

But in recent years a new form of advertising has come into wide and successful use in the form of educational publicity, which has already been employed by several chapters of the Institute, as well as by the Institute itself for the good of the profession as a whole, as well as for the good of the public.

In taxing ourselves collectively for a much stronger and effective use of paid educational publicity, we shall make a wise investment. The world is too busy to pay much attention to us unless we tell the world something of our story and keep on telling it in a convincing and interesting way. The maker of a better mouse trap who should retire to the woods and expect the public to beat a wide pathway to his door would be a slacker, and Emerson's illustration would fall flat, regardless of the simple truth it carries. In these days another man would invent a still better mouse trap, long before that path became a thoroughfare.

The architect in the large city is known by his works to comparatively few people. Unless his buildings are big and commercial, they are too scattered to be generally appreciated. And hitherto, at least, they have been anonymous. Where his monogram or signature has been inscribed, it is so modestly placed and cut that it is rarely noticed.

The proper time for an architect to secure at least local recognition of his authorship of a building is during construction—not after completion. How fearful we are of anything resembling real publicity and honest aggressive salesmanship! No wonder the contractor, even the plumber and the screen maker, bulk larger in the public eye than the real creator of the building.

Why not prohibit all signs on each building under construction except the signature of the architect, and if there be a contractor's office, the builder's name? If a building is interesting and good, let the public know from the start who deserves the credit. If it is ill planned and generally bad, let the blame be placed where it belongs.

As to personal salesmanship, why not do the simple, frank, manly thing? Instead of playing the social game and burning our candle at both ends in order to get busi-

ness, why not save the time and energy which belongs to our clients and go directly to prospective builders, tell them what we can do for them, get acquainted with them for possible mutual benefit and co-operation?

Suppose that the work we are seeking is in a field that is to us new and unfamiliar. A versatile architect, like a good engineer, enjoys attacking and solving new problems, and his first essay at a new type of building will often excel the work of the "specialist" who has gotten into a rut. Let us say so. We may be obliged to retire gracefully, or do some preliminary work gratuitously to prove our case, but if we can engage the full co-operation of our "prospect," we can soon establish confidence; and if we insist upon having a clear field, very soon make him our client and later on a friend.

It all depends upon our courage, our self-confidence, our technical and inventive skill, and our willingness to study thoroughly every problem from the ground up and from the roof down—to give to every man we serve the very best that we have.

Believing that it is the duty of every good workman in every useful field of human endeavor to keep himself busy, by all honorable means, regardless of the artificial checks and antiquated restraints of his guild; and having, doubtless, already sufficiently shocked some of my very good friends, I thank you for the opportunity to offer a few opinions and to ask a few questions, which I hope will be answered by others.

ROBERT C. SPENCER, JR.

Chicago.

Editors, The Architectural Forum: Presumably your question is an expression of the new concern over Government recognition of the engineer as the more effective instrument in our war extremity. Personally, I do not sympathize with this concern, and, moreover, I think there is danger of the present hysteria leading to an effort to recover a more or less imaginary disadvantage by stepping outside hitherto well respected boundaries. Our interest will not unlikely be found to lie in a greater rather than in a lesser detachment from that of the engineer. In some quarters it is thought that the architect had already lost in public esteem through his own disposition to emphasize the artistic rather than the business side of his interest; but I am not aware of any general feeling that the architect has failed to measure up to his business responsibilities. There are some respects, however, in which I believe the profession has put itself at disadvantage—notably by the purely provisional estimate which in ordinary practice the architect himself has been willing to put upon his service. Precisely the same work for which, if directly engaged by the owner, the architect charges a definite commission, will be tendered for nothing in mere speculation to the next comer, who may, if he only desire it, secure as much service simultaneously from twenty others.

The influence of this irregularity on the public mind may be detected when we present our bill to the client for commission on a suspended project. It is never completely hidden from us that our plans have been so far regarded merely as an element in the adventure, and that only the laying of actual bricks and mortar can dignify them into documents of real importance.

I advocate the utter abolishment of competition (except in the case of Government undertakings) as the only way to correct these anomalies. What in the nature of an architect's activities makes it more reasonable that he should gain his client by competition than that the lawyer or the doctor should? We are told it serves to give opportunity for the young fellows, but there is no suggestion that opportunity fails to come to the youth of other professions, nor that those professions are troubled seriously about the measure of their public influence.

Another element of weakness is to be noted in the difficulty with which the public perceives the responsible authorship of the architect in the face of what it conceives to be the qualifying claims of various associated engineers and contractors. It is quite as apt, indeed, to hear associated with a work the name of the contractor as that of the architect, the etiquette of whose code imposes a shy retirement. This is so rare a posture these latter days the world can ill afford to spare it for the blatant aggressiveness which some appear to think the more profitable attitude.

In my view it would be fitting and would meet the case were the Institute, through its chapters, to select annually for conspicuous honor such members of the profession as have designed notable buildings of local importance. In this way there would be perceived more dramatically by the public the normal activity of the architect and his abiding influence on the life and aspect of the community.

CHARLES D. MAGINNIS.

Boston.

Editors, The Architectural Forum: In order to arrive at a thoughtful answer to your question, it has been necessary to cover a great deal of ground both in the past and present. When architecture flourished the architect was the master builder in fact as well as in name. He co-operated with his fellow-craftsmen and together they concentrated their energies upon the task in hand and, united, worked out the problem. This union of effort made each one shoulder his share of the responsibility and created an enthusiasm which naturally follows the pride engendered in an accomplishment well done. This feeling found reflection in the attitude of the laymen who were proud to become patrons and led to a widespread appreciation of the beauty of architecture.

A somewhat similar condition existed in this country during the Colonial and Georgian periods, for the work that has been handed down from these times bears the stamp of refinement and straightforwardness. Then followed an era of architectural oblivion which lasted until the appearance of Hunt and Richardson on the scene. These two and McKim who followed them were exceptionally well trained and had the magnetic quality of leadership. Their influence on the profession is immeasurable; they should be given full credit for the splendidly trained group of men who are to-day endeavoring to create for their profession an atmosphere of dignity and respect. To-day the universities and ateliers are turning out these trained men in goodly numbers and their influence is slowly spreading. In this phase we have the spectacle of a comparatively few

thoroughly trained men taking care of a small percentage of the work for an appreciative but select clientele. In considering the other ninety and nine, it might be well to take the attitude of the layman first. He looks upon building construction as a business proposition, and justifiably so. Primarily so because of his training along mercantile lines. In this he is aided and abetted by the majority of people engaged in building because they are in a position to give him fairly exact information that is considered desirable in such undertakings. The layman would be entirely willing to consult with architects if he realized that it would work to his advantage.

If the architectural quality in buildings has an intrinsic value, the burden of proving it is clearly up to the architect. He must demonstrate his capabilities for handling the work in a businesslike way so as to convince the public of the value of his service; he must be trained to think of his profession as a combination of science, art, and business.

One stumbling block to greater recognition is that the title of architect has no intrinsic value — it is assumed by any one who has the inclination to do so. This condition retards the growth of appreciation for architecture. Without wishing to deny to any one who has the ability to construct safely the right to do so, I feel that they should be prevented from assuming a title that has not been earned by technical training. Other states should establish a standard as New York has done, or Institute membership should be a prerequisite to a certificate of proficiency.

Another detriment is the division of forces engaged in building into groups of professions, trades, material men, and unions, each so intent on emphasizing its own value that it fails to realize the need of interdependence upon others and the tremendous value of co-operation. A unification of these interests would create a feeling of mutual understanding and good fellowship that would be highly educational to themselves and to the public. The architect has so successfully camouflaged himself that to the major portion of the forces engaged in carrying out his design he means but little more than a name on a blue print. Therefore, it is not to be wondered at that he is even less to the public in general.

The architect should become more of an integral part of the community by doing his share of public service. There are so many forms of civic activity that it is entirely possible for him to select some that would appeal to his interest and sympathy. He should abandon the habits and thoughts of a recluse and keep abreast of the times and make his personality felt by the public. One of his chief complaints is the failure of the press to give what he considers a proper recognition in the write-up of buildings. This attitude of the press is a perfectly natural one, for as a rule the building has comparatively little architectural value. When a building is constructed that has general merit, it is always appreciated by the public and credit is given — where credit is due. The profession has been so busy trying to secure individual publicity that it has entirely overlooked the need for educating the public into an appreciation of architecture. When we get over the fixed habit of placing the value of self above the value of architecture, it will be much easier to make progress. An effective means of education might

be the judicious use of the deadly parallel with a merit and demerit column.

A lesson might be learned by the examination of the status of the engineering profession. In this branch when a man is through his school training he endeavors to lay as broad a foundation for himself as possible, and does not hesitate to go into the shop or field in order to secure the desired experience. He seems to adapt himself to the spirit of the times, and all without loss of professional dignity. He seems to have gained in the confidence of the public a recognition that is enviable.

The membership of the Institute shares in the worldwide unrest and is in need of skilful guidance in order to avoid disaster. The Institute is confronted with a condition rather than a theory and should encourage its members to express frankly their opinion of the present status of the profession and endeavor to gain constructive criticism which should be carefully digested and put in some tangible and workable platform for adoption.

E. J. RUSSELL.

St. Louis.

Editors, The Architectural Forum: The trouble with the profession of architecture in this country is largely hypochondria. It sees feverish visions of public inappreciation. It tosses about with dreams of civil engineers driving it out of business with Prussian-like efficiency. It sulks in dejection at fancied slights from the Government. It is worrying itself sick over imagined inability and fancied uselessness during this war. Architecture needs some lusty, big voiced conviction to slap it on the back and say, "You're all right—get plenty of fresh air and exercise and have faith in yourself and, above everything, quit worrying and talking about your troubles."

The other professions, excepting the military, do not seem to be in any better case than our own. They receive a modicum of respect and a patronage limited to the necessity of their clients. The lawyer, I believe, is held in much less esteem than the architect. What the priesthood was to the wits of the Renaissance so the legal profession is in this age—synonymous with trickery and extortion. One would think that the Bar Associations would combat the prevalent opinion that to have to resort to the courts is nothing short of a calamity, and whatever the verdict, the lawyer is the only winner. The medical profession is held in higher esteem, but, on account of its power of alleviation of suffering, is regarded more or less as an eleemosynary institution. The ministry is filled with men with their stomachs empty and their minds filled with perplexities. The pedagogic fraternity is notoriously underpaid.

No; it cannot be said that architecture has been singled out by the so-called human race for studied abuse or neglect. Because we are no worse off than the others is no reason why our position in the aristocracy of the professions cannot be improved and further ennobled. The obvious and the best way, of course, is to do better and nobler work; but we believe that what, to our wonderment, Michael Angelo said of the sixteenth century, we can say with better cause of the present: "The times are unfavorable to art."

Our lives have been cast in the pleasant places of

eclecticism. Truly we have a goodly heritage—the heritage and the inspiration of a glorious time when architecture was a necessity and not a fashion. If, then, we are so bound to the past that we must look backward with Lot's wife, let us not make our calling petty and ridiculous by prostituting it to the "mode" and by making it a plaything to be exploited for the benefit of those able to pay the most, for by so doing architecture will become a pillar of salt that shall have lost its savor.

A case in point is the servile copying of varieties of styles such as the recent rage for Adam or the raptures of a dilettante architect and his ultra-fashionable client over a piece of period furniture or a mediocre ceiling ravished from thrice looted Italy. The rugged independence of Richardson, the serenity of McKim, the originality of Cram, show a nobler conception of an architecture in which the art of the past is regarded as a trust and not a treasure-trove to be looted and despoiled.

The respect with which we treat architecture will be reflected in the opinion of the laity. Respect can be augmented by understanding, and understanding can be brought about by education. The introduction of the history and philosophy of architecture into the curricula of our cultural universities and colleges and the high schools as well should be urged by the profession.

Buildings during and after construction should be signed by the architect with his insignia of membership in the Institute, thereby instructing the public and fixing the responsibility of authorship. In constructive methods within the body architectural, rather than by railing at an allied profession or by beating on the portals of an unsympathetic officialdom, may architecture be developed in order to win a larger recognition.

THOMAS E. TALLMADGE.

Chicago.

Editors, The Architectural Forum: In the modern rush and cry for efficiency, the architectural profession seems to be pushed one side. The public is turning to the engineer, and the architect is looked upon as a luxury.

How can a larger recognition of the profession be developed? It is no new problem. This question has been before the profession for a long time. Undoubtedly, before the war, through the activities and publicity carried on by the American Institute of Architects, the profession was beginning to receive a better recognition, but even then it was far from being appreciated.

The public still seems to look upon the architect as an artist and an impractical man. The entrance into the field of mechanical engineers, who from their very training must approach the building problem from a narrow minded point of view, was becoming more and more a source of worry to the profession, and signs of a large class of building being turned over to them, caught by their cry of efficiency first, was apparent.

Certainly the architect, by his very education, training, and experience, is better qualified to handle successfully a building operation, but the public does not appreciate this. Why?

I cannot help but feel that this condition is largely due to the manner in which architects have approached the public. They go forward with a sketch in their hand

and lay stress on their artistic ability and seem afraid some one might think they were practical. Naturally, the art side of the profession appeals to them in most cases first. It is the first taught in the schools, and the greatest stress is laid on it in the education of young men, and their administrative qualities and practical ability only begin to get their development when the actual work in their profession commences.

The war may remedy to a certain extent this situation by the fact that many architects are going to be put in places of responsibility and administrative work where the public will have a newer insight into their ability.

As the artists of to-day are showing the usefulness of their training for practical war purposes, so the field is open to the architects to show their ability to handle intricate war constructional and administrative problems which the public has heretofore thought belonged to others.

Architecture is ornamented construction and not constructed ornament! Show the public we can be practical men as well as artists.

Boston.

ARTHUR WALLACE RICE.

Editors, The Architectural Forum: There are no doubt many ways by which the practice of architecture might be developed so as to win a larger recognition; but at this particular time there is one way which seems to stand out and offer itself as a most promising opportunity to accomplish this end, viz., for architects to interest themselves in factories, warehouses, industrial and commercial buildings. This is a field of work so large and important that if once entered into generally by the profession, it would eventually secure a recognition far wider than it has now, and what is also important is that the practice of architecture would then develop naturally along the lines in which a large part of the people of this country are engaged. It will probably be recalled by many that there is actually a third of our entire population interested in manufacturing alone, counting the owners, employees, and their families.

It should also be pointed out that it is an unnatural thing for the architects of a nation or people to fail to take the leading part in erecting the buildings needed for the principal pursuits of the people. Architecture has always claimed the function of expressing, in at least a recognizable degree, the character of the people; and if the leading trait of character of Americans is for making things and trading with people, and if American architects leave for others the work of designing the necessary buildings for these pursuits, then the present practice of architecture is out of harmony with the spirit of the times, and consequently fails to secure the full recognition to which the profession is properly entitled.

An evidence which seems to indicate that this state of affairs prevails to a certain extent just now, is the fact that architects were not called upon at first to any important extent to assist in the great construction work for the war.

It may be that the reason why architects have not undertaken factory and industrial buildings is because they do not understand that such problems to-day usually involve opportunities for the most scientific and interesting planning, also problems of design, sometimes

grouping and landscape studies, and nearly always problems of a most important character that have to do with the health and welfare of the employees.

From a standpoint of giving valuable service there is also the opportunity of doing a lot of good for the masses of the people, and along with it the chance to take an important part in improving the standards of manufacturing and industries throughout the country.

The more one investigates this field of work, the more it reveals all the inducements apparently necessary to attract the attention of the profession; yet in order to bring about even its consideration by architects, it will be necessary to pursue a more or less persistent policy of promoting the subject.

As to the best means of securing such work, it appears that there is no very effective way outside of the personal efforts of each architect who may be in sympathy with the movement. It is almost certain that the prospective client will not seek the architect who has never done any of such work, so that if the architect wants it, he will simply have to go after it. There is everything favorable on the architect's side for attaining success, however, if he will only take advantage of it. This work belongs to the architect above all others, because his training, education, and the nature of his profession peculiarly fit him to perform the complete services required better than any other profession or calling could do.

It is also true that those factories and industrial buildings which have shown the greatest advancement and improvements in recent times are those which have been designed by architects.

At any rate, those who have already engaged in this work can say like the small boy who has taken the first plunge, "Come on in, the water's fine."

Chicago.

GEORGE C. NIMMONS.

Editors, The Architectural Forum: The practice of architecture can be developed and can win a larger recognition by taking larger possession of its rightful field in human society.

The profession must give the public the needed assurance that it is competent to construct soundly and economically, and that it will conduct the business of spending its clients' money wisely. This is assumed with regard to the engineer who does not have to struggle against some of the unfortunate notions that the public associates with architects. Possibly the best way to accomplish this is by state registration.

As it would be unreasonable to exclude the engineer from such a licensing plan, the architectural profession, in order to differentiate itself, must make known the value of the art of architecture to both the body and the soul of society, and must demonstrate this value in its work.

The art of architecture is either the esoteric pastime of a few, or a means by which all may be instructed and ennobled. The ready abandonment of its satisfactions in times of economic stress suggests a widespread belief that the former is true. The latter is asserted to be true, and the failure of the generality to enjoy architecture is said to be due to lack of "appreciation." This is a lame excuse. The easy accusation of the layman blinds

the profession to the real truth. The art is dumb, or what it has to say renders the layman hostile, and for these faults the responsibility is on the profession itself.

The art of architecture has for the most part served wealth. Fine buildings are created to advertise business and increase wealth or to gratify the indiscriminating pride of possession, or to please the ill or misinformed dilettante and critics. Overornate office buildings, the palaces of the rich, extravagant banking institutions, do not make a high appeal to possessors or beholders. Even in some of our universities, architects have lent themselves to the production of Roman splendors, which in imaging the concentrated power and dulled vision of the creators of this type of architecture unfortunately characterize its purchasers of the present day. Architects do not lead, but cater only. In some of our hospitals great useless columns have been introduced, each of which represents a substantial part of the endowment of another bed.

This work is carried on in secret; it is hidden from the eyes of the public. The architect, when asked to explain or justify these productions, which have a base meaning or none, or are an actual economic waste, rebels. In his ignorance of the power of his art he takes refuge in empty assertions as to the value of art and his sacred profession. Is it a wonder that the public does not look at architecture, and when it does think of it, regards it as unnecessary, costly, and meaningless?

The pity is that it is not known that this is not the best that the profession can do or is doing. Not all the rich house themselves vulgarly and ostentatiously. In constantly increasing numbers, architects are beautifully translating into vivid forms that all can understand the habitations of the responsibly powerful, who have an unobtrusive conception of their duty to society, and are building universities that are permanent testimonies of a desire to serve quietly and modestly. Architects have rendered society a vast service in the progressive perfection of many modern types of building, notably the hospital and the schoolhouse.

Because there is nothing but subservient criticism of the art, the public cannot discriminate the good from the bad or harmful work. For its success it needs the courageous damnation of the obscure and meaningless, no matter how much it cost or how permanent its form may be. Failing to know good from bad, or not daring to say what they think of the endless maladaptation of anachronistic architectural fetishes, the critics, whether in or out of the profession, take easy refuge in history and archæology as a means of acquainting the public with the sources of the architect's "inspiration." Appalled by the initiation alleged to be necessary for "appreciation," the public gives up the whole matter.

Lock up the historical pictures and all histories, and put an embargo on architects! Make them look at what is being done now. The teachers say with their mouths that architecture is the outgrowth of its own civilization. Let us believe wholly what they say faint-heartedly, and look at our civilization in which reside the meanings which we must express. We must sympathetically share its better spirit and set it down in solid structure. We must use only such forms as have meaning. We must teach the people to read these simple forms until every

one knows, without further teaching, the inherent and inseparable significance of this art. Then will civilization lose the embarrassment which it feels in the expression of the surpassing motives which now lead it.

By the million, men are pledging their lives in a cause in which they have such an universal and absolute faith as the world has never before dimly glimpsed. State after state is reconstructing its whole social organization, beginning for the first time in history with the man at the bottom, housing him in fit dwellings, in gardens, in communities of sweetness and light. Man is mounting step by step in a confidence that fair play to his fellowman and constant sacrifice for that highest good is his best life. His soul will be fortified to continue in this path if we can so share this spirit as to embody it in some degree in every building whether it serve him humbly for an humble purpose or nobly for a noble purpose; for these testimonies are a part of him now, and will thus continue to be the best part of his spirit to him and his children and his children's children.

Cease to adore and deplore the past! The industrial villages of war-time England mean more than the cathedrals. The great selfishness of the world is destroying those. The great unselfishness is erecting its own monuments in our own moment. How large a part shall we have in the spread of unselfishness, in the conduct of the battle against the selfishness on this side of the trenches? Just in the measure that we join our force to every force that is working to this end and reveal to the present the soul of the present, shall we cease to pander and really take up that service which is ours, of experiencing and giving form to the faith of man. Working with this best religion that has ever been we can free the world from the Frankenstein of Science.

If we can perform this service in any measurable degree, think you civilization will lightly consider its debt?

Boston.

WILLIAM L. MOWLL.

Editors, The Architectural Forum: In what manner and by what means can the practice of architecture be developed in order to win a larger recognition?

By publicity! Through this means only can anybody or anything win a larger recognition. Publicity for developing the practice of architecture does not imply similarity to the usual commodity advertising. It means tactful and dignified *constant instruction*, always interesting as well as beautifully presented, along the following lines:

1. SCHOOL INSTRUCTION.

a. Hang photographs and drawings of architectural interest on the class-room walls.

b. Make free-hand drawing and modeling compulsory everywhere.

c. Give illustrated lectures on architecture, preferably with the courses on mythology and history.

d. Have the pupils visit the museums and important buildings under the guidance of competent architects.

2. INDIRECT PUBLIC INSTRUCTION.

a. Carve the architect's name on the exterior of his building, as in France.

b. Insert illustrated, non-technical articles in the monthly magazines.

c. Show moving pictures illustrating how the different

peoples live. Never show historic monuments without interspersing some human element of interest.

d. Associate architects with community work. Amalgamate their too numerous societies under the recognized American Institute of Architects, a representative of which is to be appointed to serve in each town council in an advisory capacity.

3. DIRECT PUBLIC INSTRUCTION.

a. Write articles for the daily papers describing, and during, the construction of meritorious buildings. Correct instantly any misleading statements or erroneous conclusions regarding matters pertaining to the fine arts.

b. Have all chapters of the American Institute give semi-annual public exhibitions in which works are to be shown from their inception to their completion. Water-colors, sketches, and drawings — not photographs — to predominate.

c. Spread propaganda by means of moving pictures, etc., showing interesting works of architects in engineering and decoration during their erection.

d. Give an actual demonstration of the sincerity and common sense business ability of architects and their work; omit absolutely all freakishness and "stunts."

e. Let the American Institute of Architects advertise. An excellent beginning would be a timely, tasteful, and tactful display in the daily papers throughout the country for the Fourth Liberty Loan.

HERBERT R. MAINZER.

New York.

Editors, The Architectural Forum: Perhaps the following sermon heads may give suggestions in answer to your question:

1. By acting habitually through the A. I. A. and its chapters; in other words, acting as a compact professional body and not as individuals.

2. By carefully selecting the officers of the A. I. A. and its chapters so that they will continue to represent the profession at large, and not a section or a faction or a group of dreamers.

3. By convincing the members of our profession that the maintenance of ethical standards is the only right road to business success.

4. By making the public believe in us because we believe in ourselves.

5. By uniting with our appreciation of beauty a thorough knowledge of practical considerations and a recognition of the constant changes in modern life.

6. By forgetting the everlasting self-seeking.

7. By such education and by such combination of the various professional specialties as will enable architects to control all building, because architects are the best fitted for such work.

8. By such interest and participation in public and quasi-public affairs as will show that architects are men of general ability and civic pride, and not merely self-interested practitioners.

9. And, last and not least, by such inspiration and thoroughness in design as will give convincing solutions and satisfactory wearing qualities; in other words, every building a monument.

Boston.

HARRY J. CARLSON.

Editors, The Architectural Forum: The fact that this question may be raised is sufficient evidence that architects recognize the need of an intelligent answer and that the laity cannot or will not furnish it. The solution of the problem — and it is a vital problem in peace times, but much more vital in times such as these — must be worked out by the members of the profession in terms which will mean something to the business world. It is astonishing how few men, who are not in direct touch with constructional problems or building enterprises, realize the tremendous scope of an architect's training. Professional men, business men, and the laity in general think of an architect as an artist whose knowledge is limited to making pretty pictures and drawings. They feel that by employing an architect they are evidencing good taste and indulging in a luxury. They do not recognize that as an investment the services of an efficient architect return as good a dividend as any other phase of building development.

The education of the general public is one of the first and most important steps. The status of an architect must not be ambiguous, and the value of his services must be intuitively recognized. Under the conditions existing in the profession to-day the term "architect" is not an evidence of ability. Many are now practising under this title who not only have not the necessary ability, but who are a real menace to the profession, as well as to good building construction. The layman cannot know this except at the cost of bitter experience, unless some means of differentiation is afforded him. Those whose experiences have been acquired through association with incompetent "architects" are naturally inclined to minimize the value of the services of the entire profession. Some method must be evolved to place before the public a condition which will reduce to the least degree the chances of an error in the selection of an architect. Such a result may be obtained by establishing certain legal restrictions, which will preclude the possibility of any one using the title who has not demonstrated his ability.

The licensing of the architect would, to an astonishing degree, free the profession from the incubus of the unintelligent, untrained, unfitted man who now attempts to practice.

Why should not a profession in whose charge rests the expenditure of vast funds of other people's money, whose responsibility for the enduring character of the development does not end with the final payment, whose mistakes may mean loss of life as well as money, be subjected to regulation? A rule governing the licensing of architects should not exempt any one from the necessity of an examination, not even older men of the profession whose ability is unquestioned and will always be recognized.

The public should be asked to co-operate, and architects should meet with various other business and professional and trade bodies so that all of these other organizations among the laity might get to know the ideals and the high standards for which an architect stands and have some knowledge of the exacting requirements of the profession. This would tend to turn over to architects many of the large contracts involving architectural problems which are now entrusted to en-

gineers. It would also acquaint the public with the fact that primarily the architect is an engineer. The exact status of the architect must be fully understood by the building and investing public before a large recognition can be expected.

Architects must be prepared to face big problems which are continually arising and which will arise in a far greater degree at the close of the present international conflict than any problems which have so far developed. It is only by keeping in touch with the development of the business world and by contact with men of large business experience that the "organization" end of architecture can properly keep pace with the developments of the æsthetic side.

The business end of the architect's office is an exceptionally important part. Too many offices are conducted on the basis of an adjunct to an art shop rather than a direct business proposition, and it is in a large degree due to the laxity of the methods of the architect's office that the business man feels skeptical about entrusting important work to him.

Unless architects are willing to change from slipshod methods to sound principles of real business, they may well expect to see important work which they might have, turned over to engineers. The office of the designing engineer is based on real efficiency. Pure

architecture is subordinate to "getting results." Our profession must also show some appreciation of these facts and build itself on a solid foundation of accurate information, keen business principles, and service.

Our national body, the American Institute of Architects, should be and is the natural leader in any movement to better the status of the profession at large. However much we may be disposed to criticize any restraint over individual action, however much we may deplore certain "rules" which may seem antiquated or unprogressive, we must still support wholeheartedly and vigorously the parent organization. Suspicion, doubt, and distrust must be laid aside. All must pull together or we shall pull apart. Unity of action among individual members and chapters alone will give the solid support without which the efforts of the Institute will be seriously hampered.

As architects, a few may individually gain wide recognition by virtue of special opportunities and special ability. As a profession we can gain larger recognition only by the elimination or education of the unfit, by a general knowledge on the part of the public of the requirements and abilities of the profession, and by consistent, coherent, united effort on the part of architects themselves.

Boston.

CHARLES A. WHITTEMORE.



From "Old Cottages in the Cotswold District"

Manor Farm, an Old Cotswold House at Temple Guiting, Gloucestershire, England



A Group of Stone Houses at St. Martins Green, Philadelphia

By HAROLD DONALDSON EBERLEIN

"**B**EAUTY is the most utilitarian asset we possess." Such is the dictum uttered, not long ago, by a manufacturer credited with a full share of shrewd practicality and known for the success that had rewarded his business undertakings. Just who it was that so tersely voiced an important truth, or just when, the writer cannot now recall, but that is quite beside the mark. The truth of the statement itself, the wide scope for its application in manifold connections, its concrete illustration in the building development of St. Martins Green, Chestnut Hill, Philadelphia, and its obvious justification in a tangible return of dollars and cents, are the facts that really count and afford food for mature reflection.

In the July number of *THE ARCHITECTURAL FORUM* were discussed the brick houses of Linden Court, a single unit in the general scheme of neigh-

borhood building. At that time it was pointed out that the groups of dwellings contiguous to St. Martins Green presented a satisfactory solution of the double problem of meeting housing needs for people of moderate or comfortable circumstances, through speculative building for tenancy, and, at the same time, of serving a coherent and comprehensive program of city planning; it was likewise pointed out that such speculative building, under the right direction, was fully "compatible both with legitimate architectural ideals and with sane neighborhood planning aims." It was furthermore noted that one controlling ownership made it possible to allow properly for the lie of the land in planning for groups of houses, and that the work was entrusted to three architects, — H. L. Duhring, Jr., of the firm of Duhring, Okie, & Ziegler, Edmund B. Gilchrist, and Robert Rodes McGoodwin, — who collaborated for the general com-



Two Views in Living Room in House at Left in Above Group

position of the grouping scheme, but enjoyed ample independence and latitude for individual interpretation each in his own groups. We now come to the several groups of stone houses, each group a significant factor of the neighborhood *ensemble*.

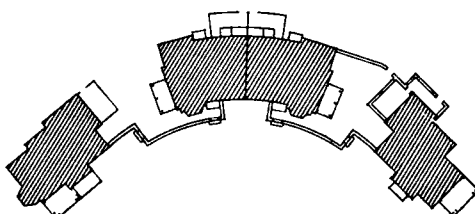
The first of these, consisting of four houses built in a quadrant, with convergent fronts — a peculiarity of arrangement that has gained the group the semi-humorous sobriquet of the "Half Moon Houses" — faces northwest on Lincoln Drive, a roadway that runs diagonally through the St. Martins Green tract. The particular bit of land upon which the quadrant houses are built was thus rendered of such shape and dimensions that no equal distribution of ground between the houses, in the usual conventional manner, was possible. The house at the north end would have had too little and the house at the south end would have had too much; had the houses been faced in a straight row, according to common practice, the lots would have been of awkward shape as well as unequal in extent. It was obviously best, therefore, to break deliberately away from all sanctions of common usage and, with such precedents in mind as Piccadilly Circus, the Royal Crescent at Bath, or some other like British prototype, set all the houses as near as might be to the eastern boundary of the plot and face them convergently in a crescent or quadrant toward Lincoln Drive, with an open space of common ground spreading out between them and the road — a feature for the occupants of all the houses to enjoy equally and a surety that the group would make

the most effectual showing. It was merely a logical application of the principle of massing units to get an effect — a device fully warranted by the result.

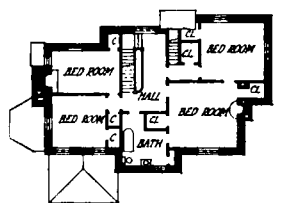
The individual kitchen yards are sufficient for all practical purposes as service and drying enclosures, but were kept down to a minimum and so disposed as not to be in conspicuous evidence, no matter from what angle the group is viewed. The composition as a whole exhibits unity of mass and style, but, as the illustrations indicate, there is enough agreeable diversity between the units of the group to give each house a separate individuality.

The style of architectural expression adopted is a modification of the Cotswold type, a style well suited to the consistent and successful use of the local building material — the native Chestnut Hill gray stone. The walls are of rough, quarry faced oblong blocks of varying lengths and thickness, all of them, however, fairly thin, and the mortar joints are raked. Door and window trims, the upper stages of the chimney stacks, and the moulded chimney caps are of the same stone dressed. The long hoods bracketed out above three of the house doors were cast in concrete and tooled to a rough surface, as it was not expedient to quarry blocks of the requisite dimensions. The concrete was carefully mixed for color, and tool

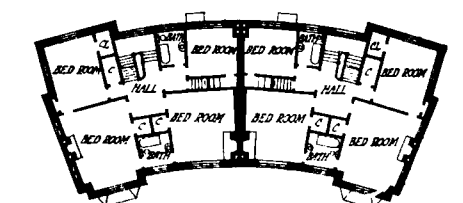
dressing brought the surface into harmony with the contiguous stone. Close examination of the illustrations, especially the illustrations of the houses yet to be considered, will show that the native stone is susceptible of being effectively dressed into



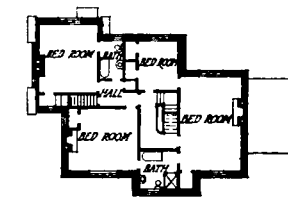
Block Plan of Quarter Circle Group



First and Second Floor Plans
of House at Left



First and Second Floor Plans of Center Houses



First and Second Floor Plans
of House at Right

Quarter Circle Group of Houses at St. Martins Green
Duhring, Okie & Ziegler, Architects

mouldings both for exterior and interior use.

All exterior woodwork is of oak, pinned together with oaken pins, and allowed to weather to some extent before any sort of dressing was applied. The entire dressing consisted of a coat of boiled linseed oil and, in certain places, a very little stain to accelerate what coloring the weather had already begun. The fashion of all the woodwork is of the utmost simplicity and vigor, and the overlapping plank-hung porch ends are especially satisfactory in aspect. Most of the down pipes are of glazed terra cotta drain piping, while a few are of lead with lead rain-water heads cast with a simple decorative device in relief, a bit of decorative craftsmanship that might profitably be developed to a greater extent as an accessory factor of interest in our domestic architecture. The cut stone upper stages of the chimney stacks, — some of them are paneled — topped with moulded caps, afford a note of amenity that materially contributes to the comeliness and pictorial value of the design.

While the pictorial value of the composition has been carefully considered, the thoroughly practical requirements have in no way been sacrificed, for



Living Room in House of Navaho Street Group

they were the fundamentals upon which all else was based and from which the whole conception sprang. Without being large in either appearance or reality, the houses are commodious and so compactly planned that the utmost value is derived from every inch of space. Inspection of the floor plans will show that the rooms, though comparatively few in number, are of good dimensions, and that exceptionally adequate provision has been made in the matter



Detail of Entrance and Library in Navaho Street Group of Houses

Edmund B. Gilchrist, Architect

of ample closet space and large bathrooms. The irregular shapes of the rooms in the two middle houses, caused by their radial treatment, might at first seem to some an inconvenience. As a matter of fact, however, any one familiar with the same feature in eighteenth-century houses in England knows that it is not objectionable, and the experience of the occupants of the quadrant houses at St. Martins Green bears out this verdict. Indeed, the houses do even better than they promise on their face, for the expanding amplitude inside is appreciable physically as well as visually. In view of the manifest practicality of the scheme, the radial device to suit a peculiar condition must be acquitted of any charge of whimsicality that the over-conventionally minded might be inclined to prefer against it. The small window within the living-room fireplace of the north house is an echo of a local eighteenth-century precedent.

The second group consists of two houses on an irregular shaped plot on the opposite side of Lincoln Drive and partially shut off from that thoroughfare by a sunken garden, pool, and shrubbery masses, contrived as a part of the neighborhood scheme of embellishment, on a low strip of ground, the former bed of a brook, that would have been unsuitable for building purposes. One of these houses

was designed by Mr. Duhring and the other by Mr. McGoodwin, and both were faced, at different angles, to get the most agreeable exposure and view. These houses also plainly proclaim their Cotswold lineage and that both, though quite different to each other, accord so well in character, is one of numerous evidences of the unanimity with which the three architects have collaborated. The native stone has been wrought into more elaboration of moulded trims on the walls of these two houses than on the quadrant group and, inside the house by Mr. McGoodwin, the dressed stone has been used for the whole chimney-piece. Though not ordinarily employed in this manner, the working of the native stone into mouldings has proved entirely satisfactory. The fact that casement windows occur throughout both houses is an important factor in the general tone of their aspect. One especially interesting item is the treatment accorded the dormers in the house by Mr. Duhring. The sides of these dormers, instead of being shingled or slated in the usual manner, are hung with overlapping, beaded edge oaken boards in the same way as the porch ends of the quadrant houses. The terrace before each house is laid with stones of random shapes and sizes; in one case the stones are set in cement, in the other there are open earth joints grown with grass and clover.

On Navaho street, nearby and within full view of the other groups, is the third group, consisting of four dwellings designed by Mr. Gilchrist in a very pronounced Cotswold fashion, fully harmonizing with the generic style of the houses already discussed but differing from them altogether in the individual mode of interpretation pursued. They are smaller than the other houses, but though less in size they are not less in degree of charm. In the matter of material, the architect has departed from the practice, observed in the other two groups, of using only the native stone for all purposes and has introduced buff Indiana limestone for the cut trims of round headed windows, wherever they occur. Another pleasant touch of variety in the use of materials is seen in the three narrow courses of flat tiles above the house door in one case, the topmost row projecting slightly to make a drip course.

The exterior woodwork is of oak and, as in the quadrant houses, pinned together with oaken pins, the pin heads left projecting. No finish nor dressing of any kind, not even an initial coat of boiled linseed oil, has been applied: sun, wind, and rain are the sole modifiers. This treatment or, more properly speaking, lack of treatment, is quite justified physically by the experience of ancient precedent in England; visually it is fully justified



Living Room Mantel, House of Spencer Ervin, Esq.

by the present agreeable appearance of the wood which constantly improves in color with the passage of time. There is no paint to be seen anywhere on the exterior of the houses, for the casements are of metal with leaded glass; the only color variation from the gray of the stone with its occasional patches of tawny rust is in the silvered weathering of the window frames and mullions and in the slight dash of deep reddish brown in the thin tile drip courses above them.

There is a bit of subtlety in this abstention from paint and color contrast at all the window openings; the absence of such items to arrest the eye contributes to the apparent size of the house. Another bit of subtlety, which has its effect both without and within, is seen in the metal casements with their narrow leaded lines. As in the Linden Court houses, all interior woodwork and all projections have been kept refined



Hallway in House of Edward Clark III, Esq.

in scale and as flat in contour as possible, all of which tends to create an impression of space in relatively small rooms. On the outside, the fine leaded lines of the casements and the inconspicuous window details serve by contrast to emphasize the scale and vigor of the porches, with their boldly cut native stone mouldings, the chimney stacks, and other projecting masses.

In their whole presentation the four Navaho street houses, without any suggestion of mere archaeological copying, express with unusual fidelity the spirit of the Cotswold mode which the owner desired

to embody and which, as already noted, was peculiarly suited to a successful rendering in the local building material. The "paper-shell" dormers, thinly framed in oak with rough cast sides and gables, afford a happy instance of consistency with the rest of the composition. Nowhere is there any affectation.



View of Living Room in House of Edward Clark III, Esq.
Duhring, Okie & Ziegler, Architects

The construction cost of the Navaho group was 25 cents per cubic foot; the house in the second group by Mr. Duhring cost 22 cents per cubic foot and that by Mr. McGoodwin 25 cents; the quadrant houses 22 cents per cubic foot. It is quite true that houses of the same size might have been built for less money; it is true, also, that more houses of less original conception, allowing less space to each house and paying less heed to considerations of outlook and the lie of the land, might have been erected on the same area. But to have done any of these things would effectually have destroyed individuality and all the other qualities that go to make residence at St. Martins Green eminently desirable, create a waiting list when other houses of like size in the vicinity long remain idle,

and make it possible to ask a higher rental than similar houses elsewhere bring. The initial cost of construction was somewhat greater than for many other dwellings of equal extent, but all the houses are so honestly built of the most durable materials that deterioration and outlay for repairs fall far below the average in other cases. In the end, therefore, the St. Martins Green groups cost really less than the structures ordinarily erected for tenancy by the speculative builder. This quality of permanence and the character of the setting together render St. Martins Green, from a purely business point of view, a more sterling investment than a like extent of the usual speculative building and, incidentally, a justification of the dictum quoted at the outset of these remarks.



