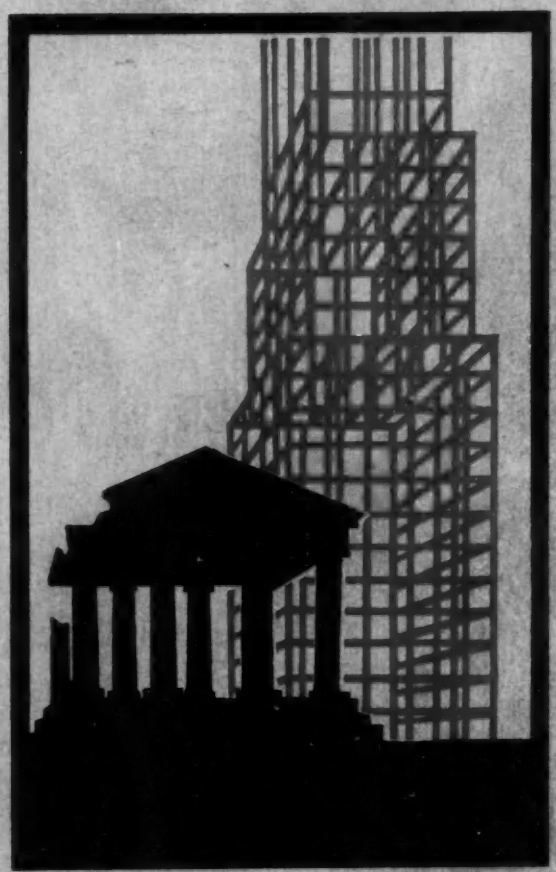
THE ARCHITECTURAL RECORD



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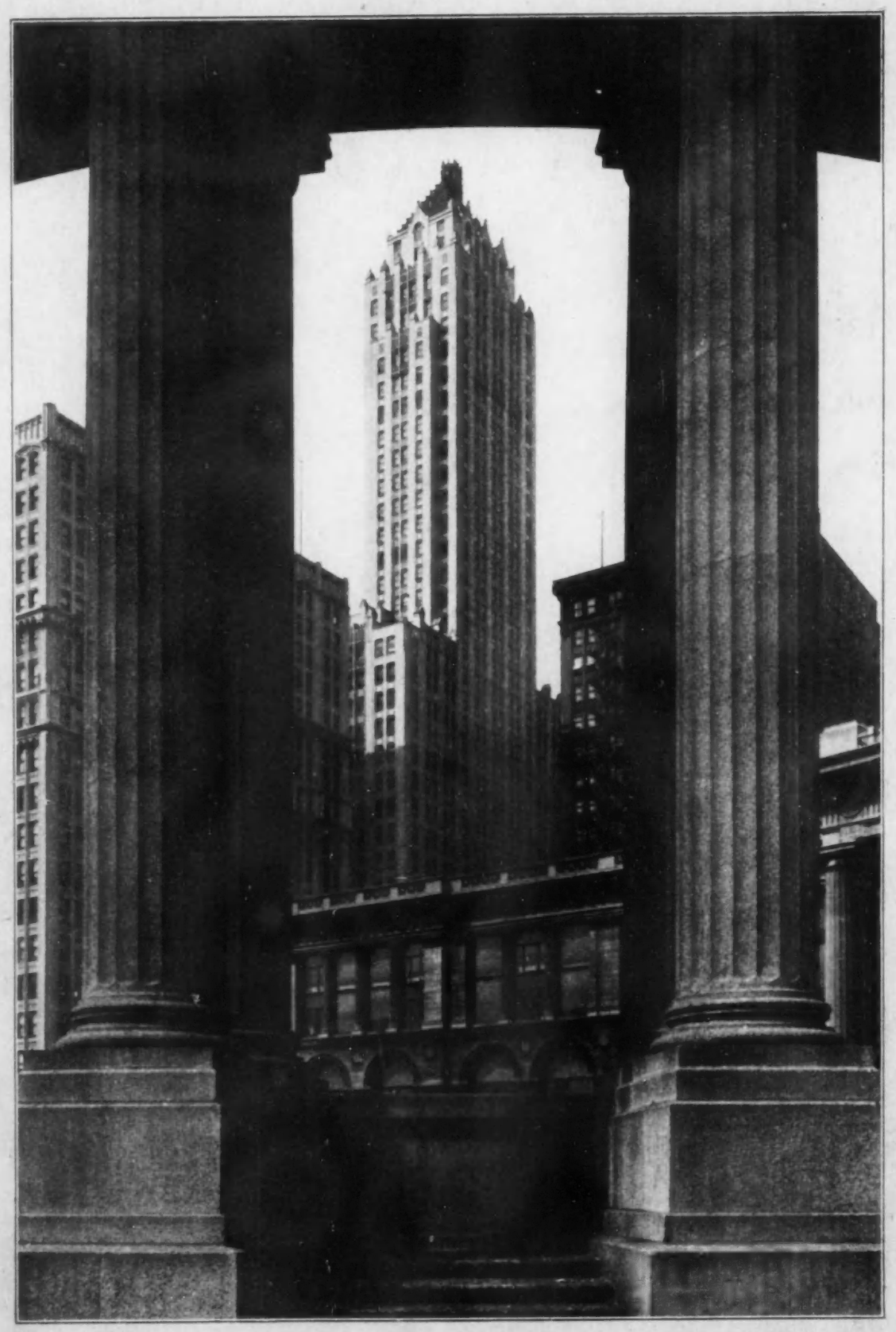

The Pittsfield Building, Chicago, is of that new group of American city buildings forming, in the opinion of many, a distinctively national type of architecture. Graham, Anderson, Probst and White, architects; Henry Ericsson Co., contractor, Chicago. The 148,000 sacks of Universal cement used in this structure were furnished by Howard Material Co. and Wisconsin Lime and Cement Co., both of Chicago.

THE ARCHITECTURAL RECORD

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NOTES ON CONTRIBUTORS

Mr. Clarence Stein is architect of the Wichita and the Pasadena museums, and so speaks as an authority on museum design. He is also known to the profession as the architect not only of numerous public and private buildings, but of the Sunnyside and Radburn developments of the City Housing Corporation.

With his *Sticks and Stones*, published in 1925, *Mr. Lewis Mumford* seemed to many people to be opening a new period of architectural criticism in the United States. A great many of his predictions, made in architectural periodicals as well as in the book, have hitherto come true. This indicates not only a vivid imagination but also the care with which he habitually checks his findings, enlisting the aid of a good many qualified experts in different fields. *Mr. Mumford* is the author also of *The Story of Utopias*, *The Golden Day*, *Herman Melville*, and other books.

Mr. Benjamin Wistar Morris, the architect of the American Women's Association Building, published in this issue, is the designer of many important structures, the best-known probably being the Cunard Building in New York. He is a member of the National Commission of Fine Arts, and a past president of the Society of Beaux-Arts Architects.

The Bullock's Wilshire Department Store is the first project THE ARCHITECTURAL RECORD has been privileged to publish of the work of *John and Donald B. Parkinson, Architects*, of Los Angeles.

In presenting the study on Prison Architecture the editors of The RECORD wish to make special acknowledgment of the assistance of *Dr. E. Stagg Whitin*, Executive Director of the National Committee on Prisons and Prison Labor.

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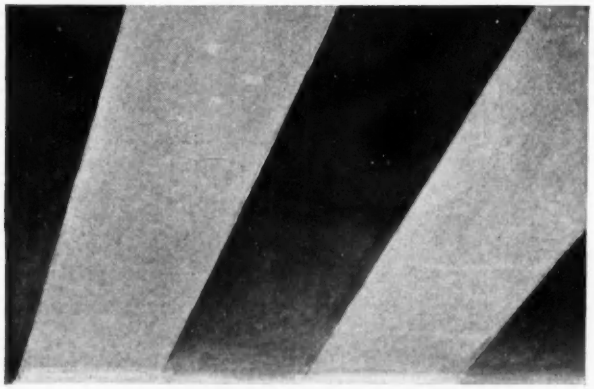

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ST. MARK'S TOWER · ST. MARK'S IN THE BOUWERIE · NEW YORK CITY.

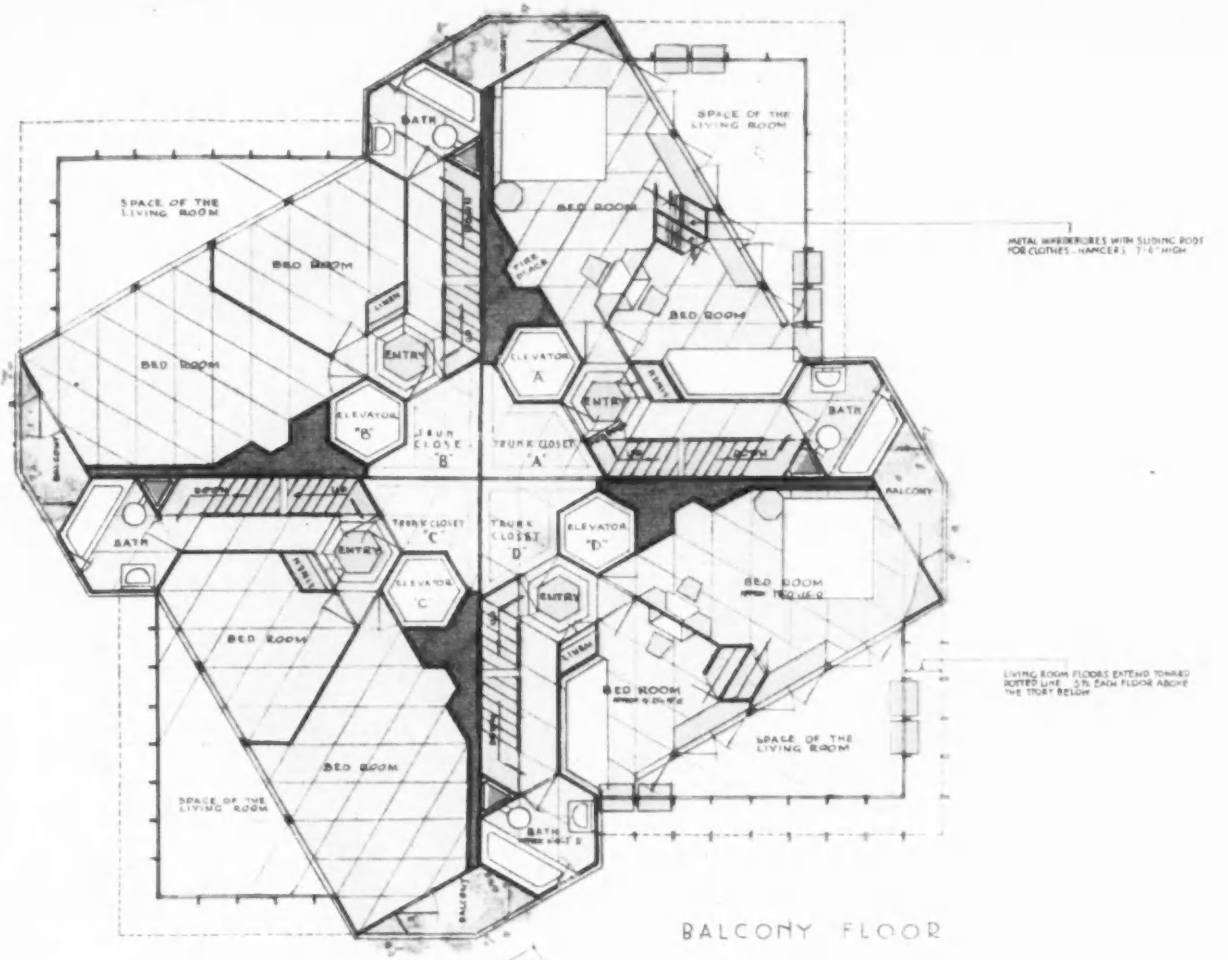
IN THIS PROJECT, Frank Lloyd Wright realizes some of the most advanced aims professed by European architects, without attendant anomalies. The uninterrupted glass window is achieved without either unprotected steel, or rooms cluttered with interior posts. The apartments are given a high degree of privacy, plenty of daylight and utilizable space. Located in a park on church property these towers will always stand free.

The whole building is hung on a core of concrete retaining walls, shown projecting at the top in the rendering above, and in section (brown) in the plans on page 2. The network upon which the plan is developed is that of the reinforcing system.

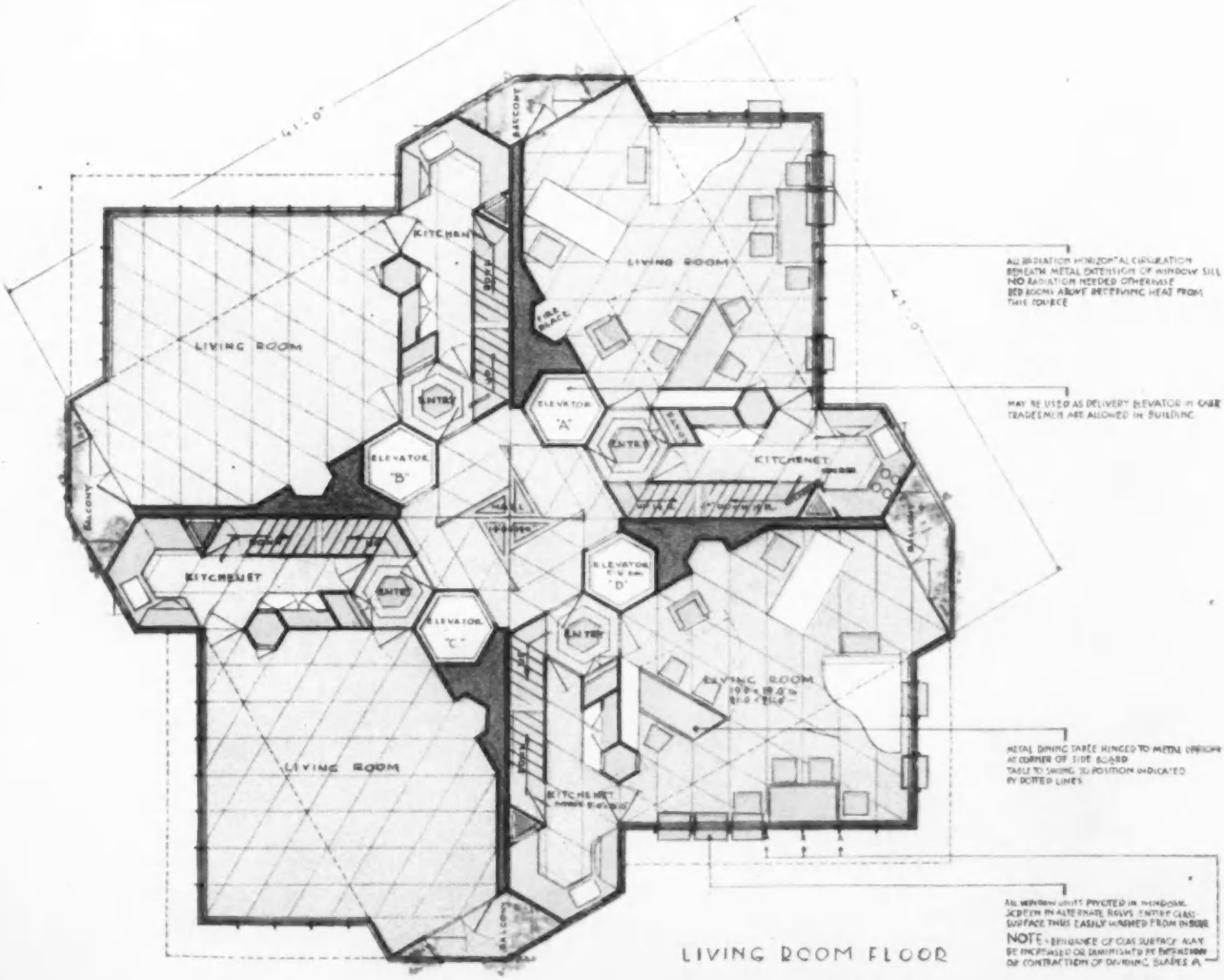
Every apartment is a duplex. The living room carries through both floors. It is marked by the copper parapets (perspective, page 4.) The bedroom stories (projecting in concrete balconies, see page 4) are set in a continuous steel truss cantilevered at an angle so that on the inside this story forms a balcony across the living room. Openings follow the struts of the truss.

To avoid torrents of water on the glass in heavy rains, every successive apartment projects out slightly beyond that below it, making the building somewhat larger at the top.

The conveniences of internal arrangement can be read from the plan. A noteworthy feature is that though every apartment has two usuable balconies each is cut off from direct view of the neighbors.

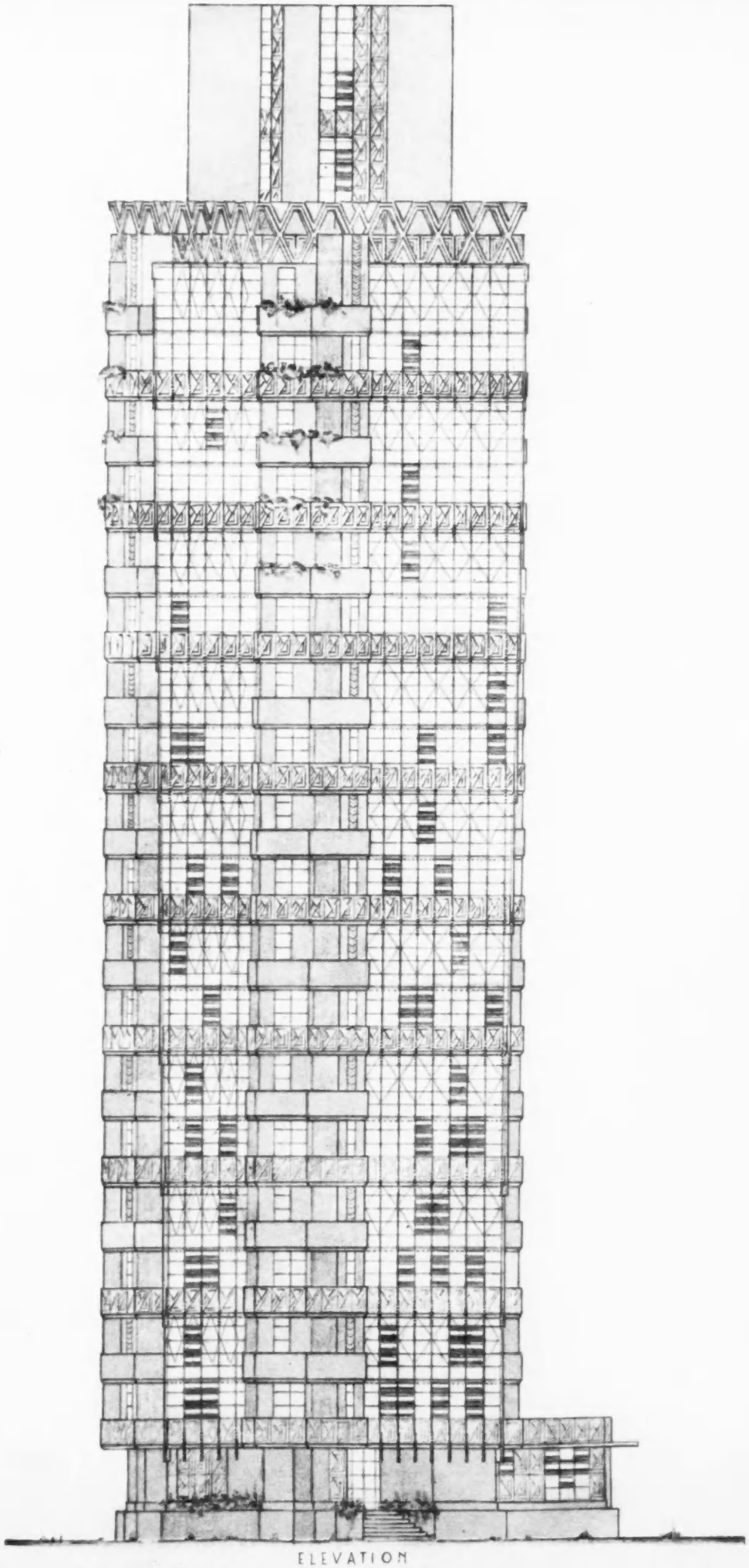


BALCONY FLOOR



LIVING ROOM FLOOR

FRANK LLOYD WRIGHT ARCHITECT **ST. MARK'S TOWER** · ST. MARK'S IN THE BOUWERIE · NEW YORK CITY.



ELEVATION

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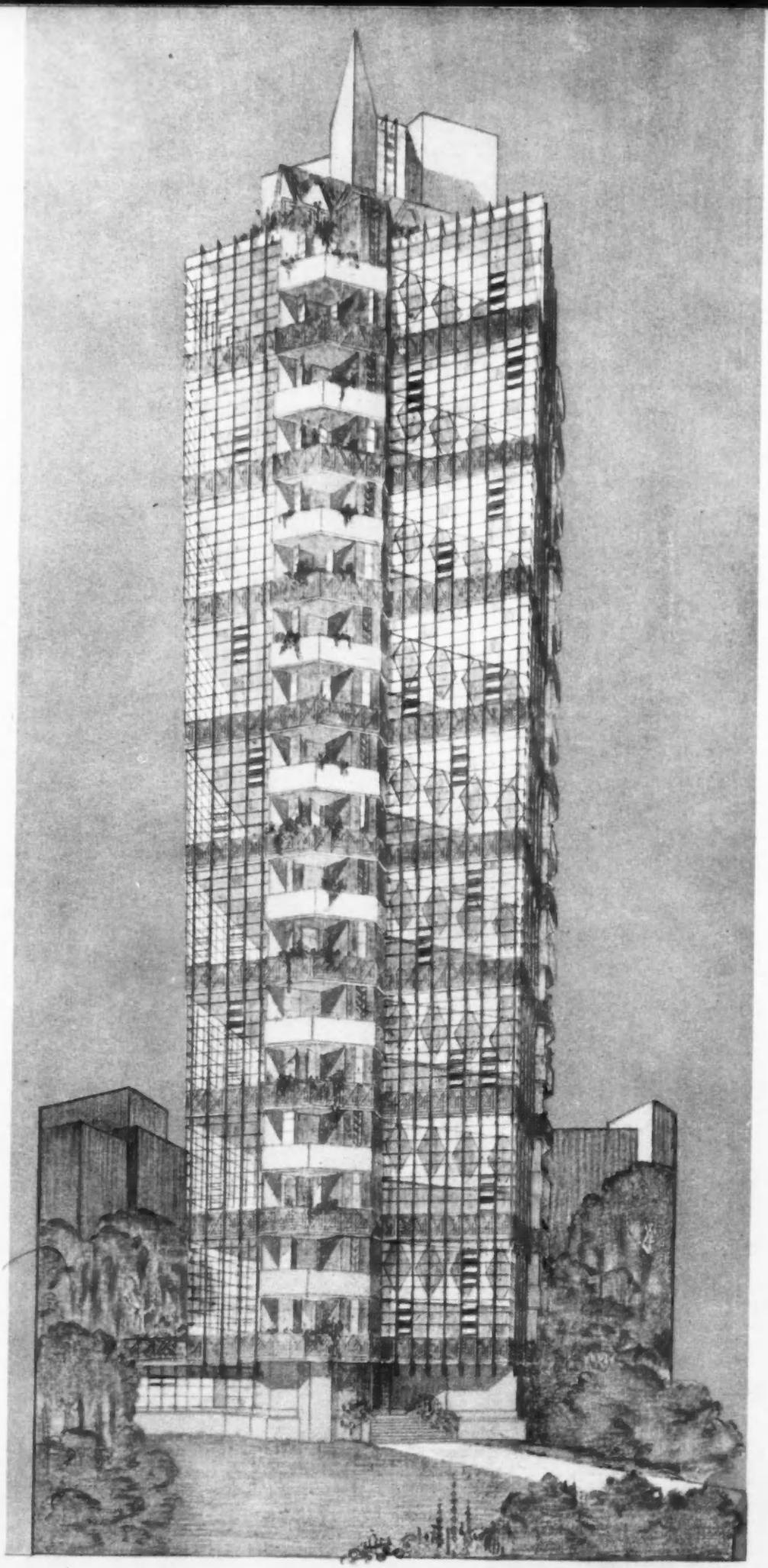


FRANK LLOYD WRIGHT ARCHITECT **ST. MARK'S TOWER** · ST. MARK'S IN THE BOUWERIE · NEW YORK CITY.

THE ART MUSEUM OF TOMORROW

BY CLARENCE S. STEIN, ARCHITECT

PROBLEM:

Art museums appeal to different groups in different ways. The general public visits them for enjoyment or inspiration. Students and craftsmen seek information.

In most museums of today exhibits are shown in a manner that serves none of these groups adequately. The two functions of inspiration and education should be separated. A visitor should not be tired by walking through endless irrelevant galleries. He should be fresh to enjoy or study just what interests him.

The essential problems of museum planning boil down to these:

1. To give direct access to the collections a visitor wishes to see, without the necessity of passing through other collections.

2. To give the casual visitor an idea of the beauty of art works of the past by showing him a few objects *well placed*. He wants inspiration first, instruction later.

3. To give the student and craftsman easy access to, and the facilities for the study of, all the material the museum may possess.

4. To connect the museum of the general public with that of the student, so that the casual visitor who becomes interested in any type of exhibit may follow his interest further and go from the rooms containing exhibitions directly to those for study of the same subject.

5. To give all visitors to the museum an opportunity from time to time to glimpse gardens and outdoor vistas. Nothing causes so-called museum fatigue so much as miles of rooms filled with inanimate objects and allowing no sight of living nature.

6. To arrange the unseen machinery that keeps the museum running in a logical, related manner.

The plans presented here are purely diagrammatic. Their object is to show how the parts of a great art museum can be related as to solve these problems.