Detail of Entrance Porch

House in Stone Group on Navaho Street, St. Martins, Philadelphia
Edmund B. Gilchrist, Architect



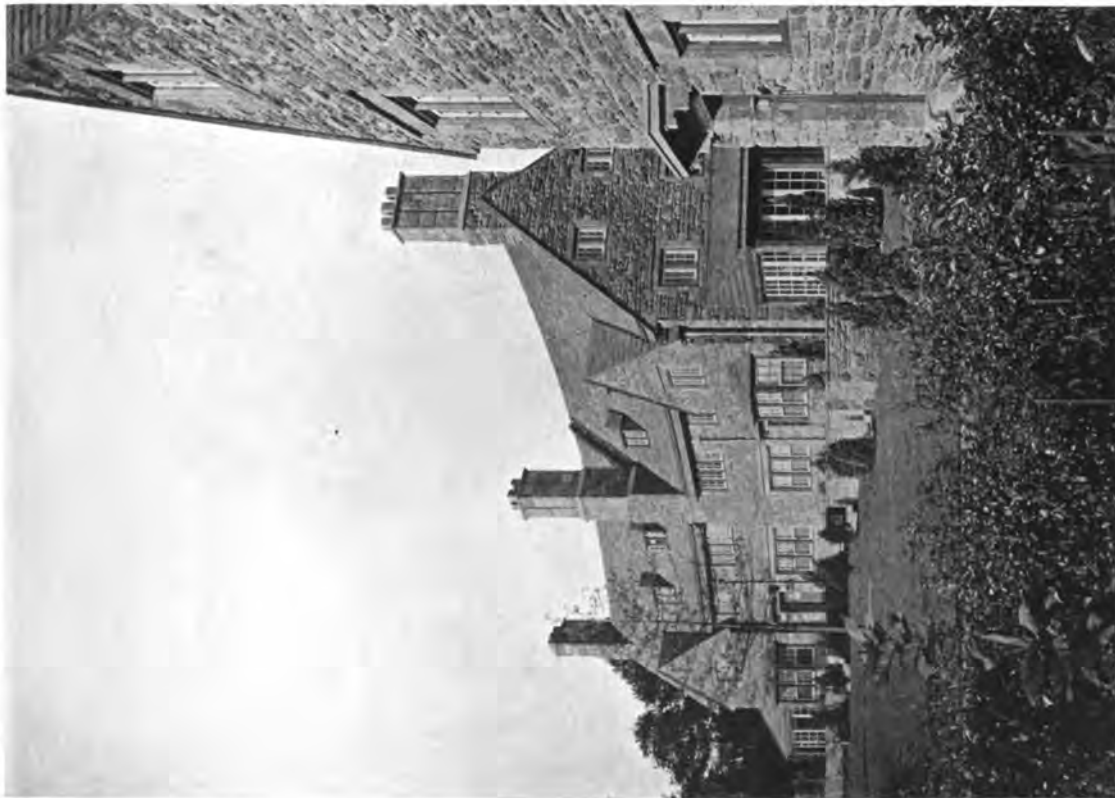
DETAIL OF NORTH END OF CENTER HOUSE

GROUP OF HOUSES AT LINCOLN DRIVE AND WILLOW GROVE AVENUE, ST. MARTINS, PHILADELPHIA, PA.
DUHRING, OKIE & ZIEGLER, ARCHITECTS





NORTH END OF NORTHERN HOUSE



VIEW ACROSS FRONT OF CENTER HOUSE

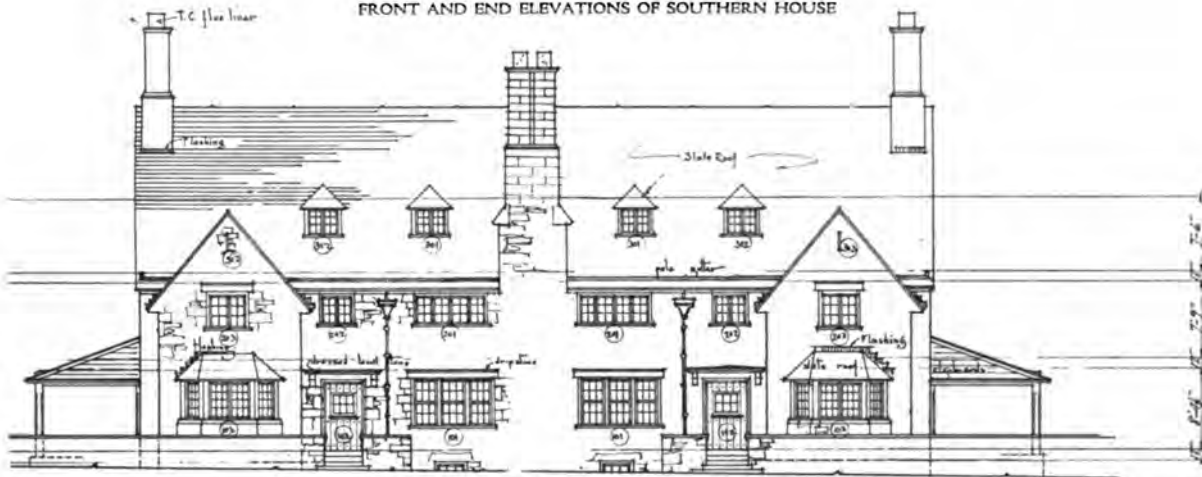
GROUP OF HOUSES AT LINCOLN DRIVE AND WILLOW GROVE AVENUE, ST. MARTINS, PHILADELPHIA, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS

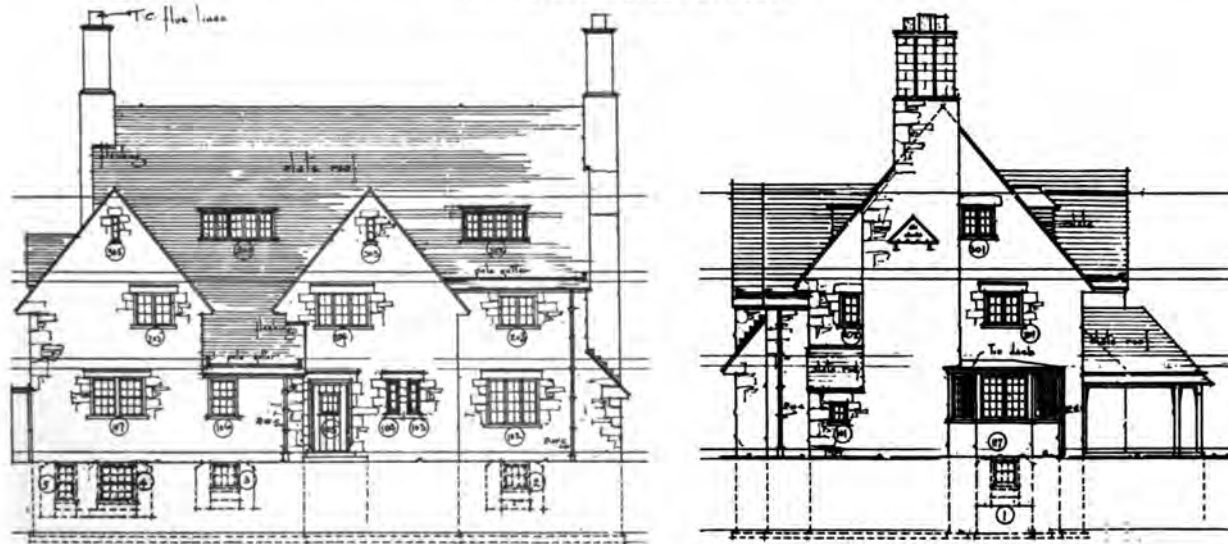




FRONT AND END ELEVATIONS OF SOUTHERN HOUSE



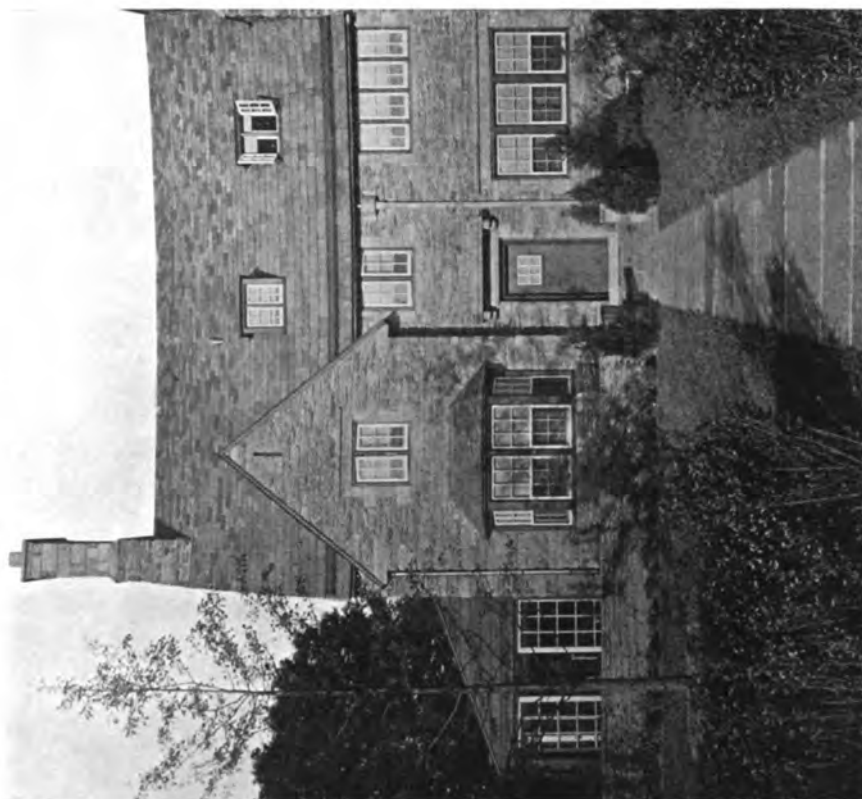
FRONT ELEVATION OF CENTER HOUSE



REAR AND END ELEVATIONS OF NORTHERN HOUSE

GROUP OF HOUSES AT LINCOLN DRIVE AND WILLOW GROVE AVENUE, ST. MARTINS, PHILADELPHIA, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS



NORTH END OF FRONT FACADE, CENTER HOUSE

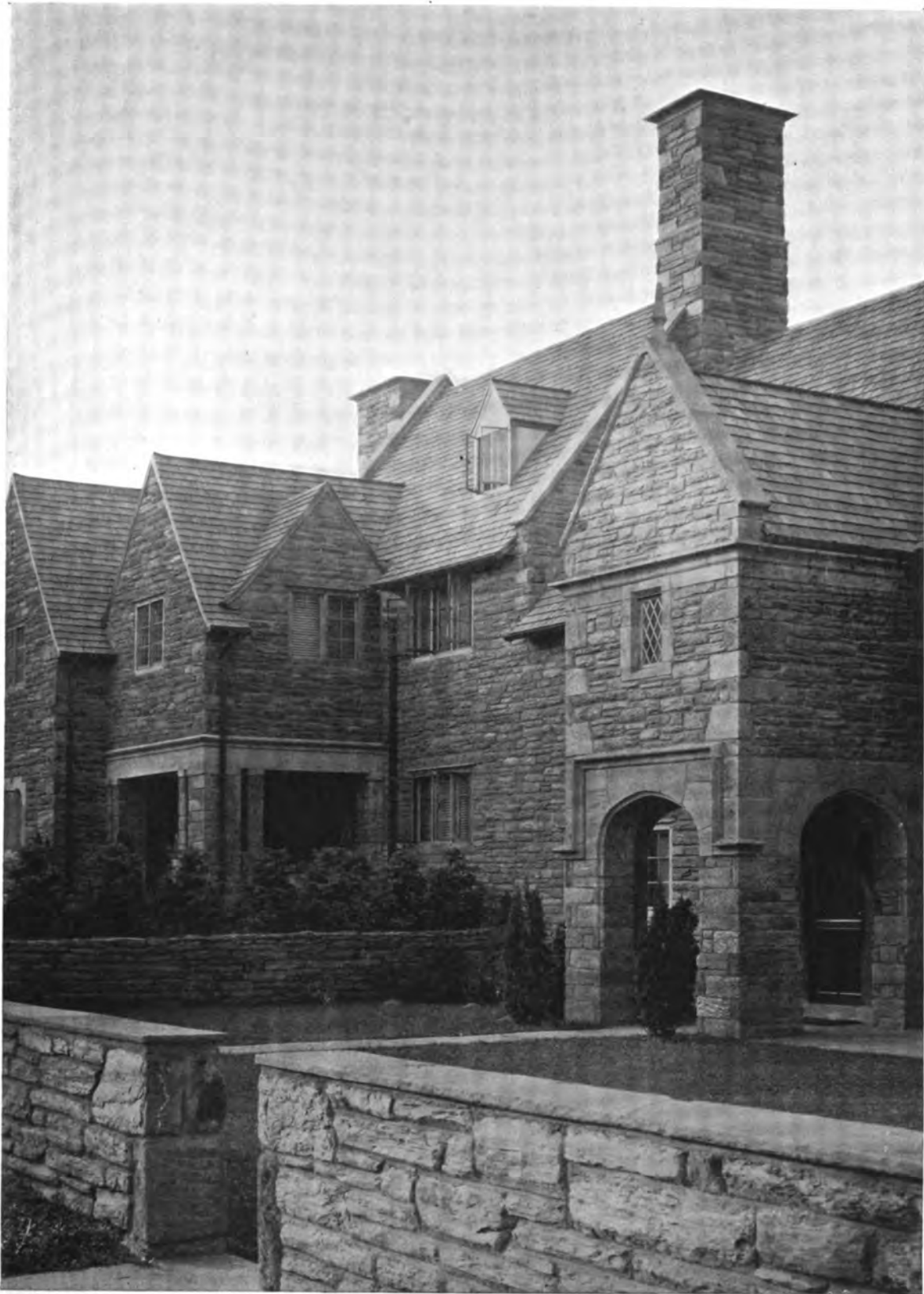


VIEW OF SOUTHERN HOUSE FROM THE REAR

GROUP OF HOUSES AT LINCOLN DRIVE AND WILLOW GROVE AVENUE, ST. MARTINS, PHILADELPHIA, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS





DETAIL OF ENTRANCE SIDE OF CENTER HOUSES

GROUP OF HOUSES ON NAVAHO STREET, ST. MARTINS, PHILADELPHIA, PA.
EDMUND B. GILCHRIST, ARCHITECT



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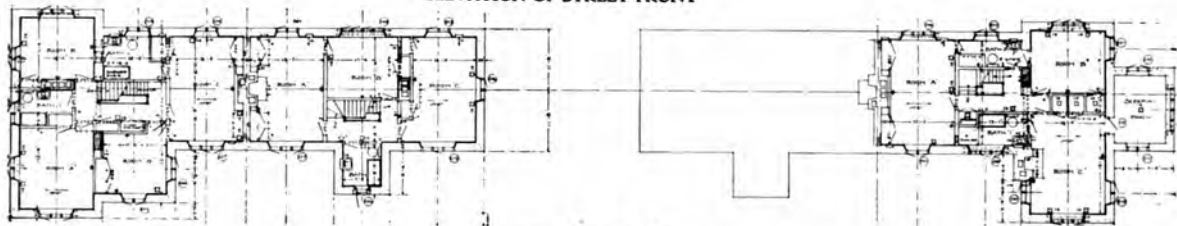
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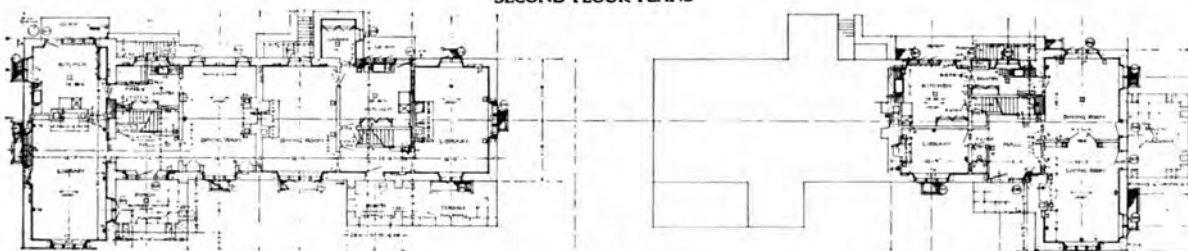
GENERAL VIEW LOOKING ACROSS STREET FRONTS



ELEVATION OF STREET FRONT



SECOND FLOOR PLANS

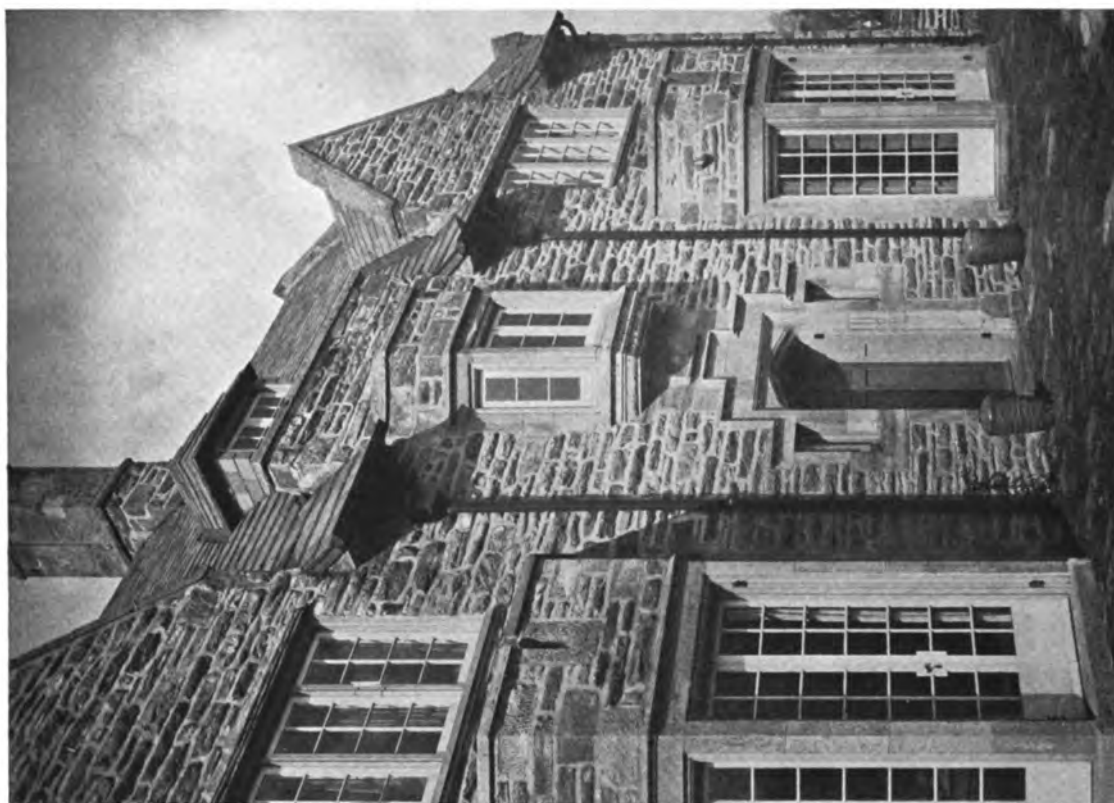


FIRST FLOOR PLANS

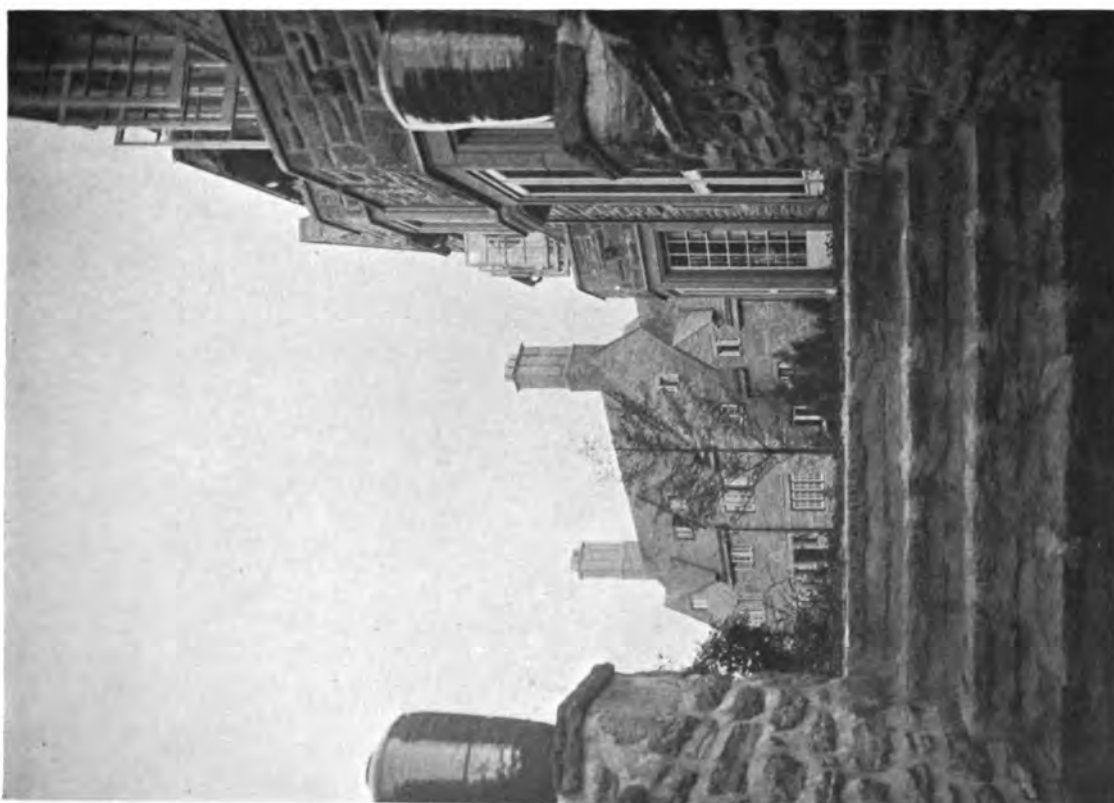
GROUP OF HOUSES ON NAVAHO STREET, ST. MARTINS, PHILADELPHIA, PA.

EDMUND B. GILCHRIST, ARCHITECT

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DETAIL OF GARDEN FRONT
HOUSE OF SPENCER ERVIN, ESQ., ST. MARTINS, PHILADELPHIA, PA.
ROBERT RODES MCGOODWIN, ARCHITECT



VIEW LOOKING ACROSS TERRACE

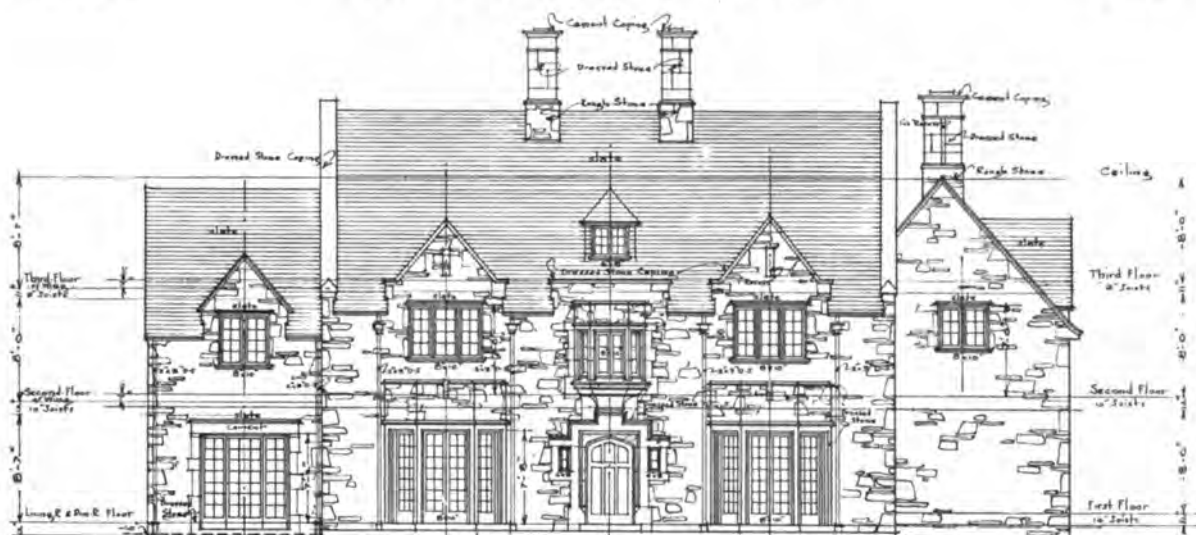
22



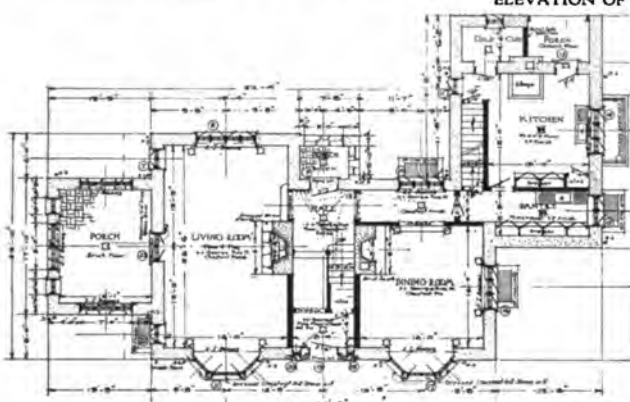
GENERAL VIEW OF ENTRANCE SIDE

HOUSE OF SPENCER ERVIN, ESQ., ST. MARTINS, PHILADELPHIA, PA.
ROBERT RODES MCGOODWIN, ARCHITECT

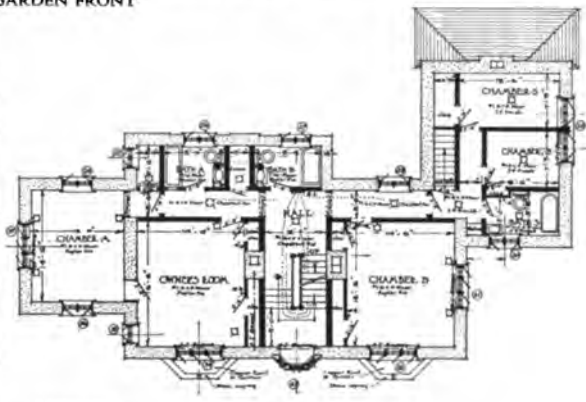
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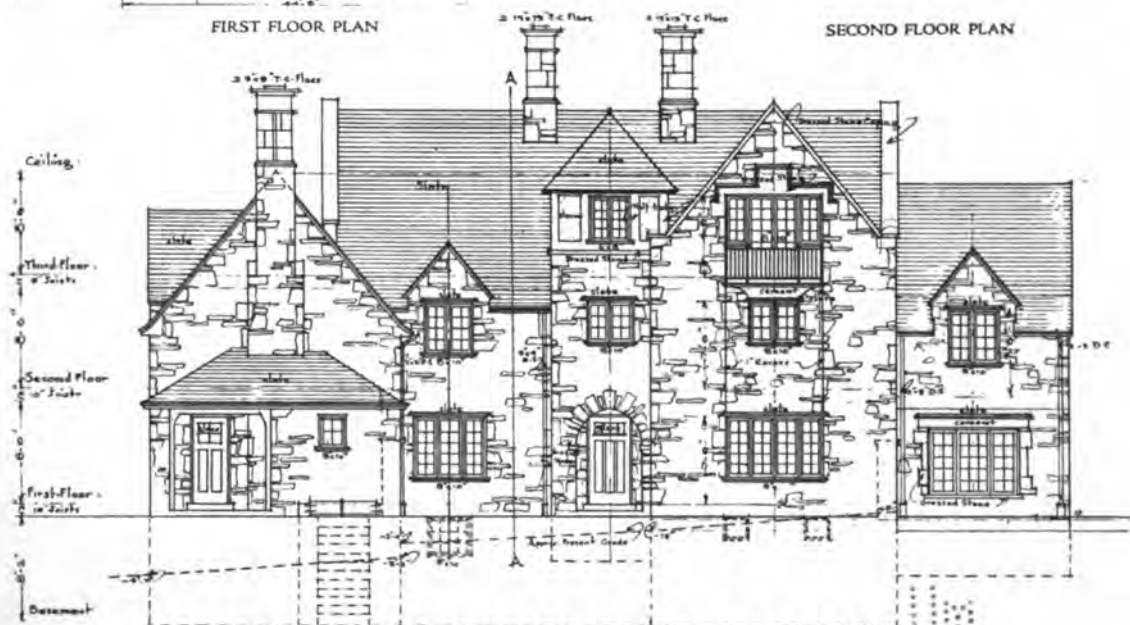
ELEVATION OF GARDEN FRONT



FIRST FLOOR PLAN



SECOND FLOOR PLAN



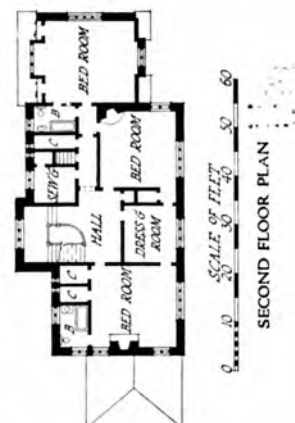
ELEVATION OF ENTRANCE FRONT

HOUSE OF SPENCER ERVIN, ESQ., ST. MARTINS, PHILADELPHIA, PA.

ROBERT RODES MCGOODWIN, ARCHITECT



GENERAL VIEW OF ENTRANCE FRONT



SECOND FLOOR PLAN



FIRST FLOOR PLAN

HOUSE OF EDWARD CLARK III, ESQ., ST. MARTINS, PHILADELPHIA, PA.

DUHRING, OKIE & ZIEGLER, ARCHITECTS



DETAIL OF GARDEN FRONT

2

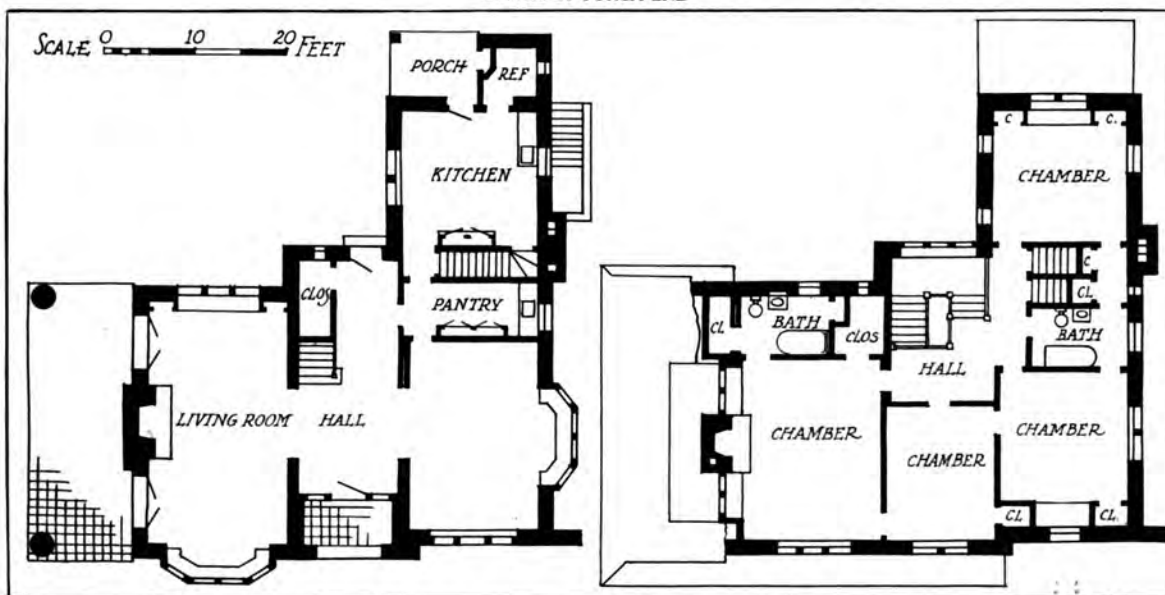


HOUSE OF EUGENE M. KAUFMAN, ESQ., GERMANTOWN, PA.
SIMON & BASSETT, ARCHITECTS

4



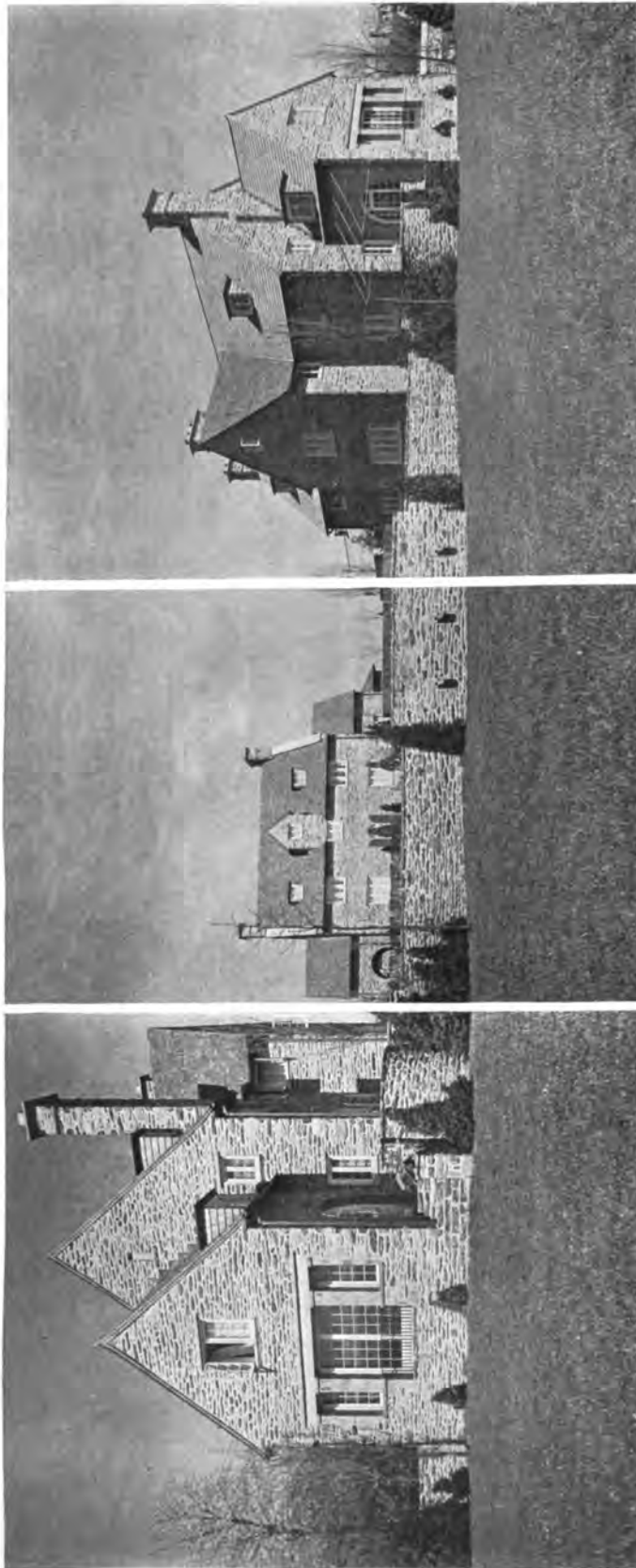
DETAIL OF PORCH END



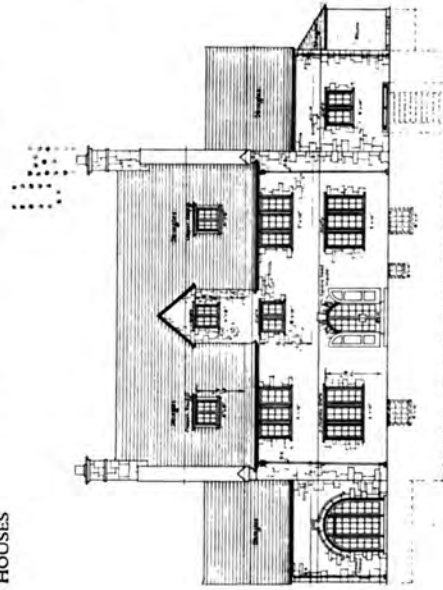
HOUSE OF EUGENE M. KAUFMAN, ESQ., GERMANTOWN, PA.

SIMON & BASSETT, ARCHITECTS

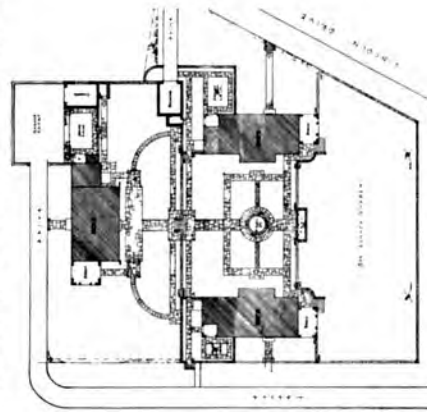




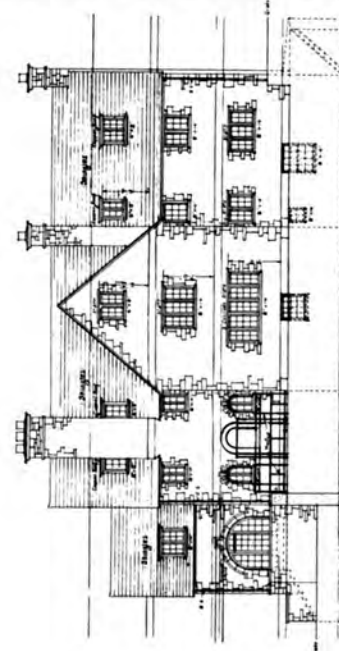
GENERAL VIEW FROM BELOW TERRACE SHOWING GROUPING OF HOUSES



GARDEN ELEVATION OF CENTER HOUSE



PLOT PLAN OF GROUP



GARDEN ELEVATION OF END HOUSES

GROUP OF HOUSES AT ST. MARTINS, PHILADELPHIA, PA.

ROBERT RODES MCGOODWIN, ARCHITECT

22



GARDEN FRONT OF END HOUSES



ENTRANCE FRONT OF END HOUSES

GROUP OF HOUSES AT ST. MARTINS, PHILADELPHIA, PA.

ROBERT RODES MCGOODWIN, ARCHITECT



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UNIVERSITY OF MICHIGAN



A Group of Houses on Willow Grove Avenue, St. Martins, Philadelphia

ROBERT RODES MCGOODWIN, ARCHITECT

By CHARLES Z. KLAUDER

WE know the design of dwellings in this country is steadily improving. Yet an architect, as he looks about him, seldom finds an object of delight. Imagine my pleasure, therefore, when, upon wandering the other day not far from my home, I came upon the group of houses on Willow Grove avenue. My surprise was the greater because only two or three years ago all this land I knew as a quite undeveloped region. Nor was I surprised to learn that these houses were the work of so talented an architect as Mr. McGoodwin.