THE PUBLIC'S MUSEUM—*A Museum for Inspiration:*

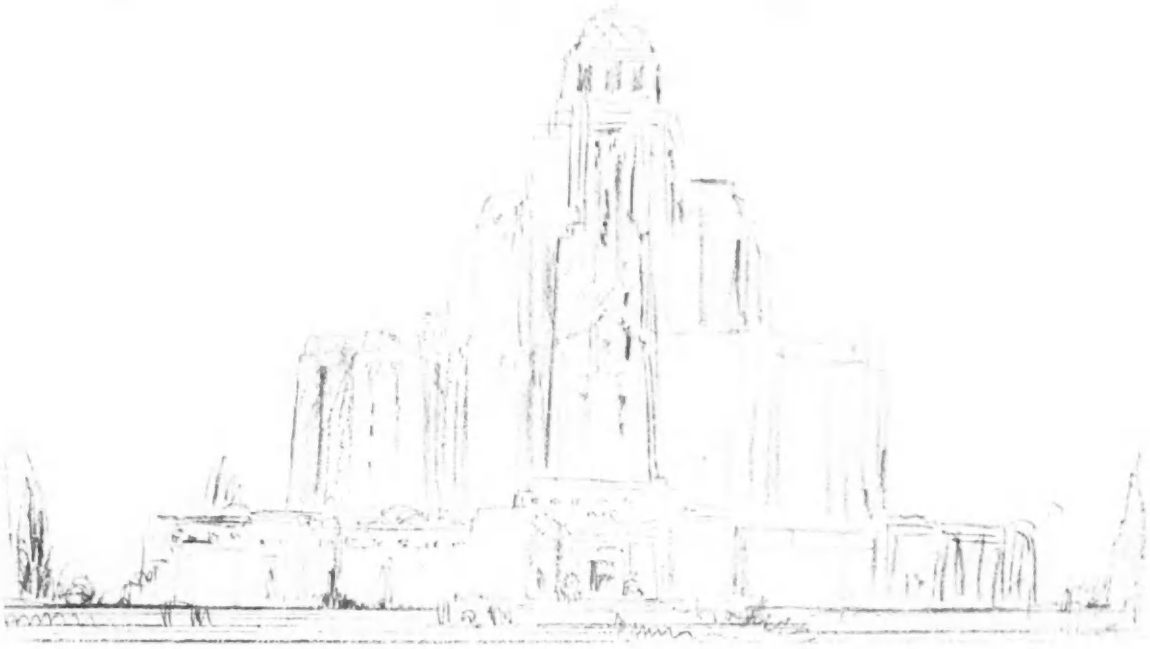
The casual visitor goes to a museum to enjoy himself. He lacks the critical ability to gain anything by comparing picture with picture. What he wants is an opportunity to *feel* and enjoy the real beauty of works of art. Explanation will not help him.

In the museum of today there is too much to see. As one at last finds the exit one has the jumbled recollection of endless vistas through doorways, and doorways, and doorways; of endless halls and walls crowded with aesthetically antagonistic objects; of row above row of gold frames and paintings, armies of white statues, a thousand snuff boxes, a quarter of a mile of pottery, and all the chairs that the *Mayflower* brought over in a hundred trips—and never a view of natural green.

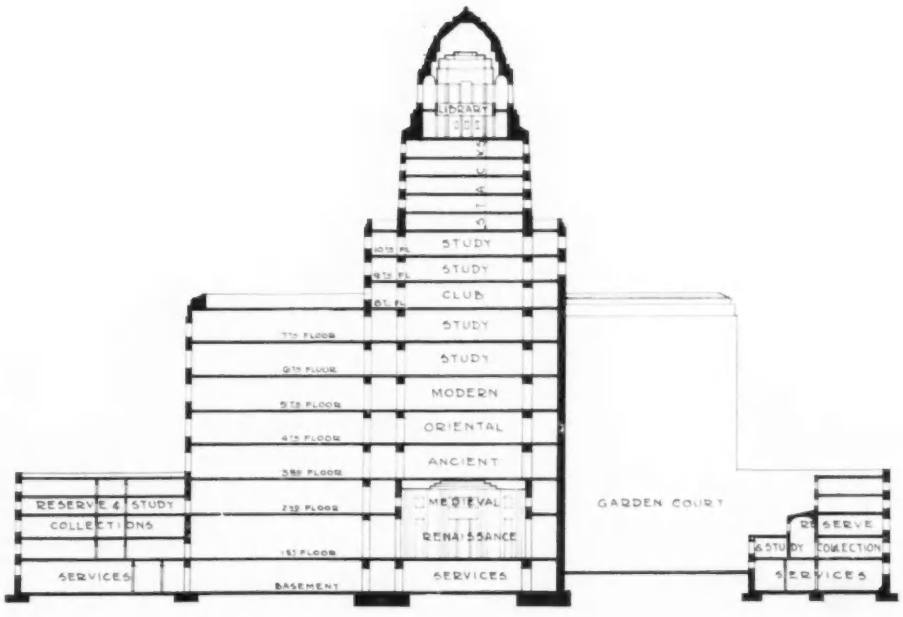
The museum of tomorrow will show the casual visitor a limited number of its choicest possessions, every object so placed as to accentuate its individual beauty. He will see as much or as little as he wants to, and will find it without difficulty.

From the central rotunda he may enter any one of seven groups of small rooms exhibiting in a related manner the choicest masterpieces of the museum in both painting and the allied arts. He can ask direction at the information desk, placed at the hub as that in the Grand Central Station (see page 8). Elevators lead to the collections on the upper stories. Every collection of the public's museum on every floor will be directly accessible from the central core of the building, without the interposition of any other collection.

To reach the central rotunda from the entrance the visitor has but to pass through a vestibule and a reception gallery. This gallery can be a place of gay beauty. The "sight-seeing" will not commence until the visitor has reached the rotunda. Art will not be forced upon him. At either side of



SKETCH



SECTION

"THE MUSEUM OF TOMORROW"

CLARENCE S. STEIN, ARCHITECT

The plans and sections shown in this article are purely diagrammatic. Other systems of classification of material than those shown can be followed.

the gallery, he will find a series of alcoves where he can rest and meet his friends. Through the windows he will see courts arranged with brilliant flowers and tiles and sparkling fountains. In the reception gallery there may be a few tapestries, some pieces of sculpture, and a lovely group of furniture, to be used, not merely to be examined. There he may sit and listen to the music of an organ or to a small orchestra.

But the exhibitions themselves are not going to be tiresome. The works will be grouped together in a series of small rooms of varied size and arrangement. For the purpose of illustration I am assuming that they will be grouped by periods or nationalities. But it is quite possible that in some museums they will be arranged in quite different ways; for example, so as to more easily relate the works of past and present.

One group of rooms may contain enough of the art of Spain to suggest the inspirational contribution of Moor and Christian to the world of art. The visitor will leave the central rotunda and enter a suite of galleries that might be part of the palace of a Spanish noble of the sixteenth century. From a balcony he looks down upon a little patio, decorated with tiles and fountains as if it were part of Granada. He climbs tiled stairs to a series of halls reminiscent of the Alhambra. He returns to the rotunda and is directed to the French wing. It might be Versailles—a gallery of Louis XIV, a boudoir of the time of Marie Antoinette, salons of the Regence and the Empire. Furniture, sculpture, metal balconies, bric-a-brac, as well as choice paintings, are all of the period. In a court below is a garden with all the formality of Versailles. An elliptical stairway leads this time to rooms of the days of Blois and Francis I, and beyond is a Gothic hall. In the same way are grouped the art of England, the American Colonies, Holland, Belgium and Germany, each around the gardens that formed an essential part of its art life. These gardens not only complete the background for the works of each period and place, but at the same time give that pleasant relaxation

DIAGRAM OF "THE MUSEUM OF TOMORROW"
CLARENCE S. STEIN, ARCHITECT
The public's museum radiates from the center as the spokes of a wheel; the student's museum forms the periphery

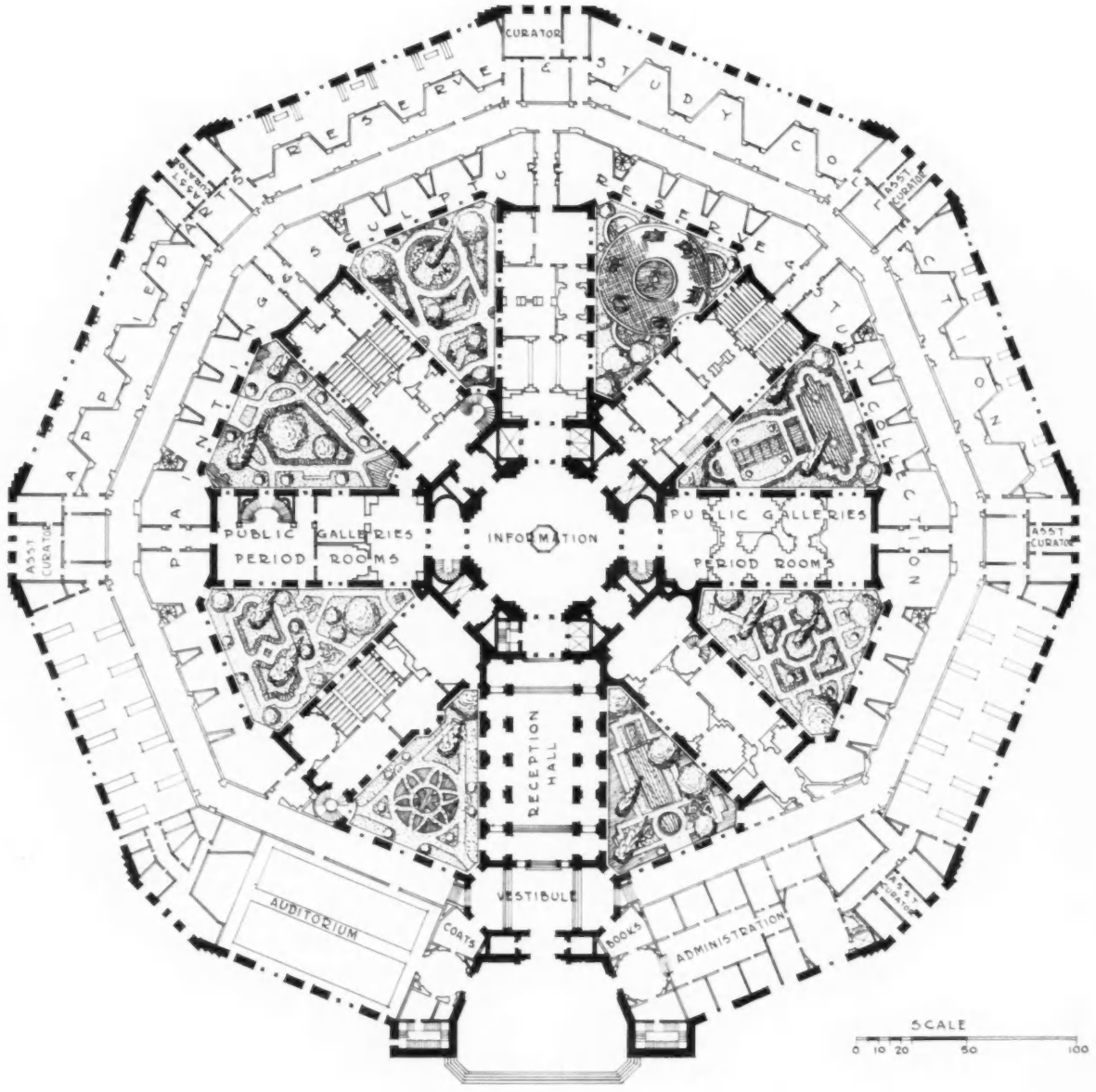
which a visitor to a museum so much needs.

If one wants to judge the great advantage of authentic interiors as a setting, one has but to visit the Colonial rooms in the Metropolitan Museum or the new section of the Philadelphia Museum and the Museum of Fine Arts at Boston. These rooms appeal to the emotions because they contain a few objects in a harmonious, sympathetic environment. The historical setting will probably be chosen for this purpose as long as Europe and the rest of the world can continue to supply us with real rooms. Fake interiors, or an approximation of the character of the period represented, are hardly satisfactory as a background for works of art.