The neighborhood has been transformed by the building of houses in attractive groupings, all designed by three architects. That there is between the work of these architects a similarity, it is as useless to deny as to admit that there is anything in common with the mediocre dwellings of the vicinity. The houses illustrated here and on Plates 61-64 especially appealed to me.

The endeavor has been to make the best use of a comparatively small piece of land by attractively grouping three houses upon

it, — one as a center and two flanking it at right angles. The result has been three successful houses instead of one. Each complements the other; each has an equally desirable outlook; the terrain of each is exactly suited to its purpose, that of giving a good setting to its particular house. The terrace between the houses, for example, is just high enough to set

off the group and to awaken one's curiosity. Who could refrain from ascending it to look for more?

The flanking buildings are duplicates in plan, though, of course, reversed. They, as well as the center building, are designed with exceeding skill — the skill that produces good proportions, an excellent arrangement of parts of the mass, and, withal, an unusual degree of dignity and repose. The houses at the side are freer in their design than their more balanced and formal companion between. In the center house is seen a commanding symmetry and a high degree of exquisite simplicity. The expanse of wall surface, especially between the first and second story windows; the closeness of the latter to the eaves;



Detail of an Entrance Doorway



View from Lawn of Center House Showing Garage and Service Yard of End House

the carefully considered roof projection and curving upward of the ridges as they end at the gables; the use of the local stone, simply dressed, where a foreign stone of smooth face would surely have produced a jarring note — well studied refinements such as these cannot but arouse the enthusiasm of designers. Here is the work of one who has considered every detail with a constantly active mind, but whose judgment has ever imposed restraint,

and whose artistic impulses are held firmly in reserve, creating beauty of enduring order.

The present group is but another sign of the advancing strides our domestic architecture has made during the last fifteen — even ten — years. In contemplating it, one cannot but imagine, if the past rate of progress is kept up for the next decade and the next, what superb creations will then be the houses we live in.



View of Garden from Terrace of Center House

Robert Rodes McGoodwin, Architect

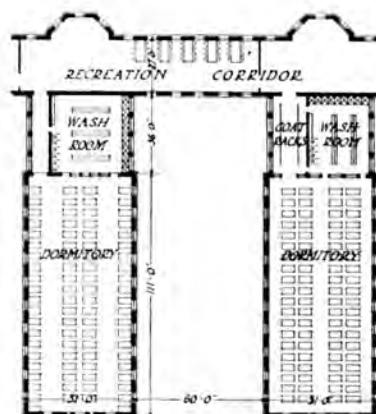
Perspective Sketch of Proposed Reformatory at Occoquan, Va. Alfred Hopkins, Architect

Prisons and Prison Building

By ALFRED HOPKINS

IV. DORMITORIES

IT IS perhaps fair to say that until very recently the dormitory has been in disrepute, but largely through lack of a clear understanding of the principles of discipline necessary for its proper control. These principles are all contained in the one word "supervision," which must at all times be sufficient and continuous. Housing the men in dormitories has many advantages, chief among which is economy. The difference between the initial cost in structure of caring for 100 men in one large room, and in 100 separate rooms each with wash basin and toilet as is now practically demanded by the custom in New York State, is very considerable. The dormitory also provides a somewhat greater floor area and a very much greater volume in cubic feet of air space per man. The minimum cell approved by the New York State Prison Commission is 5 feet by 7 feet by 8 feet in ceiling height. This provides for each inmate 35 square feet

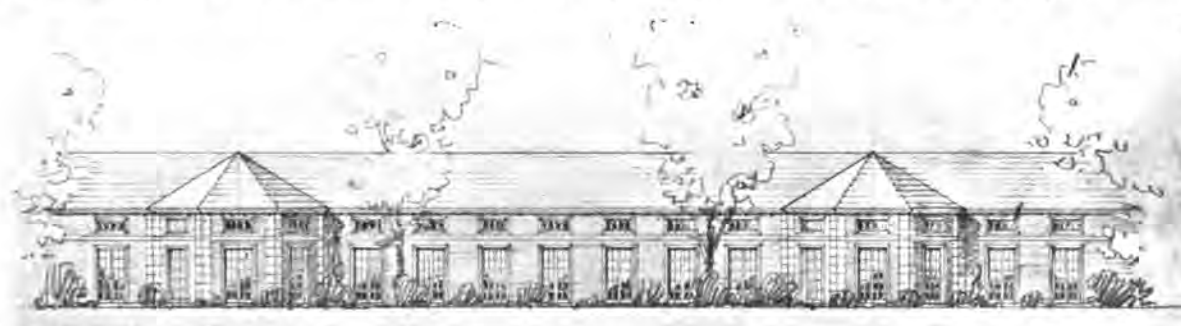


Plan of Dormitories
Reformatory at Occoquan, Va.

of floor area and 280 cubic feet of air space. In the plans of the dormitory shown for Occoquan Prison the floor area is 40 square feet per man — not a very large increase — but the air space is 1,550 cubic feet per man, — a very considerable one. In floor area the dormitory may have little advantage over the cell block, but in cubic contents it has a very decided advantage; likewise in cost and in simplicity of construction it has many points in its favor. It is a building which furthermore can very readily be built by the inmates themselves.

All these advantages are thrown to the winds, however, if proper supervision and discipline in the dormitory are not maintained. Too many dormitories have been tried out experimentally in a half hearted way, with such unsatisfactory results as to discourage their further use.

It has been left to Mr. W. H. Whittaker, superintendent of the prison at Occoquan, Va., and Mr. John Joy Edson of his board, to develop the dormi-



Elevation of Recreation Corridor toward Garden Court, Reformatory at Occoquan, Va. Alfred Hopkins, Architect



Temporary Shacks at Occoquan Reformatory which have been built some five or six years and in effective use as prison dormitories during that time

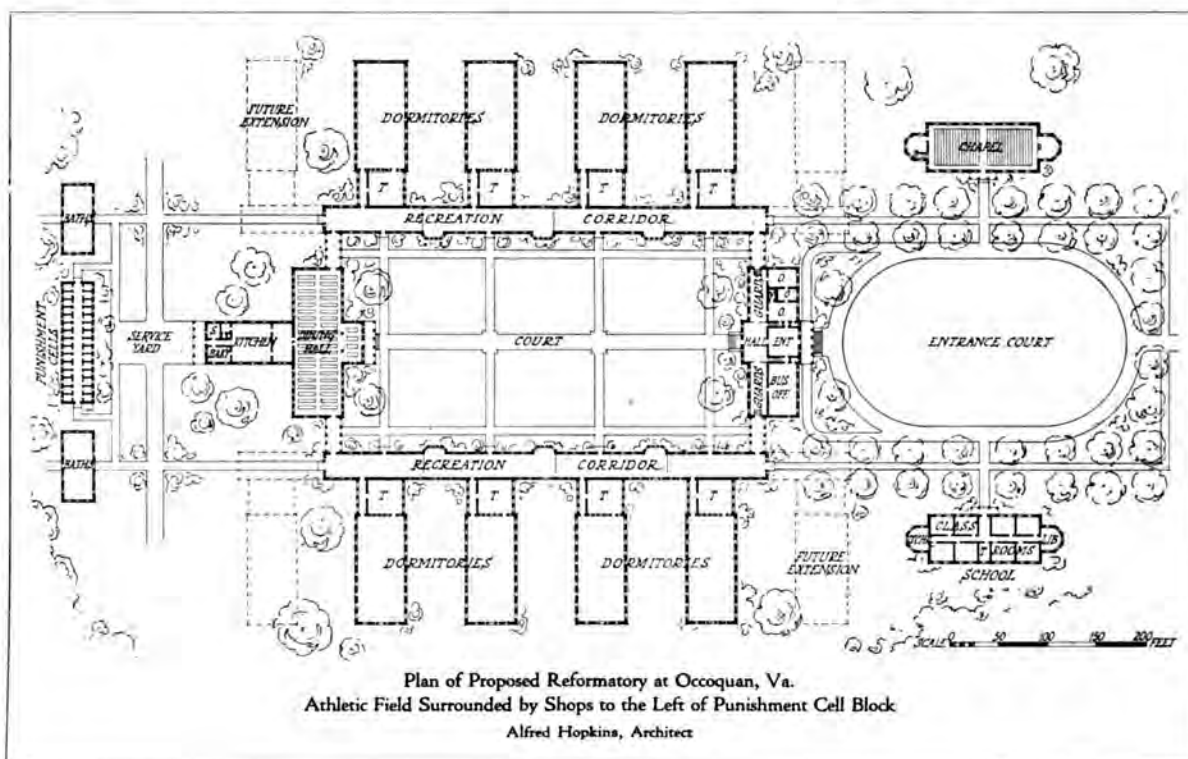
tory and to prove beyond peradventure that it can be made entirely satisfactory as a means of housing the criminal offender, and the success attained there is because the supervision and discipline of the dormitory are constantly maintained. Two guards are on duty all night in the dormitories for 200 men, one guard in the dormitories for 100 men. The guard, wearing rubber shoes, patrols his beat throughout the night as methodically as the city policeman. This quiet, continual, and certain movement of the guard among the inmates is very necessary for discipline and practically does away with the abuses which have given the dormitory its bad name. At Occoquan the dormitories are merely wooden shacks with no protection at the windows. The inmates have a freedom which has been almost unknown

before, and the number of escapes is so insignificant that the question of the fortification of the new institution is a matter of keen controversy among the board, some members maintaining that it should be entirely without bars—a fine thought.

In the freedom at Occoquan, which is largely contributed by the dormitory, there is an element not to be found in cell block housing, and that is the possibility of detecting the inclination of a man who wants to escape before he takes any definite steps to do so, for within four or five days after his admission to the institution it is possible to discover by his actions whether he can be

trusted or not.

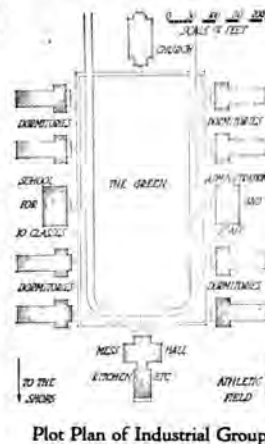
The author presents here some tentative sketches which were made for the new prison at Occoquan, Va., and this is to him a very unusual and a very interesting solution of the prison problem. Occoquan now has about 750 prisoners all housed in one-story shacks, without any enclosing wall and with no jail protection whatsoever. While these quarters as originally constructed were considered only temporary measures, yet they have been so successful that it is the commission's desire to construct the new prison on the general principles of the old. The new plan therefore contemplates housing all the men in dormitories and makes these dormitories one story in height—a particularly sensible idea for a mild climate like that of Virginia. This is an entirely new





Tentative Scheme for a Reformatory for the State of New Jersey
Alfred Hopkins, Architect

The general scheme proposes two groups of buildings,—one the Administrative Group and the other the Industrial Group. The Administrative Group would contain the administrative offices, the reception building, the observation cells, and accommodations for those prisoners who could not be trusted with the liberties permitted in the Industrial Group. The plan presented shows the Industrial Group, which is a series of units placed around a village green with the auditorium in the form of a New



England church* at one end and the refectory at the other. The individual units are placed between, with the officers' quarters on one side of the central axis and the school building on the other. Each unit would provide accommodations for 40 inmates with a recreation room and accommodations for one officer who would have charge of the building. In this instance the structures were to be of wood, the only protection being mesh grilles at the windows, and in some of the cottages it was proposed to omit these.

thought, but the more the author worked on it the more convinced he became that it was the right one.

The plan follows out the idea of the connecting corridor which has already been dwelt on at length, but here the connecting corridor is made 30 feet wide and is developed into a recreation space for the men, divided into four compartments by glass partitions so that supervision may be had at all times throughout its entire length. The dormitories are laid out for 80 men, although the number will probably be increased to 100. Between the dormitory and the recreation corridor are the lavatories, toilets, and showers, accessible from both divisions. The men are not allowed in the dormitories until the retiring hour, so that there is no occasion for the continued supervision of the dormitory and the recreation corridor at the same time. If this were necessary, there would be a disadvantage in the location of the washroom between them which would make such supervision difficult.

The Administration Building in the center will have on the first floor the general business offices and a guards' corridor which will be used for visitors who come to see the inmates, and on the second floor the guards' rooms. The prisoners will be received in the basement, all of which is well above ground, where the usual series of rooms for this purpose will be provided. As the life of the inmate at Occoquan is so free it was the thought of the commission to have the chapel and the school building well in front of the main institution and separated from it, and there will be no difficulty whatever with this arrangement. To the rear of the main court is the large mess hall with the guards' dining room in the front and the serving room,

kitchen, and bakery at the rear. Behind the refectory and joining the athletic ground are the punishment cells for incorrigible prisoners and others who need discipline. These are very high cells with ventilation at the top. The prisoner will be unable to see out the window, but the cells are intentionally placed where he will be cognizant of the freedom of the men at their games on the outside.

It is the intention to have all the buildings open to the roof, so that there will be no place of concealment anywhere. This gives splendid cubage which in the dormitory amounts to 1,555 cubic feet per man. Ventilators placed in the roofs will remain open all the year around, and while it may take a little more coal for heating during the winter months, the difference will be more than made up in the health of the men.

It will be noted that the lavatories which connect the dormitories to the recreation corridor have flat roofs and are lighted overhead by skylights. These will be operated on worm gears so that excellent ventilation will be had there at all times. The low roof of the lavatories permits windows to be placed above it not only in the end of the dormitories, but in the side of the recreation corridor as well, so that this corridor has cross ventilation at the top throughout its whole length of 448 feet. In fact, the principal thing to be desired in any prison is adequate ventilation and abolition of the depressing prison odor. This plan has been designed for fresh air. There will be no prison odor here, nor is there the slightest trace of it at the Westchester Penitentiary.

Another very important and attractive feature of the plan is its flexibility with regard to possible future extension. The dormitories can be increased

in length almost indefinitely, but better than this, additional dormitories may be added both at the front and at the rear, without in any way affecting the architectural quality of the plan. In the dormitory each prisoner will have a cot, a chair at the foot of his bed, and a table at the head of it, this latter to contain drawers for his clothes and a shelf at the bottom for shoes, etc.

The buildings are to be placed in a well wooded part of the property and are to be built of the brick which the inmates make themselves. While the drawings are only tentative ones and need much further study to perfect the quality of the architecture, yet it is thought that this general scheme is well worth careful consideration and that in the light of our present penology the extended prison plan has here found its solution, whether the offender is to be housed in separate rooms or in the general dormitory.

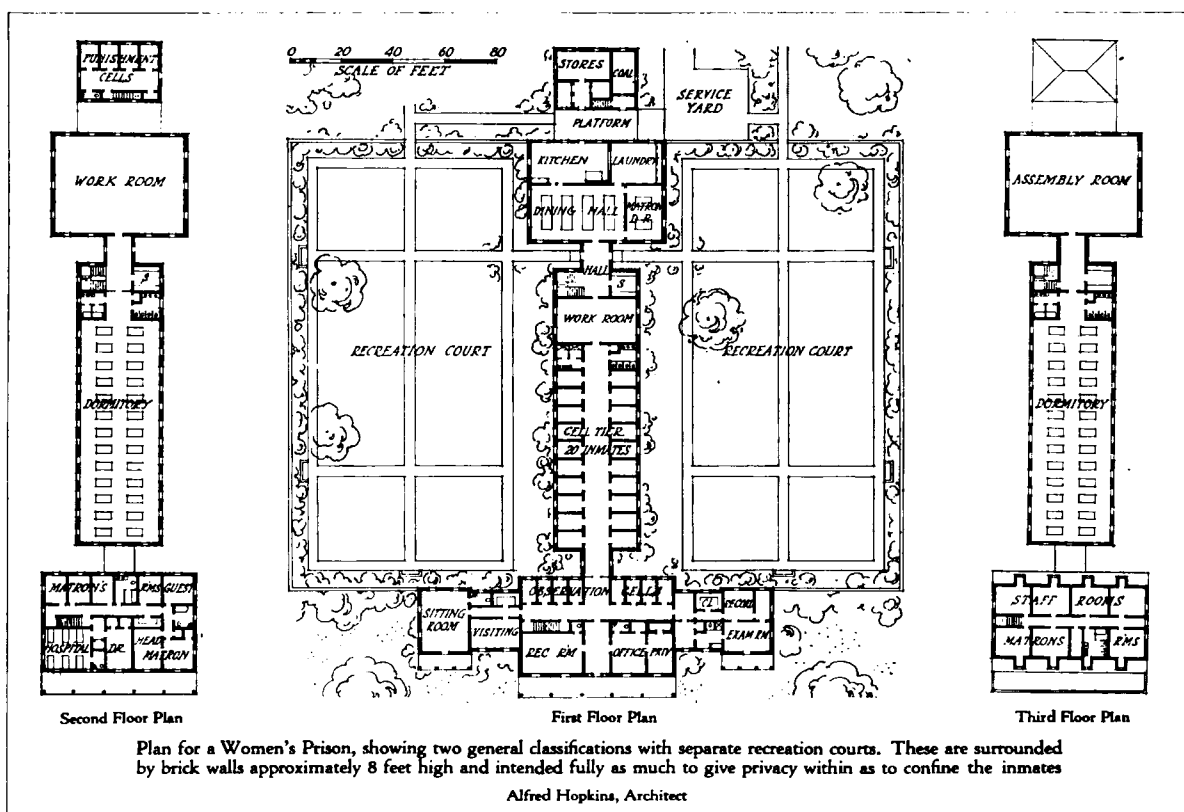
V. IMPORTANCE OF GOOD ARCHITECTURE

A very important phase of prison building which has scarcely received any attention whatsoever is its architecture. The prison inmate is much more susceptible to the influence of the visual aspect of things than is generally supposed, and the evidence of this interest which he has for agreeable surroundings is brought out on every hand. A warden tells this story: For a long time he had difficulty in get-

ting men to work in the vegetable garden. He finally hit upon the idea of planting flowers there, as well as vegetables, and said that since the flowers had been planted he not only had no trouble in getting men to work in the garden, but there was actual competition among them to see who should be detailed to work there. If an impulse for good can be created in the mind of the criminal offender by the sight of flowers, is not the appearance of the institution to which he has been committed a thing to be taken into serious consideration?

In many of the prisons it is the custom, and a very wise one, for the authorities to permit the men to decorate their rooms. Where such privileges are given they are always appreciated, and you will see that in such institutions the great majority of cells have been adorned with photographs and pictures, and with growing plants and with vases of flowers, and not infrequently even with curtains and hangings and bedspreads, and things which one would look for more in the feminine impulse for interior decoration than in the masculine. At the State Prison at Jackson, Mich., there are some 500 canaries belonging to a prison population of less than double that number.

That the prison should have a definite architectural expression goes without saying. Indeed, it should be beautiful architecture, and the buildings should be planted and finely treated from the point



of view of the landscape architect. A satisfactory aid to the accomplishment of this is that there is always sufficient labor to keep the grounds and buildings in perfect condition.

There is not the slightest doubt but that agreeable surroundings have a very decided influence over not only the prison inmates, but the wardens and keepers as well, and the architect should bear this in mind from the very first inception of his plan. The possibilities of the extended prison group are almost limitless with regard to pleasing architectural courts and corners where plants and flowers may be grown, and with this idea of not only the possibility but the absolute necessity of fine architecture for the prison the author ventures to close with a quotation from his recent address before the Wardens' Meeting of the American Prison Association :

"You practical men may think that I have laid entirely too much stress on the artistic side of prison building, but you know better than I that the thing which is to work regeneration of the men you have subordinate to your will and discipline is influence. Proper influence is what will cure your man if you can find it for him, and you know better than I what the

influence of environment has meant in that man's life — that it has been perhaps the vital thing to bring him where you have come to know him ; and since he has been sent to prison to pay the penalty which our laws prescribe, who shall say that buildings free from the reproach of the usual gloomy and oppressive prison architecture are not a thing to be desired ?

"One of the architectural tenets of my student days was that a building to be good architecture should look its purpose. This expression of fitness is sometimes difficult to obtain in stone and mortar ; but even now the thought is a good one, and if our penology demands that the spirit of the offender be crushed beneath ponderous walls and prison barred windows, then the old system of prison design should prevail. If, on the other hand, better results are had by putting some brightness into the prisoner's life, let us cut out root and branch the old system and erect buildings that in their appearance will not seem to emphasize but will minimize the ignominy of the prison sentence, and will not proclaim to the outside world that here shall dwell the transgressor, and that it has been written his way shall be hard."



Perspective Showing Exterior Design for a Women's Prison, plans for which are shown on the page opposite. It is needless to say that attractive architecture is quite as necessary for the women's prison as for the men's

Alfred Hopkins, Architect

Notes on the Fifty-First Convention of the American Institute of Architects

OF particular interest are the proceedings of the Fifty-first Annual Convention of the American Institute of Architects, held in Philadelphia, April 24, 25, and 26, 1918. First, because of the reflection among the delegates of present war conditions which are vitally affecting the practice of architecture; and, second, because of the constructive manner with which problems before the profession were attacked and solved. The departure from the custom of holding the convention in Washington was due to the war congestion in that city, and in selecting Philadelphia the Board of Directors provided an excellent opportunity for many architects to become familiar with the group of Colonial buildings which have been restored and preserved to the city and nation largely through the efforts of the Philadelphia Chapter. It was also the first convention held at the new date in accordance with the change made at the previous convention.

The action of the delegates centered largely on further development of the profession's ability to serve ever widening interests, and to promote such means as will insure a better understanding of architecture and the functions of architectural practice among laymen and the officials of the Government.

The convention was opened by President John Lawrence Mauran, who in his address reviewed the activities of the Institute in aiding the Government in its emergency building program for war purposes — work which was accomplished under severe handicaps because of a general lack of understanding of architects' abilities and a marked aversion on the part of officials to co-operate. In spite of these discouraging conditions, the work of the Institute and its officers looms large and embraces valuable suggestion and guidance to the Navy Department, Council of National Defense, Signal Corps, and other branches of the Government. If the tangible results are not large, it is because of failure on the part of the Government to make use of the talent and service at its disposal, and not because of disinterest on the part of the Institute.

Among the reports tendered the convention, those covering registration of architects, advertising, and the signing of buildings received extended consideration, and the action of the convention with reference to them is indicative of the constructive reasoning, influenced by present-day conditions that characterized the work of the delegates.

The Institute at its previous convention had stated that it neither advocated nor opposed the regulation of the practice of architecture by law, considering that such legislation was a matter for each state to determine. It has been advocated, however, that the Institute adopt a standard form of registration that might serve as a model for future legislation,

and a tentative draft of such a law, printed in full on another page, was presented for the consideration of the convention and accepted.

Advertising as related to the conduct of individual members of the Institute has many times been discussed, and the statement in the Canons of Ethics, that such procedure is unprofessional, has always successfully withstood assault. Developments affecting architectural practice in recent years, however, have served to bring the matter to the foreground once more, and a committee previously appointed to study the situation submitted its report to the convention, which in substance declared that advertising to excess is a question of bad taste; that it is practically impossible to control matters of taste by legislation, and that it is better, therefore, to remove advertising from the list of punishable offenses and revise the Canons of Ethics accordingly. Spirited debate of the question brought out many of the varying conditions architects are called upon to meet in carrying on their profession in various parts of the country. Arguments on both sides of the question were evenly balanced, the Western architects in general favoring the adoption of the report, and those of the East opposing it; the majority of the delegates were in favor, however, and the Canon was repealed, the Board of Directors being empowered to change the article covering this point in the Advice on Practice to be in agreement. This action will not probably alter to any great degree the present attitude of individual architects toward advertising, but it will present a much needed avenue of approach to the public for associated bodies of architects and the Institute itself, whereby educational publicity of a useful character may be properly carried on.

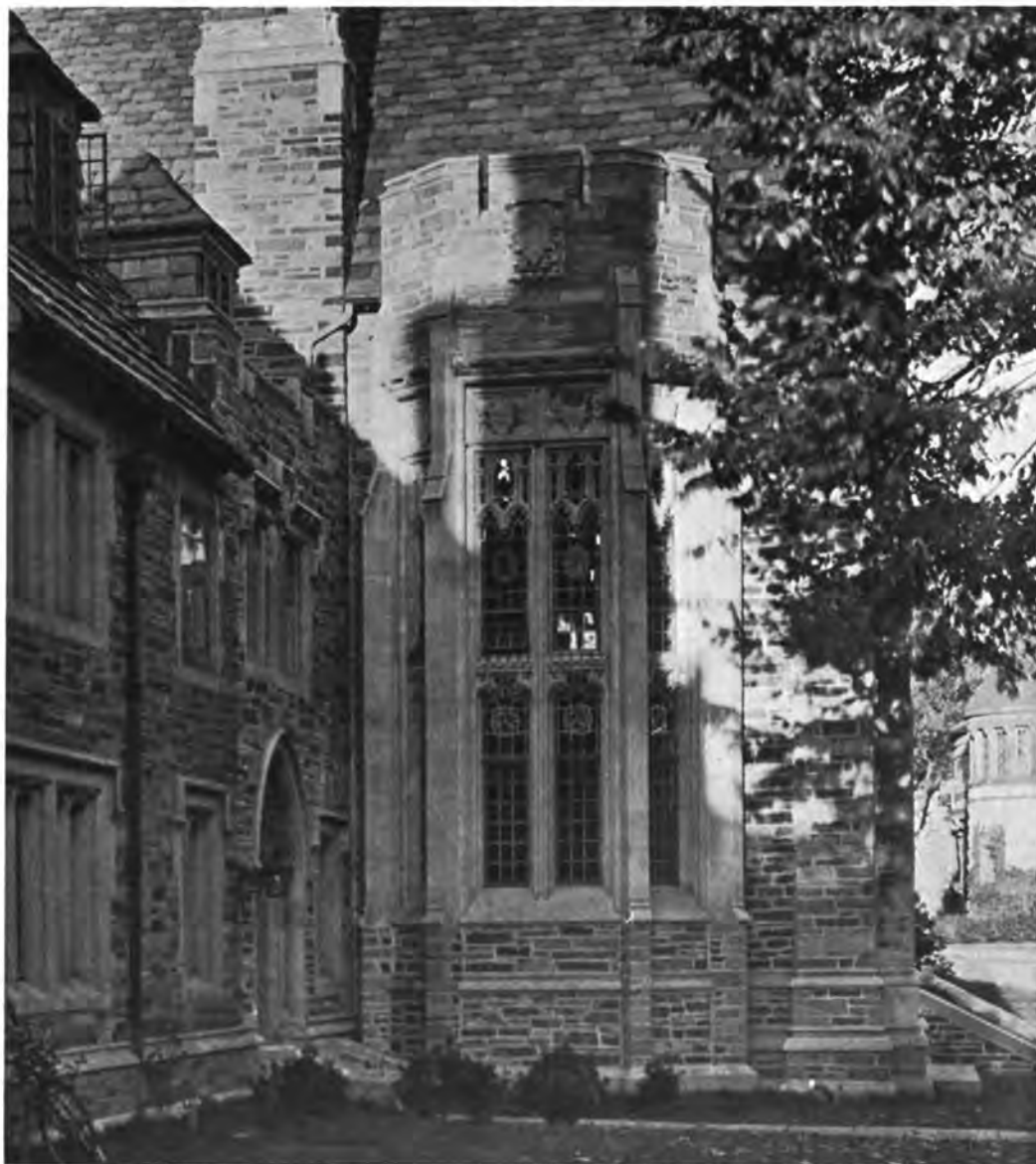
A subject of similar character to advertising is the signing of buildings during the course of construction, the demand for which, like that of publicity through advertising, was first expressed in the Middle West. Although eliciting considerable discussion, final action was not taken by the convention and the matter was referred to the Directors.

The election of officers for the year was as follows: Thomas R. Kimball, Omaha, president; Charles A. Favrot, New Orleans, first vice-president; George S. Mills, Toledo, second vice-president; W. Stanley Parker, Boston, secretary. Directors: Edward W. Donn, Jr., Washington; Robert D. Kohn, New York; Ellis F. Lawrence, Portland, Ore.; Richard E. Schmidt, Chicago.

The following members were elected to fellowship: James E. Allison, Los Angeles; Louis Ayres and Charles Butler, both of New York; E. E. Dougherty, Atlanta; Alexander C. Eschweiler, Milwaukee; Albert Kahn, Detroit; John B. P. Sinkler, Philadelphia, and William L. Steele, Sioux City.

THE FORUM COLLECTION OF
MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE FOUR



THIS bay is at the south end of South Sage Hall, one of the new group of dining halls at Princeton University. This group is one of the most distinguished American interpretations of the Gothic style and is particularly interesting in showing a spirited handling

of the style entirely free from archaeological influence. The walls are faced with a local shale stone carefully selected for color and used in conjunction with the mica schist of Pennsylvania, which had been largely used for previous buildings at the university.

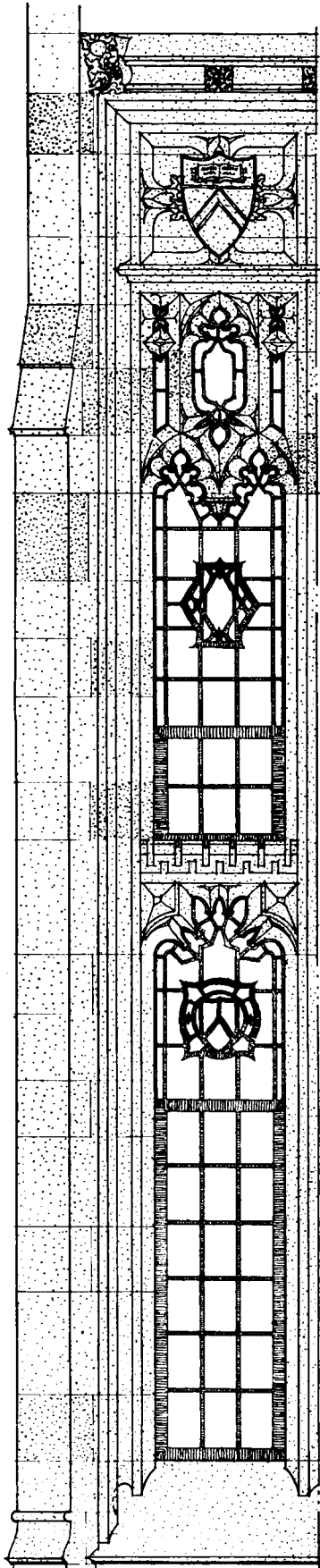
DETAIL OF BAY IN SOUTH SAGE DINING HALL, PRINCETON UNIVERSITY

DAY & KLAUDER, ARCHITECTS

DETAIL DRAWING BY ROBERT A. TAYLOR ON FOLLOWING PAGE

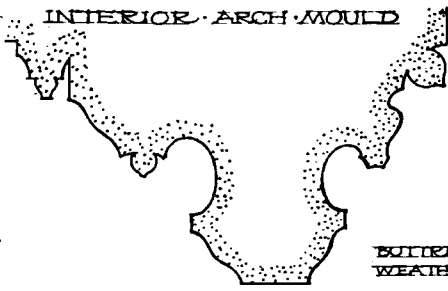
DETAILS OF BAY IN / / / SOUTH-SAGE DINING HALL PRINCETON UNIVERSITY.

DAY AND KLAUDER / ARCHITECTS.
PHILADELPHIA / / / PENNSYLVANIA.
DRAWN BY / / ROBERT A. TAYLOR.



DETAIL OF BAY EXTERIOR

INTERIOR ARCH MOULD



BUTRESS WEATHERING

LOWER BASE

COPING

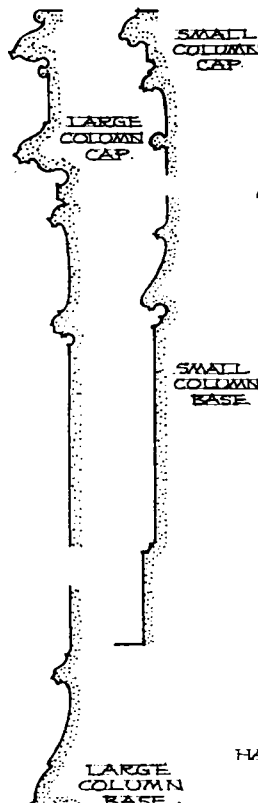
LABEL

WINDOW SILL

EXTERIOR DETAILS

UPPER BASE

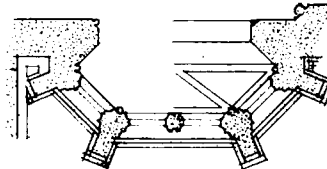
IMPOST



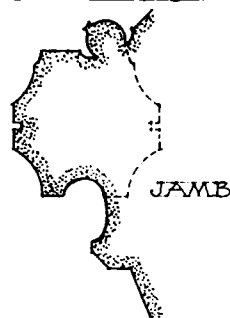
HALF EXTERIOR HALF INTERIOR

SECTION

INTERIOR DETAILS



PLAN



JAMB

EDITORIAL COMMENT

THERE are now in operation laws regulating the practice of architecture in fourteen states, and others have similar laws in preparation. A number of these laws were framed without expert advice from the profession, and many contain undesirable features; some, on the other hand, have many good qualities, but, as a whole, they cannot be considered entirely effective in meeting the conditions they were naturally intended to correct. The phase of state regulation that is generally criticized and that will become distinctly burdensome with any further increase of registration, is the difference of qualifications in different states. This entails difficulty in reciprocal state relations and will impose inconveniences upon architects who have commissions in other states than those in which they are registered.

While the Institute of American Architects has taken no stand either for or against state regulation, it has seen the complications that may arise through lack of coordinated effort on the part of responsible representatives of the profession in furnishing advice on the character of such legislation, and at its recent convention a tentative model law that may be used for future legislation was submitted and accepted.

Many of the existing laws are deficient in providing means for determining the qualifications of persons that were practising before the enactment of the law. In some states any person so engaged becomes automatically registered by the passage of the law, thereby defeating what should be the main purpose of legal regulation. Thus incompetent men may be regarded by the public in the same light as those that are fully competent, inasmuch as both are registered by the state. There should be no attempt to prevent any one from carrying on any activities he engaged in before the passage of legislation, nor should there be any restriction placed upon the public as to whom they should engage to prepare building plans; but the state should not place a seal of approval upon any person claiming ability to practise architecture till he has proved his right to such approval.

The Institute has done a commendable thing in drafting a model law that would seek to avoid these evils, and it is hoped that its influence in future legislation may be sufficiently great to develop uniform regulations in those states imposing them that will provide full protection to the public and justice to the members of the profession.

The form of registration law submitted at the recent convention by the Committee on Registration Laws is here printed, and it is the hope of the Board of Directors of the Institute that suggestions or criticisms of this tentative model law will be sent to them at the earliest possible date by all architects,

whether members of the Institute or not, who are interested in the subject. Communications may be sent to Mr. Wm. P. Bannister, 69 Wall street, or Mr. D. Everett Waid, 1 Madison avenue, New York City.

AN ACT

To Define the Qualification for the Practice of Architecture in the State of _____ and to provide for the Examination and Registration of Architects.

1. Any person wishing to practise architecture residing in or having a place of business in the State, who, before this article takes effect, shall not have been engaged in the practice of architecture in this State, under the title of architect, shall, before being styled or known as an architect, secure a certificate of his qualification to practise under the title of architect, as provided by this article.

Any person who shall have been engaged in the practice of architecture under the title of architect, before this article takes effect, may secure such certificate in the manner provided by this article, having presented proof of competency and good character.

Any person having a certificate pursuant to this article may be styled or known as an architect or registered architect.

No person having the right to practise as an architect because of his or her use of the title architect prior to the time this act takes effect, shall assume any title indicating that he or she is an architect or any words, letters, or figures to indicate that the person using same is a registered architect unless he or she shall have qualified and obtained a certificate of registration; but this article shall not be construed to prevent persons other than architects from filing application for and obtaining building permits.

2. There shall be a State Board for the examination and registration of architects, who and their successors shall be appointed by and hold during the pleasure of (name here the appointing power, preferably the department having jurisdiction over education) and who, subject to the approval of (same department), shall make rules for the examination and registration of candidates for the certificates provided for by this article.

Each member of such Board of Examiners shall be entitled to ten dollars per diem while actually engaged in attendance at meetings; the members shall receive also the amount of actual expenses incurred in travel to and return from meetings, and for necessary expenditures for hotel bills, meals, postage, typewriting, printing as may be approved by the said (department having jurisdiction), subject to the approval of the Comptroller of the State of _____.

3. *Qualifications, Examinations, Fees.*— Any citizen of the United States or any person who has declared his intention of becoming such citizen or any citizen of another country complying with the requirements of this article for aliens, being at least twenty-one years of age and of good moral character, may apply for examination or certificate of registration under this article, but before

receiving such certificate shall submit satisfactory evidence of having completed the course in a high school approved by (department having jurisdiction) or the equivalent thereof, and subsequent thereto of having completed such courses in mathematics, history, and language as may be determined by the board for the examination and registration of architects; examination for the above academic requirements shall be held by the (department having jurisdiction).

The board for the examination and registration of architects may accept satisfactory diplomas or certificates from approved institutions covering the course required for examination.

Upon complying with the above requirements the applicant shall satisfactorily pass an examination in such technical and professional courses as are established by the board for the examination and registration of architects. The board for the examination and registration of architects may in lieu of all examination accept satisfactory evidence of any one of the qualifications set forth under subdivisions "A" and "B" of this article."

A. A diploma of graduation or satisfactory certificate from an architectural college or school that he or she has completed a technical course approved by the American Institute of Architects, together with at least three years' satisfactory experience in the office or offices of a reputable architect or architects.

The board for the examination and registration of architects may require applicants under this subdivision to furnish satisfactory evidence of knowledge of professional practice.

B. Registration or certification as an architect in another State or country where the qualifications required are equal to those required in this State.

C. The board for the examination and registration of architects may grant registration to those who have been engaged in the practice of architecture for at least one year prior to the date when this article takes effect as a member of a reputable firm of architects or under his own name, or to those who have been engaged in the practice of architecture as an employee for at least five years prior to the date when this article takes effect, provided that applicants under this subdivision shall present satisfactory proof of competency and qualifications and evidence as to character, and providing that the application for such certification shall be made within two years after the date when this article takes effect.

Any architect who has lawfully practised architecture for a period of more than ten years without the State shall be required to take only a practical examination, which shall be of the nature to be determined by the board for the examination and registration of architects.

Any architect who is a citizen of a foreign country and who seeks to practise within this State who has lawfully practised architecture for a period of more than ten years shall be required to take a practical examination as determined by the board for the examination and registration of architects, or if in practice for a period of less

than ten years shall obtain registration by academic and technical examinations, but in either event he shall file a bond with (the department having jurisdiction) for the sum of five thousand dollars; such bond and certificate shall remain in force for a period of three years and shall then terminate unless privilege of renewal be granted by the Board of Examiners and Registration at its discretion.

Every person applying for examination or certificate of registration under this article shall pay a fee of twenty-five dollars to (department having jurisdiction).

4. *Certificates.*—The result of every examination or other evidence of qualification, as provided by this article shall be filed with (department having jurisdiction) and a record shall be kept by the (department having jurisdiction) and the board for the examination and registration of architects shall file records of all certificates issued with (department having jurisdiction). Every person securing such certificate shall have same recorded with the County Clerk of the county in which he resides or conducts the practice of architecture.

The board for the examination and registration of architects may revoke any certificate after thirty days' notice to the holder thereof, granting him a hearing if proof be presented in the following cases:

a. Where certificate has been obtained by fraud or misrepresentation.

b. Where the architect has been guilty of any fraud or deceit in his practice or guilty of any crime or misdemeanor.

c. That he is an habitual drunkard or habitually addicted to the use of morphine, opium, cocaine, or other drugs having a similar effect.

Proceedings for the annulment of registration shall be begun by filing a written charge against the accused with the board for the examination and registration of architects; a time and place for the hearing of the charges shall be fixed by the board; where personal service or service through counsel cannot be effected, service by publication may be made. At the hearing the accused shall have all rights of examination, cross-examination, counsel, and witnesses as granted in court of law. The board shall make a written report of its findings, which report shall be filed with the Secretary of State.

5. Every architect or person using the title of architect in this State before this act goes into effect shall within one year record his name with proof of his use of the title architect with the board for the examination and registration of architects, such recording not to be interpreted as evidence of competency or ability unless applicant applies for and is granted a certificate of registration.

6. The use of the title architect without compliance with the provisions of this act shall be deemed a misdemeanor punishable with a fine of not more than two hundred dollars or imprisonment for not more than one year or both.

7. This act shall take effect immediately.

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THE ARCHITECTURAL FORUM

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VIEW OF ALBEMARLE SQUARE



VIEW OF NORTH AND SOUTH COMMONS

YORKSHIP VILLAGE, A HOUSING DEVELOPMENT NEAR CAMDEN, N. J., FOR
THE NEW YORK SHIPBUILDING CORPORATION

ELECTUS D. LITCHFIELD, ARCHITECT

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THE ARCHITECTURAL FORUM FOR QUARTER CENTURY THE BRICKBUILDER

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Sunlight Engineering in City Planning and Housing*

By HERBERT S. SWAN AND GEORGE W. TUTTLE

THE purpose of this paper will be to provide some of the fundamental data required for the application of sunlight engineering in city planning and housing.†

To what height may buildings be erected on either side of a street and yet provide sufficient sunshine for the apartments and work rooms on the ground floor? How far down on a street façade does the sun shine and how long does it shine there? How small may courts and yards be made without shading the lower stories? What proportion should the length of a court bear to its width? What ratio should its width bear to its height? What is the relative sunshine value of a window fronting on a yard as compared with one fronting on a street? On an inner court? On an outer court? On a side yard? What is the effect of obstructing buildings? How are these factors affected by the orientation of the building? By its latitude? To what depth will sunshine penetrate into a room? What is the relative value of a large window as compared with a small one? What proportion of the sunshine entering a window is shut out from the room by walls of different thicknesses?

These are questions which this paper will enable any one to answer for himself.

The accompanying table defines the points of sunshine and shadow in inner and outer courts on the shortest day in the year, December 21. The coordinates given are applicable to both the side and end walls of any particular court, no matter what its height, width, length, or orientation may be so long as it is rectangular in shape.

To locate the portion of a façade in sunshine on either side of a street at different times of the day, only one shadow need be defined, that of the opposite parallel wall. In the case of a wall of a rectangular court there are two shadows to be defined: first, that from the opposite parallel wall; and, secondly, that from the adjoining wall at right angles. In the case of outer courts opening to a street or yard, the

opposite side of which is improved with buildings, there is also a third shadow to be defined — that of the obstructing buildings. This is true also of inner courts which have their sunshine obstructed by high opposite buildings.

The coordinates in the table define the several portions of a court in sunshine and shadow at sunrise and sunset and at each even hour and half hour throughout the day. The coordinates A of the table are measured horizontally along the given face of the court from the end nearest the sun. The corresponding coordinates B are measured downward from the top of the court. Both coordinates are expressed in terms of the court's width.††

For either side or end walls oriented west of south the table of coordinates is read from the top down in connection with the time of day indicated in the left-hand column for the orientation given at the top. The letters on the left of the coordinates indicate the side of the court then in sunshine and the end of the court through which the sunshine is then entering. For walls oriented east of south the table is read from the bottom up in connection with the time indicated in the right-hand column and the orientation given at the bottom. The letters at the right of the coordinates indicate the side of the court then in sunshine and the end of the court through which the sunshine is then entering.

The detailed method of applying the coordinates to different types of walls will now be described in the following order:

1. The façade of a street;
2. The side wall of an inner court;
3. The end wall of an inner court;

†† The following formulæ were used in computing the coordinates:

Let A = horizontal distance of shadow of upper corner of court nearest the sun on opposite side wall, the distance being measured from the end nearest the sun. (See Diagrams.)

Let B = vertical distance of the above shadow point down from top of court. (See Diagrams.)

Let a = azimuth of sun for the given latitude and time (given by tables).

Let h = altitude of sun for the above latitude and time.

Let b = azimuth of side wall of court.

The width of court is assumed as unity.

We then have

$$A = \cot(a-b).$$

$$B = \frac{\tan h}{\sin(a-b)}.$$

* Copyrighted, 1913, by Herbert S. Swan. All rights reserved.

† For a popular discussion of the laws governing this subject, see articles by Herbert S. Swan and George W. Tuttle on "Planning Sunlight Cities" in *The American City*, September and October, 1917. Reprinted as No. 167, The American City Pamphlets.

4. The side wall of an outer court ;
5. The end wall of an outer court, and
6. The interior of a room.

1. THE FACADE OF A STREET.

In defining the points in sunshine and shadow on a street façade the coordinates are expressed in terms of the perpendicular distance between the buildings.

To ascertain the portion of a façade at a given latitude and orientation in sunshine at a given time, where the buildings on either side of a street are of a uniform height and conform to a common building line, the coordinate A should be measured horizontally along the front of the obstructing building from the end toward the sun, and the coordinate B down from the top of the obstructing building. A point directly opposite and at the same elevation on the parallel wall furthest from the sun defines the area in sunshine. That part of the street wall toward the sun from a vertical line drawn through the point fixed by the coordinates derives its sunshine from the open end of the street. The portion above a horizontal line drawn from this point and away from the sun parallel to the tops of the buildings derives its sunshine from over the tops of the obstructing buildings. When the point fixed by the coordinates is beneath the surface of the ground, the entire façade is in sunshine.

Where the height of the shading and shaded buildings is different the same method is followed in ascertaining the portion of the façade in sunshine as where both buildings are of the same height — in either case the point fixed by the coordinates is established with reference to the top and end of the obstructing building toward the sun, though it is plotted at the same elevation and directly opposite on the obstructed building.

Where the height of the obstructing building varies at different points, as in the case of a gabled roof, the point fixed by the two coordinates is located on the obstructed building with reference to each point of the obstructing building having a different height. Lines connecting points fixed by the coordinates on the façade of the obstructed building define the portion in sunshine.

Where the buildings do not conform to a common building line the width of the open space taken as unity is not that directly opposite the point casting the shadow, but the perpendicular distance between the point casting the shadow and its shadow on the opposite building.

In the case of detached buildings or where the

continuity of the street façade is interrupted the shadow point of corners of obstructing buildings given by coordinates A and B will often fall outside the façade in question. These points are then used in the construction of the shadow lines precisely as if the façade were continuous and the portions of the lines outside the actual façade omitted.

The method of ascertaining the shadow line of a street façade is illustrated in detail in Diagram 1.

2. THE SIDE WALL OF AN INNER COURT.

To define the particular part of a side wall receiving sunshine in an inner court, the length of which is oriented in a given direction, at any given time of the day, it is only necessary to locate the point fixed by the coordinates A and B for the given latitude, orientation, and time. If this point falls outside the face of the wall under consideration, then all that part of the wall situated above a diagonal line drawn between this point and the upper corner of the wall at that time nearest the sun will be the part in sunshine (Diagram 2). If this point falls on the face of the wall, then all that part of the wall situated above the diagonal line drawn as just described, and above another line drawn parallel to the top of the court from this

point to the end of the court at that time furthest from the sun, will be the part in sunshine (Diagram 3).

3. THE END WALL OF AN INNER COURT.

The shadow lines on the end wall of an inner court are determined by the use of the same coordinates as for side walls having the same orientation. There is an important difference in their application, however.

The coordinates which locate the shadow cast by a corner of the court on the side walls are proportional to the breadth of the court which for convenience is taken as unity in measuring its dimensions. When the shadows of the corner of a court on its end walls are considered, the length of the court takes the place of its breadth in determining the length of the shadows and the magnitude of the coordinates.

It is, therefore, necessary to multiply each of the coordinates as heretofore given by the length of the court expressed in terms of its width unity. With these new coordinates the shadow lines for the end wall of an inner court can be located as in the case of a side wall (Diagrams 4 and 5).

The method of ascertaining the period of sunshine enjoyed at different points on a wall in an inner court is illustrated in Diagram 9.

SUNSHINE AND SHADOW ON FACADE OF EAST AND WEST STREET
WINTER SOLSTICE, 40° NORTH LATITUDE
12.30 P.M.

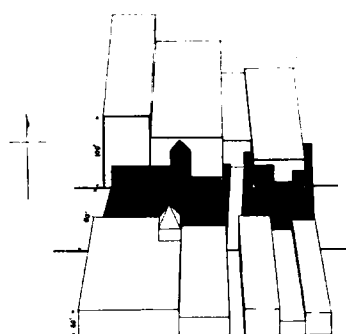


Diagram 1

SUNSHINE AND SHADOW IN INNER COURT

SQUARE COURT ORIENTED NORTH AND SOUTH, 40° NORTH LATITUDE, WINTER SOLSTICE

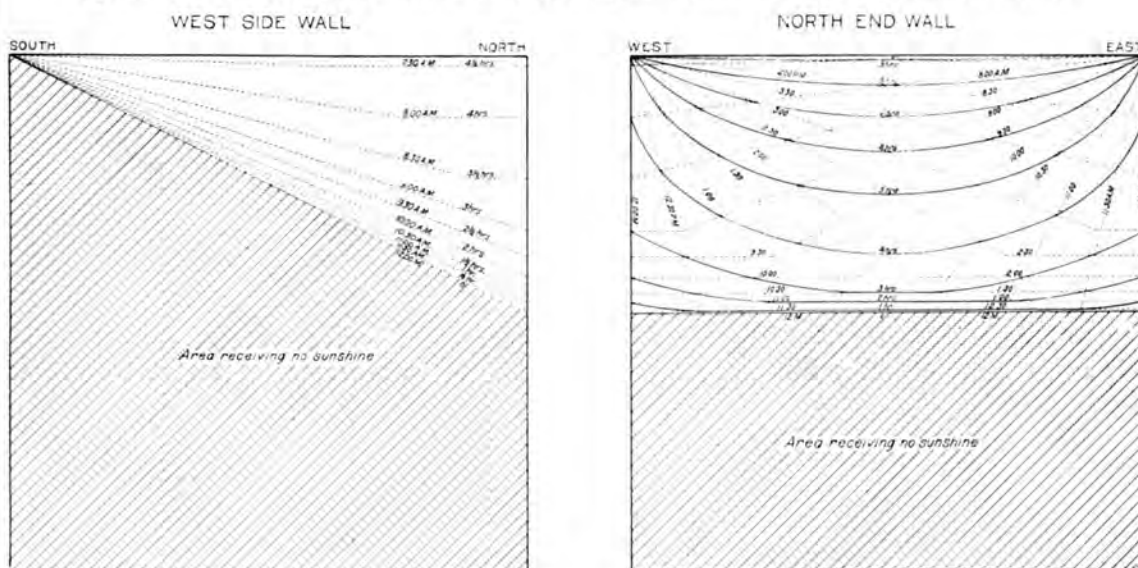


Diagram 9

SUNSHINE IN INNER AND OUTER COURTS, 40° NORTH LATITUDE, WINTER SOLSTICE

Length of Court Oriented North and South

Dimension — 10 feet wide, 20 feet long, 10 feet high

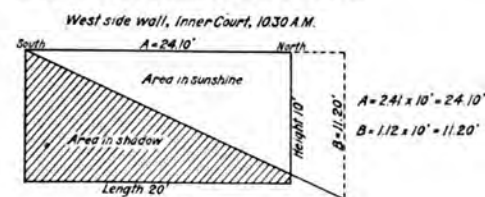


Diagram 2

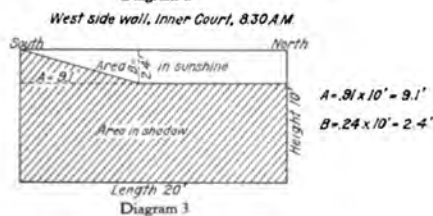


Diagram 3

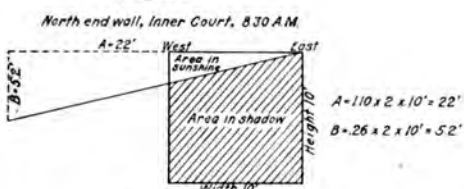


Diagram 4

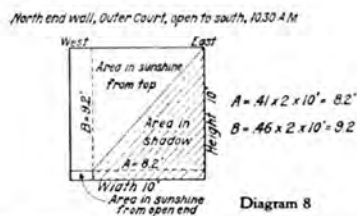


Diagram 8

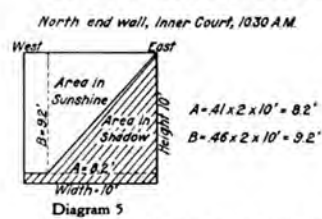


Diagram 5

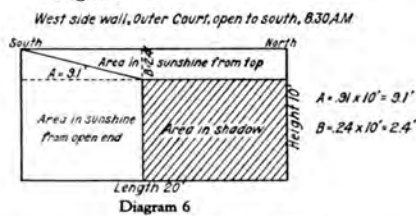


Diagram 6

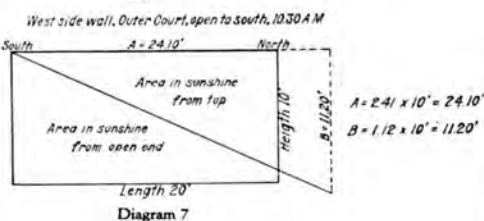


Diagram 7

COORDINATES OF POINTS DEFINING SUNSHINE AND SHADOW IN INNER AND OUTER COURTS AT THE WINTER SOLSTICE

25° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South		15° W		30° W		45° W		60° W		75° W		West		Time of Day
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
6:44 a.m.	W.S. 48	00	W.S. 19	00	W.S. 06	00	W.S. 35	00	W.S. 65	00	W.S. 116	00	W.S. 208	00	5:16 p.m.
7:00	S.E. 52	05	S.E. 22	05	S.E. 09	05	S.E. 32	05	S.E. 64	06	E.E. 109	07	E.E. 192	10	5:00
7:30	60	38	60	38	60	38	60	38	60	38	60	38	60	38	4:30
8:00	70	31	70	31	70	31	70	31	70	31	70	31	70	31	4:00
8:30	80	25	80	25	80	25	80	25	80	25	80	25	80	25	3:30
9:00	80	25	80	25	80	25	80	25	80	25	80	25	80	25	3:00
9:30	80	25	80	25	80	25	80	25	80	25	80	25	80	25	2:30
10:00	80	25	80	25	80	25	80	25	80	25	80	25	80	25	2:00
10:30	80	25	80	25	80	25	80	25	80	25	80	25	80	25	1:30
11:00	80	25	80	25	80	25	80	25	80	25	80	25	80	25	1:00
11:30	80	25	80	25	80	25	80	25	80	25	80	25	80	25	12:30 p.m.
12:00 m.	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	12:00 m.
1:00	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	11:30 a.m.
2:00	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	11:00
3:00	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	10:30
4:00	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	10:00
5:00	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	9:30
5:16	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	12 m. 310	267	9:00

30° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South		15° W		30° W		45° W		60° W		75° W		West		Time of Day
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
6:55 a.m.	W.S. 51	00	W.S. 21	00	W.S. 06	00	W.S. 32	00	W.S. 65	00	W.S. 111	00	W.S. 196	00	5:05 p.m.
7:00	S.E. 52	01	S.E. 22	01	S.E. 09	01	S.E. 31	01	S.E. 63	01	E.E. 109	01	E.E. 191	02	5:00
7:30	61	12	61	12	61	12	61	12	61	12	61	12	61	12	4:30
8:00	72	25	72	25	72	25	72	25	72	25	72	25	72	25	4:00
8:30	86	39	86	39	86	39	86	39	86	39	86	39	86	39	3:30
9:00	103	56	103	56	103	56	103	56	103	56	103	56	103	56	3:00
9:30	127	78	127	78	127	78	127	78	127	78	127	78	127	78	2:30
10:00	162	103	162	103	162	103	162	103	162	103	162	103	162	103	2:00
10:30	203	131	203	131	203	131	203	131	203	131	203	131	203	131	1:30
11:00	250	152	250	152	250	152	250	152	250	152	250	152	250	152	1:00
11:30	303	168	303	168	303	168	303	168	303	168	303	168	303	168	12:30 p.m.
12:00 m.	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	infinite	12:00 m.
1:00	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	11:30 a.m.
2:00	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	11:00
3:00	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	10:30
4:00	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	10:00
5:05	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	12 m. 331	238	9:30

COORDINATES OF POINTS DEFINING SUNSHINE AND SHADOW IN INNER AND OUTER COURTS AT THE WINTER SOLSTICE

35° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South	15° W	30° W	45° W	60° W	75° W	West	Time of Day
7:07 a.m.	A	W.S. 54	A	W.S. 29	A	W.S. 00	A	n.s. 1:53 p.m.
7:30	B	S.E. 62	B	E.E. 23	A	E.E. 00	B	E.E. 1:53 p.m.
8:00	A	W.S. 40	A	E.E. 15	B	E.E. 19	A	E.E. 1:53 p.m.
8:30	B	S.E. 50	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
9:00	A	W.S. 38	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
9:30	B	S.E. 37	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
10:00	A	W.S. 33	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
10:30	B	S.E. 33	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
11:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
11:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
12:00 p.m.	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
12:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
1:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
1:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
2:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
2:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
3:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
3:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
4:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
4:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
4:55	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.

40° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South	15° W	30° W	45° W	60° W	75° W	West	Time of Day
7:22 a.m.	A	W.S. 59	A	W.S. 25	A	W.S. 00	A	n.s. 1:53 p.m.
7:30	B	S.E. 62	B	E.E. 23	A	E.E. 00	B	E.E. 1:53 p.m.
8:00	A	W.S. 41	A	E.E. 15	B	E.E. 19	A	E.E. 1:53 p.m.
8:30	B	S.E. 50	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
9:00	A	W.S. 38	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
9:30	B	S.E. 37	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
10:00	A	W.S. 33	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
10:30	B	S.E. 33	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
11:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
11:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
12:00 p.m.	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
12:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
1:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
1:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
2:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
2:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
3:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
3:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
4:00	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.
4:30	B	S.E. 31	B	E.E. 24	A	E.E. 25	B	E.E. 1:53 p.m.
4:55	A	W.S. 31	A	E.E. 24	B	E.E. 25	A	E.E. 1:53 p.m.

45° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South	15° W	30° W	45° W	60° W	75° W	West of Day	Time of Day
7.38 a.m.	A	W.S. .34	A	.06	n.s.	.00	n.s.	4.22 p.m.
8.00	B	S.E. .41	B	.13	E.E. .14	.04	E.E. 1.31	4.00
8.30	A	.53	.23	.12	.23	.06	1.08	3.30
9.00	B	.67	.34	.19	.34	.13	.88	3.00
9.30	A	.90	.46	.25	W.E. .07	.20	.24	2.30
10.00	B	.42	.31	.24	8.41 a.m.	.26	.54	2.00
10.30	A	.61	.34	.30	.31	.34	.33	1.30
11.00	B	.84	.79	.43	.43	.40	.36	1.00
11.30	A	.90	.52	.56	.56	.38	.26	12.00
12.00	B	.74	.101	.68	.68	.34	.26	12.30
12.30	A	.70	.73	.64	.64	.39	.26	12.00
13.00	B	.51	.79	.56	.56	.41	.26	11.30 a.m.
13.30	A	.23	.24	.50	.50	.42	.36	11.00
14.00	B	.98	1.02	.73	.73	.42	.36	10.30
14.30	A	190.98	.39	.85	.85	.42	.36	10.00
15.00	B	70.22 e.s.	6.85	2.32	2.32	.42	.36	9.30
15.30	A	e.s. 8.51	2.32	3.53 a.m.	3.53	.42	.36	9.00
16.00	B	1.01 p.m. 4.17	11.20	27.01 e.s.	1.03	.42	.36	8.30
16.30	A	1.84	.70	27.01	1.40	.42	.36	8.00
17.00	B	.61	.23	15.06	1.63	.42	.36	7.38
17.30	A	1.42	.42	2.07 p.m. 5.05	2.71 n.s.	.42	.36	
18.00	B	.27	.93	3.11	2.94	.42	.36	
18.30	A	.21	.39	s.s. 27.27	2.56	.42	.36	
19.00	B	.07	.11	3.19 p.m. 7.40	7.81	.42	.36	
19.30	A	.05	.29	.00	15.89	.42	.36	
20.00	B	.05	.20	.00	.00	.42	.36	
20.30	A	.05	.20	.00	.00	.42	.36	
21.00	B	.05	.20	.00	.00	.42	.36	
21.30	A	.05	.20	.00	.00	.42	.36	
22.00	B	.05	.20	.00	.00	.42	.36	
22.30	A	.05	.20	.00	.00	.42	.36	
23.00	B	.05	.20	.00	.00	.42	.36	
23.30	A	.05	.20	.00	.00	.42	.36	
24.00	B	.05	.20	.00	.00	.42	.36	
24.30	A	.05	.20	.00	.00	.42	.36	
25.00	B	.05	.20	.00	.00	.42	.36	
25.30	A	.05	.20	.00	.00	.42	.36	
26.00	B	.05	.20	.00	.00	.42	.36	
26.30	A	.05	.20	.00	.00	.42	.36	
27.00	B	.05	.20	.00	.00	.42	.36	
27.30	A	.05	.20	.00	.00	.42	.36	
28.00	B	.05	.20	.00	.00	.42	.36	
28.30	A	.05	.20	.00	.00	.42	.36	
29.00	B	.05	.20	.00	.00	.42	.36	
29.30	A	.05	.20	.00	.00	.42	.36	
30.00	B	.05	.20	.00	.00	.42	.36	
30.30	A	.05	.20	.00	.00	.42	.36	
31.00	B	.05	.20	.00	.00	.42	.36	
31.30	A	.05	.20	.00	.00	.42	.36	
32.00	B	.05	.20	.00	.00	.42	.36	
32.30	A	.05	.20	.00	.00	.42	.36	
33.00	B	.05	.20	.00	.00	.42	.36	
33.30	A	.05	.20	.00	.00	.42	.36	
34.00	B	.05	.20	.00	.00	.42	.36	
34.30	A	.05	.20	.00	.00	.42	.36	
35.00	B	.05	.20	.00	.00	.42	.36	
35.30	A	.05	.20	.00	.00	.42	.36	
36.00	B	.05	.20	.00	.00	.42	.36	
36.30	A	.05	.20	.00	.00	.42	.36	
37.00	B	.05	.20	.00	.00	.42	.36	
37.30	A	.05	.20	.00	.00	.42	.36	
38.00	B	.05	.20	.00	.00	.42	.36	
38.30	A	.05	.20	.00	.00	.42	.36	
39.00	B	.05	.20	.00	.00	.42	.36	
39.30	A	.05	.20	.00	.00	.42	.36	
40.00	B	.05	.20	.00	.00	.42	.36	
40.30	A	.05	.20	.00	.00	.42	.36	
41.00	B	.05	.20	.00	.00	.42	.36	
41.30	A	.05	.20	.00	.00	.42	.36	
42.00	B	.05	.20	.00	.00	.42	.36	
42.30	A	.05	.20	.00	.00	.42	.36	
43.00	B	.05	.20	.00	.00	.42	.36	
43.30	A	.05	.20	.00	.00	.42	.36	
44.00	B	.05	.20	.00	.00	.42	.36	
44.30	A	.05	.20	.00	.00	.42	.36	
45.00	B	.05	.20	.00	.00	.42	.36	
45.30	A	.05	.20	.00	.00	.42	.36	
46.00	B	.05	.20	.00	.00	.42	.36	
46.30	A	.05	.20	.00	.00	.42	.36	
47.00	B	.05	.20	.00	.00	.42	.36	
47.30	A	.05	.20	.00	.00	.42	.36	
48.00	B	.05	.20	.00	.00	.42	.36	
48.30	A	.05	.20	.00	.00	.42	.36	
49.00	B	.05	.20	.00	.00	.42	.36	
49.30	A	.05	.20	.00	.00	.42	.36	
50.00	B	.05	.20	.00	.00	.42	.36	
50.30	A	.05	.20	.00	.00	.42	.36	
51.00	B	.05	.20	.00	.00	.42	.36	
51.30	A	.05	.20	.00	.00	.42	.36	
52.00	B	.05	.20	.00	.00	.42	.36	
52.30	A	.05	.20	.00	.00	.42	.36	
53.00	B	.05	.20	.00	.00	.42	.36	
53.30	A	.05	.20	.00	.00	.42	.36	
54.00	B	.05	.20	.00	.00	.42	.36	
54.30	A	.05	.20	.00	.00	.42	.36	
55.00	B	.05	.20	.00	.00	.42	.36	
55.30	A	.05	.20	.00	.00	.42	.36	
56.00	B	.05	.20	.00	.00	.42	.36	
56.30	A	.05	.20	.00	.00	.42	.36	
57.00	B	.05	.20	.00	.00	.42	.36	
57.30	A	.05	.20	.00	.00	.42	.36	
58.00	B	.05	.20	.00	.00	.42	.36	
58.30	A	.05	.20	.00	.00	.42	.36	
59.00	B	.05	.20	.00	.00	.42	.36	
59.30	A	.05	.20	.00	.00	.42	.36	
60.00	B	.05	.20	.00	.00	.42	.36	
60.30	A	.05	.20	.00	.00	.42	.36	
61.00	B	.05	.20	.00	.00	.42	.36	
61.30	A	.05	.20	.00	.00	.42	.36	
62.00	B	.05	.20	.00	.00	.42	.36	
62.30	A	.05	.20	.00	.00	.42	.36	
63.00	B	.05	.20	.00	.00	.42	.36	
63.30	A	.05	.20	.00	.00	.42	.36	
64.00	B	.05	.20	.00	.00	.42	.36	
64.30	A	.05	.20	.00	.00	.42	.36	
65.00	B	.05	.20	.00	.00	.42	.36	
65.30	A	.05	.20	.00	.00	.42	.36	
66.00	B	.05	.20	.00	.00	.42	.36	
66.30	A	.05	.20	.00	.00	.42	.36	
67.00	B	.05	.20	.00	.00	.42	.36	
67.30	A	.05	.20	.00	.00	.42	.36	
68.00	B	.05	.20	.00	.00	.42	.36	
68.30	A	.05	.20	.00	.00	.42	.36	
69.00	B	.05	.20	.00	.00	.42	.36	
69.30	A	.05	.20	.00	.00	.42	.36	
70.00	B	.05	.20	.00	.00	.42	.36	
70.30	A	.05	.20	.00	.00	.42	.36	
71.00	B	.05	.20	.00	.00	.42	.36	
71.30	A	.05	.20	.00	.00	.42	.36	
72.00	B	.05	.20	.00	.00	.42	.36	
72.30	A	.05	.20	.00	.00	.42	.36	
73.00	B	.05	.20	.00	.00	.42	.36	
73.30	A	.05	.20	.00	.00	.42	.36	
74.00	B	.05	.20	.00	.00	.42	.36	
74.30	A	.05	.20	.00	.00	.42	.36	
75.00	B	.05	.20	.00	.00	.42	.36	
75.30	A	.05	.20	.00	.00	.42	.36	
76.00	B	.05	.20	.00	.00	.42	.36	
76.30	A	.05	.20	.00	.00	.42	.36	
77.00	B	.05	.20	.00	.00	.42	.36	
77.30	A	.05	.20	.00	.00	.42	.36	
78.00	B	.05	.20	.00	.00	.42	.36	
78.30	A	.05	.20	.00	.00	.42	.36	
79.00	B	.05	.20	.00	.00	.42	.36	
79.30	A	.05	.20	.00	.00	.42	.36	
80.00	B	.05	.20	.00	.00	.42	.36	
80.30	A	.05	.20	.00	.00	.42	.36	
81.00	B	.05	.20	.00	.00	.42	.36	
81.30	A	.05	.20	.00	.00	.42	.36	
82.00	B	.05	.20	.00	.00	.42	.36	
82.30	A	.05	.20	.00	.00	.42	.36	
83.00	B	.05	.20	.00	.00	.42	.36	
83.30	A	.05	.20	.00	.00	.42	.36	
84.00	B	.05	.20	.00	.00	.42	.36	
84.30	A	.05	.20	.00	.00	.42	.36	
85.00	B	.05	.20	.00	.00	.42	.36	
85.30	A	.05	.20	.00	.00	.42	.36	
86.00	B	.05	.20	.00	.00	.42	.36	
86.30	A	.05	.20	.00	.00	.42	.36	
87.00	B	.05	.20	.00	.00	.42	.36	
87.30	A	.05	.20	.00	.00	.42	.36	
88.00	B	.05	.20	.00	.00	.42	.36	
88.30	A	.05	.20	.00	.00	.42	.36	
89.00	B	.05	.20	.00	.00	.42	.36	
89.30	A	.05	.20	.00	.00	.42	.36	
90.00	B	.05	.20	.00	.00	.42	.36	
90.30	A	.05	.20	.00	.00	.42	.36	
91.00	B	.05	.20	.00	.00	.42	.36	
91.30	A	.05	.20	.00	.00	.42	.36	
92.00	B	.05	.20	.00	.00	.42	.36	
92.30	A	.05	.20	.00	.00	.42	.36	
93.00	B	.05	.20	.00	.00	.42	.36	
93.30	A	.05	.20	.00	.00	.42	.36	
94.00	B	.05	.20	.00	.00	.42	.36	
94.30	A	.05	.20	.00	.00	.42	.36	
95.00	B	.05	.20	.00	.00	.42	.36	
95.30	A	.05	.20	.00	.00	.42	.36	
96.00	B	.05	.20	.00	.00	.42	.36	
96.30	A	.05	.20	.00	.00	.42	.36	
97.00	B	.05	.20	.00	.00	.42	.36	
97.30	A	.05	.20	.00	.00	.42	.36	
98.00	B	.05	.20	.00	.00	.42	.36	
98.30	A	.05	.20	.00	.00	.42	.36	
99.00	B	.05	.20	.00	.00	.42	.36	
99.30	A	.05	.20	.00	.00	.42	.36	
100.00	B	.05	.20	.00	.00			

50° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South		15° W		30° W		45° W		60° W		75° W		West		Time of Day
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	
8.00 a.m.	W.S. 76	.00	W.S. 41	.00	W.S. 13	.00	W.S. 14	.00	W.S. 43	.00	W.S. 27	.00	W.S. 131	.00	4.00 p.m.
8.30	S.E. 17	.06	S.E. 36	.06	S.E. 35	.12	S.E. 42	.05 W.E.	E.E. 30	.06	E.E. 42	.06	E.E. 150	.08	3.30
9.00	1.16	17	.68	14	.35	12	.08	W.E. 08	W.E. 19	11	2.10 p.m.	.08	E.E. 186	.15	3.00
9.30	1.46	.22	.81	.22	.68	.18	.19	17	.08	.17	W.E.	.35	.68	.20	2.30
1.00	1.80	.31	1.08	.31	.48	.25	.31	.22	.04	.21	W.E.	.35	.53	.24	2.00
1.30	1.89	.45	1.37	.42	.80	.40	.44	.27	.15	.25	.22 1.03 p.m.	.39	.27	.27	1.30
2.00	2.58	.68	1.80	.40	1.03	.40	.60	.32	.28	.29	W.E. 01	.28	.25	.28	1.00
2.30	3.95	1.00	2.46	.56	1.72	.48	.72	.44	.42	.41	10.57 a.m.	.49	.42	.42	12.00 m.
3.00	4.03	1.30	2.80	.77	2.30	.77	1.68	.52	.76	.36	W.E. 31	.31	W.E. 12	.29	11.30 a.m.
3.30	infinitesimal	1.50	3.00	1.12	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
4.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
4.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
5.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
5.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
6.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
6.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
7.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
7.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
8.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
8.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
9.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
9.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
10.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
10.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
11.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
11.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
12.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
12.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
13.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
13.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
14.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
14.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
15.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
15.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
16.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
16.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
17.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
17.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
18.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
18.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
19.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
19.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
20.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
20.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
21.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
21.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
22.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
22.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
23.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
23.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
24.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
24.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
25.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
25.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
26.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
26.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
27.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
27.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
28.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
28.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
29.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
29.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
30.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
30.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
31.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
31.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
32.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
32.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
33.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
33.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
34.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
34.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
35.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
35.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
36.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
36.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
37.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
37.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
38.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
38.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
39.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
39.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
40.00	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
40.30	2.40 p.m.	1.80	3.53	1.01	2.37	.75	1.28	.47	.76	.36	W.E. 41	.31	W.E. 20	.32	11.00 a.m.
41.00	2.40 p.m.	1.80	3.53	1.01											