•

THE STUDENT'S MUSEUM—*A Museum of Education:*

The museum which will give understanding to the student requires quite a different arrangement from that which will give appreciation to the general public. The student needs a comprehensive view of what he is studying. Every authentic work which the museum finds worth keeping should be arranged in an orderly, systematic



MAIN FLOOR, "THE MUSEUM OF TOMORROW"

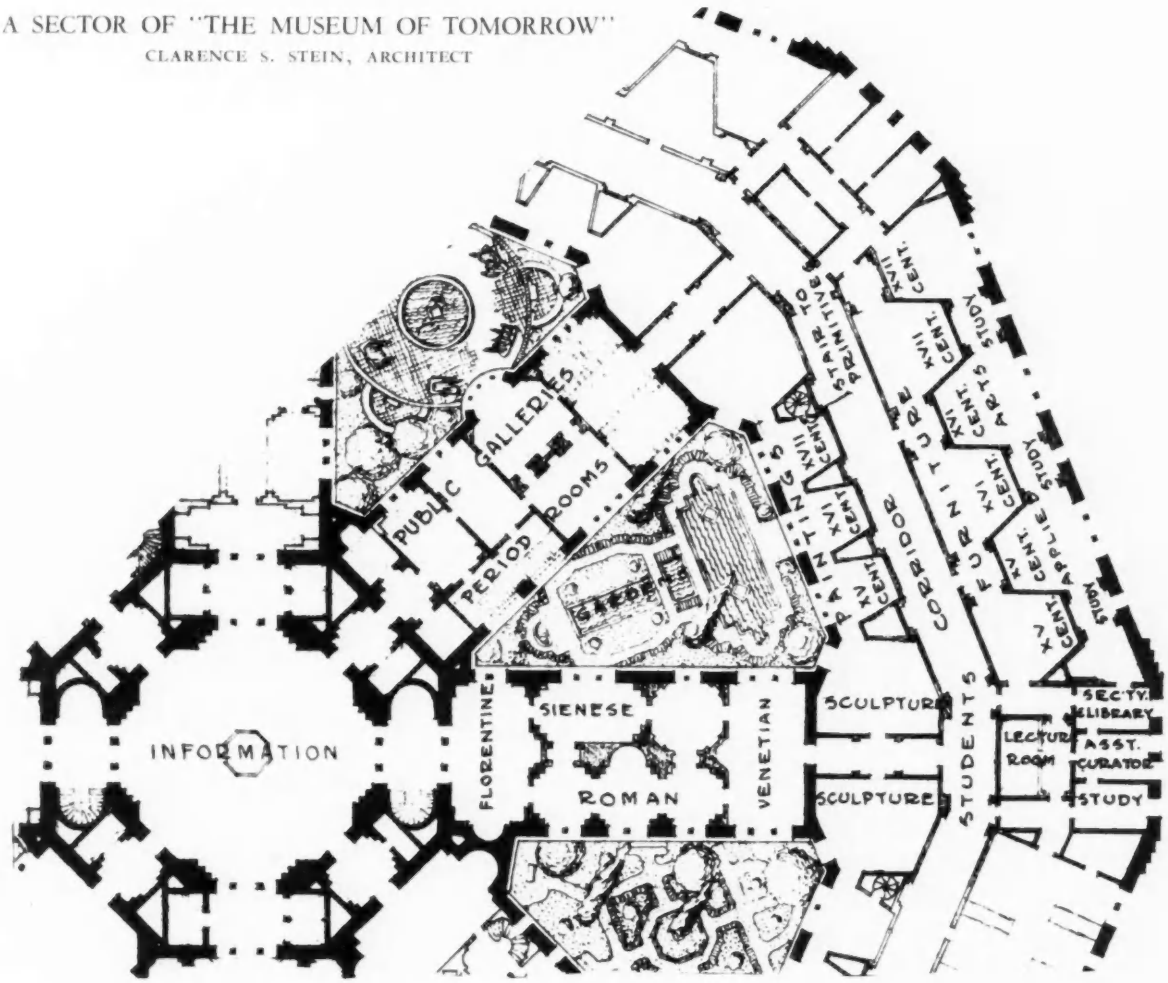
CLARENCE S. STEIN, ARCHITECT

From the main entrance the visitor goes through a Reception Hall to the hub of the building with its Information Booth before he commences to do any sightseeing. All collections are directly accessible from this hub without the interposition of any other collections. This condition applies to all floors, since all are served by the centrally placed elevators.

Note that the Auditorium is so placed that it can be used independently of the Museum.

A SECTOR OF "THE MUSEUM OF TOMORROW"

CLARENCE S. STEIN, ARCHITECT

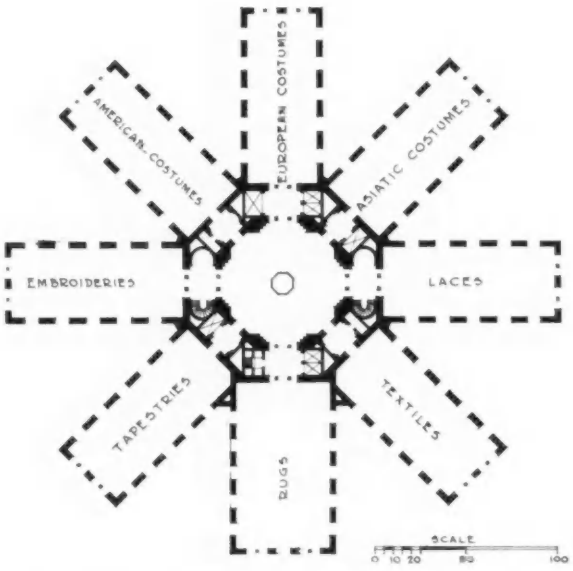


For the purpose of illustration it is assumed that exhibits will be grouped by periods or nationalities. The diagram shows galleries devoted to the Italian Renaissance. The visitor first enters the inspirational public gallery and if he then desires to make a closer study of the period, continues to the students' gallery in the periphery. The Assistant Curator's office and the Lecture Room are immediately accessible. Note that one spoke of the wheel is devoted to authentic period rooms and that a stairway leads down to the primitive art of the same nationality.

manner so as to facilitate research, comparison and study. There should be nothing hidden in dark storage places. Photographs of related works in other museums should be at hand, as should reference books. It should not be necessary to run from one end of the building to the other to compare two paintings or to look up reference materials. The student in a museum should be able to surround himself with material just as he would in a public library. The public's museum will be selective, the student's comprehensive.

This portion of the museum will also be a reserve collection: it will provide a reservoir from which the finer works can be moved from time to time to the inner popular museum.

The student's museum will encircle that of the public. Both will be entered from the same vestibule. The one radiates from the hub or core of the building, the other follows the rim. The spokes connect the two. The contents of the radiating wings are in every case directly related to that portion of the reference collection which is



STUDY COLLECTION ON ONE OF THE UPPER FLOORS
"THE MUSEUM OF TOMORROW"
CLARENCE S. STEIN, ARCHITECT

One of the prime services of the modern museum is that rendered by it to professional designers and to manufacturers.

found at its outer edge. If a student wishes, he may follow the development of an art in different countries at the same period by going around the circle. (He can always stop at the inspirational collections to see a few of the finer works in their historical setting.) Or, by climbing up little stairs, which in the study section will be low, like stacks in a library, he may follow a single country from period to period.

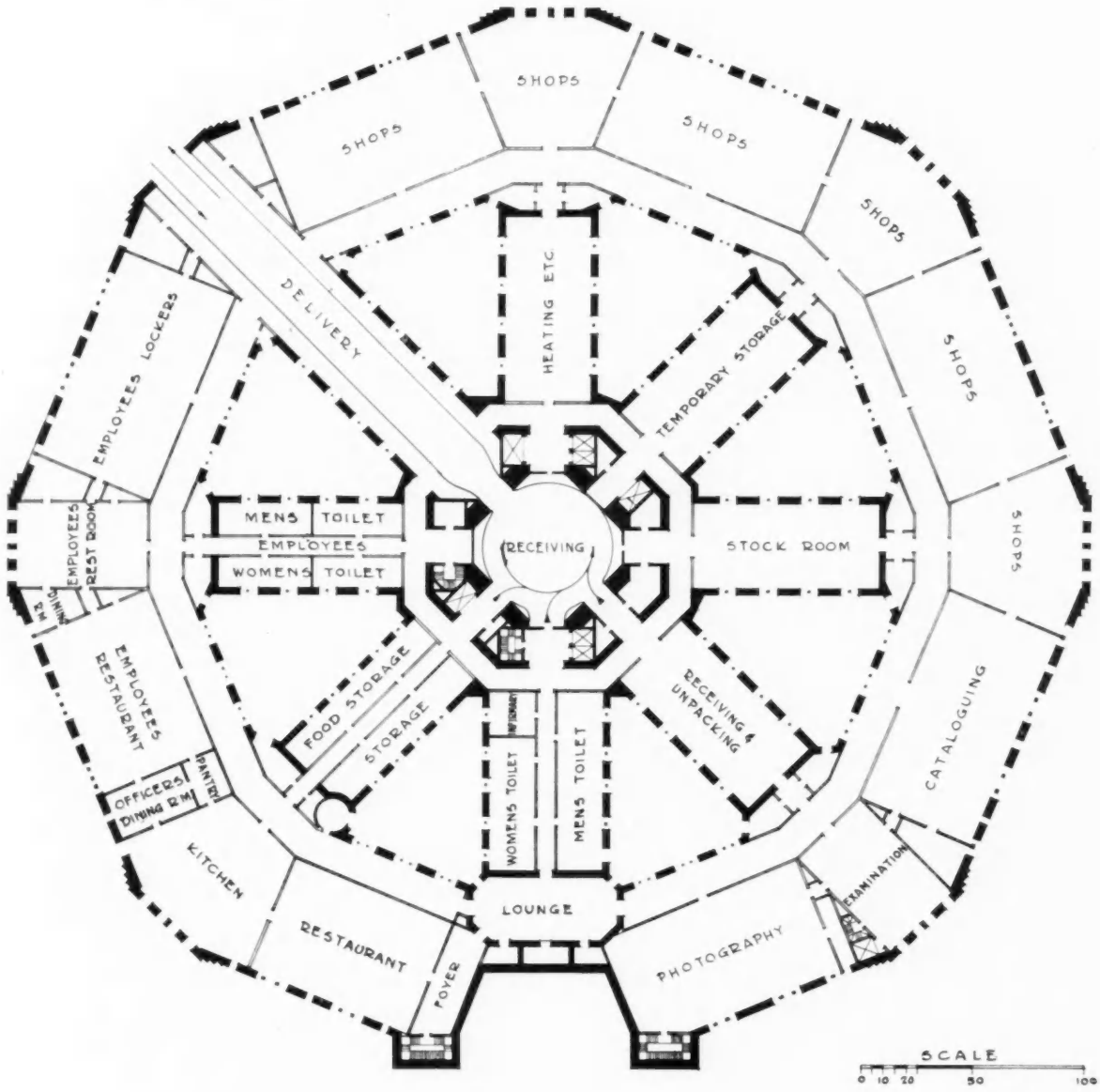
With the exception of certain studios and workshops set aside for those who are carrying on serious research work, the reserve collection will be open to all: the visitor who decides to make a closer study can follow the spokes of the wheel out to the rim as easily as the student can follow them in to the hub. He may be attracted by a picture of Titian's hung in the hall from a Venetian palace. The guardian can direct him to a series of rooms a few steps away where he can find all the other paintings of the Italian Renaissance that the museum contains, arranged according to place and school. He can continue around the circle and compare with these the works of the masters of the same period in Holland, Belgium, France and Germany, or he may prefer to note the influence of Giotto and the primitives. Their works he will find in the alcoves just above. In the same way he can follow the historical sequence of styles in sculpture or furniture, and the influence of one artist, period, school or nation upon another, by following the rooms on the other side of the encircling corridor. If he needs help or advice in his pilgrimage he will find the office of the curator or his assistant easily accessible and directly connected with the collection under his care. Although there will be a central library at the top of the tower, with a main reading room and stacks from which books may be distributed throughout the building, many reference books will be found in the smaller libraries used by the curators and instructors and those studying with them.

The lecture and conference rooms will also be decentralized throughout the student's museum. After attending a lecture illustrated by lantern slides or cinema films, instructor and student can visit the study and inspirational collections of the period described.

The main auditorium will be located so that it may be used in connection with the museum or separately when the museum is closed. Its entrance is next to that of the main museum and balances the entrance to the executive offices. However, there is direct access from it to the museum, close to the entrance for the general public and students.

Some of the study collections—fabrics, for example—are best organized by subjects. Such study collections will be placed in the upper stories of the central tower, as suggested by Mr. Lee Simonson.* Here the artisan and student, manufacturer and collector, will find assembled an organized collection of authentic objects, reference photographs and books. In addition to studios and workrooms there will be a few small meeting rooms, where groups interested in the progress of the arts may gather

* "Skyscrapers for Museums." *American Mercury*, August, 1927.



BASEMENT FLOOR

"THE MUSEUM OF TOMORROW"

CLARENCE S. STEIN, ARCHITECT

The basement houses functions of three sorts: having to do with exhibition objects, employees, and the public.

The delivery road leads directly to the core of the building with its elevators. Exhibition objects are speedily routed through examination, photographing, cataloging, and repair departments, to temporary storage room and elevators. Museums require numerous workshops not only for repairs to objects but for upkeep of the building.

The public restaurant, rest rooms, and infirmary are grouped close to the main entrance. They can be reached directly from the outside without any necessity for opening other parts of the Museum.

socially or for discussion or to exhibit small groups of studies, projects or completed works, as in a club. The museum of tomorrow will not only preserve the art of the past but will serve as the center of the art of today.

•

MUSEUM SERVICES:

Every museum requires many services that cannot be classified under the functions of exhibition or education. In most of our museums the realization of many of these needs has come as an afterthought. The museum has not been planned to care for these services in a logical manner. The service portion of the museum of tomorrow will be planned as integrally as in a modern factory.

The executive and administrative offices should be easily accessible to the public. They will be placed in a group with a separate entrance from the outside, in direct connection with the main public entrance (see plan, p. 11).

The basement will house the greater part of the service functions of the museum. These can be divided into three parts, having to do with housekeeping (employees), with objects for exhibition, and with the general public.