COORDINATES OF POINTS DEFINING SUNSHINE AND SHADOW IN INNER AND OUTER COURTS AT THE WINTER SOLSTICE

55° North Latitude

LENGTH OF WALL ORIENTED

Time of Day	South	15° W	30° W	45° W	60° W	75° W	West	Time of Day
8.28 a.m.	A	W.S. .53	W.S. .23	n.s. .04	n.s. .31	n.s. .63	n.s. 1.08	3.32 p.m.
8.30	B	S.E. .94	S.E. .24	E.E. .03	E.E. .30	E.E. .62	E.E. 1.06	3.30
8.40	A	1.47	.46	W.E. .08	W.E. .19	W.E. .48	W.E. .88	3.00
9.30	B	1.46	.46	W.E. .08	W.E. .19	W.E. .48	W.E. .88	2.00
10.00	A	1.92	.59	W.E. .13	W.E. .24	W.E. .52	W.E. .93	1.00
10.30	B	2.63	.81	W.E. .18	W.E. .29	W.E. .57	W.E. .98	1.30
11.00	A	4.02	1.04	W.E. .22	W.E. .34	W.E. .61	W.E. 1.07	1.00
11.30	B	8.12	1.33	W.E. .26	W.E. .38	W.E. .65	W.E. 1.11	12.30
12.00 m.	A	infinite	1.43	W.E. .29	W.E. .40	W.E. .68	W.E. 1.14	12.00 m.
12.30 p.m.	B	1.65	1.73	W.E. .33	W.E. .44	W.E. .72	W.E. 1.17	11.30 a.m.
1.00	A	1.65	2.36	W.E. .36	W.E. .46	W.E. .75	W.E. 1.20	11.00
1.30	B	1.65	3.48	W.E. .40	W.E. .50	W.E. .79	W.E. 1.23	10.30
2.00	A	1.65	6.20	W.E. .44	W.E. .54	W.E. .83	W.E. 1.26	10.00
2.30	B	1.65	10.03	W.E. .48	W.E. .58	W.E. .87	W.E. 1.29	9.30
3.00	A	1.65	12.71	W.E. .52	W.E. .62	W.E. .91	W.E. 1.32	9.00
3.30	B	1.65	15.40	W.E. .56	W.E. .66	W.E. .95	W.E. 1.35	8.30
3.32	A	1.65	18.09	W.E. .60	W.E. .70	W.E. .99	W.E. 1.38	8.28
	B	1.65	21.11	W.E. .64	W.E. .74	W.E. 1.03	W.E. 1.41	
	A	1.65	23.33	W.E. .68	W.E. .78	W.E. 1.07	W.E. 1.44	
	B	1.65	25.44	W.E. .72	W.E. .82	W.E. 1.11	W.E. 1.47	
	A	1.65	27.55	W.E. .76	W.E. .86	W.E. 1.15	W.E. 1.50	
	B	1.65	29.66	W.E. .80	W.E. .90	W.E. 1.19	W.E. 1.53	
	A	1.65	31.77	W.E. .84	W.E. .94	W.E. 1.23	W.E. 1.56	
	B	1.65	33.88	W.E. .88	W.E. .98	W.E. 1.27	W.E. 1.59	
	A	1.65	35.99	W.E. .92	W.E. 1.02	W.E. 1.31	W.E. 1.62	
	B	1.65	38.10	W.E. .96	W.E. 1.06	W.E. 1.35	W.E. 1.65	
	A	1.65	40.21	W.E. 1.00	W.E. 1.10	W.E. 1.39	W.E. 1.68	
	B	1.65	42.32	W.E. 1.04	W.E. 1.14	W.E. 1.43	W.E. 1.71	
	A	1.65	44.43	W.E. 1.08	W.E. 1.18	W.E. 1.47	W.E. 1.74	
	B	1.65	46.54	W.E. 1.12	W.E. 1.22	W.E. 1.51	W.E. 1.77	
	A	1.65	48.65	W.E. 1.16	W.E. 1.26	W.E. 1.55	W.E. 1.80	
	B	1.65	50.76	W.E. 1.20	W.E. 1.30	W.E. 1.59	W.E. 1.83	
	A	1.65	52.87	W.E. 1.24	W.E. 1.34	W.E. 1.63	W.E. 1.86	
	B	1.65	54.98	W.E. 1.28	W.E. 1.38	W.E. 1.67	W.E. 1.89	
	A	1.65	57.09	W.E. 1.32	W.E. 1.42	W.E. 1.71	W.E. 1.92	
	B	1.65	59.20	W.E. 1.36	W.E. 1.46	W.E. 1.75	W.E. 1.95	
	A	1.65	61.31	W.E. 1.40	W.E. 1.50	W.E. 1.79	W.E. 1.98	
	B	1.65	63.42	W.E. 1.44	W.E. 1.54	W.E. 1.83	W.E. 2.01	
	A	1.65	65.53	W.E. 1.48	W.E. 1.58	W.E. 1.87	W.E. 2.04	
	B	1.65	67.64	W.E. 1.52	W.E. 1.62	W.E. 1.91	W.E. 2.07	
	A	1.65	69.75	W.E. 1.56	W.E. 1.66	W.E. 1.95	W.E. 2.10	
	B	1.65	71.86	W.E. 1.60	W.E. 1.70	W.E. 1.99	W.E. 2.13	
	A	1.65	73.97	W.E. 1.64	W.E. 1.74	W.E. 2.03	W.E. 2.16	
	B	1.65	76.08	W.E. 1.68	W.E. 1.78	W.E. 2.07	W.E. 2.19	
	A	1.65	78.19	W.E. 1.72	W.E. 1.82	W.E. 2.11	W.E. 2.22	
	B	1.65	80.30	W.E. 1.76	W.E. 1.86	W.E. 2.15	W.E. 2.25	
	A	1.65	82.41	W.E. 1.80	W.E. 1.90	W.E. 2.19	W.E. 2.28	
	B	1.65	84.52	W.E. 1.84	W.E. 1.94	W.E. 2.23	W.E. 2.31	
	A	1.65	86.63	W.E. 1.88	W.E. 1.98	W.E. 2.27	W.E. 2.34	
	B	1.65	88.74	W.E. 1.92	W.E. 2.02	W.E. 2.31	W.E. 2.37	
	A	1.65	90.85	W.E. 1.96	W.E. 2.06	W.E. 2.35	W.E. 2.40	
	B	1.65	92.96	W.E. 2.00	W.E. 2.10	W.E. 2.39	W.E. 2.43	
	A	1.65	95.07	W.E. 2.04	W.E. 2.14	W.E. 2.43	W.E. 2.46	
	B	1.65	97.18	W.E. 2.08	W.E. 2.18	W.E. 2.47	W.E. 2.49	
	A	1.65	99.29	W.E. 2.12	W.E. 2.22	W.E. 2.51	W.E. 2.52	
	B	1.65	101.40	W.E. 2.16	W.E. 2.26	W.E. 2.55	W.E. 2.55	
	A	1.65	103.51	W.E. 2.20	W.E. 2.30	W.E. 2.59	W.E. 2.59	
	B	1.65	105.62	W.E. 2.24	W.E. 2.34	W.E. 2.63	W.E. 2.63	
	A	1.65	107.73	W.E. 2.28	W.E. 2.38	W.E. 2.67	W.E. 2.67	
	B	1.65	109.84	W.E. 2.32	W.E. 2.42	W.E. 2.71	W.E. 2.71	
	A	1.65	111.95	W.E. 2.36	W.E. 2.46	W.E. 2.75	W.E. 2.75	
	B	1.65	114.06	W.E. 2.40	W.E. 2.50	W.E. 2.79	W.E. 2.79	
	A	1.65	116.17	W.E. 2.44	W.E. 2.54	W.E. 2.83	W.E. 2.83	
	B	1.65	118.28	W.E. 2.48	W.E. 2.58	W.E. 2.87	W.E. 2.87	
	A	1.65	120.39	W.E. 2.52	W.E. 2.62	W.E. 2.91	W.E. 2.91	
	B	1.65	122.50	W.E. 2.56	W.E. 2.66	W.E. 2.95	W.E. 2.95	
	A	1.65	124.61	W.E. 2.60	W.E. 2.70	W.E. 2.99	W.E. 2.99	
	B	1.65	126.72	W.E. 2.64	W.E. 2.74	W.E. 3.03	W.E. 3.03	
	A	1.65	128.83	W.E. 2.68	W.E. 2.78	W.E. 3.07	W.E. 3.07	
	B	1.65	130.94	W.E. 2.72	W.E. 2.82	W.E. 3.11	W.E. 3.11	
	A	1.65	133.05	W.E. 2.76	W.E. 2.86	W.E. 3.15	W.E. 3.15	
	B	1.65	135.16	W.E. 2.80	W.E. 2.90	W.E. 3.19	W.E. 3.19	
	A	1.65	137.27	W.E. 2.84	W.E. 2.94	W.E. 3.23	W.E. 3.23	
	B	1.65	139.38	W.E. 2.88	W.E. 2.98	W.E. 3.27	W.E. 3.27	
	A	1.65	141.49	W.E. 2.92	W.E. 3.02	W.E. 3.31	W.E. 3.31	
	B	1.65	143.60	W.E. 2.96	W.E. 3.06	W.E. 3.35	W.E. 3.35	
	A	1.65	145.71	W.E. 3.00	W.E. 3.10	W.E. 3.39	W.E. 3.39	
	B	1.65	147.82	W.E. 3.04	W.E. 3.14	W.E. 3.43	W.E. 3.43	
	A	1.65	149.93	W.E. 3.08	W.E. 3.18	W.E. 3.47	W.E. 3.47	
	B	1.65	152.04	W.E. 3.12	W.E. 3.22	W.E. 3.51	W.E. 3.51	
	A	1.65	154.15	W.E. 3.16	W.E. 3.26	W.E. 3.55	W.E. 3.55	
	B	1.65	156.26	W.E. 3.20	W.E. 3.30	W.E. 3.59	W.E. 3.59	
	A	1.65	158.37	W.E. 3.24	W.E. 3.34	W.E. 3.63	W.E. 3.63	
	B	1.65	160.48	W.E. 3.28	W.E. 3.38	W.E. 3.67	W.E. 3.67	
	A	1.65	162.59	W.E. 3.32	W.E. 3.42	W.E. 3.71	W.E. 3.71	
	B	1.65	164.70	W.E. 3.36	W.E. 3.46	W.E. 3.75	W.E. 3.75	
	A	1.65	166.81	W.E. 3.40	W.E. 3.50	W.E. 3.79	W.E. 3.79	
	B	1.65	168.92	W.E. 3.44	W.E. 3.54	W.E. 3.83	W.E. 3.83	
	A	1.65	171.03	W.E. 3.48	W.E. 3.58	W.E. 3.87	W.E. 3.87	
	B	1.65	173.14	W.E. 3.52	W.E. 3.62	W.E. 3.91	W.E. 3.91	
	A	1.65	175.25	W.E. 3.56	W.E. 3.66	W.E. 3.95	W.E. 3.95	
	B	1.65	177.36	W.E. 3.60	W.E. 3.70	W.E. 3.99	W.E. 3.99	
	A	1.65	179.47	W.E. 3.64	W.E. 3.74	W.E. 4.03	W.E. 4.03	
	B	1.65	181.58	W.E. 3.68	W.E. 3.78	W.E. 4.07	W.E. 4.07	
	A	1.65	183.69	W.E. 3.72	W.E. 3.82	W.E. 4.11	W.E. 4.11	
	B	1.65	185.80	W.E. 3.76	W.E. 3.86	W.E. 4.15	W.E. 4.15	
	A	1.65	187.91	W.E. 3.80	W.E. 3.90	W.E. 4.19	W.E. 4.19	
	B	1.65	190.02	W.E. 3.84	W.E. 3.94	W.E. 4.23	W.E. 4.23	
	A	1.65	192.13	W.E. 3.88	W.E. 3.98	W.E. 4.27	W.E. 4.27	
	B	1.65	194.24	W.E. 3.92	W.E. 4.02	W.E. 4.31	W.E. 4.31	
	A	1.65	196.35	W.E. 3.96	W.E. 4.06	W.E. 4.35	W.E. 4.35	
	B	1.65	198.46	W.E. 4.00	W.E. 4.10	W.E. 4.39	W.E. 4.39	
	A	1.65	200.57	W.E. 4.04	W.E. 4.14	W.E. 4.43	W.E. 4.43	
	B	1.65	202.68	W.E. 4.08	W.E. 4.18	W.E. 4.47	W.E. 4.47	
	A	1.65	204.79	W.E. 4.12	W.E. 4.22	W.E. 4.51	W.E. 4.51	
	B	1.65	206.90	W.E. 4.16	W.E. 4.26	W.E. 4.55	W.E. 4.55	
	A	1.65	209.01	W.E. 4.20	W.E. 4.30	W.E. 4.59	W.E. 4.59	
	B	1.65	211.12	W.E. 4.24	W.E. 4.34	W.E. 4.63	W.E. 4.63	
	A	1.65	213.23	W.E. 4.28	W.E. 4.38	W.E. 4.67	W.E. 4.67	
	B	1.65	215.34	W.E. 4.32	W.E. 4.42	W.E. 4.71	W.E. 4.71	
	A	1.65	217.45	W.E. 4.36	W.E. 4.46	W.E. 4.75	W.E. 4.75	
	B	1.65	219.56	W.E. 4.40	W.E. 4.50	W.E. 4.79	W.E. 4.79	
	A	1.65	221.67	W.E. 4.44	W.E. 4.54	W.E. 4.83	W.E. 4.83	
	B	1.65	223.78	W.E. 4.48	W.E. 4.58	W.E. 4.87	W.E. 4.87	
	A	1.65	225.89	W.E. 4.52	W.E. 4.62	W.E. 4.91	W.E. 4.91	
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	B	1.65	232.22	W.E. 4.64	W.E. 4.74	W.E. 5.03	W.E. 5.03	
	A	1.65	234.33	W.E. 4.68	W.E. 4.78	W.E. 5.07	W.E. 5.07	
	B	1.65	236.44	W.E. 4.72	W.E. 4.82	W.E. 5.11	W.E. 5.11	
	A	1.65	238.55	W.E. 4.76	W.E. 4.86	W.E. 5.15	W.E. 5.15	
	B	1.65	240.66	W.E. 4.80	W.E. 4.90	W.E. 5.19	W.E. 5.19	
	A	1.65	242.77	W.E. 4.84	W.E. 4.94	W.E. 5.23	W.E. 5.23	
	B	1.65	244.88	W.E. 4.88	W.E. 4.98	W.E. 5.27	W.E. 5.27	
	A	1.65	246.99	W.E. 4.92	W.E. 5.02	W.E. 5.31	W.E. 5.31	
	B	1.65	249.10	W.E. 4.96	W.E. 5.06	W.E. 5.35	W.E. 5.35	
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	B	1.65	253.32	W.E. 5.04	W.E. 5.14	W.E. 5.43	W.E. 5.43	
	A	1.65	255.43	W.E. 5.08	W.E. 5.18	W.E. 5.47	W.E. 5.47	
	B	1.65	257.54	W.E. 5.12	W.E. 5.22	W.E. 5.51	W.E. 5.51	
	A	1.65	259.65	W.E. 5.16	W.E. 5.26	W.E. 5.55	W.E. 5.55	
	B	1.65	261.76	W.E. 5.20	W.E. 5.30	W.E. 5.59	W.E. 5.59	
	A	1.65	263.87	W.E. 5.24	W.E. 5.34	W.E. 5.63	W.E. 5.63	

4. THE SIDE WALL OF AN OUTER COURT.

The area of a side wall of an outer court in sunshine is determined by identically the same coordinates as for an inner court.

The area receiving sunshine through the top is defined in the same manner as in an inner court. The additional area receiving sunshine through the open end is defined by drawing a vertical line from the point fixed by the coordinates in ascertaining the area illuminated through the top to the bottom of the court. The added area in sunshine is that between this vertical line and the open end (Diagram 6). If the point fixed by the coordinates should in the case of an outer court opening toward the sun fall outside the face of the side wall considered, there is no occasion for drawing either the horizontal or the vertical line as the entire wall is then in sunshine (Diagram 7). If the closed end of the court is toward the sun, the shadow lines are the same as for an inner court.

5. THE END WALL OF AN OUTER COURT.

The coordinates are plotted in the same manner for the end wall of an outer court as for an inner court.

When the open end of the outer court faces the sun and the point fixed by the coordinates for the end wall falls outside the wall, only so much of the wall as is above the diagonal line drawn from this point to the upper corner nearest the sun receives sunshine. When the point fixed by the coordinates, however, falls on the end wall, an area in addition to that situated above the diagonal line receives sunshine. This additional area is the surface of the end wall between a vertical line drawn through the point fixed by the coordinates and the side wall at that time furthest from the sun (Diagram 8). When the closed end of the outer court faces the sun, the end wall of the outer court is entirely in shadow.

6. THE INTERIOR OF A ROOM.

The portion of a wall within a room illuminated by sunshine entering a window is determined in the same manner as that for the corresponding wall of an outer court receiving sunshine through the open end. The width of the court is taken as the distance between the edge of the window nearest the sun and the opposite wall of the room at that time furthest from the sun; the height of the court as the height of the top of the window above the floor; the length of the court as the depth of the room from the window surface. The coordinates A and B when plotted on the wall furthest from the sun — A as the distance in from the window, and B as the distance down from the upper edge of the window — give the point in sunshine from the upper corner of the window near-

est the sun. Similarly coordinates for the same court diminished in width by the width of the window will give the point in sunshine from the upper corner of the window furthest from the sun. Vertical lines dropped from each of these two points, of a length equal to the height of the window opening, determine the points in sunshine from the two lower corners of the window. The portion of the wall enclosed by lines connecting these four points is the area at that time in sunshine from the whole window opening. Of course, some of these points may fall outside the wall in the room at right angles to the window. This simply means that part of the possible sunshine on an indefinitely extended wall strikes the floor or the wall opposite the window. The portion of the wall opposite the window in sunshine at any particular time is obtained in the same manner as that of an end wall in an outer court.

It has been assumed above that the window opening is effective to the edge of the glass. This condition is true only where the wall in which the window is set has no appreciable thickness. When the sunshine falling on a particular wall in a room is limited, not by the edge of the glass, but by the sides of the window opening, or by obstructing walls either inside or outside the room, the coordinates should be plotted for a court, the dimensions of which are determined not by the edge or surface of the window pane, but by the edge and distance of such obstructing wall.

NEED FOR SUNLIGHT ENGINEERING.

Sunlight engineering has in the past been all but wholly ignored in city planning. The width and arrangement of streets, the length and breadth of lots, and the size of blocks have all been fixed without the slightest reference to latitude or sun. And so it has been in housing, too. The height of buildings, the size and thickness of window openings, the depth of rooms, and the least dimension of courts and yards have generally been determined without any consideration of the fact that the altitude of the sun varies not only during each day of the year, but during each moment of the day. From the way cities are planned and houses built one would never know that the sun described during half the year less than half a circle in its orbit through the sky. Both the street plan and the building plan of many a city would suggest that the inhabitants were under the illusion that sunlight was equally available in all directions.

The low sun and the short day are the two great natural disabilities of a northern latitude in winter. These two disadvantages may, to a large extent, be overcome by the application of sunlight engineering in city planning and housing.

THE FORUM COLLECTION OF
MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE FIVE



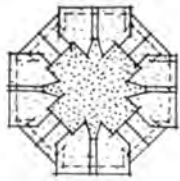
A FREE rendering of Gothic precedent in simple forms, particularly fortunate in its pleasing contour of mass and fine relation of scale between tracery,

mouldings, and units of masonry wall. An interesting use of inscriptions as a decorative motif is shown on the fascia beneath the gable copings.

DETAIL OF UPPER PORTION OF TOWER, CHURCH OF THE EPIPHANY
SHERWOOD, WEST PHILADELPHIA, PA.

DAY & KLAUDER AND E. E. HENDRICKSON, ASSOCIATED ARCHITECTS

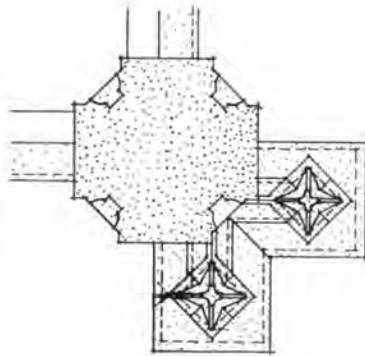
DETAIL DRAWING BY ROBERT A. TAYLOR ON FOLLOWING PAGE



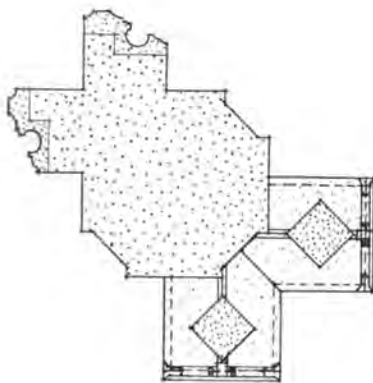
PLAN A: A

Details of Upper Portion of Tower Church of the Epiphany Sherwood West Philadelphia / / / Pennsylvania

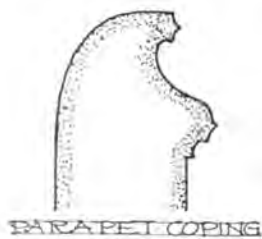
DAY AND KLAUDER, F. E. HENDRICKSON
ASSOCIATED ARCHITECTS, PHILADA. PENN.
DRAWN BY ROBERT A. TAYLOR



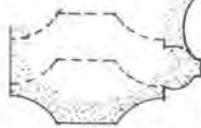
PLAN A: B



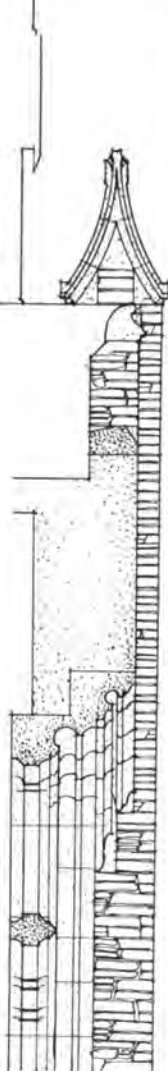
PLAN A: C



PARAPET COPING



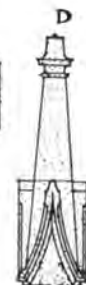
NORMAL SECTION
THRO HEAD OF
WINDOW



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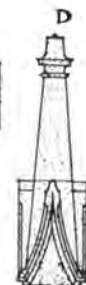
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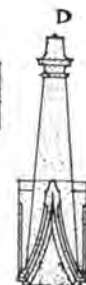
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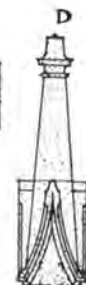
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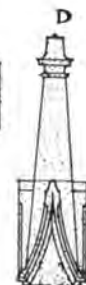
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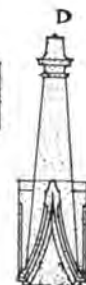
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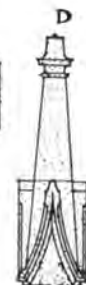
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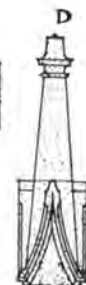
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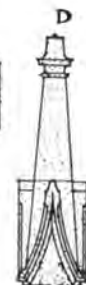
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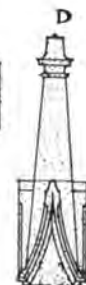
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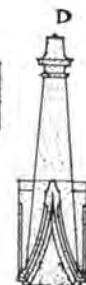
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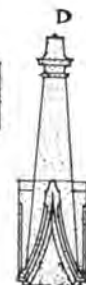
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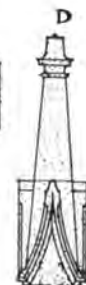
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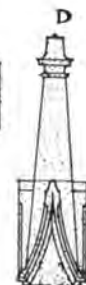
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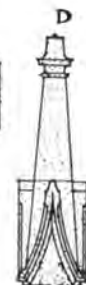
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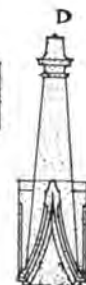
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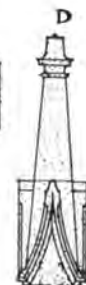
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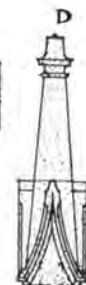
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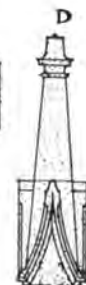
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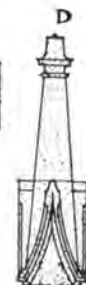
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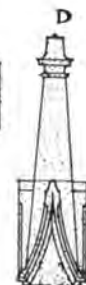
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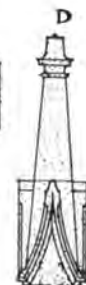
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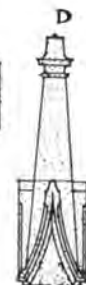
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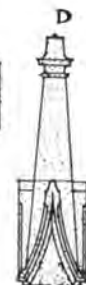
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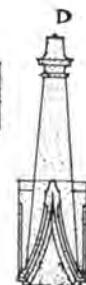
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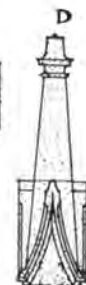
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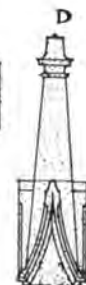
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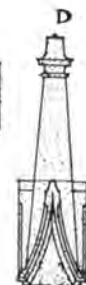
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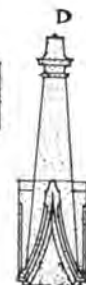
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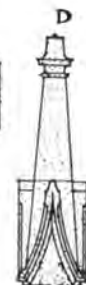
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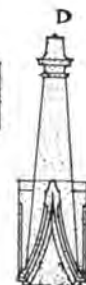
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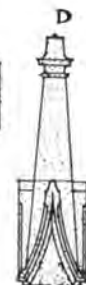
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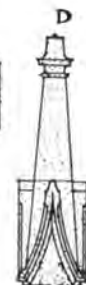
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Yorkship Village

A DEVELOPMENT FOR THE NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

ELECTUS D. LITCHFIELD, ARCHITECT

By CHARLES C. MAY

NOW that the Federal Government of the United States has definitely accepted the challenge offered by the combination of low speed production and universal shortage of houses, nothing can exceed in interest for students of the subject the working out in practice of the relation of the governmental sponsor to the villages over which it has assumed temporary guardianship. It must be worked out in practice because the Federal authority has thus far wished to avoid direct ownership or landlordism, and the specific terms of participation by the Government in the provision of industrial villages, and later withdrawal from the administration of them, are matters not as yet fully explored or proven.

One of the earliest opportunities for observing the workings of the newly constructed machine will be afforded by the progress of the industrial development called Yorkship Village, which adjoins the city of Camden, N. J.

The industry which calls this village into being is that of the New York Shipbuilding Corporation, one of the largest of the plants along the water fronts of the entire country. While the new housing development is legally a part of the city of Camden, it is physically a self-contained unit of population, lying outside the built-up portion of the present city; while the Government of the United States is legally the holder of a controlling interest in the property (since, as lender of most of the money, it holds a mortgage over the development), the active care and responsibility for the construction and immediate administration of the village is vested in the Fairview Realty Company, an organization formed for the purpose.

This company's dividends are permanently limited to 5 per cent, but it must first pay to the United



Street View Showing Single House Types

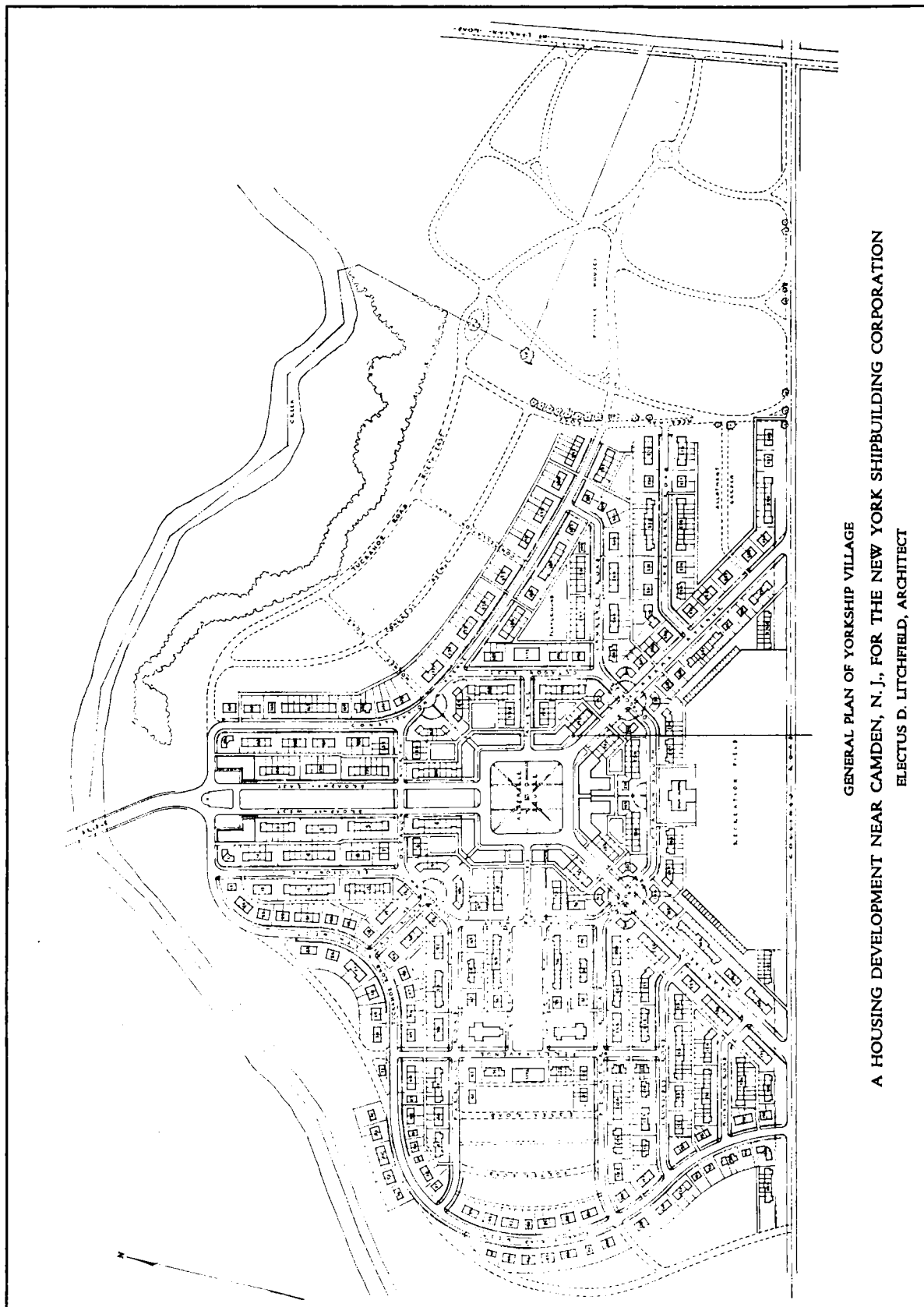
States 5 per cent interest on its loan, plus 3 per cent payment on the principal. In view of the conditions under which building is carried on, it is hardly to be expected that the project will be able to meet all its obligations for a considerable period after the war. Provision is made, therefore, for an appraisal to be made at a reasonable time after the close of hostilities, at which time the Government is prepared to absorb if necessary a good share of the excess cost, due to abnormal conditions as a war charge, thereby setting the project once more on its own feet, on a

fair competitive basis, with other ventures born under more favorable circumstances.

In the meantime the company is permitted to sell houses to individuals—in fact, it is rather encouraged to do so, since the proceeds from such sales are credited as part of the amortization charges.

As architect for the development, the company selected Mr. Electus D. Litchfield of New York. He is also responsible for the general plan of the village; while the engineering features, such as water supply, sewerage, gas, etc., are in charge of Lockwood, Green & Company. Mr. Litchfield began active work on the project during the first week of February. At present writing (the first week in June) much of the foundation work is in place, and brickwork is getting under way.

The photographs reproduced herewith show how fortunate the new village has been in its natural setting. Within walking distance of the shipbuilding plant, it is separated by the winding stream known as Newton Creek. It gains thus the important asset of definition at its boundary line, without losing, as is usually the case, the close relation between living and working quarters of its citizens. A third side of the town (the stream really borders two of them) is bounded by a highway which forms the main con-



GENERAL PLAN OF YORKSHIP VILLAGE
 A HOUSING DEVELOPMENT NEAR CAMDEN, N.J., FOR THE NEW YORK SHIPBUILDING CORPORATION
 ELECTUS D. LITCHFIELD, ARCHITECT

necting link by road to the city of Camden. On the fourth side there is a tract of land as yet unoccupied, similar in character to that now being developed, and in this direction lies the outlet for future expansion. It may be assumed that this feature has not been lost sight of in the disposition of the main arteries of traffic in the present town plan.

The area selected for immediate subdivision comprises some 200 acres of moderately rolling country side, of which a little less than half will be developed at once. The land has an elevation above the high water of the creek of about 10 feet and is thus reasonably free from any danger from overflow. It has also sufficient height to allow the use of cellars without the necessity of expensive waterproofing. There are numerous fine old trees and hedgerows along the existing country lanes, and, it goes without saying, that these, the principal natural feature of the landscape, are being preserved with greatest care. Besides this scattered growth over the whole area there is a considerable belt of woods skirting the creek along the part reserved for the higher grade residential section. This, being somewhat low lying, is to be developed and reserved for a park border for that entire side of the town.

Reservations such as this are an expression of the zoning principle on which the town plan is based. The anatomy of the structure is peculiarly simple, since the main access to the plant is by bridge over the river, and this thoroughfare thus becomes at once the main artery of the whole circulatory system. Its focus is the village square, devoted to business buildings, and the adjoining common, where are to be

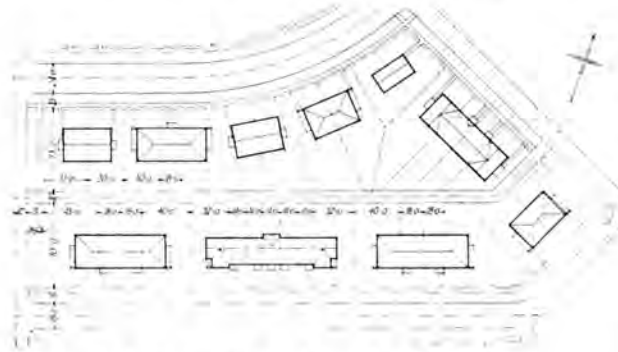
grouped the public and semi-public buildings of the town. Beyond, the plan shows the high school and its athletic field, to the east the area of less expensive dwellings, and at the opposite side of the town, the higher grade residential district. This latter section is not included in the program for immediate development, nor have the civic features aside from the buildings around Albemarle Square been definitely determined and located, but tentative provision has been made for them as a part of the town plan, in order that the ultimate result may be properly unified.

The village green, "Albemarle Square," as it has been named, is an open space about 320 by 320 feet — a modest size compared with some of the civic centers planned or projected. It is being carefully studied with a view toward producing not only an enclosed area which may well serve for the utility of town business and commerce, but may also possess the virtue

of good composition, variety, and architectural dignity.

As the perspectives indicate, the general character of this square and the common will be reminiscent of some of the best of our New England towns. Mr. Litchfield has aimed, while not sacrificing any of the advantages of collective planning, to give this square, and indeed the whole village, the feeling of a town which has grown through a period of years, rather than that of one which has sprung full grown from the earth, without traditions or reminiscences of a long-past youth.

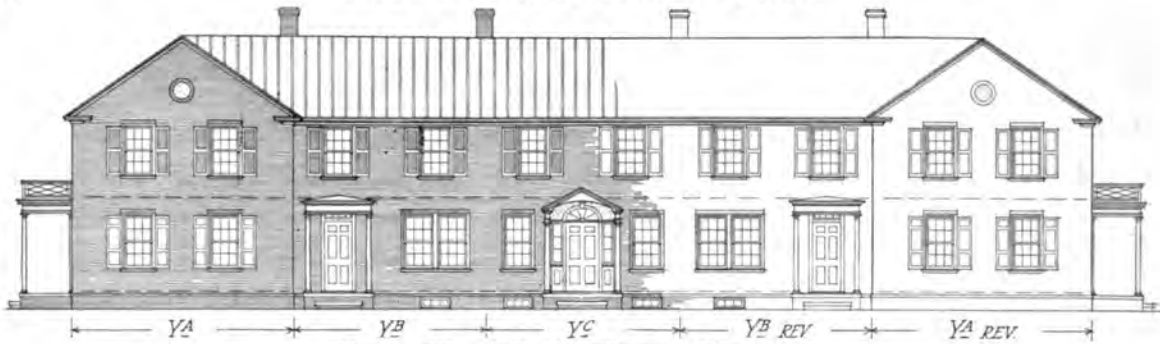
A study of the town plan shows that local tradition has been respected in matters of street system, lotting, etc. The streets are comparatively wide, ranging,



Plan of a Typical Block Showing Lot Arrangement

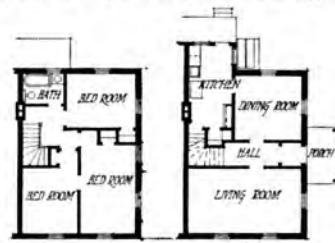


Two Views on the Site of Yorkship Village

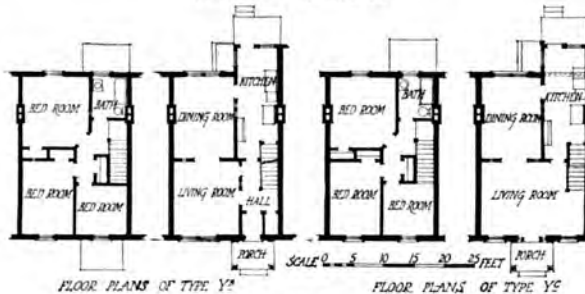


Elevation of Five-Family House Composed of Typical Units

with one or two exceptions, from 50 feet up to a maximum, in case of Broadway, the main axial thoroughfare, of 124 feet. These widths provide, in even the minor residential streets, for ample spaces for planting, especially since the roadways themselves are kept to moderate widths of 24 or 32 feet. The use of the alley system is due partly to local preference, but more to the need of providing convenient access to the



FLOOR PLANS OF TYPE YA



FLOOR PLANS OF TYPE YB

FLOOR PLANS OF TYPE YC

Floor Plans of Types in Group House Below

rears of all houses in a community, the great majority of whose dwellings are in groups. Even so, one can hardly avoid grudging this 12 feet of space at the rear lines of lots which average not more than 70 feet and are in some cases even less.

As we have said, the great majority of the 907 houses now under contract are in groups. These reach a maximum length of eleven units, while at the other end of the scale there are



Perspective View of Group of Five Houses

triple units, semi-detached houses, and some few single-family detached dwellings. Of these latter there will be a much larger proportion in the residential section reserved for later development.

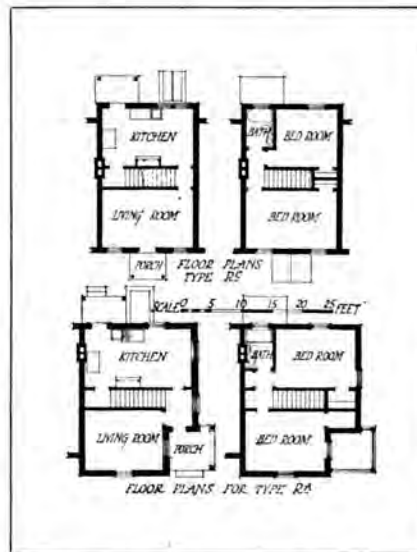
The houses themselves are of numerous types, which divide themselves among the four, five, six, and seven room classes. They are planned on the most straightforward lines, nearly all of full two story height, the large group units making this architecturally possible. This fact is also advantageous in allowing simplest roofing and framing everywhere.

In cases such as this, where the time element in producing plans as well as in construction is of the essence, the procedure in designing and getting out drawings for the many different groups is both novel and ingenious. First, units for the various types were drawn out in plan and elevation as working drawings, modifying them as necessary to make them suitable for terminal or intermediate motives. These typical elevations were then photographed, and many prints of each struck off. Each of these tiny elements then became one of a series of motives which could be readily and flexibly grouped into compositions to fit any conditions presented by the town plan. These built-up groups are again photographed, and the resulting prints, taken in connection with the typical large-scale plans, become the working drawings for the groups. Very few short cuts to architectural creation

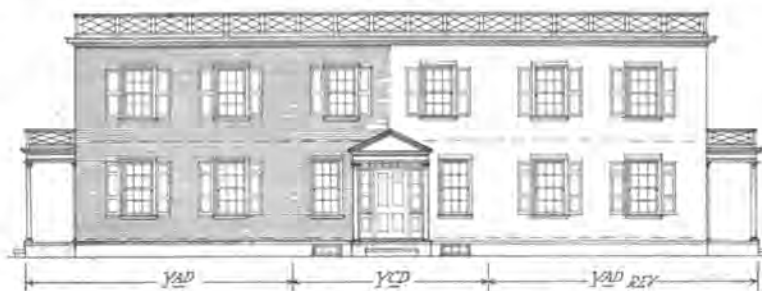
have proved acceptable in the long run; but for cases where repetition of elements in varying combinations is an essential process of design, this method of speeding up the purely mechani-



Elevation of Three-Family House



Floor Plans of Typical Units in Group House Shown Above



Elevation of Three-Family House with Flat Roof

cal part of the process appears to have worked out successfully in this case and to be of value to others who are confronting similar problems in architectural quantity production.

For the houses themselves, Mr. Litchfield, pursuing

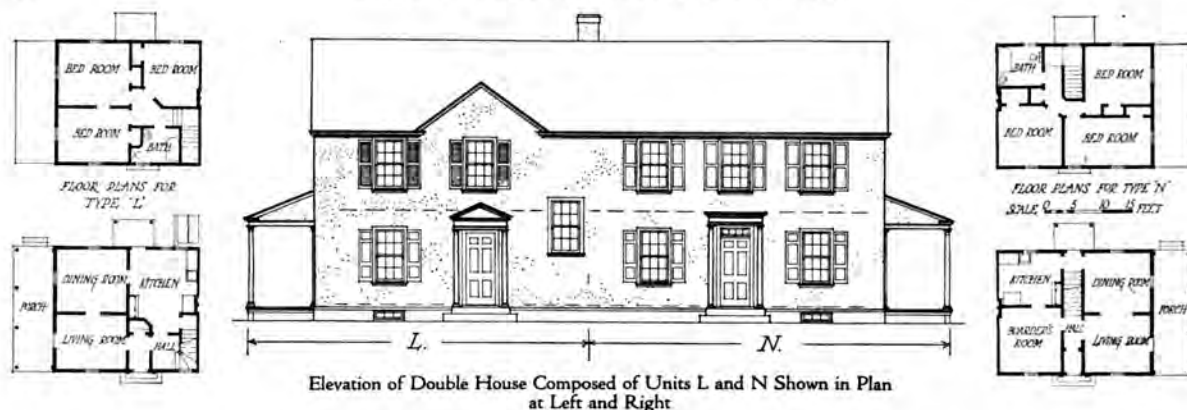
the idea of creating a flat village which may have the quality of a grown-up one, is using a variety of constructions and materials. This has the advantage also of drawing upon several material markets, instead of tending to exhaust one or two. Thus, while the majority of the houses will be of brick exterior, there will also be numbers of them built of stucco on metal lath and stud, as well as some of ordinary frame construction. For use on many of the roofs, Mr. Litchfield has devised a use of slate surfaced, asphalt roofing in rolls, but laid on the roofs by turning it up and over raised batten strips after the manner of tin roofs. This method of

laying should give scale and interest to a roof which has hitherto had the merits of durability and economy.

All houses have accommodations of bathrooms, electric light, gas, and heat from hot air furnaces. The latter are complete installations with ducts carried to each room.

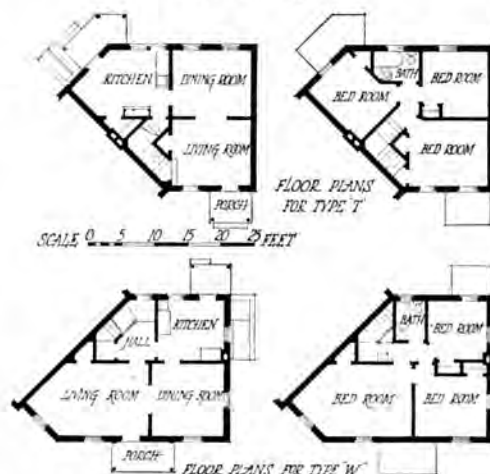
It is greatly to be regretted that at the moment no schedule of costs for either house construction or public utilities can be made available. General estimates were taken, to be sure, in mid-winter, and it

may be said that the house units then averaged about \$2,700 in cost. This average cost represented the structure alone and took no account of land, street improvements nor utilities and



overhead. The contract under which they will be built is based upon cost plus a fixed sum for the contractor's profit. This fixed sum is well below the proportionate limit allowed in the cantonment work for the contractor's percentage.

The completion date under the first contract falls in September, so that early next fall we should be able to point to a phenomenon new in our national life — some 1,400 workmen, constituting, with their families, a town of 5,000 persons, living under conditions which the National Government alone has been able to bring about. We have in York-ship Village an entire town carried out in a homogeneous architectural treatment that promises to possess great charm, a town plan following the zoning system which should operate to control future development in a manner that will ensure protection to the home districts, and distinct natural advantages in the way of definite boundaries, removing the pos-



Plans for External and Internal 45° Angle Houses

sibility of unrestricted commercial development on the outskirts to take advantage of the newly created values. These conditions are new among American towns, and, what is of greater importance, the method of operation imposed by the Government because of its financial aid, which will be maintained even after the realty corporation's indebtedness to the Government has been discharged, assures that any earnings of the property over and above the

limited dividends allowed will be expended in further improvement of the development. The opportunity for the individual to live in surroundings of decency and amenity, so often denied to the man without financial backing, becomes now a matter of national policy. It is in the broadening of our outlook as a people toward this and allied questions that men see greatest signs of promise at the present moment, and it is as a contribution toward this end that Mr. Litchfield's accomplishment at Camden is of greatest significance.