The service road will lead through the building to the large space underneath the central rotunda. From here new acquisitions can be delivered directly to the receiving room and there unpacked, and then placed in well-lighted examination rooms, directly below the directors' and trustees' rooms, and accessible to them. On either side of the examination room will be departments for photographing and labelling. Thereafter, if repairs are necessary, the objects will be taken to one of several shops.

•

FLEXIBILITY

Most of our museum buildings are antiquated; they do not fit even the method of exhibition of today. I fear that if the same sort of buildings were replanned and rebuilt now, with all our present understanding and past experience, they would be out of date within a very short period.

Even in the Philadelphia Museum, where Fiske Kimball is performing the separation of the collections devoted to education and to appreciation, the structural shell was never intended for this purpose. In old buildings progress of arrangement is crippled by the fixed fenestration and inflexible location of interior walls. Some type of structure must be developed that will be flexible. The partitions should be movable, like screens or office partitions, so as to form different shapes and kinds of enclosures. At the same time the exterior wall should be capable of rearrangement so as to make possible the relocation of windows. If we followed these requirements through logically instead of letting our museums consist of more or less unbroken, solid exterior walls and glass roofs, we should do away entirely with the impossible illumination of skylights and build our exterior walls of some type of glass brick or tile behind which would be placed the temporary walls with the fenestration actually required for the best illumination of the exhibits.

MASS-PRODUCTION AND THE MODERN HOUSE

BY LEWIS MUMFORD

DURING the last hundred and fifty years a great change has taken place in architecture. This change has nothing to do with the questions of superficial esthetics that agitated the architectural world: the quarrels between the classicists and the medievalists or between the traditionalists and the modernists are all meaningless in terms of it. I refer to the process whereby manufacture has step by step taken the place of the art of building, and all the minor processes of construction have shifted from the job itself to the factory.

How far this process has gone everyone is aware who has watched the composition of a building, and who knows how suddenly the whole work would stop if the architect were forced to design or specify with any completeness the hundred different parts, materials, and fixtures he draws from Sweet's Catalog. But what are the implications of this process? What results must it have on the status of the architect and the place of architecture in civilization? What further developments may we look forward to on the present paths: what alternatives suggest themselves?

Some of these questions can be answered: others will lead us to push beyond the current premises upon which the discussion of mass production and architecture is based.

II

By an ironic accident, the first use of fabricated parts in a building seems to have been ornamental: the plaster mouldings of the eighteenth century were introduced before the Franklin stove: but the age of invention ushered in a whole series of technical devices designed to increase the comfort or the efficiency of the dwelling house, and along with these improvements went a shift from handicraft to machine production. There are country districts in the United States where, until a few years ago, the kitchen sink would have been made of sheet zinc fitted over a box made by the carpenter, or where the ice-box might have been constructed in the same way. In the main, however, the shift was steady and inexorable: steam-heating, gas-lighting, electricity, baths, toilets, refrigerators, to say nothing of radio-connections and garages, have all led to the industrialization of architecture. Plaster, jig-saw, and cast-iron ornament, the first spontaneous gifts of industrialism, all happily diminished; but the technical improvements remained and multiplied.

In the great run of modern building, except in part the country homes of the rich, mass-manufacture has taken the place of local handicraft. The latter has remained in two places: the construction of the physical shell itself, and the assemblage of the individual parts

Now, this change was coincident with the withdrawal of the architect from the grand body of building during the early industrial period. The new factories and bridges and railroad stations were largely the work of engineers, while the great mass of private dwellings became the province of the speculative jerry-builder who, with a few stereotyped plans, created the dingy purlieus of all our large cities. The radical change that had taken place passed almost unnoticed, until during the last fifteen or twenty years the architect was called in to design small houses for industrial villages. He was then confronted with two brute facts: if he designed houses for industrial workers in the fashion that he did for the upper middle classes, it turned out that the costs were so high that only the middle classes could afford to live in them: that was the fate, for example, of Forest Hills, L. I. On the other hand, when he accepted the price limitations laid down by the industrial corporation, or, as in Europe, the municipal housing scheme, he suddenly discovered that he was no longer a free man.

Photo. Fairchild Aerial Surveys, Inc.

ON THE WAY TOWARD STANDARDIZATION: A SECTOR OF BROOKLYN

The jerry-builder replacing the architect. Not only are stereotypes frequently repeated, but every house is largely an *assembly* of standard parts from the factory. Bathrooms have come; gardens have gone. Every house is but the visible shoot upon a great underground root mechanism, constituting "the land and its improvement."

Every variation he wished to introduce which departed from current practice was prohibitive in cost: his design was in fact little more than a composition of standardized patterns and manufactured articles. The elements were no longer under the architect's control; for the carpenter on the job could not construct a kitchen cabinet as well or as cheaply as the factory, nor had he spent so much time in finding out exactly what compartments and divisions the housewife preferred. As for windows, doors, bathroom equipment, the architect either had to accept them as they came from the factory, or he had to do without them altogether.

III

Needless to say, this revolutionary change had come about without any genuine renovation in design, and without any attempt to overcome the difficulties that the increase of manufactured articles brought with it. The chief of these difficulties, as Mr. Henry Wright was perhaps the first to point out, was that the building proper, without being cheaper in its own right, accounted for only forty-five to sixty per cent of the total cost, whereas a hundred years before it had represented, with its decoration and ornament, about ninety per cent of the total cost. Some accommodation to this condition was made; but the adjust-

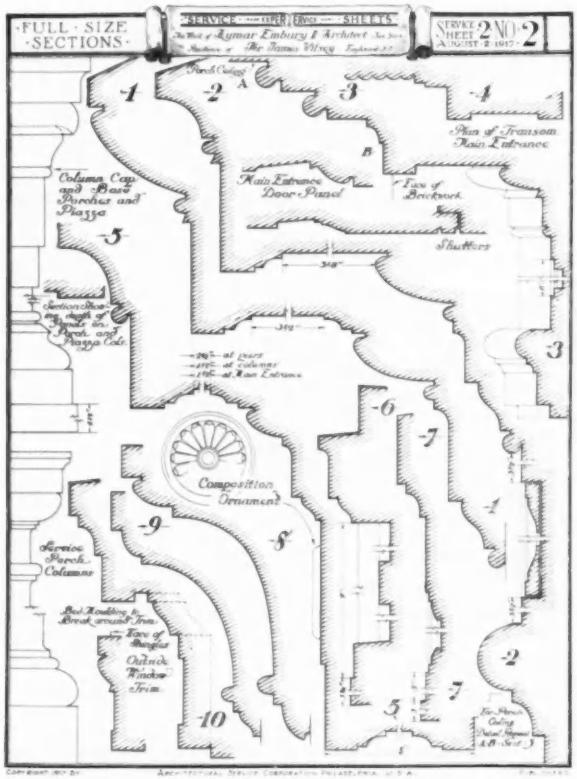
Photo Fairchild Aerial Surveys, Inc. *Grosvenor Atterbury, Architect*

THE ARCHITECT'S ATTEMPT TO INDIVIDUALIZE AN INDUSTRIAL VILLAGE: FOREST HILLS

An attempt that failed. The cost of spaciousness and individual design was too high for workers and the houses are now occupied by the middle classes. To the rear is seen the invasion of the jerry-building that must serve the poorer man who wishes to live in a "free-standing" house.

ment was a blind and fumbling one: now it came as jerry-building, a general cheapening of materials and workmanship, again it came as smaller rooms or fewer rooms per family, or finally, it came as an abandonment of handicraft on the remaining parts of the building, and the increase of ready-made equipment. Decoration had not so much vanished by itself, for lack of artistic talent, still less because of any doctrinaire prejudice against it: it had rather been absorbed, or at all events transformed into mechanical fixtures. The new costs of finance, mechanical fixtures, utilities, had to be met at some point in the design. Short of a proportional rise in the real income of wage-earners, there was no way of cementing the old requirements and the new in a single building.

In a word, building has shrunk, manufacture has expanded. One cannot suppose that this process will stop short at the shell. Apart from the fact that this has already been partly conquered—as yet, however, with no appreciable saving—in the mail-order wooden house, or in the sheet-iron garage, who doubts that the manufacturers of steel, aluminum or asbestos blocks, if not the large-scale motor manufacturers, looking for a new outlet for a market glutted with cars, will finally produce a light transportable shell, whose sections will be set up easily by unskilled labor? It would not be difficult to describe such a house: indeed, Mr. Buckminster Fuller in Chicago, and the Brothers Rasch in Germany have already gone a step beyond this. The chief differ-



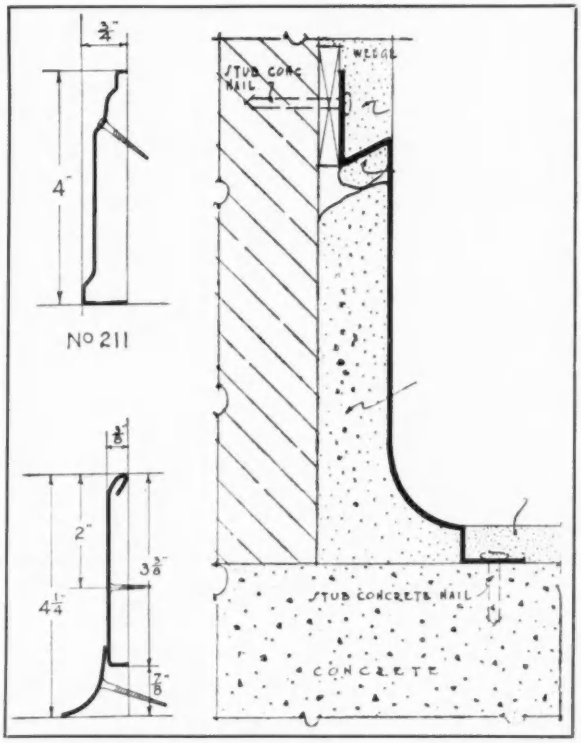
ALL THIS FOR A SINGLE CUSTOM-BUILT HOUSE
1917: The pride of the architect lay in giving every house, and every possible part of every house, its individual decorative treatment, specially full-sized and specially made. The effort was directed at what was very accurately named "enrichment." (House of Mr. James Wilsoy, Aymar Embury II, Architect.)

ence between the factory-manufactured house and the current product of the jerry-builder in Flatbush or West Philadelphia would be that in the first case the design would possibly bear some living relation to the elements out of which it is composed. The mass-house would probably be placed on a platform, if not on a pedestal, in order to provide garage space and avoid the expensive cellar; the plans would be standardized; the pipes and fittings and fixtures would be integral with the walls and ceilings, joined together by a turn of the wrench; and the use of light insulating materials would both facilitate transportation and permit the design of large windows which would otherwise, in cold weather, make a great drain on the heating system.

What would be the advantages of the completely manufactured house? There are many potential ones. First of all, the mass-house, like the motor car, will be able to call to its design and construction a corps of experts, sanitary engineers, heating engineers, hygienists, to say nothing of professors of domestic science, who will have their minds focussed, not upon solving indifferently an indeterminate number of problems, but upon getting a perfect solution for a fixed and limited problem. These research workers will have the opportunity to deal with fundamental mechanical and biological facts, without the distraction of attempting to compose these facts into a traditional frame, conceived when industry and family life were on an entirely different basis, and when the inventions of the last century were still but vague grandiose dreams in the minds of Utopians like Leonardo and Johann Andreae.

The introduction of this council of experts would undoubtedly hasten the rationalization of the modern house. A dozen standard plans, with all minor deviations ruled out, would probably take the place of the competitive chaos that provides our more traditional forms of monotony and squalor, or, as in the well-to-do suburb, of standardized "variety" and fake elegance. No one would be able to pretend that individuality and personality are achieved by meaningless departures on the drafting board from standard dimensions: once the mechanical requirements were granted, an equally mechanical solution would follow. The charm of good building, the charm due to the carpenter's or the mason's feeling for his material and site, would disappear; but as compensation there would be the austere clarity of good machinery; and since this charm is already a sentimental memory in most of our building, it is an illusion rather than a reality that would be destroyed. Undoubtedly the result would be "hard"; but such hardness is surely preferable to the spurious "softness" of imitation half-timbers, imitation slates, and imitation fires; and it would constitute a real improvement over the actual quarters in which a great part of the population now live.

There is no need to go here into the various technical improvements that may be possible in the mass-house. It is enough to assume that such matters as artificial cooling and heating, the removal of dust, and the utilization of sunlight would receive competent attention, and it is even possible that entirely untried methods, such as the heating of walls by electric grids, or complete insulation from outside air would be tested, if not incorporated in the mass-house. Such dwellings would represent a real advance from the standpoint of hygiene and constructive soundness; and since a good part of our population needs to be rehoused, its present quarters being unsanitary, crowded, vile, ugly, and entirely out of key with the best features in the modern environment, the mass-house holds out, on the surface, very attractive promises. Does the architect shrink from the prospect? He had better not. As a profession he has permitted something far worse than the scientifically designed mass-house, namely the unscientific one of the jerry-builder, to appear; and since he has shown as yet no capacity to face or master the real problem of housing, he cannot in all conscience turn away from this spectacle.



STANDARD PARTS FOR A THOUSAND BUILDINGS

1930: Showing the evolution of a metal baseboard from imitative decoration toward impeccable utility and clarity. Decoration has not vanished by itself because of prejudice against it: rather it has been absorbed or transformed into mechanical fixtures.

IV

Let us grant, then, the mechanical advantages of the mass-house; and along with this its practicability. We must now ask another question: to what extent would the mass-production of such houses be a solution of the housing problem, and how far would this form of manufacture meet all the needs that are involved in the dwelling house and its communal setting? Those who talk about the benefits of mass-production have been a little misled, I think, by the spectacular success of this method in creating cheap motor cars; and I believe they have not sufficiently taken into account some of its correlative defects. Let us consider a few of these.

First of all: the great attraction of the manufactured house is the promise not only of efficiency but of cheapness, due to the competitive production of houses in large quantities. It is doubtful if this will prove to be a great element in reducing the cost of housing. The reason is simple. The shell of the building is not the largest element in the cost; the cost of money, the rent of land, the cost of utilities, including streets, mains, sewers and sewage disposal plants, are among the major items on the bill. The two new spots where mass production would take the place of present methods, namely, in the shell itself, and in the assemblage of the parts, offer only a minor field for reductions. To cut the cost of the shell in half is to lower the cost of the house a bare ten per cent. The New York State Housing and Regional Planning Commission has shown that the lowering of the interest rate one per cent would effect as great a reduction; and the lowering of it to the level justified by the safety and dura-

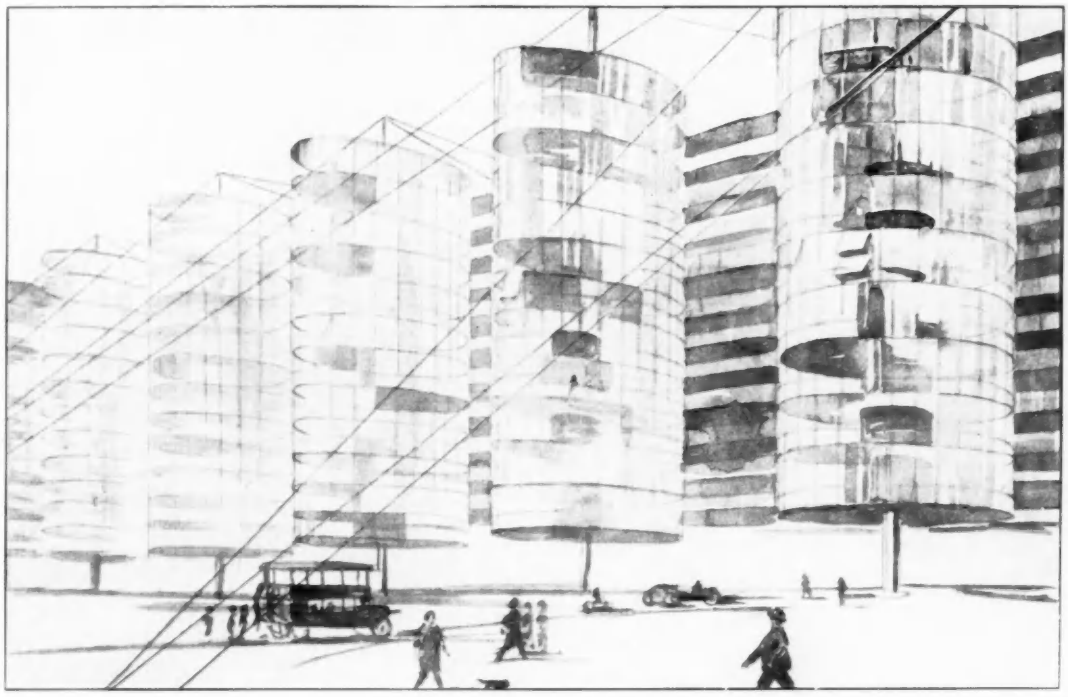
MODEL OF THE "DYMAXION" HOUSE
BUCKMINSTER FULLER, DESIGNER*

bility of housing investments would reduce the costs far more drastically than the most ingenious cheese-paring on the structure.

Moreover, with respect to the other parts of the house, the fixtures, the mechanical apparatus, the finish, it remains true that while slight economies are possible through further standardization, a good part of these items is already produced by mass-methods —and most of the possible economies have been wrung out. Novelties in plan or design, such as those suggested in the Dymaxion house, should not obscure the fact that the great change in the shell is only a little change in the building as a whole. For lack of proper cost accounting our experimental architects have been butting their heads against this solid wall for years; but there is no reason why they should continue. Land, manufactured utilities, site-improvements, and finance call for a greater share of the cost than the "building" and labor. Mass production will not remedy this. To use cess-pools instead of sewers, artesian wells instead of a communal water system, and cheap farming land instead of urban land, as some of the advocates of the manufactured house have suggested, is merely to camouflage the problem: and it is more than a little naive: for such expedients are temporary dodges, which may occasionally be favored by a sandy soil or inaccessibility to traffic, but they cannot count for two pins in any comprehensive and universal solution of the housing problem. There are many districts where an artesian well would cost as much as the house itself; and except in a communist society there are no spots on the earth where the Law of Rent is not operative—so that any large movement towards the open land, such as is now taking place fifty miles from New York, is immediately recorded in a conversion of farmland into building lots, with a swift rise in price. In short: the manufactured house cannot escape its proper site costs and its communal responsibilities.

The second hole in the program is the fact that mass-production brings with it the necessity for a continuous turnover. When mass-production is applied to objects that wear out rapidly, like shoes or rubber tires, the method may be socially valuable, although the late Thorstein Veblen has shown that some of these potential economies are nullified by the commercial habit of weakening the materials in order to hasten the pace of destruction. When, however, mass methods are applied to relatively durable goods like furniture or houses, there is great danger that once the original market is supplied, replacements will not have to be made with sufficient frequency to keep the original plant running. Our manufacturers of furniture and motors are driven desperately to invent new fashions in order to hasten the moment of obsolescence; beyond a certain point, technical improvements take second place and stylistic flourishes enter. It will be hard enough, in the depraved state of middle class taste, to keep our mass houses from being styled in some archaic fashion, pseudo-Spanish or pseudo-Colonial, as the fad of the day may be; and once mechanical improvements bring diminishing returns this danger will be a grave one.

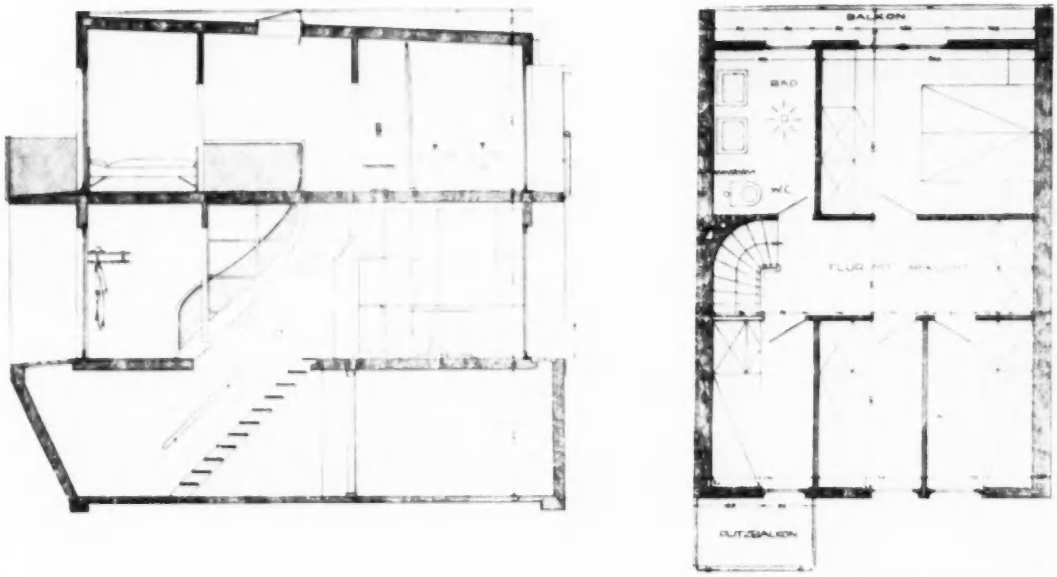
*Walls (no windows) of transparent casein; inflated duralumin floors; heat, light, refrigeration supplied to it individually, through central mast, by Diesel engine; water from well.



MASS-PRODUCTION APARTMENT HOUSES HUNG ON MASTS

THE BROTHERS RASCH, GERMANY

Two rows of hollow masts with a set of passages between. The ground is clear. Masts hold one another in position by system of cables; anchored by cables; floors hung on cables. Proposed in 1928



FROM ANOTHER CONTINUOUS ROW (STEEL HOUSES RESTING ON THE GROUND)

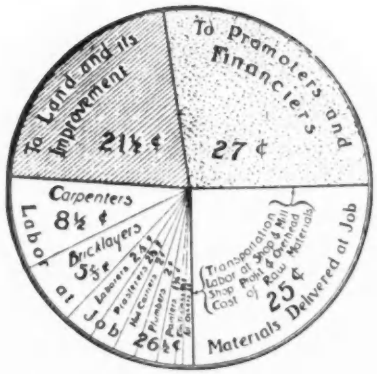
THE BROTHERS RASCH, GERMANY

There is still another defect in the manufactured house, just the opposite of the tendency to foist new style, in order to increase the turnover. One might call this the model T dilemma. Mass-production, just because it involves the utmost specialization in labor-saving machinery and the careful interlinkage of chain processes, suffers, as I have pointed out elsewhere, from rigidity, from premature standardization. When the cheapening of the cost is the main object, mass production tends to prolong the life of designs which should be refurbished. In the case of the dwelling house, the continuance of obsolete models would possibly be as serious as the rapid alterations of style; and it is hard to see how mass production can avoid either one or the other horn of this dilemma.

V

What, then, is the conclusion? So far as the manufactured house would base its claim upon its social value, that is, upon the possibility of lowering the cost of housing to the point where new and efficient dwellings could be afforded by the owners of Ford cars, its promises are highly dubious. Granting every possible efficiency in design or manufacture, the mass-house, without any site attachments, would still represent an expenditure of from six to ten times the amount invested in automobiles of similar grade; and this leaves us pretty much in our present dilemma. The new houses might well be better than the present ones—they could scarcely be worse. But, if better, they would not be radically cheaper, and since a new cost, a cost that is excessive in the motor industry, namely competitive salesmanship, would be introduced, the final results promise nothing for the solution of our real housing problem—the housing of the lower half of our income groups, and particularly, of our unskilled workers. The manufactured house no more faces this problem than the semi-manufactured house that we know today.

This does not mean that the processes of manufacture will not continue to invade the modern house; nor does it mean that the architect's present position in relation to the problem is a happy one. The question is whether he is able to devise an approach to the housing problem and to house design which will bring with it all the efficiencies promised by the Brothers Rasch or by Mr. Buckminster Fuller, and which will at the same time give scope to the particular art and technique of which he is master. Is there perhaps a more radical approach to the problem of housing than the engineer and the mechanically-minded architect have conceived? I think there is; for though Mr. Fuller for example believes that he has swept aside all traditional tags in dealing with the house, and has faced its design with inexorable rigor, he has kept, with charming unconsciousness, the most traditional and sentimental tag of all, namely, the free-standing individual house. If we are thorough enough in our thinking to throw that prejudice aside, too, we may, I suspect, still find a place for the architect in modern civilization. I shall deal with the alternative to the purely mechanical solution of our problem in a second article.