Elevation of Nine-Family Group House Composed of Typical Units



DETAIL OF MAIN ENTRANCE

BOB-O-LINK GOLF CLUB, HIGHLAND PARK, ILL.

BROWN & WALCOTT, ARCHITECTS



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Original from
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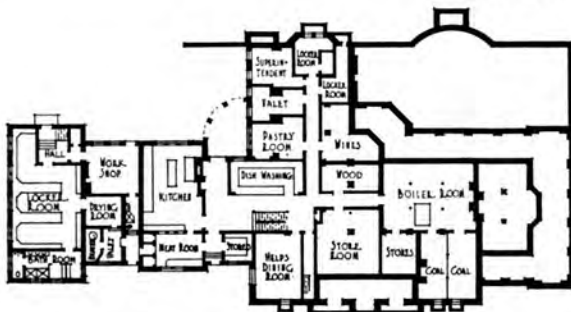
GENERAL VIEW

ESSEX COUNTY CLUB, MANCHESTER-BY-THE-SEA, MASS.
PARKER, THOMAS & RICE, ARCHITECTS

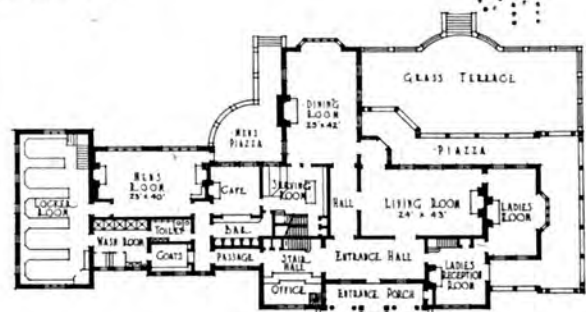
4



DETAIL OF MAIN ENTRANCE



BASEMENT PLAN



FIRST FLOOR PLAN

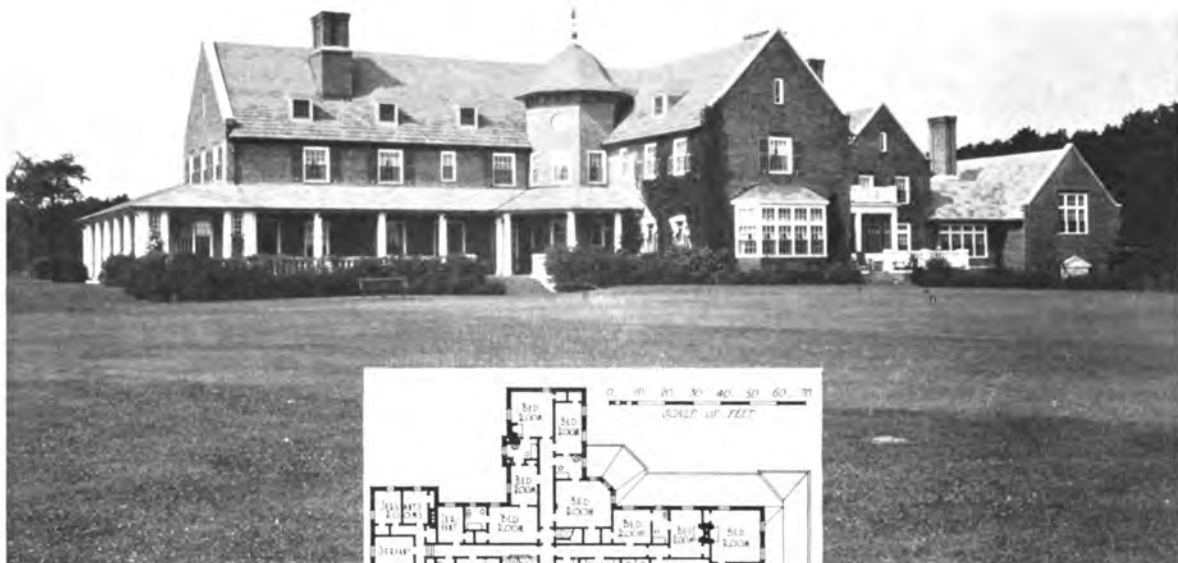
ESSEX COUNTY CLUB, MANCHESTER-BY-THE-SEA, MASS.

PARKER, THOMAS & RICE, ARCHITECTS



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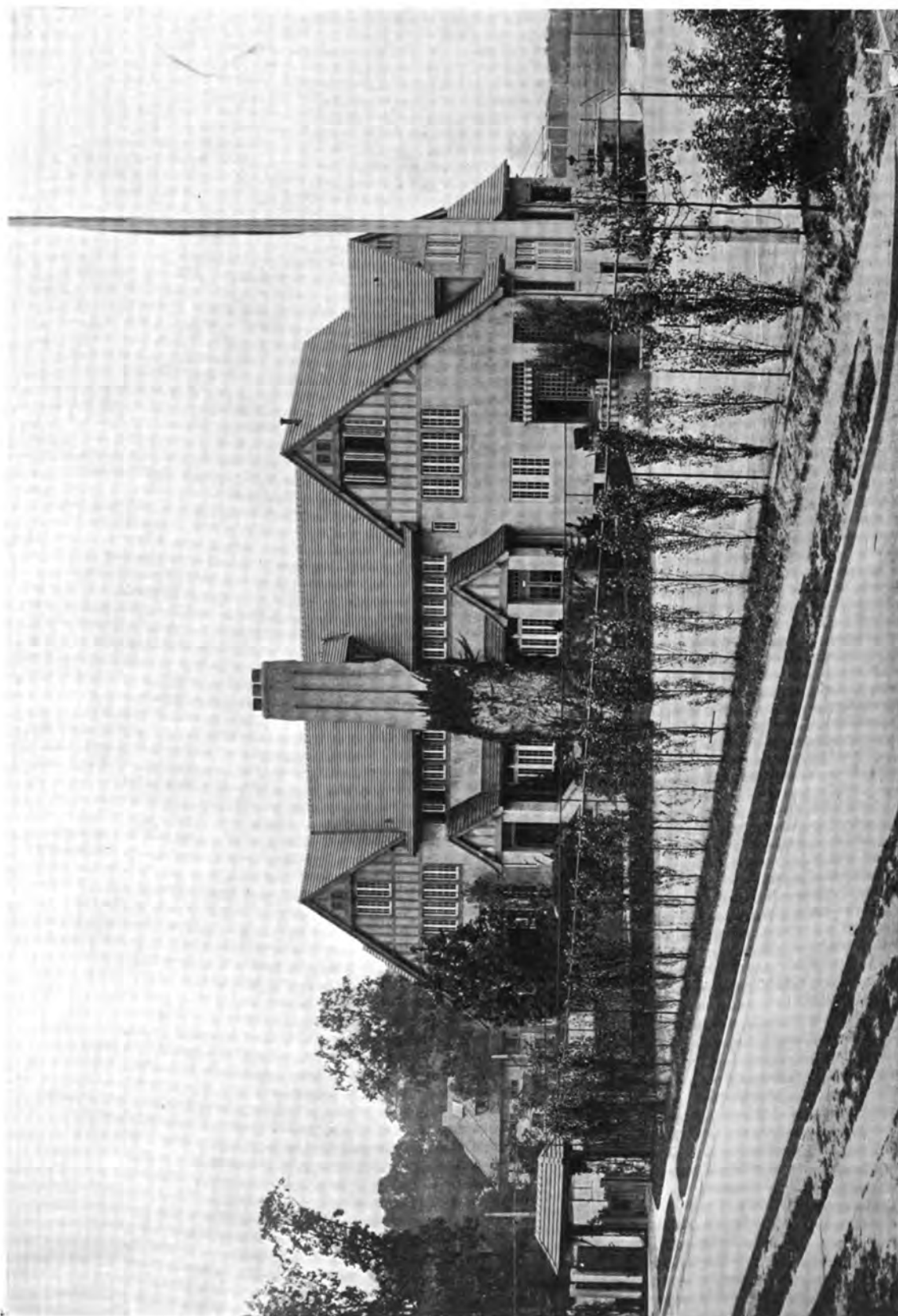
VIEW FROM THE LINKS

SECOND FLOOR PLAN

VIEW OF ENTRANCE FRONT AND LOCKER WING
ESSEX COUNTY CLUB, MANCHESTER-BY-THE-SEA, MASS.

PARKER, THOMAS & RICE, ARCHITECTS

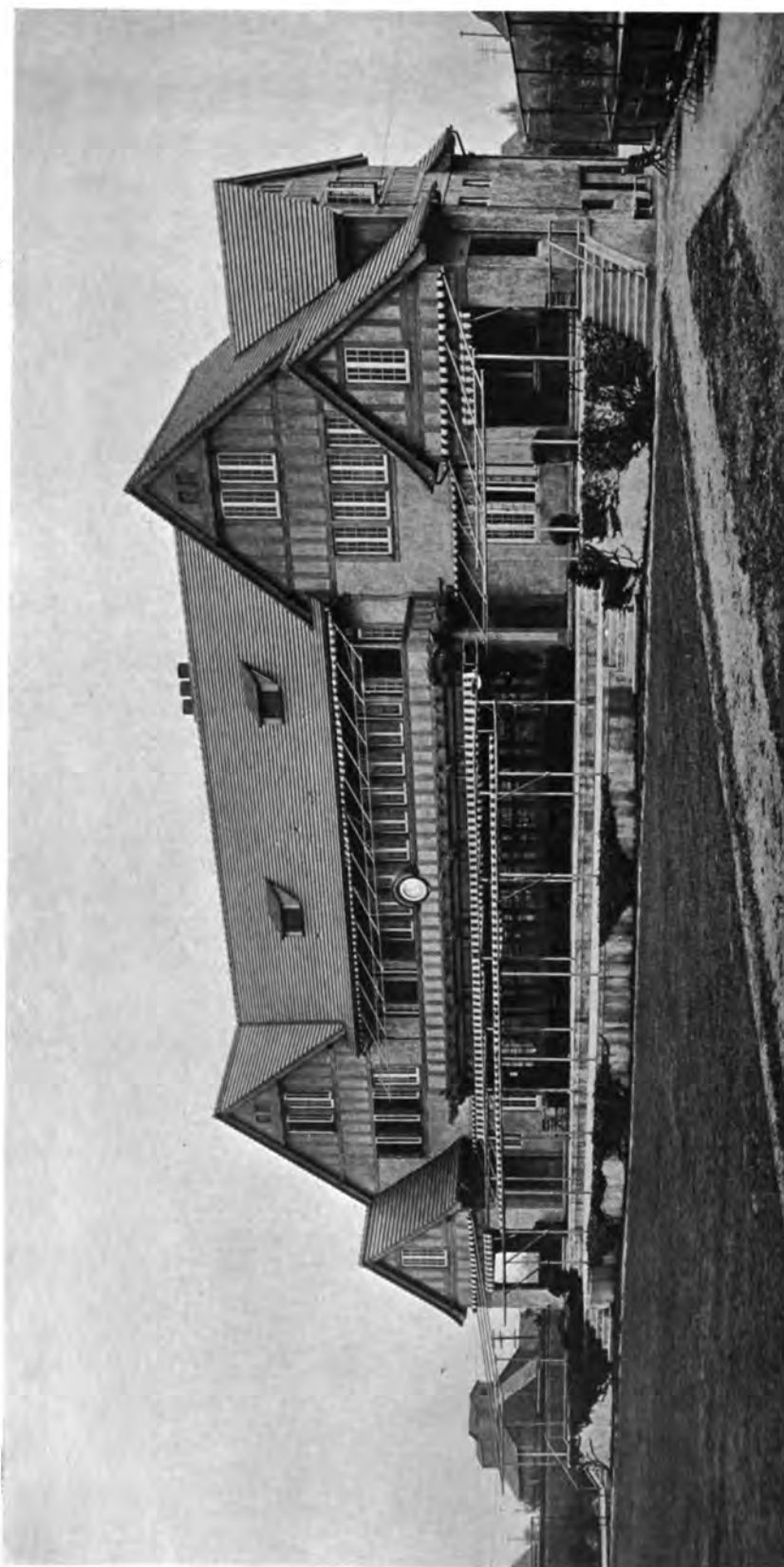




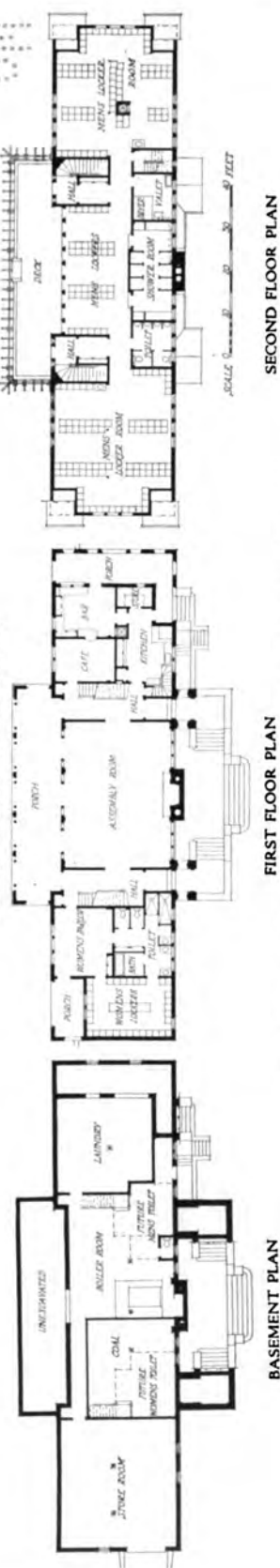
VIEW OF ENTRANCE FRONT

WEST SIDE TENNIS CLUB, FOREST HILLS, LONG ISLAND, N. Y.
GROSVENOR ATTERBURY AND JOHN A. TOMPKINS, ASSOCIATED ARCHITECTS





VIEW OF FACADE TOWARD COURTS

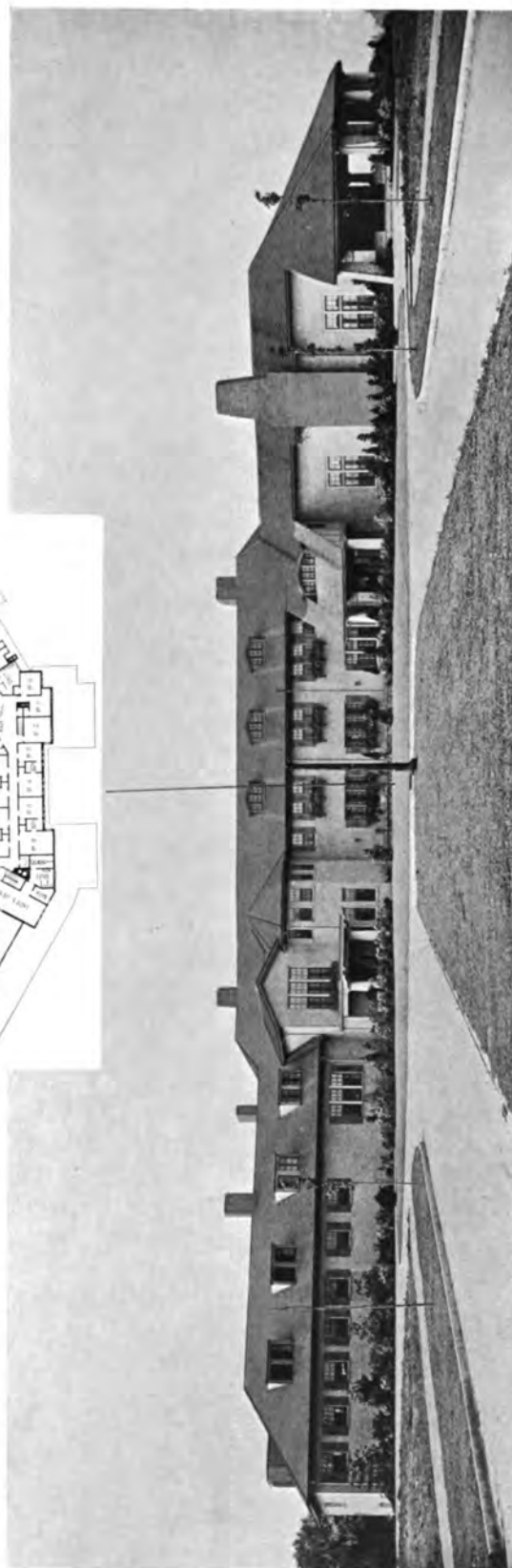


WEST SIDE TENNIS CLUB, FOREST HILLS, LONG ISLAND, N. Y.
GROSVENOR ATTERBURY AND JOHN A. TOMPKINS, ASSOCIATED ARCHITECTS

24



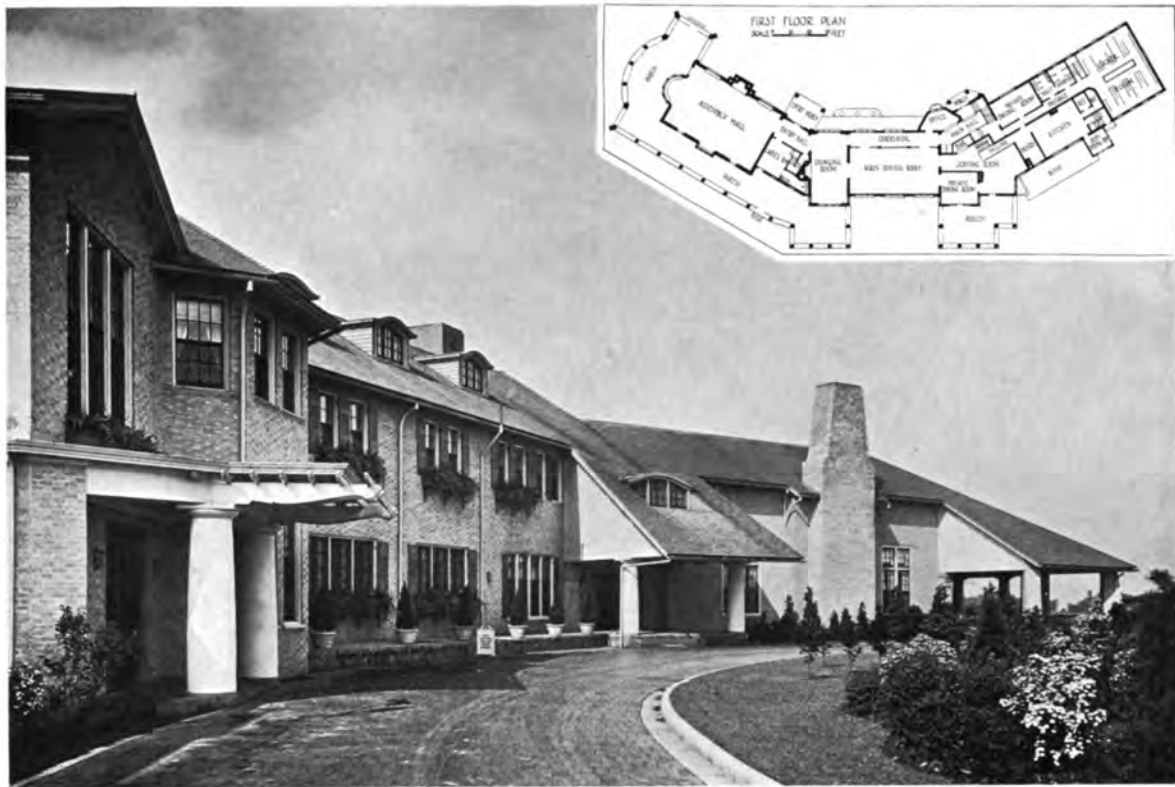
GENERAL VIEW OF ENTRANCE FRONT



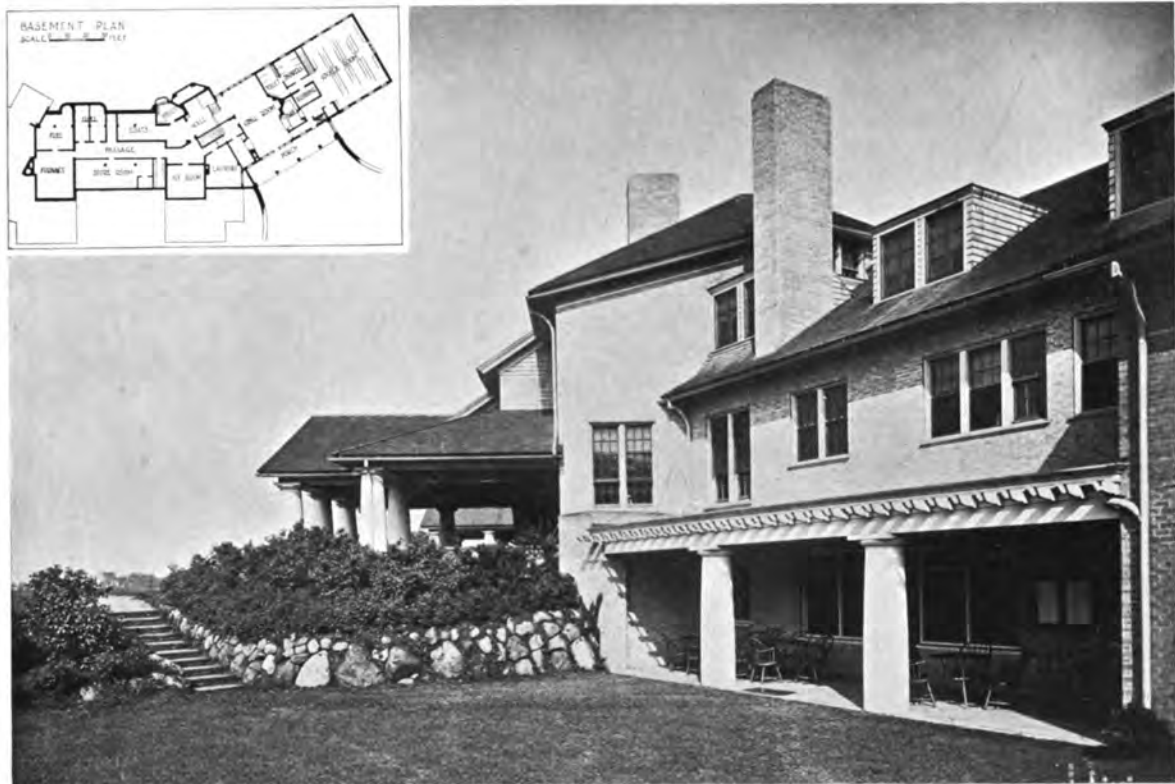
GENERAL VIEW FROM THE LINKS

SHAKER HEIGHTS COUNTRY CLUB, CLEVELAND, OHIO
FRANK B. MEADE & JAMES HAMILTON, ARCHITECTS

22



DETAIL OF ENTRANCE SIDE



PORCH AT NINETEENTH HOLE
 SHAKER HEIGHTS COUNTRY CLUB, CLEVELAND, OHIO
 FRANK B. MEADE & JAMES HAMILTON, ARCHITECTS

23



VIEW OF LOUNGE



VIEW OF DINING ROOM

SHAKER HEIGHTS COUNTRY CLUB, CLEVELAND, OHIO

FRANK B. MEADE & JAMES HAMILTON, ARCHITECTS

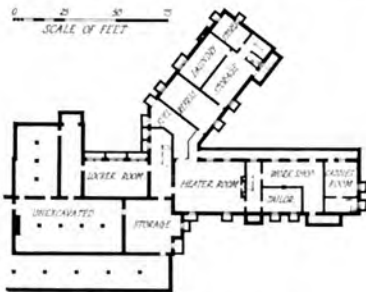


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VIEW OF LOCKER WING END



BASEMENT PLAN



FIRST FLOOR PLAN



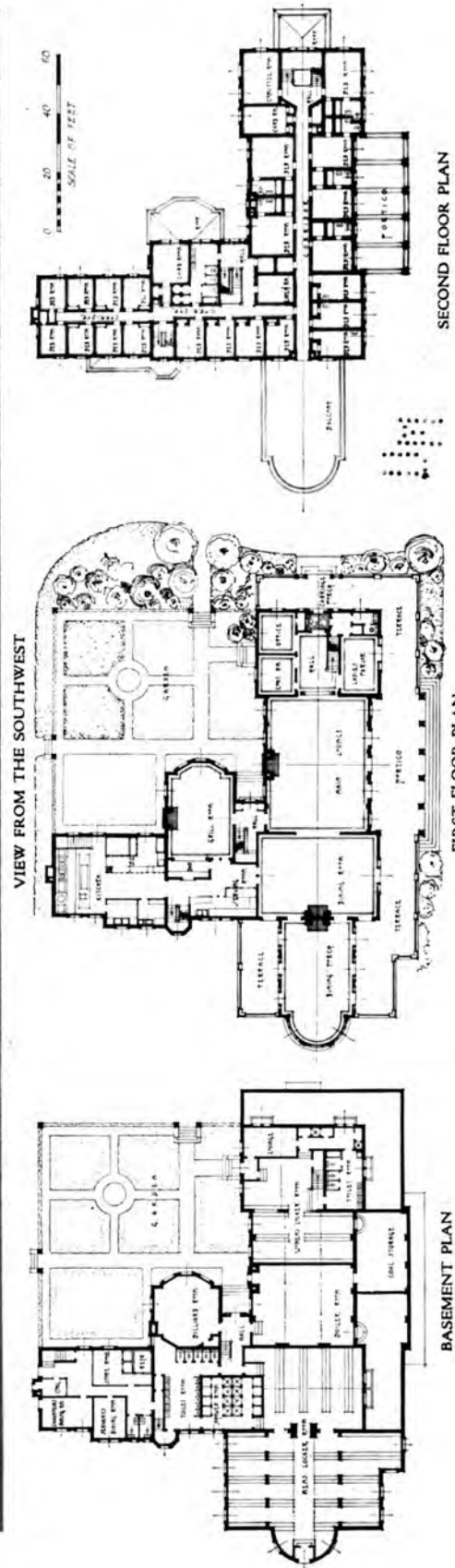
SECOND FLOOR PLAN



GENERAL VIEW FROM THE LAWN

SCIOTO COUNTRY CLUB, COLUMBUS, OHIO

RICHARDS, McCARTY & BULFORD, ARCHITECTS



INWOOD COUNTRY CLUB, INWOOD, LONG ISLAND, N. Y.

MORRELL SMITH, ARCHITECT





VIEW FROM APPROACH



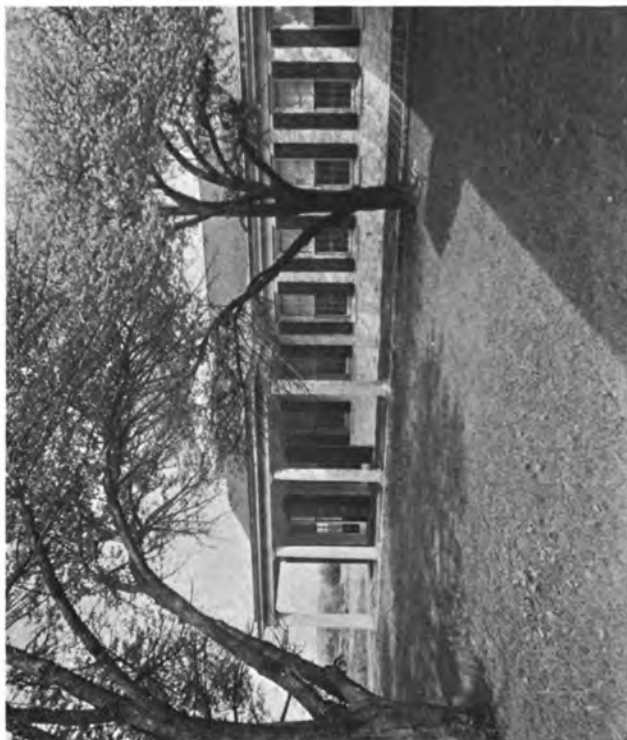
VIEW FROM LINKS

SOMERSET HILLS COUNTRY CLUB, BERNARDSVILLE, N. Y.

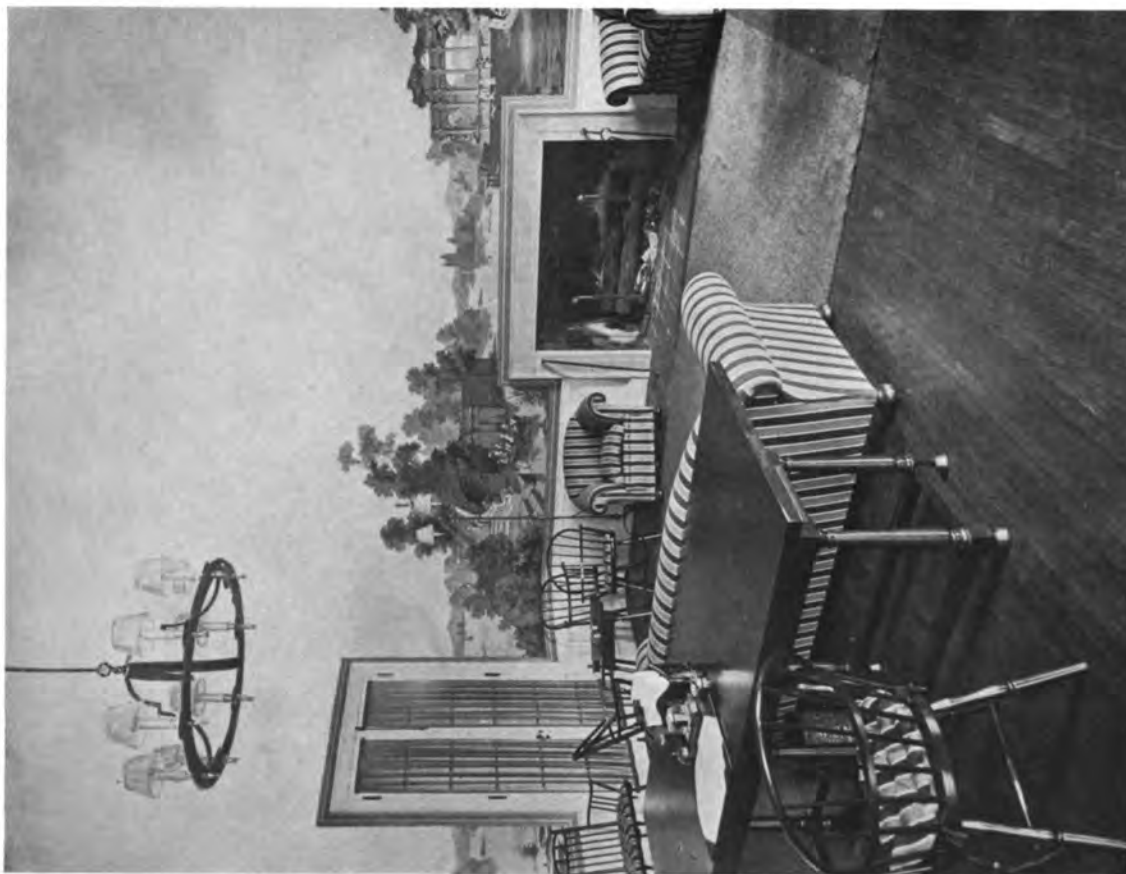
LORD & HEWLETT, ARCHITECTS



VIEW FROM LINKS



DETAIL OF WING



VIEW IN LOUNGE

SOMERSET HILLS COUNTRY CLUB, BERNARDSVILLE, N. Y.
LORD & HEWLETT, ARCHITECTS



Some Recent Country Club Houses

GOLF has come to be an important sport in American life, ranking second only to baseball in the number of its adherents. From humble beginnings it has grown to such an extent in recent years as to embrace 1,748 courses, according to the *American Annual Golf Guide*. It is estimated that \$85,000,000 are invested in club houses and courses, with an additional \$5,000,000 in clubs and balls, so it is easily apparent that the financial investment far surpasses that of any other American sport. It is the only game that is so universally appealing as to induce people to take time regularly from business or other activities to obtain outdoor recreation and exercise.

The planning of golf and country club houses has therefore become an important phase of architectural practice, and affords splendid opportunities for the creation of buildings of an informal and picturesque character. The work of the architect extends as well to the development of landscape features, for, in addition to an attractive house, it is desirable that playing over a course be made attractive from natural advantages or treatment of planting which will offer pleasant vistas from points of vantage.

The demands of members on a club house are many and varied, and because of them the development of the plan presents a particularly interesting problem. For that part of the club's facilities bearing on the athletic side the requirements are simple and comprise chiefly locker space for the members with adjoining toilets and shower baths and facilities for the management. Further requirements are accommodations for caddies, club repairing room, and professional's quarters, which are often incorporated in a separate small building in connection with the course. The social side of the club will require facilities in proportion to its membership and the intended use of the club by the members. The use of country clubs is rapidly being extended through the entire year, and an important factor in their planning is the provision of easy means of closing up portions of a club so that the part necessary to accommodate those following winter sports may be comfortably heated and operated in cold weather.

In the plates of this issue and the following pages

there are presented a selection of recent country clubs, embracing types devoted to all country sports as well as those restricted to a particular sport, such as golf or tennis, and the essential features of each of the buildings illustrated are mentioned in the following descriptive notes.

In attacking the problem of plan for the West Side Tennis Club at Forest Hills Gardens, the architects and Board of Governors were confronted with certain very definite limitations.

First: As the club drew a large part of its membership from New York City, it was desirable that the club house be placed within a two-minute walk of the railroad station.

Second: It was highly desirable that the building

be so placed on the property as to allow for the maximum number of tennis courts, sixty-four in all being provided. While the club house was designed to have a central building with two flanking wings, it was decided to construct the central portion only. This involved incorporating all essentials of a complete club house in this middle portion and at the same time so designing it that the future wings could

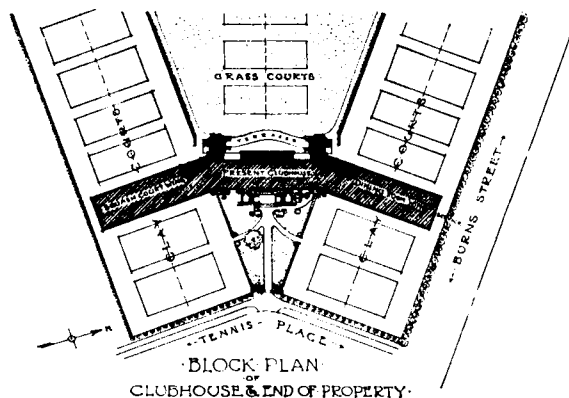
be added at any time without undue disturbance.

Third: In the matter of cost, there was on the one hand the necessity of providing ample accommodations for the existing membership; and on the other the high standard of construction set for all buildings in the restricted locality in which the club house was to be built.

These conditions were met first by the Board of Governors, who acquired a piece of land west of Continental avenue, which was fairly level, requiring but a comparatively small amount of grading for the courts. The fanlike shape of this property dictated the alignment of the courts on diverging lines with the club house at the apex.

Second: By the architects in sketching out a scheme for a tripartite treatment, the center unit of which was built, with provision for the future addition of the wings.

It is expected that, at some time in the future, these additional wings may be constructed to contain on one side squash courts and swimming pool and on the other the dining room. There also remains the possibility of adding two piazzas on the courts' side.

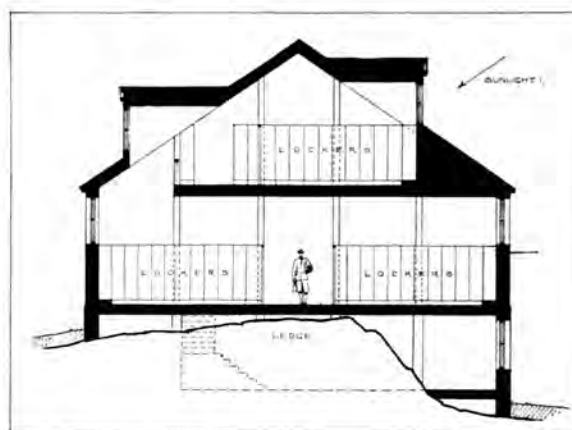


West Side Tennis Club, Forest Hills, L. I.
Grosvenor Atterbury and John A. Tompkins, Associated Architects

It will be seen by reference to the plan that the large assembly room occupies the central portion of the building, with its fireplace toward the entrance from the street, while the opposite side gives an unobstructed view of the courts. On either side is a hallway, to be used by all members. The south end of the building is devoted to the needs of the women members and the north side to the club service. The entire second story is given over to the men's locker room, etc.; while the double set of doors at the head of each staircase permits the women to have access to the open deck overlooking the courts.

Third: After a careful study of construction cost the following materials were chosen: for foundation walls, concrete cast in wood forms; for walls above, terra cotta blocks covered with stucco, with half timber planted on in the gables and dormer faces. Where the proposed wings would connect with the main building, frame construction is used above the second floor. The roof is covered with flat fire flashed interlocking tile in varying shades of red and brown. A small amount of steel was used where required for strength and to reduce settlement due to shrinkage. All other framing was done in spruce and hemlock. The exterior color scheme is a warm drab stucco, gray timbers, and white sash.

The interior finish consists of chestnut trim in the



Cross Section, Locker Building, the Country Club, Brookline, Mass.

principal rooms and halls, and cypress elsewhere with birch and cypress doors and birch floors. All finish was kept very simple in design and all woodwork was stained. In the interest of economy the second floor locker rooms were left with rafters exposed and stained. In the construction of the shower rooms marble was used for the partitions and the entire floor was of composition. A full and complete plumbing system was installed, and in the basement the necessary branch lines were run to provide for future additional fixtures. The heating system consists of a one-pipe, steam heating plant of modern type.

— The Locker Building of the Country Club of Brookline, Mass., forms the end of a quadrangle of buildings and stands on a ledge which falls off steeply at the rear toward the south. The plan is distinguished by an arrangement of lockers which divides them in groups or sections. Besides this arrangement, which was stipulated from the beginning, effort was centered upon securing a maximum of natural light and ventilation, together with centralization of administration. Perhaps the most interesting feature of the building is its cross section, shown in the accompanying illustration. By cutting away the floor of the second story next the front wall, where it would be valueless for lack of head room, the air within the building is allowed to circulate freely in such a way that in whatever direction the wind may be, effective ventilation is maintained. The windows everywhere come above the level of the top of the lockers, so that all outer wall space is available, and the interior is flooded with light. A radiator stands in the center of each section of lockers, surrounded by a bench for use in dress-



Entrance to Locker Building, the Country Club, Brookline, Mass.
Andrews, Rantoul & Jones, Architects

ing. At the two ends of the building private dressing rooms are supplied, with adjoining toilet accommodations. The main plumbing facilities are located in the center of the building opposite the entrance and a shaft is carried through to the roof, supplying additional light and ventilation. The floors are of maple.