"A LARGE SAVING IN THE SHELL IS A SMALL SAVING IN THE FINAL HOUSE"

A little more than half of the building cost goes for construction itself. The shaded areas in this chart of the construction dollar represent factors of land and financing that mass production cannot very much affect

Chart from *Primer of Housing*, by Arthur C. Holden and others, Workers' Education Bureau Press

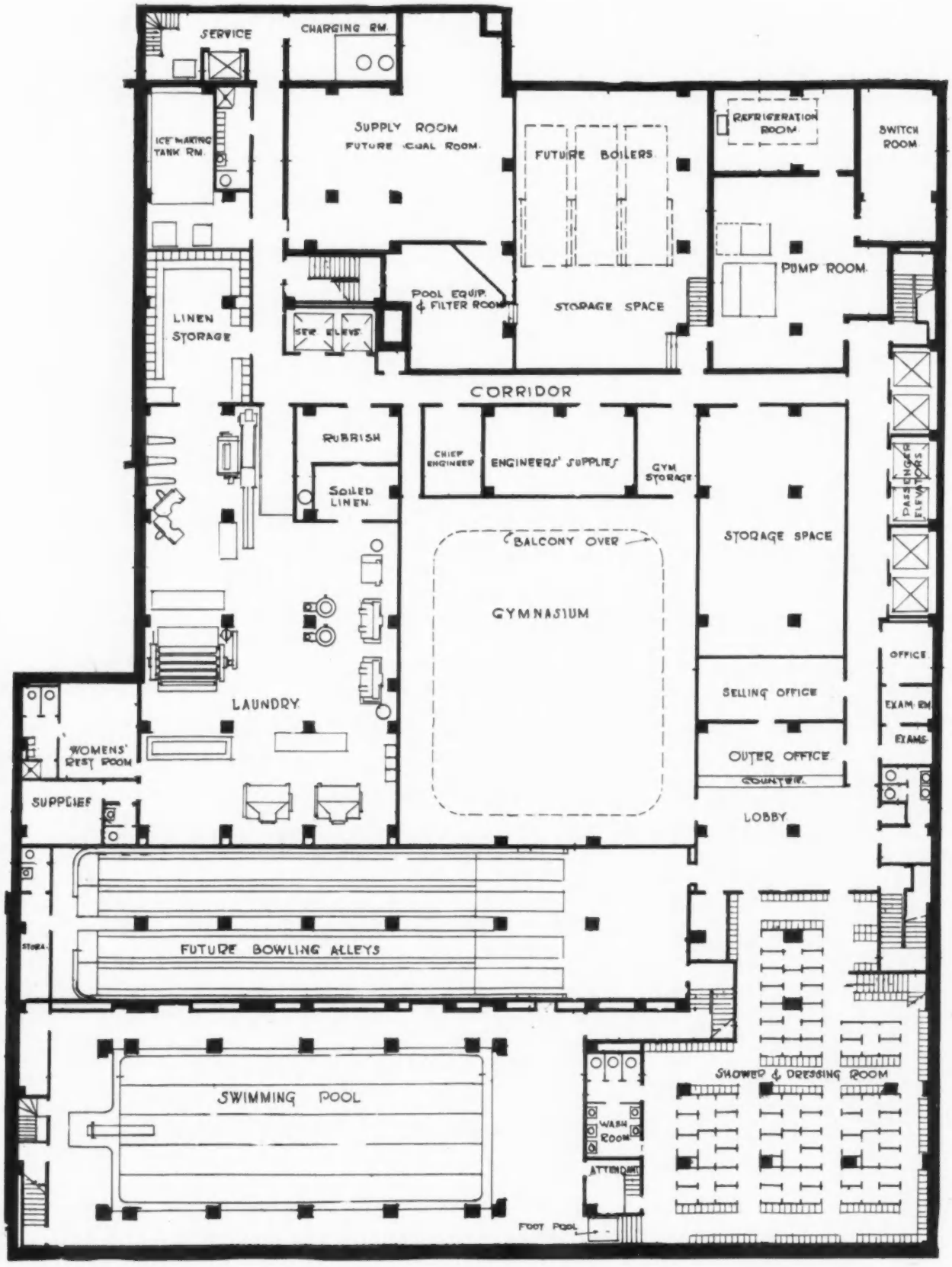
PORTFOLIO
OF
CURRENT ARCHITECTURE

Photo. Anton Bruehl

Vent Pipes Carrying Shades
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

FEATURING
AMERICAN WOMEN'S ASSOCIATION BUILDING
LAWRENCE PARK PROPERTIES
KENT COMMUNITY HOUSE

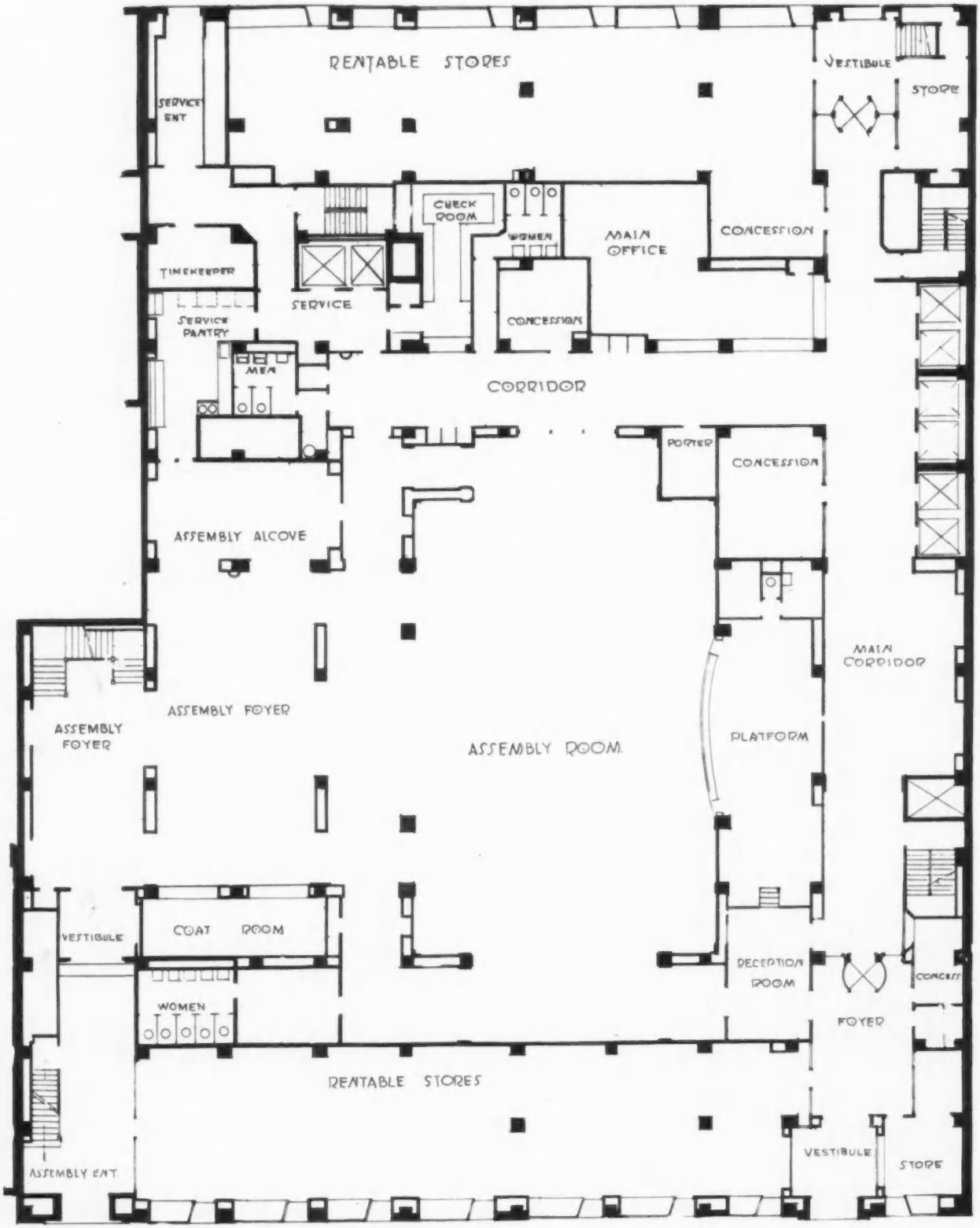
(Note: A description of the American Women's Association Building will be found on page 37)



Sub-Basement Plan
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

Photo. Van Anda

General View
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT



Main Floor Plan
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

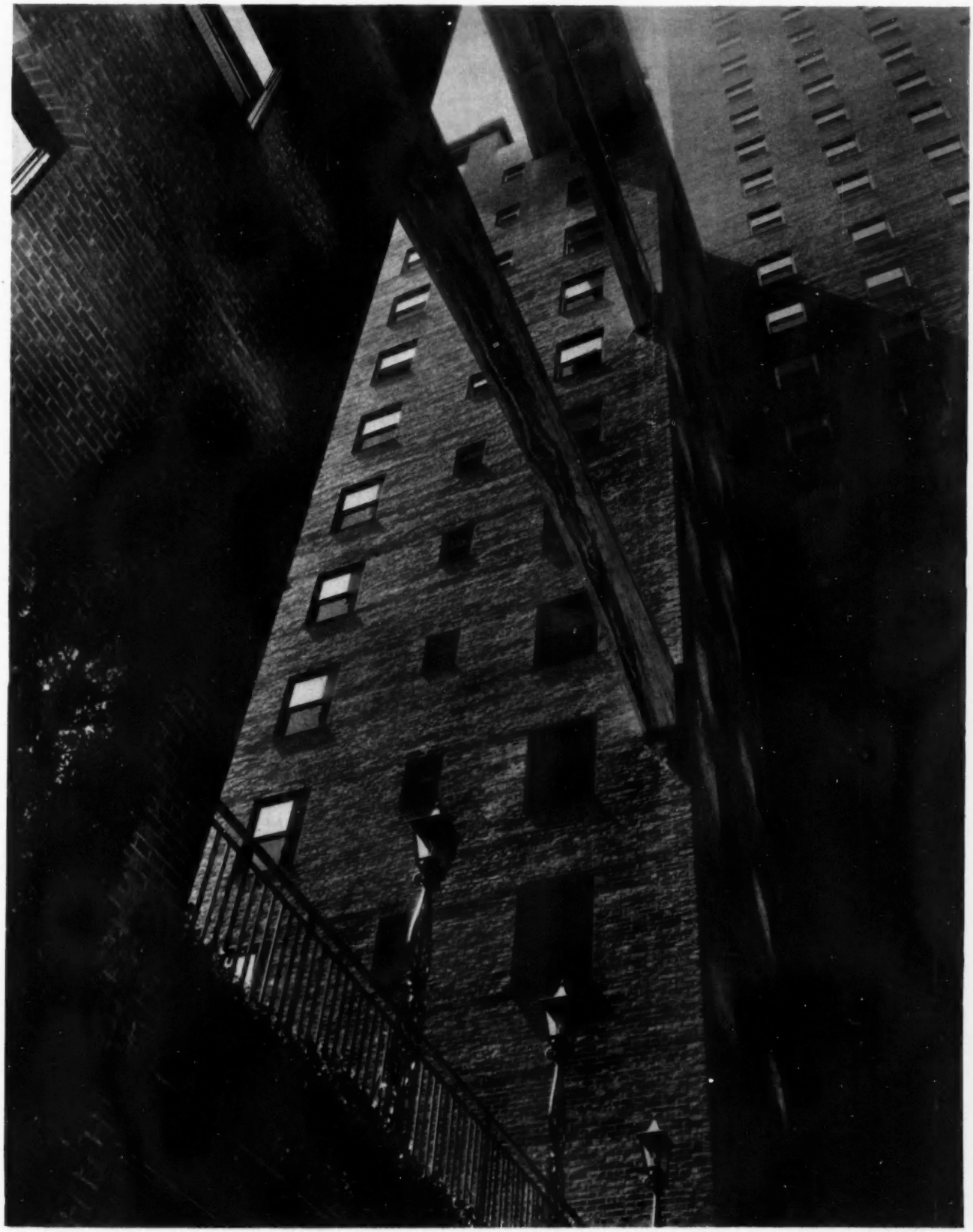
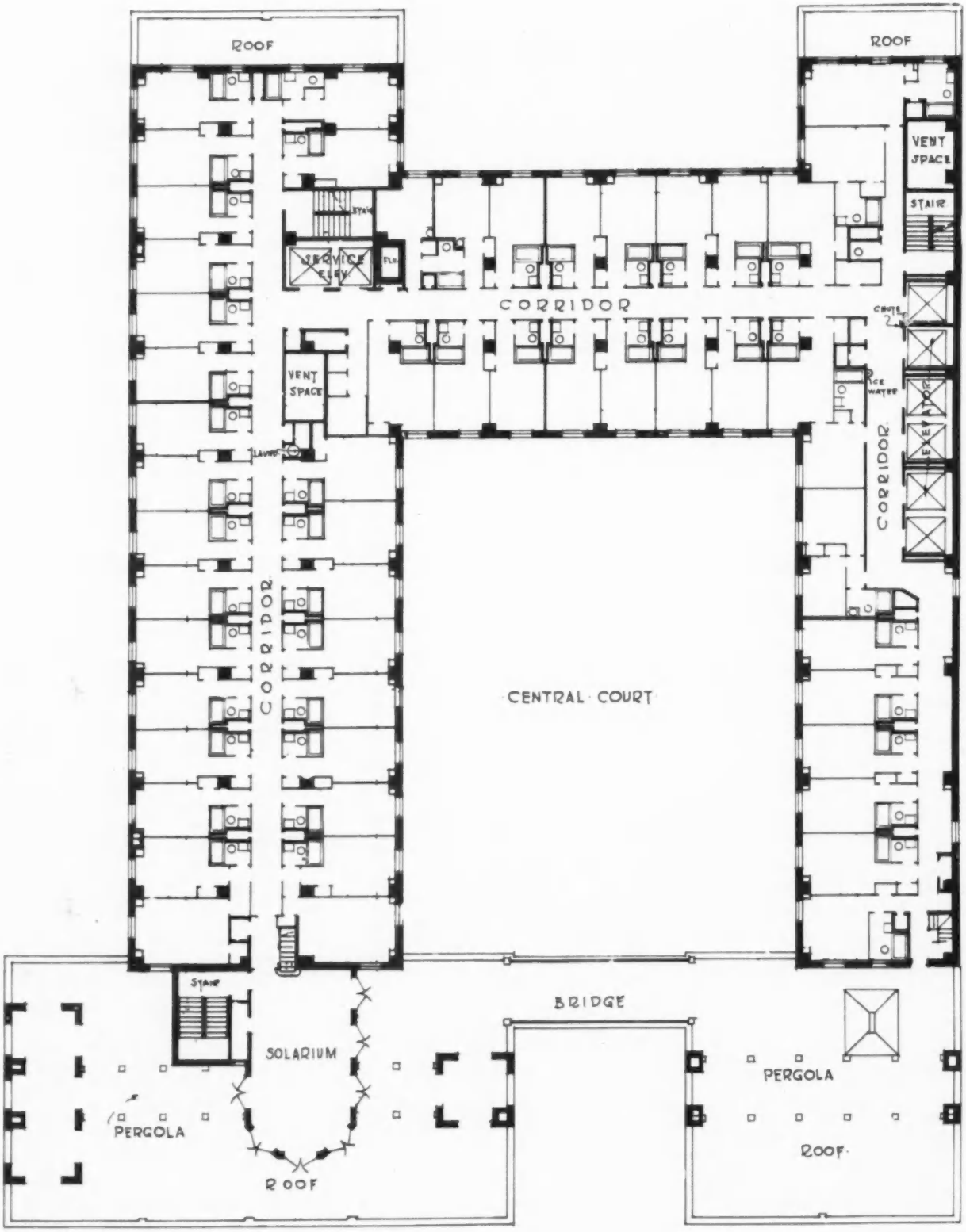