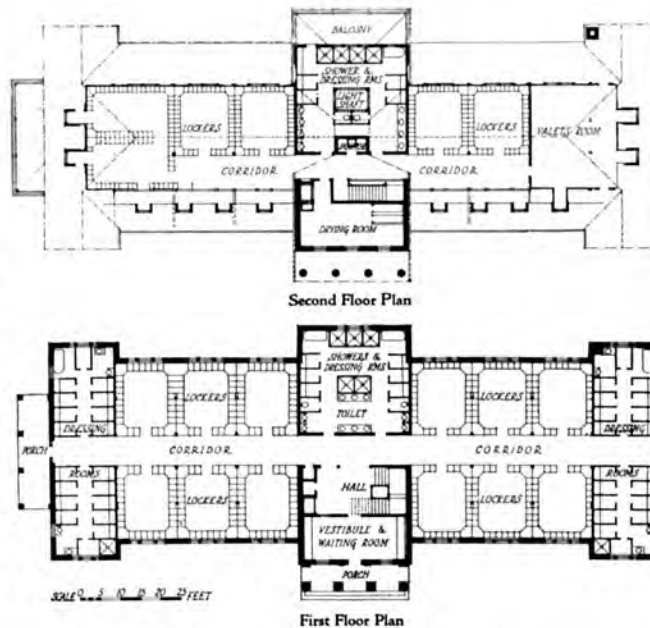
The exterior has red brick walls, with white wooden trimmings and slate roof. The bricks employed are of the large unit type, forming a hollow wall, with light gray bricks on the inside carefully pointed. The building is of second class construction. A system of automatic sprinklers is installed throughout. It is 150 feet long and covers a total area of 7,478 square feet. Its cubical contents are approximately

180,000 cubic feet, and the cost was \$42,400, making the cost per cubic foot about 23½ cents. Construction was started in the fall of 1915.

The plumbing includes 4 sinks, 10 wash basins, 12 urinals, 5 waterclosets, 11 shower baths, and 5 bath tubs. The building is heated by steam radiators,

with boiler plant in basement.

The plan of the Richmond Country Club eliminates hallways as much as possible, allowing the assembly room, general dining room, and billiard room to take the corridor service. This has the advantage of giving a more open plan, which is important in a southern climate. This plan also subordinates the bedroom feature, with the idea that this part of a country club is used only for a limited period, therefore



Locker Building, the Country Club, Brookline, Mass.
Andrews, Rantoul & Jones, Architects

making it unwise to devote highly desirable space to it.

Materials used in the building were in all cases local, except the enamel brick used in the swimming pool in the basement under the palm room. The balance of the brick used in exterior walls and terrace floors is a local brick, varying in shades from almost black to dark red, laid with raked joints.

The locker arrangements in the basement permit of convenient use of the pool on specific days during the week by the lady members. The cost of the club per cubic foot was the very low figure of 15 cents in 1910, which is largely attributed to the use of local materials and the open plan.

The Norfolk Country Club is characterized by the same openness in plan as the Richmond Club and uses two levels for the first floor, thereby hugging the ground. The roof construction in nearly all cases is exposed. The materials used are all local, the trim and exterior mill work being undressed material. One of the principal features in this club is the fireplaces, which are unusually large and very successful from an operating standpoint.

The locker room is two stories in height, all the framework being exposed, with three shower rooms consisting of two showers each. The porch floors and the café floor are ordinary common brick laid in sand with a sand joint. The cost of the building was 8 cents per cubic foot in 1911.

The Inwood Country Club was designed to provide accommodations for approximately three hundred members. The grill room will accommodate from fifty to sixty persons, the dining room from seventy-five to one hundred, and the dining porch about seventy-five. The kitchen is designed with facilities to serve approximately three hundred persons at one time.

The locker rooms, showers, and toilets for both men and women are located in the basement. The women's locker room provides lockers for about fifty members. Connecting with their locker room is a small lounging room. The floor and side walls of the toilet and wash rooms and shower rooms are tiled.

The men's locker room provides accommodation for approximately two hundred and fifty lockers, varying in size as follows: 15 by 18 inches, 18 by 18 inches, and 18 by 24 inches and 72 inches high. The locker room has a clear ceiling height of 10 feet and is well lighted. Eight shower baths with dressing rooms have been provided adjacent to the locker room. A wash room and toilet room of generous proportions, with a complete equipment, has also been provided close to and connecting with both the shower and locker room.

In the men's section the staircase, adjacent to the grill room, extends from the basement to the third story. It provides access from the men's lockers to the grill room and also with the bachelors' quarters

on the second and third stories. This staircase hall can be entered from the garden court on the basement floor level.

The building is a combination of frame and masonry construction. Where frame walls occur they are veneered with brick, to correspond with other walls. Exterior terrace floors are paved with brick laid in herringbone pattern, with borders of large, red quarry tiles. Interior trim used throughout, except in the grill room, is of white wood painted. All floors on the first story are of quartered oak, and on other stories of comb-grain yellow pine. The building is heated with steam. It was erected during the year 1915 and completed early in the year 1916. The cost was approximately 24 cents per cubic foot, including the heating plant, plumbing, electrical equipment, electric fixtures, vacuum cleaning plant, screens, weather strips, etc.

The Scioto Country Club is so situated that the main approach for motor cars and carriages is by a drive leading up to the west entrance. The main front of the building is toward the east, overlooking the golf links and the picturesque valley that extends through the grounds of the club from north to south.

In architectural treatment the building is Colonial, the exterior being rough red brick with wood trim, window frames, cornice, etc., painted white, the roof being of shingles stained green. The building is 170 feet long from north to south and, including the kitchen wing and porch, is 150 feet from east to west. The lounging room is 26 by 53 feet. To the north of the main lounging room is the dining room. This is separated from the lounge by a partition formed of accordion doors so arranged that they can be folded back into pockets at each side of the room, thus throwing the entire front portion of the building into one large room that can be used as a ball room or for other club entertainments.

The locker room in the wing extending to the north occupies a space two stories in height, and at the present time will accommodate over two hundred lockers. Provision is made for two shower-bath rooms, one on each floor, in connection with the locker room, each of these rooms containing three shower baths. The grill room in the same wing is 25 by 34 feet, with a large open fireplace at the north end. The room is so situated as to get light on both east and west sides, which will permit of its being opened up in summer and securing outside air and ventilation almost equal to a porch.

The kitchen occupies all that portion of the building extending northwest at an angle of 45 degrees, and is so located that all access to the dining porch, dining room, grill room, and second floor private dining rooms is from one end, thereby ensuring quick and economical service.

The porch located along the east side of the main



Grill Room, Bob-o-Link Golf Club, Highland Park, Ill.
Brown & Walcott, Architects



Grill Room, Shaker Heights Country Club, Cleveland, O.
Frank B. Meade & James Hamilton, Architects

building is 17 by 76 feet, and is so constructed as to permit of its being closed in with glass and heated when so desired.

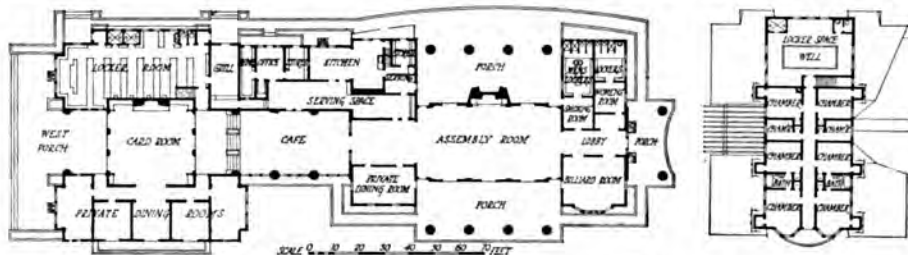
The Essex County Club at Manchester-by-the-Sea, Mass., is built in a permanent way, so that it may be used equally as much in winter as in summer. It is a free adaptation of English architecture with Georgian detail in the porches, and with an exceptionally rich texture in wall and roof surfaces. The exterior walls are of common red brick laid in running bond with every seventh course, all headers. The roofs are covered with slates graduated in exposure and thickness. Cornices, window trim, and porch details are of wood, painted white, and gutters are of the metal hanging type.

The building was planned to provide porches on these exposures so that all the prevailing breezes might be taken advantage of. The wing containing the dining room and extending out toward the golf

links is intended to screen the entrance to the men's locker building from those watching the play from the porch. The locker building is attached to the main building and, being situated on lower ground, it has been made two full stories in height without detracting from the importance of the main façade. From the second floor easy access is had to the café and the men's porch through the men's lounging room.

The ladies' locker and dressing rooms are on the second floor and are reached directly from the ladies' quarters on the first floor near the main entrance.

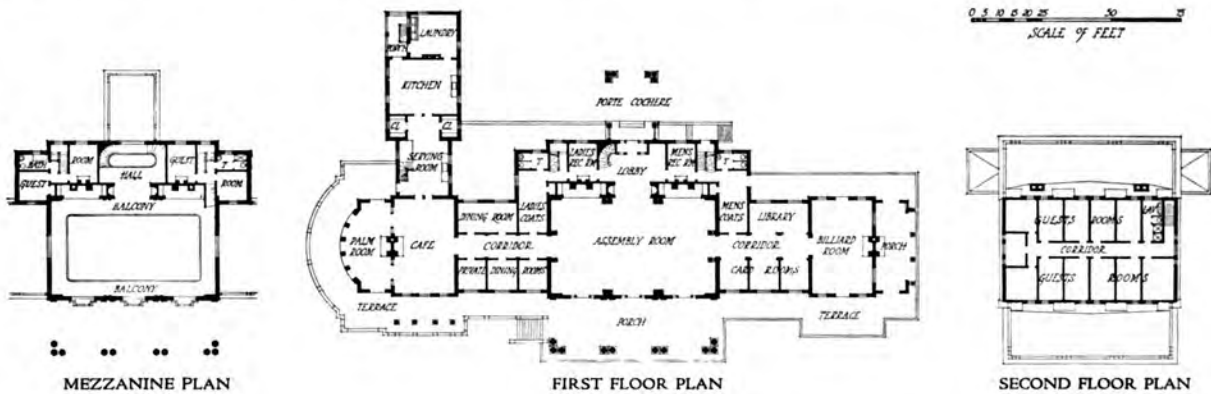
The Shaker Heights Country Club is admirably located, ten miles from the heart of Cleveland. The view obtained from the broad, double-avenued ap-



First and Second Floor Plans of Norfolk Country Club



General View of Norfolk Country Club, Norfolk, Va.
Neff & Thompson, Architects



COUNTRY CLUB OF VIRGINIA, RICHMOND, VA.
NEFF & THOMPSON, ARCHITECTS



Ladies' Room



Men's Room

Essex County Club, Manchester-by-the-Sea, Mass.

proach offers a charming picture of a long and low, light gray brick structure, with its rolling roof weathered to a brownish gray, and quaint dormers.

Entrance is made at either end of the central or main part of the building: the one at the east giving direct access, through a medium sized hall in which the office and telephone rooms are located, to the grill room in the basement, to the men's locker rooms and showers located in the eastern wing, and to the ground floor where the guest rooms are located; the other entrance gives access to the assembly room, ladies' rest room, and porch occupying the entire western wing, and to the lounging room at the left. A beamed corridor running the full length of the dining room, which occupies the main part, connects the two outlying wings.

The grill room opens out on a terrace leading directly to the golf links. The ladies' locker rooms,

located in the opposite wing of the building, give direct access to the links and afford a desired privacy.

The interior, treated in a restrained English manner, by the employment of individual pieces of furniture, by a most unusual assortment of prints, and a discriminating choice in the selection of fabrics and rugs, reflects an atmosphere that is both pleasing and harmonious. The automatic sprinkler system used throughout has had the objectionable feature removed by making it a part of the decorative ornament in the plaster ceilings, which are Early English in character. The fireplaces in the lounging and assembly rooms have facings of artificial Caen stone. The grill room, finished in English oak, with Windsor chairs and tables, has Old English prints and silhouettes on the walls, conveying the effect of an old tap room. The walls are of rough gray plaster and the floor is cement marked off in large squares.



Shaker Heights Country Club from the Golf Course



HOUSE OF L. APPLETON, ESQ., HADDONFIELD, N. J.
SIMON & BASSETT, ARCHITECTS

Notes Concerning Federal Government Building

THE HOUSING DEPARTMENT OF THE SHIPPING BOARD is now located at 140 North Broad street, Philadelphia. It is known as the Department of Passenger Transportation and Housing. The personnel of this Department is :

A. Merritt Taylor, Director.
J. Rogers Flannery, Assistant Director.
Robert D. Kohn, architect, New York, Chief of Production.
Frank Goodwillie, architect (Wallis & Goodwillie), New York, Deputy Chief of Production.
D. Everett Waid, architect, New York, Deputy Chief of Production.
E. J. Russell, architect (Mauran, Russell & Crowell), St. Louis, Deputy Chief of Production.

Branch of Design : F. L. Ackerman, architect (Trowbridge & Ackerman), New York, Chief.

Project Supervisors : F. Mathesius, architect (Rich & Mathesius), New York ; L. A. Goldstone, architect (Rouse & Goldstone), New York ; E. S. Klein, architect (LaBeaume & Klein), St. Louis ; W. T. Karcher, architect (Karcher & Smith), Philadelphia ; A. Mackintosh, architect, New York ; E. C. Wachendorff, architect, Atlanta, Ga. ; J. W. Ritchie, architect, Philadelphia.

The following Housing Commissions have been assigned:

Bath, Me., Texas Shipbuilding Co. Appropriation \$540,000. Architect, R. Clipston Sturgis, Boston.

Portsmouth, N. H., Atlantic Corporation. Appropriation \$1,120,000. Architects, Kilham & Hopkins, Boston.

Bristol, Pa., Merchants Shipbuilding Co. Appropriation \$3,850,000. Architect, Carroll H. Pratt, Bristol.

Hog Island. Appropriation \$6,450,000. American International Shipbuilding Co. Consulting architect, Owen Brainard, New York. Architect for Dormitories, Geo. M. Bartlett, New York.

Camden, N. J., New York Shipbuilding Co. Appropriation \$3,686,400. Architect, E. D. Litchfield, New York.

Chester, Pa., Sun Shipbuilding Co. Appropriation \$1,800,000. Architect, Ernest Flagg, New York.

Chester, Pa., Chester Shipbuilding Co. Appropriation \$1,540,000. Architect, G. Edwin Brumbaugh. Simon & Bassett, consulting architects, Philadelphia, Pa.

Wilmington, Del., Pusey & Jones and Bethlehem Shipbuilding Co. Appropriation \$2,500,000. Architects, Ballinger & Perrot, Philadelphia.

Sparrow's Point. For Bethlehem Shipbuilding Co. Appropriation \$1,000,000. Architect, Edward L. Palmer, Jr., Baltimore.

Newport News, Va. Appropriation \$1,500,000. Newport News Shipbuilding Co. Architect, Francis Y. Joannes, New York.

Jacksonville, Fla., Merrill-Stevens Shipbuilding Co. Appropriation \$500,000. Architect, H. T. Klutho, Jacksonville, Fla.

Lorain, Ohio, American Shipbuilding Co. Appropriation \$770,000. Architect, Abram Garfield, Cleveland.

Port Jefferson, L. I., Bayles Shipyard, Inc. Appropriation \$240,000. Architect, Alfred C. Bossom, New York.

THE BUREAU OF INDUSTRIAL HOUSING AND TRANSPORTATION is now located at 615 G street, Washington. The personnel of this Bureau is :

Director, Otto M. Eidlitz, New York.

Asst. Director, Joseph D. Leland, 3d, architect (Loring & Leland), Boston.

Production, Burt L. Fenner, architect (McKim, Mead & White), New York.

Design, John W. Cross, architect (Cross & Cross), New York.

Estimating, N. Max Dunning, architect, Chicago.

Town Planning, F. L. Olmstead, Boston.

Engineering, J. W. Alvord, Chicago.

Construction, D. T. Webster, New York.

Investigation, I. N. Phelps Stokes, architect, New York ; C. Grant LaFarge, architect, New York.

A number of housing projects have been assigned to architectural firms for development, although Congress has not as yet appropriated the \$60,000,000 asked for.

QUARTERMASTER'S DEPARTMENT, CANTONMENT DIVISION, 7th and B streets, Washington, Building C, Room 310-H, Lieut. Col. Francis B. Wheaton, Architect in Charge. This Department has charge of all Army Cantonment work. All buildings are designed by this Department and built under its direction. Libraries, theaters, Y. M. C. A.'s, and kindred buildings that are built at cantonments do not come under the supervision of this Department. A number of warehouses and buildings of similar type have been assigned to architects by other divisions of the Quartermaster's Department.

BUREAU OF YARDS AND DOCKS, 1317 F street, Washington, F. W. Southworth, Chief Draftsman. This Bureau has its own architectural department, and the probabilities are remote that work will be given to outside architectural firms, although the Hospital and Power House at the Brooklyn Navy Yard was given to a committee of New York architects headed by C. Grant LaFarge.

COMMITTEE ON EMERGENCY CONSTRUCTION, WAR INDUSTRIES BOARD, COUNCIL OF NATIONAL DEFENSE, Col. William A. Starrett, Chairman, architect (Starrett & Van Vleck), New York. Capt. Kenneth M. Murchison, architect, New York, and Capt. Alfred H. Granger, architect, Chicago, are on Col. Starrett's staff. This committee lets contracts for all buildings authorized by the War Department, but has nothing to do with the giving out of architectural commissions.

SURGEON GENERAL'S DEPARTMENT, HOSPITAL DIVISION, 7th and B streets, Washington. This Department is equipped to do all its own work. Most, if not all, of the buildings will be of temporary construction. Major John Allan Hornsby (Doctor) is in charge of this Division, assisted by Major Nathan C. Wyeth, architect, Washington, Major S. F. Voorhees, architect, New York, Capt. Howard Cutler, architect, Rochester, N. Y., Lieut. C. H. Woodbridge, architect, Chicago.

COMMISSION ON TRAINING CAMP ACTIVITIES, UNITED STATES WAR DEPARTMENT, offices 19th and G streets. This Commission is composed of nine members, with Raymond D. Fosdick, Chairman, and W. Prentice Sanger, architect, Secretary. Under its general direction are the military branches of the Y. M. C. A., Liberty Theaters, Camp Libraries, and many other sub-organizations, each with its own management, each providing its own funds, and each erecting its own buildings.

AVIATION DEPARTMENT, 7th and B streets, Building C, Room 3-317. Capt. Robert C. Dunbar, architect, New York, has charge of the personnel in the Construction Division. Nearly all of the work has been designed by Albert Kahn of Detroit. The construction of the buildings in France and elsewhere abroad, however, is done under the direction of men selected by Capt. Dunbar's Department.

RED CROSS WAR WORK, Red Cross Building, Washington. Charles E. Fox, architect (Marshall & Fox), Chicago, Chief of Construction Work. This organization does its own architectural work.

WAR TRADE BOARD. This Board reports that it has nothing to do with the assignment of architectural commissions. T. J. S. Fuller, architect, Washington, is connected with the Board.

Cass Gilbert is architect for the new supply base for the U. S. Army at Brooklyn.

Waddy B. Wood is architect for the new Washington Housing Development. Estimated cost, \$10,000,000.

J. H. de Sibour is architect for the additions to the naval group at Annapolis. Estimated cost \$6,000,000.

Ewing & Allen, New York, are architects for the housing development at the U. S. Nitrate Plant located at Muscle Shoals, Ala. This work is for the U. S. Ordnance Department.

Mead & Requa, San Diego, Cal., have been appointed associate architects with Albert Kahn of Detroit in building the permanent flying school at Rockwell Field, Los Angeles. This school will comprise a group of 60 or 70 permanent buildings.

Ewing & Allen, New York, are architects for the new Merchant Marine Training Station — Navy Department — at Pelham Bay, New York.

Mann & MacNeille, New York, are architects for the housing development for the U. S. Ordnance Plant at Sheffield, Ala.

George C. Nimmons is architect for the group of warehouses being built at Chicago for the Quartermaster's Department.

The following is the form of contract between Architect and the United States Shipping Board Emergency Fleet Corporation for the construction of houses :

THIS AGREEMENT made this.....day of..... in the year 1918, by and between..... of....., engaged in the profession of architecture, party of the first part, (hereinafter called "Architect" and referred to by the masculine pronoun "he" or its derivatives) and the UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION, a corporation under the laws of the District of Columbia, party of the second part, (hereinafter called "Fleet Corporation") WITNESSETH :

Premises. The Fleet Corporation intends to erect a housing development at or near the city of....., near the shipyards of the..... on property.....

Under the national emergency, the Fleet Corporation urgently requires the immediate performance of the services herein provided for as public services, and it is necessary that said services be completed within the shortest possible time; the Architect has the necessary facilities and organization for the performance of such services;

Now, THEREFORE the parties agree as follows :

I

Scope and nature of services. The Architect shall, subject to the general supervision and direction of the Fleet Corporation, with all possible dispatch and giving precedence thereof to all other professional business which he may have, perform, in connection with the above-named construction work, professional services, which shall consist of the necessary conferences, the making of any necessary surveys of the site, the preparation of preliminary studies, working drawings, specifications, large scale and full size detail drawings, and also such drafting of forms of proposals and contracts, such checking upon issuance of certificates of payment and supervision of the said construction work as the Fleet Corporation may require.

The Fleet Corporation may, from time to time, give additional general or detailed instructions to the Architect, and may require professional services of a character similar to the above in addition to those theretofore ordered, or require the omission of services previously ordered; and the provisions of this agreement shall apply to all such additions, modifications and changes in the same manner, and with the same effect as if they were embodied herein. The Architect shall comply with all such instructions and requirements.

The title to any and all plans, drawings, specifications, details, original tracings and blueprints made by the Architect for use in the construction work; shall be in the Fleet Corporation upon their delivery to it, and the Fleet Corporation may use them for any purpose without compensation to the Architect except as hereinafter provided.

The Architect shall at all times use his best efforts in all his acts hereunder to protect and subserve the interests of the Fleet Corporation.

The Architect shall, in his own name, and upon his own responsibility employ, at rates not exceeding those ordinarily paid at this time to such persons for their services, all such assistants, subordinates, engineers, experts and consultants as may be necessary to the proper conduct of his work. In order that compensation paid to any of such persons, or any part of such compensation, shall be chargeable to the Fleet Corporation, the number of such assistants, subordinates, engineers, experts or consultants and the amount of their respective compensation must receive the authorization or approval of the Fleet Corporation, applied for and given in writing; and at all times during the period of the performance of this contract, such employment shall be subject to invalidation by the Fleet Corporation as a basis for reimbursement to the Architect.

The Architect has already been at work for a period preceding the date of this agreement; and he will now diligently proceed so that the construction work may be completed at the earliest practicable date; he shall use his best efforts to deliver as rapidly as possible to the Fleet Corporation as many copies of all plans, drawings, specifications, details, prints, and such original tracings as it may request.

The Architect agrees to pay promptly for all labor, material or services rendered to him.

II

Payments on account of expenses. Reimbursements. The Architect shall be reimbursed in the manner described in Article IV hereof, subject to the provisions of Article VIII hereof, for such of his actual net expenses necessarily, in the Fleet Corporation's opinion, incurred in the performance of his services hereunder and evidenced by receipts, vouchers or other evidence of the sort, from time to time re-

quired by the Fleet Corporation, as are included in the following items:

(a) The actual sums paid for any drafting necessary hereunder and verification of shop drawings, and writing of specifications, as shown by vouchers and signed time-cards, and such part of the compensation paid by the Architect to members of his office staff as may be properly, in the opinion of the Fleet Corporation, apportionable to the work hereunder.

(b) Sums paid engineers, experts and consultants, and other persons performing similar necessary services, whose employments by name and the rates of whose compensation are approved or ratified by the Fleet Corporation, and for such time as they were, in the opinion of the Fleet Corporation, necessarily employed on the work.

(c) Cost of reproducing drawings, printing or mimeographing specifications, and of models, telegrams, long distance telephone calls and expressage.

(d) Sums paid for transportation of the Architect or his assistants while traveling in discharge of duties necessarily in the Fleet Corporation's opinion connected with the work, and not in excess of Seven and a Half Dollars (\$7½) per diem for himself and for each regular office assistant for living and hotel expenses actually incurred while temporarily absent in discharge of his duties hereunder from the place in which his main office is located.

A sum equal to the sums paid to the Architect under sub-division (a) of this Article shall also be paid to the Architect as covering full and proper proportion of the general expenses of the Architect's office, commonly called overhead, representing items that cannot be apportioned in detail to this work.

III

Professional fee. The Fleet Corporation shall pay to the Architect, in the manner described in Article IV hereof, and subject to the provisions of Article VIII hereof, as the professional fee in full for his personal services under this agreement, the sum of _____ Dollars and no more; and with the desire to render a public service in the national emergency, the Architect shall accept said fee in full for his services hereunder.

IV

Payments. On or before the fifth day of each calendar month, while this contract may be in force, the Architect shall prepare and deliver to the Fleet Corporation a detailed statement of his expenditures up to and including the last day of the previous month for which he claims reimbursement or payment under the terms of Article II hereof, and the Architect at such time shall as far as practicable deliver to the Fleet Corporation original receipted bills and all other original papers not theretofore delivered, supporting expenditures on account of which the Architect claims reimbursement or payment.

If there be any items and/or amounts entering

into such statement which the Fleet Corporation does not approve, such statement shall be modified and changed to meet the approval of the Fleet Corporation and the decision of the Fleet Corporation as to such items and/or amounts shall be final, subject to the provisions of Article IX hereof.

On or before the fifteenth day of each month following the execution of this agreement, the Fleet Corporation shall pay to the Architect the amount due him, as shown by the statement approved by the Fleet Corporation.

The fee of ----- Dollars to the Architect shall be paid in such amounts and at such times as will, in the opinion of the Fleet Corporation, result in the Architect's being paid upon the basis of the schedule of percentages set forth in Article VIII hereof.

The Fleet Corporation may withhold from any payment provided for hereunder such an amount of money, if any, as may be necessary to cover any sums theretofore erroneously paid to the Architect.

Upon final completion of all the Architect's services hereunder, the Fleet Corporation shall pay to the Architect the unpaid balance of money, if any, due under the terms of Articles II and III hereof, subject, however, to the provisions of Article VIII hereof.

V

Inspection and audit. The proper auditing officials of the Fleet Corporation shall at all times be afforded proper facilities for inspection of the Architect's services and access to all of the Architect's books, records and other papers pertaining to said services; and the Architect shall preserve for a period of six years after the completion or cessation of services under this agreement all the books, records and other papers just mentioned. The system of accounting to be employed by the Architect shall be such as is satisfactory to the Fleet Corporation.

VI

Special undertakings of Fleet Corporation. The Fleet Corporation shall furnish the Architect with a complete and accurate statement of the boundaries of the building site and of the rights, restrictions, easements and all other legal limitations thereof. The Fleet Corporation shall pay for borings and test pits, and for chemical, mechanical or other tests when required. The Fleet Corporation shall provide and maintain, or cause to be provided and maintained, such suitable and properly equipped offices as may be required for the Architect's field representatives.

VII

No assignment by Architect. Neither this agreement nor any interest therein shall be assigned or transferred by the Architect. If there be a partnership, it is understood that, in the event of the death of a member of the Architect partnership, this contract shall enure fully to the survivor therein, and that, in the event of dissolution of said partnership, the succession to this contract shall be in accordance

with the desire of the Fleet Corporation. If the Architect be engaged in business for himself, it is understood that in the event of the death of the Architect, this contract shall, at the option of the Fleet Corporation, be rescinded.

VIII

Termination. The Fleet Corporation may terminate this agreement at any time by written notice to the Architect. In the event of such termination the Fleet Corporation shall pay to the Architect such amounts of money, if any, as may be then determined by the Fleet Corporation (a) as being due to the Architect on account of reimbursement for all sums expended or liabilities incurred by him prior to such termination, within the terms of Article II hereof, and (b) as resulting in the receipt by the Architect of the proper proportion, based upon the amount of work actually done by the Architect, of the total fee of ----- Dollars which the Architect is to receive for the total work hereunder. In determining the proportion of the total fee which has been earned by the Architect for services performed by him up to the time of such termination, the Fleet Corporation shall be guided by the following standard as to the value of the services of the Architect.

Upon completion and approval of preliminary studies, the Architect shall be entitled to a total of fifteen per cent of the professional fee.

Upon completion and approval of specifications and general working drawings (exclusive of details), the Architect shall be entitled to a total of fifty per cent of the professional fee.

Upon completion and approval of detail drawings, the Architect shall be entitled to a total of eighty per cent of the professional fee.

If such termination occurs at a stage other than those above mentioned, such fee shall be proportionately determined on the basis of the above schedule.

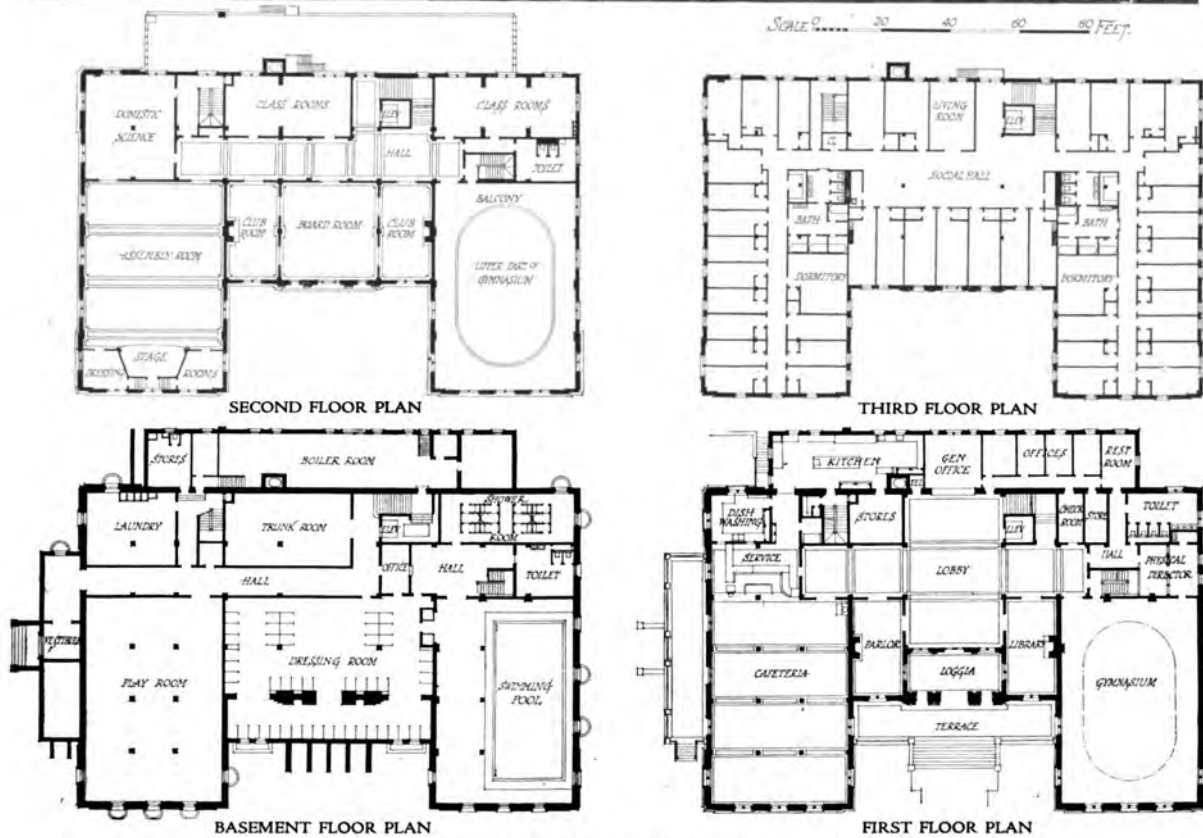
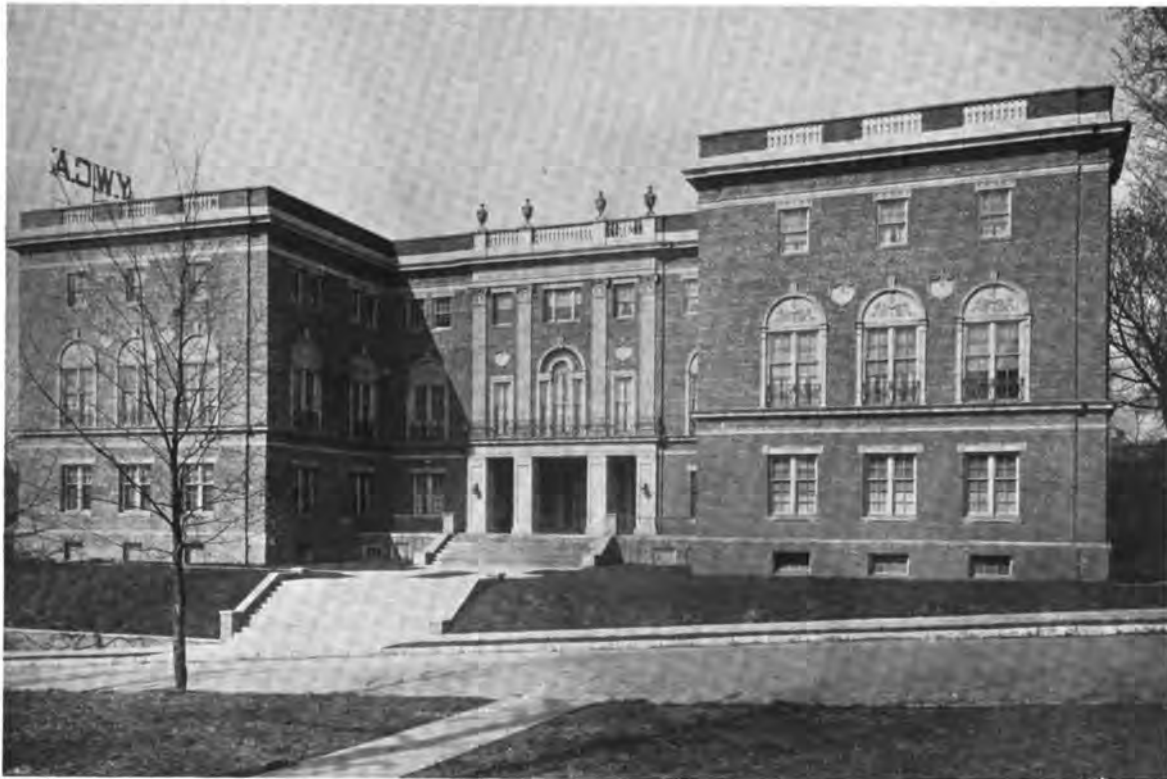
IX

Disputes. If any dispute shall arise between the Fleet Corporation and the Architect which cannot be satisfactorily adjusted, such dispute shall be promptly settled by three arbitrators, one to be chosen by the Fleet Corporation, one by the Architect, and the third by the first two. The decision in writing of any two of said arbitrators shall be binding on both parties, and the cost of such arbitration shall be borne equally between the Fleet Corporation and the Architect.

X

It is understood and agreed that whenever the words "Fleet Corporation" are used herein, they shall be construed to include its successor, any person to whom the duties of the Fleet Corporation may be properly vested, and any formal assignee or duly appointed representative of the Fleet Corporation.

WITNESS the signatures of said parties to triplicate copies hereof the day and year first above written.



YOUNG WOMEN'S CHRISTIAN ASSOCIATION BUILDING, ST. JOSEPH, MO.

WALTER BOSCHEN, ARCHITECT

EDITORIAL COMMENT

ONE of the marked features of our war preparation is the manner in which the building industry has served the Government in the erection of military and naval training camps, warehouses, manufacturing plants, and many different types of building required by our participation in the conflict. Were it not for the speed and efficiency which the industry was able to contribute to this work, our preparations for war would be far less advanced than they are to-day. Such a vast amount of construction probably never before occurred in an equal space of time, and it is undoubtedly true that similar attainments would be impossible in any other country.

Notwithstanding this large building program of the National Government, the full facilities of the building industry are not engaged. Owing to various reasons, chief among which has been a mistaken understanding that the Government opposes private building during the war, much work of a necessary character has been abandoned. As a consequence a serious situation is developing in the larger centers in that the buildings required to meet normal growth are not being supplied. War work has been placed for the most part in the hands of large building concerns which has tended to make them still larger, leaving the smaller units without means of employment. With private building reduced to the very lowest minimum, there has naturally been a decreased demand for many building products that find no place in war work. The industry as a whole is, therefore, contending with serious conditions which, if maintained for any further space of time, will eventuate in disorganization.

While it is the intention of every patriotic American industry to place the winning of the war above everything else, it is equally important that in so far as their activities do not conflict with the war, they should be maintained as factors in the earning power of the people. This is especially true of the building industry, and there are many instances of lessened activity resulting in loss to all connected with building, aside from the loss of the building's use, that are wholly unnecessary, and the curtailment of which has not aided the war program in the smallest way. Building materials of local character are easily obtainable in most markets and could be easily made so in all were there sufficient demand. All mechanics have not been absorbed by war work, and there are many conditions which make it difficult for them to change their mode of living and place of occupation in order to avail themselves of war work. These men should be regularly employed, and they can best be used in work with which they are familiar.

The building industry has undoubtedly suffered

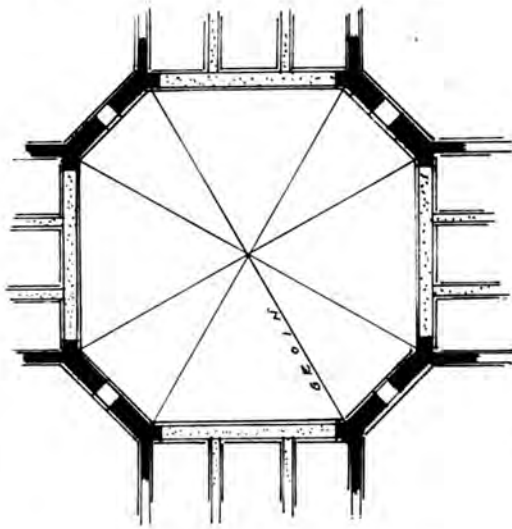
within the past year without any great necessity, and means should be adopted without further delay for restoring activities to as nearly a normal basis as is compatible with present conditions and without interfering with the conduct of war work. Steps have recently been taken toward this end, and the attitude of representative building interests in assembling to survey the present situation is to be commended: first, in that the results of careful organization will offer to the Government the complete resources of this most important element in the work it is called upon to do; and, second, in the service it will be to the industry itself in coordinating all forces to maintain its status and prevent any further unnecessary disorganization.

An informal meeting of forty representatives of organizations within the industry was held on June 14, at the Engineers' Club, New York, at which the sentiment was expressed that the various organizations of the industry were in the past obliged to act singly in matters pertaining to their interests and that the present time called for united effort, if the best results were to be accomplished. A resolution embracing this thought and empowering the chairman of the meeting to appoint a committee to study the plan of a national organization, was unanimously adopted. In such an organization it would be the aim to give fullest representation to all interested in building, including architects, engineers, material men, and contractors. It would operate in the sense of a clearing house through which an interchange of knowledge might be readily effected, and as an organ capable of speaking for the welfare of the entire industry. The organization committee appointed is composed of the following:

F. H. Chapin, vice-president, Hydraulic Press Brick Company; A. M. Maddock, president, Thomas Maddock's Sons Co.; W. D. Baldwin, Otis Elevator Company; W. H. Powell, Atlantic Terra Cotta Company; George F. Lindsay, White Pine Bureau; F. T. Miller, F. W. Dodge Company; B. F. Affleck, president, Portland Cement Association; Col. J. R. Wiggins, president, National Association of Builders' Exchanges; H. H. Murdock, chairman, Board of Directors, Building Industries of New York.

A period of reconstruction will follow the war that will demand the best efforts of all our activities. We will emerge from the conflict with renewed ideals of democracy and service to mankind that will form the keynote of our future endeavor. While the building industry has proved in its contribution to war activities its capability of splendid accomplishments in the way of speed and efficiency, it is destined to play a still more important part in the rehabilitation of the country in its peaceful pursuits, demanding a breadth of constructive vision for which it must now begin to prepare the foundation.

Example of Typical Guastavino Floor Vault



Ceiling Plan of Vault at Reduced Scale

ROUGH tile soffit, suitable for plaster finish with leveling over curvature forming spaces for ducts, etc. Soffit can also be furnished in glazed or acoustic tile as an integral part of the construction.

Without Structural Steel

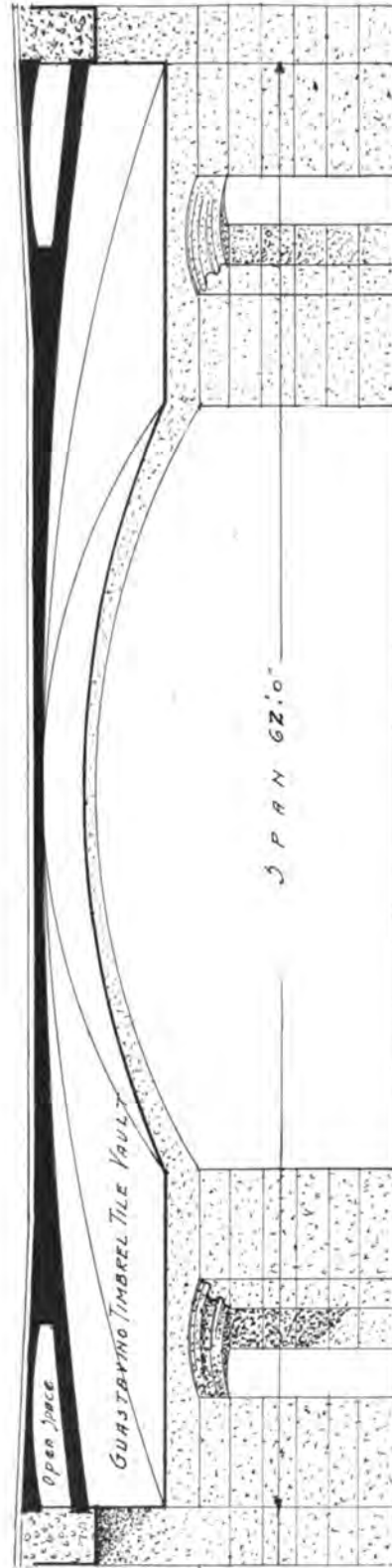
R. GUASTAVINO COMPANY

NEW YORK
949 Broadway

FACTORY
Woburn, Mass.

BOSTON
40 Court St.

*Represented in California by Gladding McBean & Co.
San Francisco and Los Angeles*



Cross Section through Floor Vault on Axis



TRANSFORMING a dead corner into a landmark; the story of Number 737 Sheridan Road, Chicago.

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*Detail from the Buick Building, Philadelphia, Pa.
M. H. Dickinson, Architect*

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*Detail from Office Building at 10th and Chestnut Streets
Philadelphia, Pa. John T. Windrim, Architect*

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G. W. SPITZER, ARCHITECT

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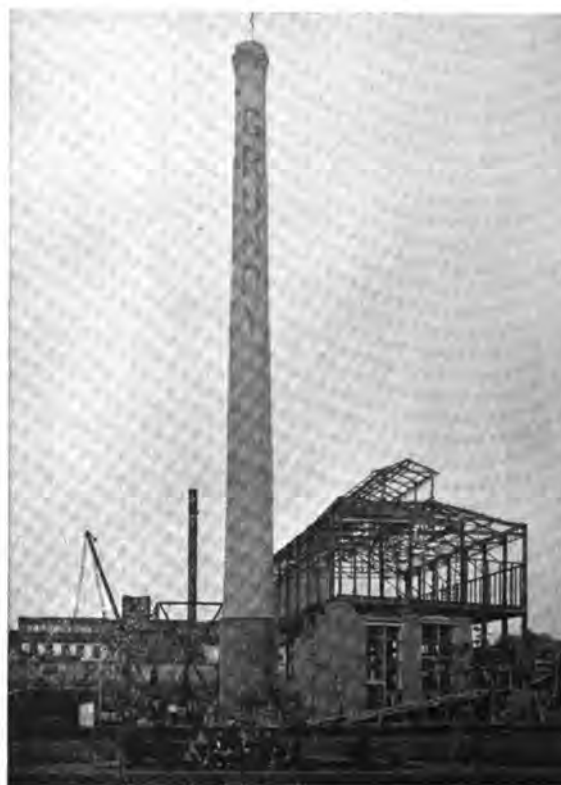
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A COPY of "The Art of Home Furnishing and Decoration," by Frank Alvah Parsons, with a portfolio of the de-luxe color plates of home interiors, can be secured for 20 cents in stamps. This publication furnishes many surprising examples of the artistic possibilities of linoleum floors.

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Suggestions for Specifications

All pitched roofs shall be covered with (*Insert name of Pattern of tile wanted*) Tiles, made by Ludowici-Celadon Company, with stock fittings suitable for each pattern; all hip and valley tile to be cut to proper angle (valley tile for roll patterns to be filled) before burning. The tiles as specified above must be of shale, hard burned, of — color.

PREPARATION OF ROOF — Before roofer is sent for, the owner or general contractor shall construct roofs in strict accordance with plans, sheath roofs tight, have all chimneys and walls above roof line completed, have all vent pipes through roofs, furnish all strips of required width used under hip rolls and ridging, furnish all 1 x 7/8 inch cant strips used under tile at eaves (if required) and have all scaffolding ready for use of roofers. Metal contractor shall have all gutters in place on roof (gutters, whether box, hanging or secret, to extend over the roof sheathing and cant strip (if cant strip required) and extend under felt and tile at least eight (8") inches) and shall also have in place all valley metal, the width of which must be 24 inches (20 inches on short valleys where conditions are favorable), with both edges turned up 1/4 inch the entire length of valley. Valley metal must be laid over one layer of felt running lengthwise the entire distance of valley. Metal contractor must have in readiness all flashing metal used alongside and in front of dormers, gables, skylights, towers, perpendicular walls, also around vent pipes and chimneys, and place same after arrival of tile roofer and in accordance with requirements of the tiles.

LAYING OF FELT — After roofs have been thus prepared to receive felt and tile, tile roofer shall cover sheathing of the roofs with one thickness of asphalt roofing felt, weighing not less than 30 pounds to the square, laying same with a 2 1/2 inch lap and securing in place with capped nails. Felt shall be laid parallel with eaves and lapped over all valley metal about 4 inches, and laid under all flashing metal and turned up against all vertical walls 6 inches.

LAYING OF TILE — The roof having been thus prepared, tile roofer is to fasten tile with copper nails. Roofer shall see that tiles are well locked together and lie smoothly, and no attempt shall be made to stretch the courses. Tile must be laid so that the vertical lines are parallel with each other and at right angles to eaves.

The tiles that verge along hips shall be fitted close against the hip board, and a water-tight joint made by cementing cut hip tile to hip board with good elastic cement. Each piece of hip roll shall then be nailed to hip board, and hip rolls cemented where they lap each other. The interior spaces of hip and ridge rolls must not be filled with pointing material.

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THE EDITORS FORUM



WE present in this issue complete data on the planning of buildings designed to obtain the full benefit of sunlight in their lighting. The importance of this subject is appreciated by every architect, yet entirely satisfactory results are often difficult to guarantee at the stage of preparation of plans because of limited information on the subject and the complicated and arduous mathematical computations necessary for determining the areas of light and shadow at different times of the day and year. Mr. Swan and Mr. Tuttle have given in their paper, "Sunlight Engineering in City Planning and Housing," the results of long and intensive study to the subject, and with the accompanying detailed tables, covering any orientation and any height of building, the principles for determining sunlight areas may be easily applied to any plan. The value of sunlight from sanitary and health standpoints is universally recognized, and it is particularly of great importance in northern latitudes, where sunshine is not provided lavishly, that buildings be so oriented and planned as to take advantage of all available.

THE industrial housing project near Camden, N. J., illustrated from drawings in this issue, is one of the first commissions to be given architects under the recent appropriation of the National Government for relieving the housing shortage around shipbuilding and munition plants. It is particularly gratifying to note that the work of designing these Government towns will be placed in the hands of capable architects, for aside from the present emergency, demanding a correct and speedy solution of the problem, its ultimate influence on future real estate and speculative work will be far reaching in effect, and it is of utmost importance that it be for good.



Church of the Epiphany, West Philadelphia
Showing Relation of Tower to Main
Structure

Upper Portion of Tower is Shown in Detail in
Gothic Detail Plate of This Issue

This development is being carried out under the direction of the Department of Transportation and Housing of the Shipping Board, which has received its appropriation and is now actively engaged in pushing to completion its program calling for an expenditure of \$50,000,000. The work is being directed by a well selected board, the personnel of which is made up in good measure by architects. The same is true of the Housing Bureau of the Department of Labor, more recently organized, although through the fact that the bill authorizing the expenditure of an additional \$60,000,000 under the President's direction, carried no appropriation, delays have crept in and no work is yet

started. Several architectural firms have been assigned projects for development, however, and from present indications the character of the Government housing work promises to be satisfactory from standpoints of architecture and construction.

THE design of country clubs offers to architects an attractive field for the exercise of their talents. From very simple beginnings, country and golf clubs have grown to proportions where they assume an important part in American social life, and with their augmented functions better and more complex buildings have been demanded. In this issue we have brought together a selection of some

of the best recent club houses from various sections of the country, forming a comprehensive review of recent work in this field. The construction of new club houses has undoubtedly been temporarily halted because of war conditions, but interest in them at this season of the year is general, and with the resumption of normal peace-time activities, the expansion of outdoor recreation and exercise will demand increased facilities for their enjoyment.



Floor Plan of Somerset Hills Country Club, Bernardsville, N. J.
Lord & Hewlett, Architects
(See Plates 79 and 80)

Necessary Work in War-Time

WHAT we have said about business possibilities in the building field — with particular reference to remodeling — applies with equal force to other forms of necessary work.

Conceding the point that the erection of certain types of structures will be discouraged during the war, the fact remains that the housing problem in all industrial centers, the necessity for making repairs in residence buildings, apartments, office buildings, factories, etc., and the undiminished demand for manufacturing facilities of many kinds, represent excellent possibilities for continued activity on the part of the architect.

In all lines of necessary work represented by the above classifications, Tiles should play a leading part. Their use makes the repair job better and improves the character of any remodeled building, adding both stability and beauty in a way that completely satisfies the owner and reflects credit upon the one who executes the work for him.

In the Standards for War Housing recently adopted by the United States Government, *impervious floors*, not of concrete, are specified for certain uses. The only *impervious* material is Tile, and additional avenues for its use are thus opened and made available to architects entrusted with this class of work.

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Tin Roofing to the Rescue Again

This illustration of a fire that occurred in Philadelphia in January, 1918, is of particular interest by reason of its location. The building destroyed is one of several old buildings remaining in a high value district. In the background on the right is first the Drexel Building, then the tower of Independence Hall, next the dim outline of the Public Ledger Building, then the high facade of the Curtis Publishing Company Building, and finally, on the extreme left, the massive granite pile of the Penn Mutual Life Insurance Company Building. The photograph was taken from the American Bank Note Company Building. Beyond the burned structure lies Independence Square. The upper floor of this building was gutted by the fire, but the tin roof held together and helped to keep the fire from spreading. This is a good example of one of the advantages secured in using TARGET AND ARROW roofing tin. Durability is of greater importance, however, and the durability of this heavily coated, hand-made tin plate has been proved in nearly a century's use.

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write a specification that permits substitution. In your specifications for sheet metal work where roofing tin is required, simply call for Taylor's TARGET AND ARROW brand to be laid in accordance with the standard working specifications of the National Association of Sheet Metal Contractors. With a responsible roofing contractor, such a specification will secure you tin roofing work of the standard that has made the old-time roofing tin a watchword for durability and all-round satisfaction in service. Our catalog is in Sweet's — all issues.

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Plate No. 3.—An attractive roof effect secured by the use of Conglomerate Brown Shingles.

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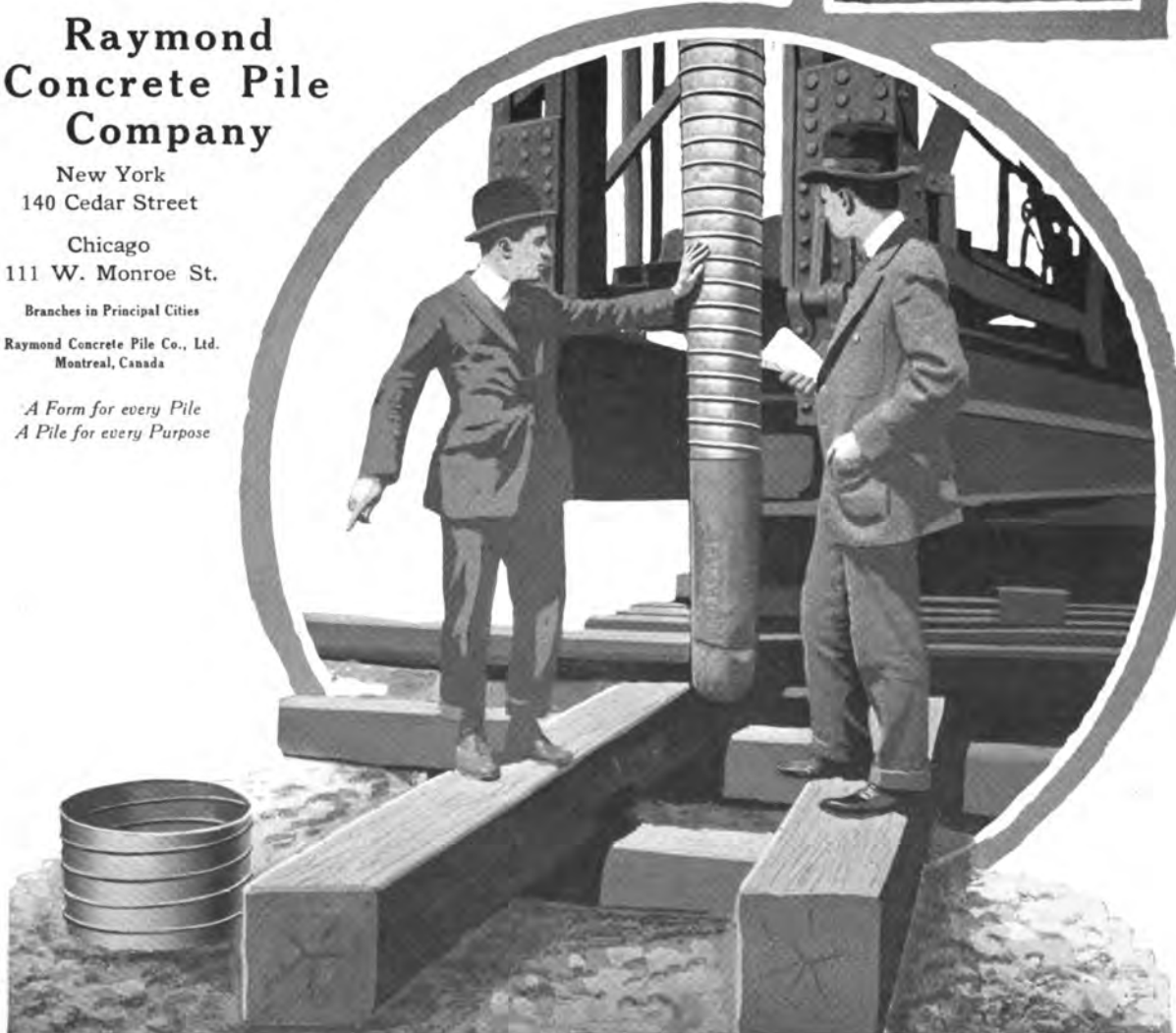
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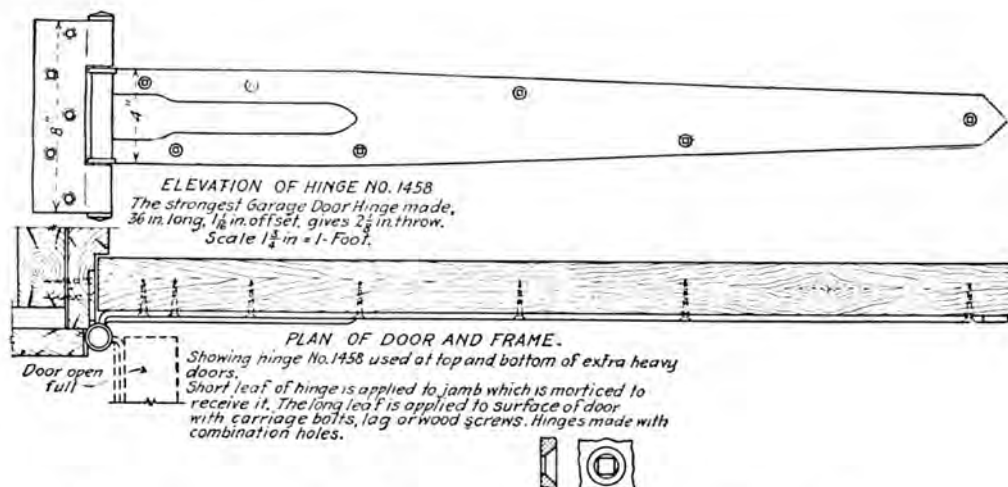
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Winfield High School, Winfield, Kan.
Architects, J. H. Felt & Co., Kansas City, Kan.



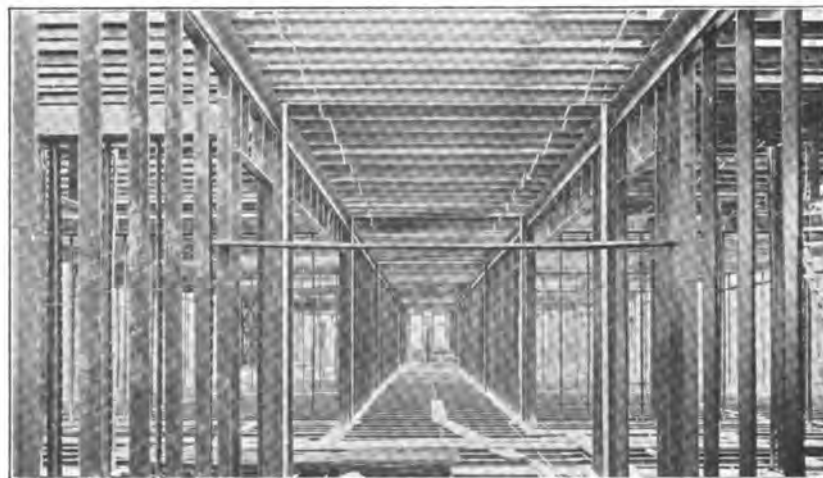
Humboldt High School, St. Paul, Minn.
Architect, E. J. Donohue



Oak Harbor School, Oak Park, O.
Architects, Bacon & Huber



Excelsior Springs School Building, Excelsior Springs, Mo.
Architects, J. H. Felt & Co.



Construction View of Metal Lumber in St. Francis Parochial School, Detroit, Mich.
J. G. Kastler & Co., Architects

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W. T. Butler, Contractor
Edgar Blair, School Architect
Occidental Sheet Metal Works,
Contractors

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Contractor

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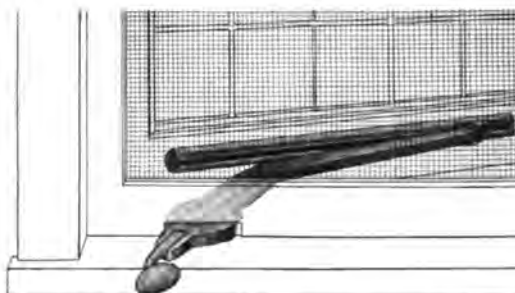
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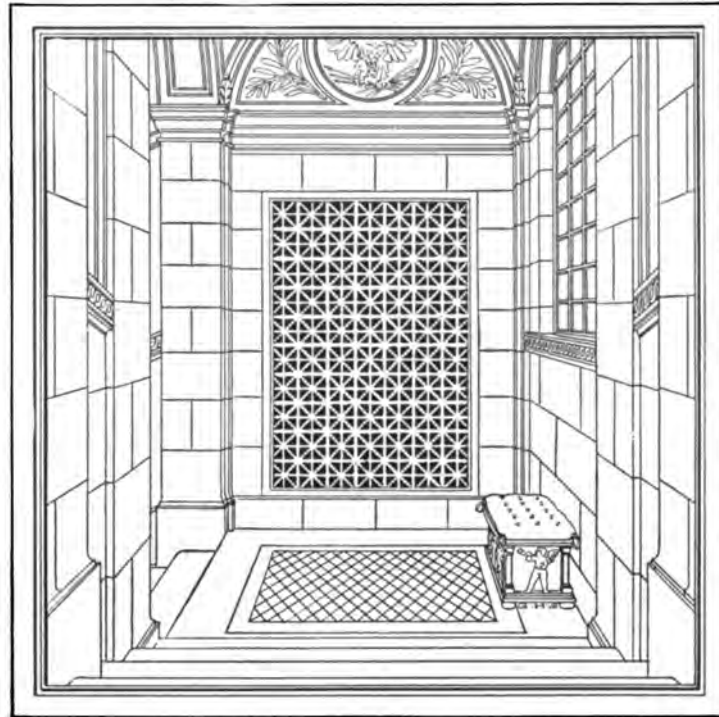
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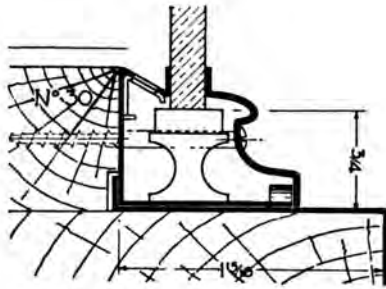
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Issue No. 10 of ALPHA AIDS, a publication issued regularly by us in the interests of engineers, architects, contractors, builders and building-material dealers, is devoted entirely to the big subject of proper housing for American workmen.

Although we are building just one type of house at our own plants, we did not confine attention to that in our Industrial Housing number, but printed all the information available on several types of permanent homes of modern character and reasonable cost. Sixteen pages, with special supplement, giving news of actual building operations, photographic views, floor plans and useful working data. Three separate sheets of details on: (1) Poured Wall Houses; (2) Precast System Houses; (3) Stucco Type Houses. Free to all engineers, architects, contractors, builders and manufacturers interested in this live subject.

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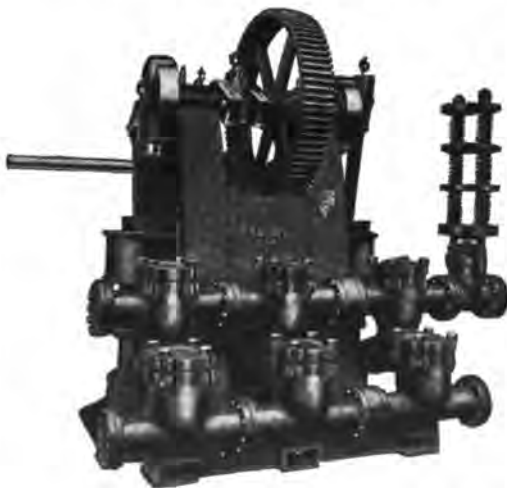
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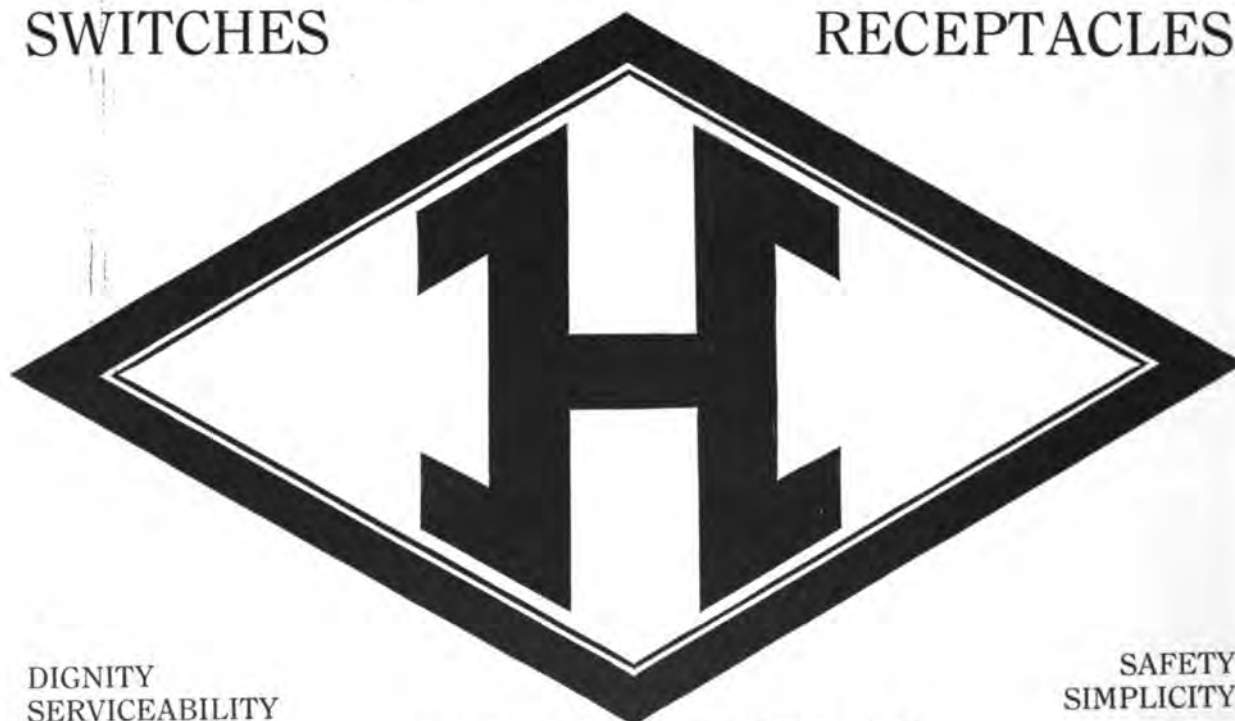
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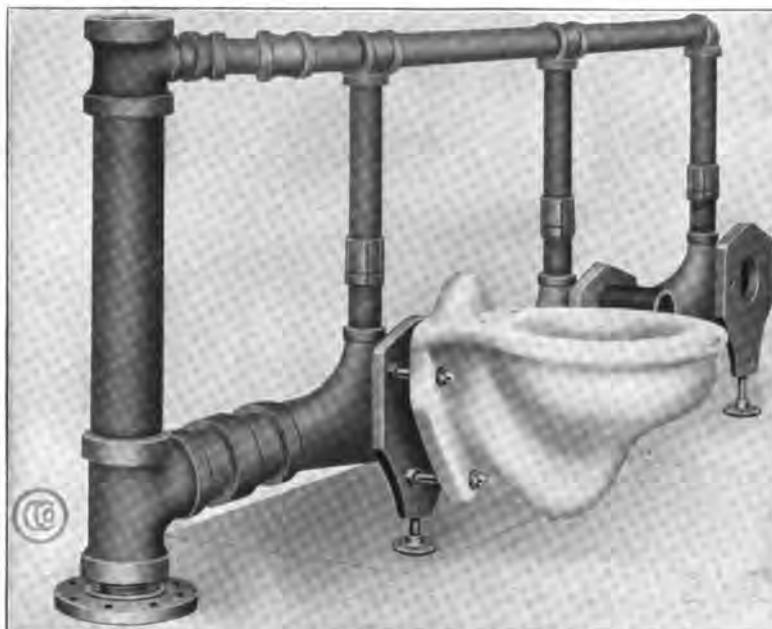
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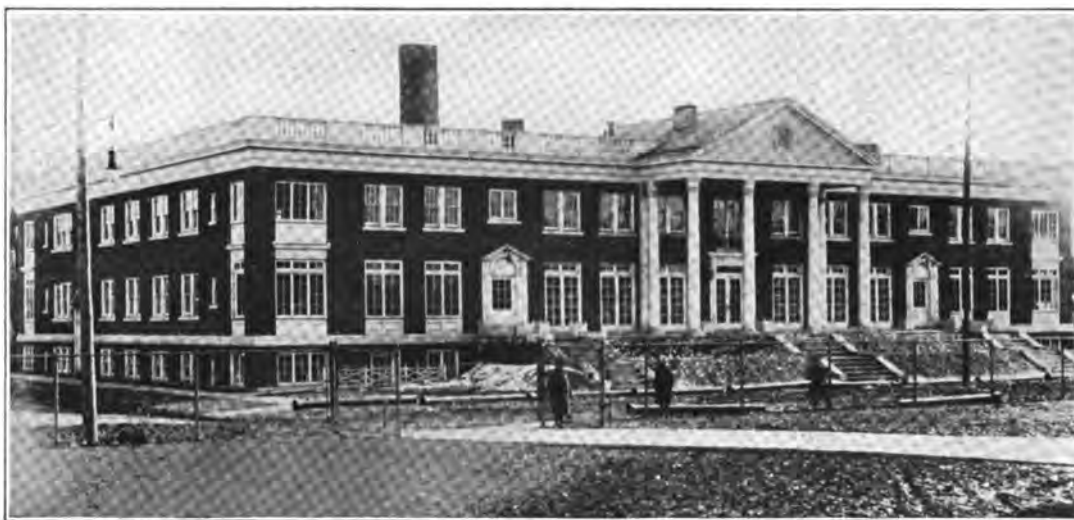
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J. Philip McDonnell
Architect

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Showing Boiler

Successfully heated during the severe winter
of 1917-18 with a

Capitol Smokeless Boiler burning bituminous coal

Note:—The above illustration is a reproduction of an actual
photograph (without retouching) taken immediately
following a firing period, and while the thermometer
in the open air registered 30°.

"It's the TEST that tells"

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Note the depth of the section leg corrugation. It is no mere wrinkle in the air. It is both broad and deep.

*Burnham
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It adds greatly to the active fire surface—a surface that in most boilers is half dead.

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THE DUNHAM RADIATOR TRAP, pictured above, is one of the fundamentals of DUNHAM HEATING SERVICE. It was placed on the market in 1903. Immediately a storm of criticism was directed against it, so radically different was it from anything of its kind before. Probably no mechanical device ever encountered such intense opposition or made its debut under such trying circumstances.

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The simplicity of The DUNHAM RADIATOR TRAP is one of its distinguishing features. It comprises a body, a cover and a thermostatic disc which is secured in the cover. There are no loose parts, no sliding contacts, nothing to gum up and no guide or pin to obstruct the valve opening. There is a flat valve and seat with liberal valve opening. The valve is self-cleaning. The action of the disc is positive and the valve seats squarely, like a globe valve, the tightest of all types of valves and one presenting little opportunity for uneven wear. The body is standardized, as is also the cover and disc, thus giving the further advantages of interchangeable parts.

Architects and Heating Engineers will appreciate the significance of the fact that cast iron does not enter

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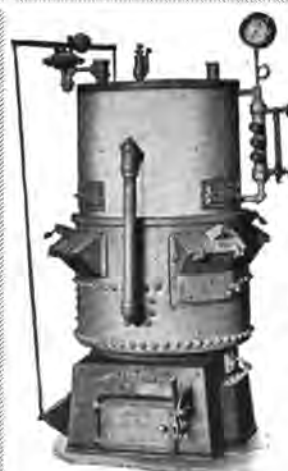
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(461)

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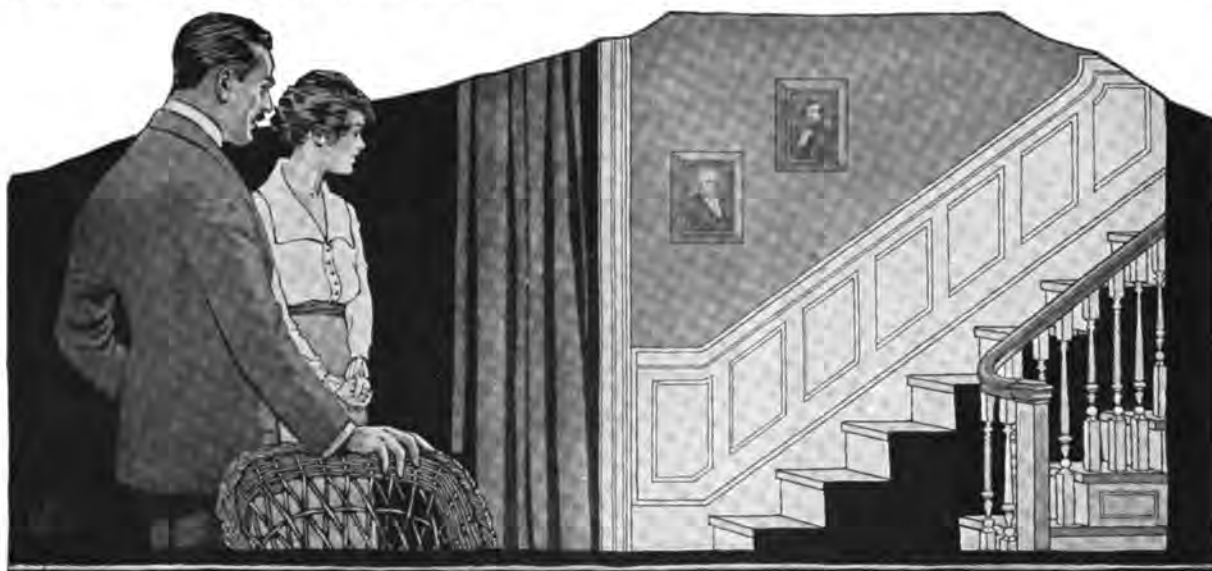
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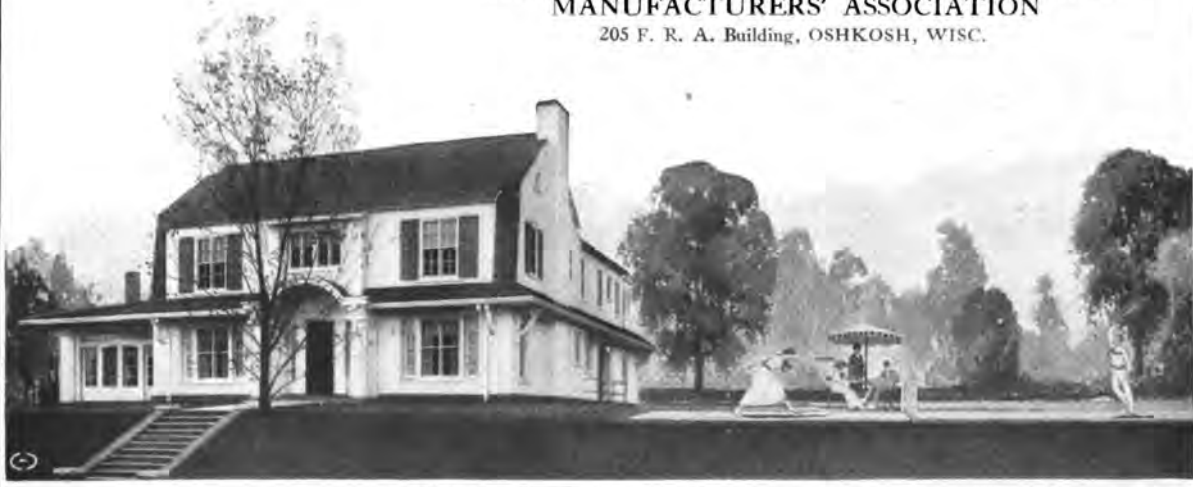
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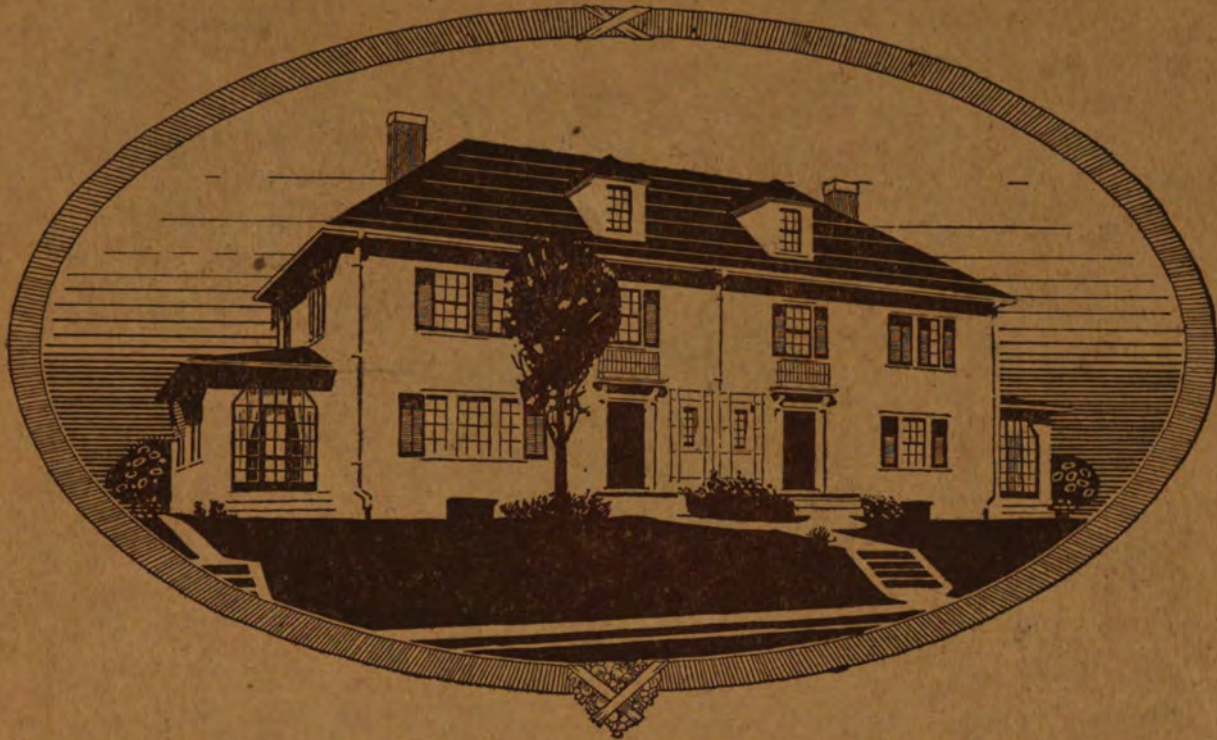
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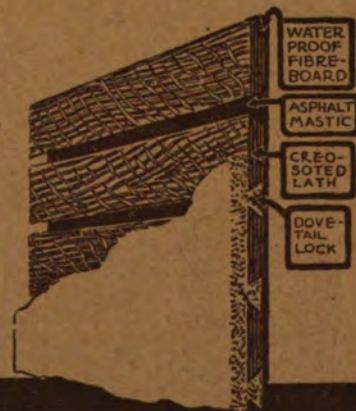
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THE WORD CONTEST for a name for our new patent Siphon Revolving Ventilator has been decided in favor of Mr. A. J. Russell, 314 National Realty Bldg., Tacoma, Wash., who suggested “Alpina” as the name and “The Peak of Efficiency” as a slogan. A check has been forwarded to Mr. Russell for the amount above named.

A WORD FROM THE PRESIDENT

The decision of the committee of advertising men, who picked this name as best among nearly 1,000, is final. However, I wish to thank all those participating in this contest, as many other names were submitted of unquestionable merit.

A. Russell

President

“The Peak of Efficiency” in Ventilation Is
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A full description of the “Alpina” Siphon Revolving Ventilator was given in the circular letter sent to architects. We have not room to repeat those details here, but will see to it that architects are fully informed of its exceptional merit. For present purposes, suffice it to say, the “Alpina” has three-fifths more ventilating capacity than other ventilators.

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