Photo. Anton Bruehl

Inner Court Detail
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT



Plan at First Set Back
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

Photo. Anton Bruehl

Inner Court Detail
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

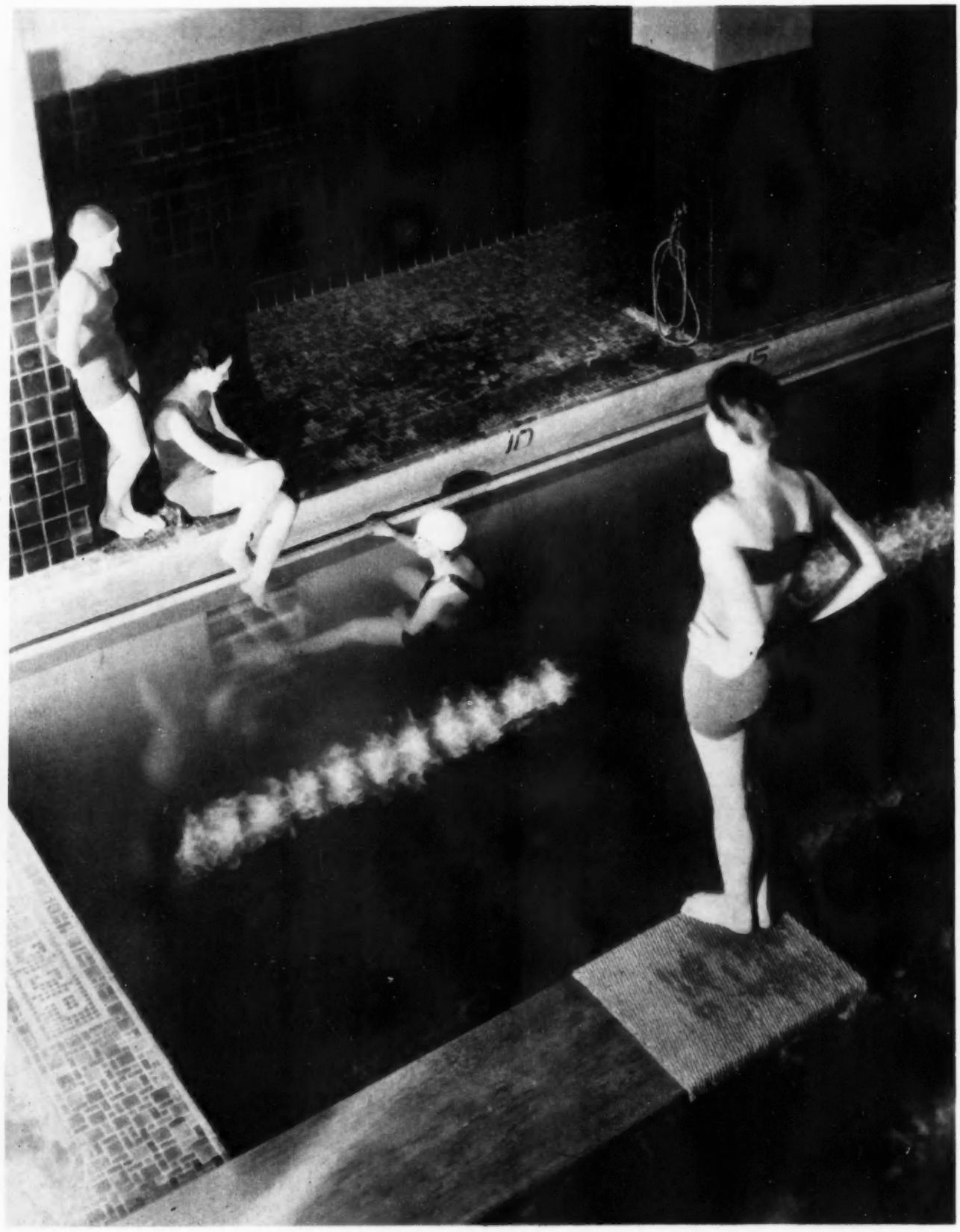


Photo. Anton Bruehl

Swimming Pool
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

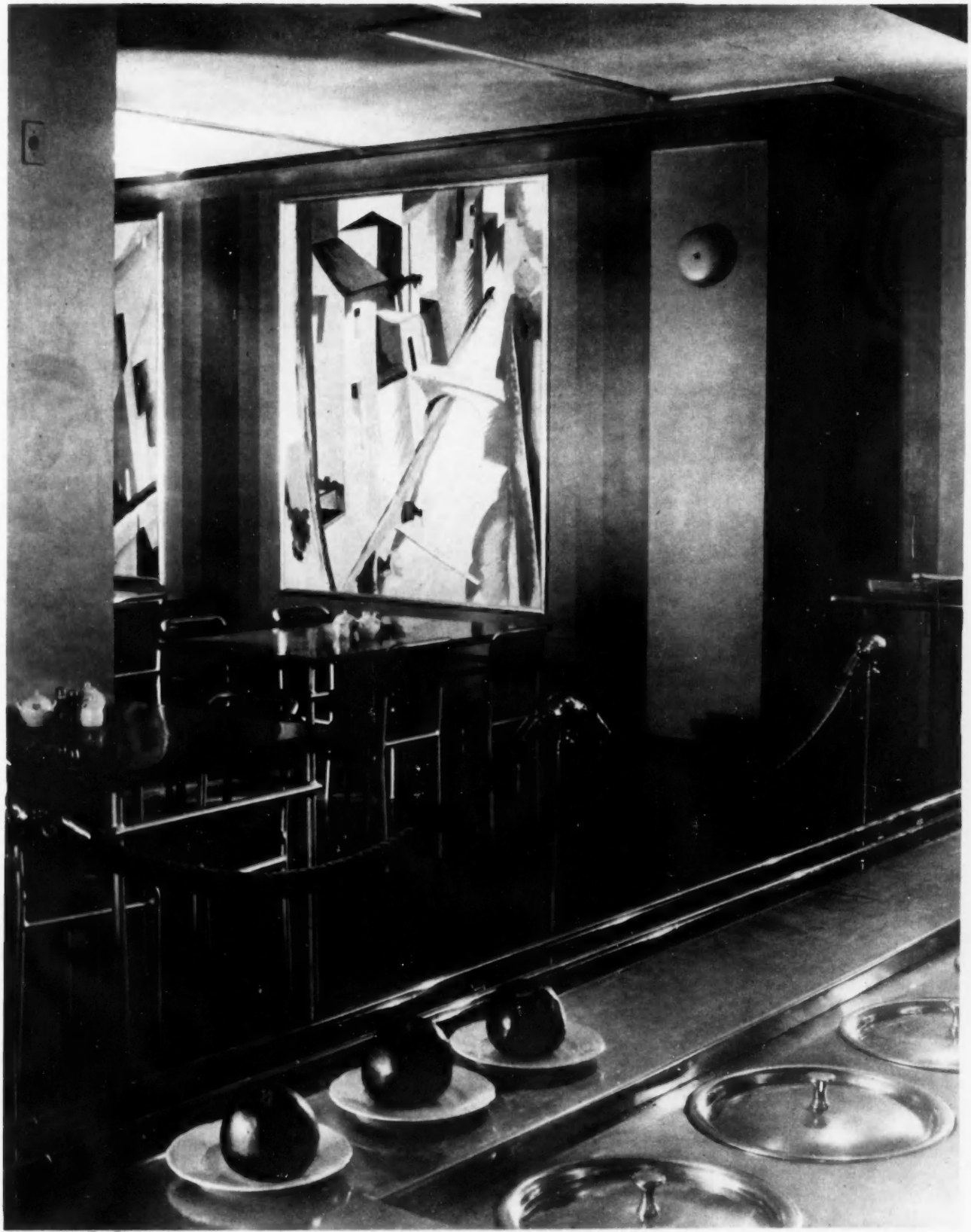


Photo. Anton Bruehl

Cafeteria
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

Photo. Van Anda

Writing Room
American Women's Association Building, New York City
BENJAMIN WISTAR MORRIS, ARCHITECT

Photo. Nyholm and Lincoln

A Remodelled House
Executive Offices of Lawrence Park Properties, Bronxville, N. Y.
PENROSE V. STOUT, ARCHITECT

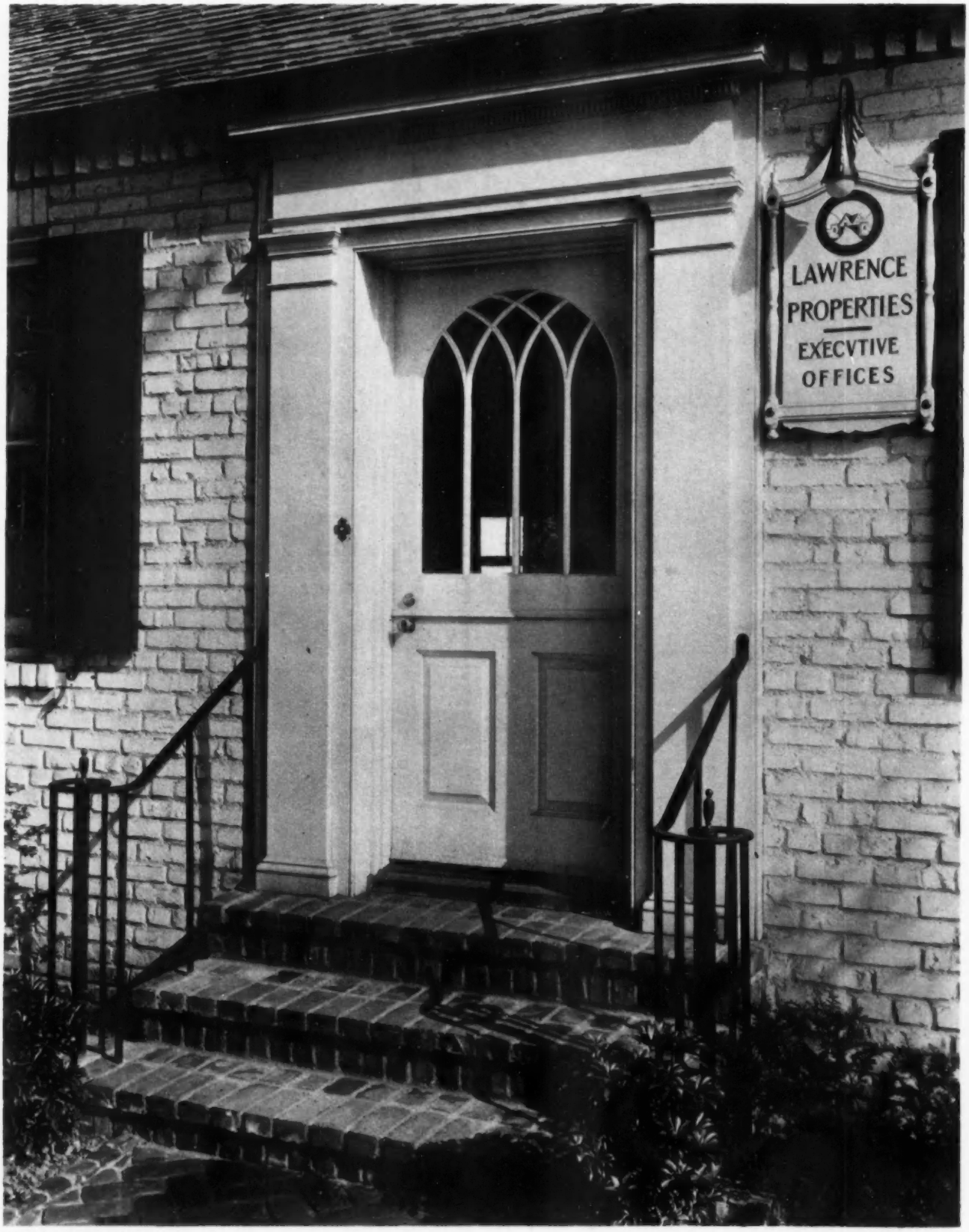


Photo. Nyholm and Lincoln

Entrance Detail
Executive Office of Lawrence Park Properties, Bronxville, N. Y.
PENROSE V. STOUT, ARCHITECT

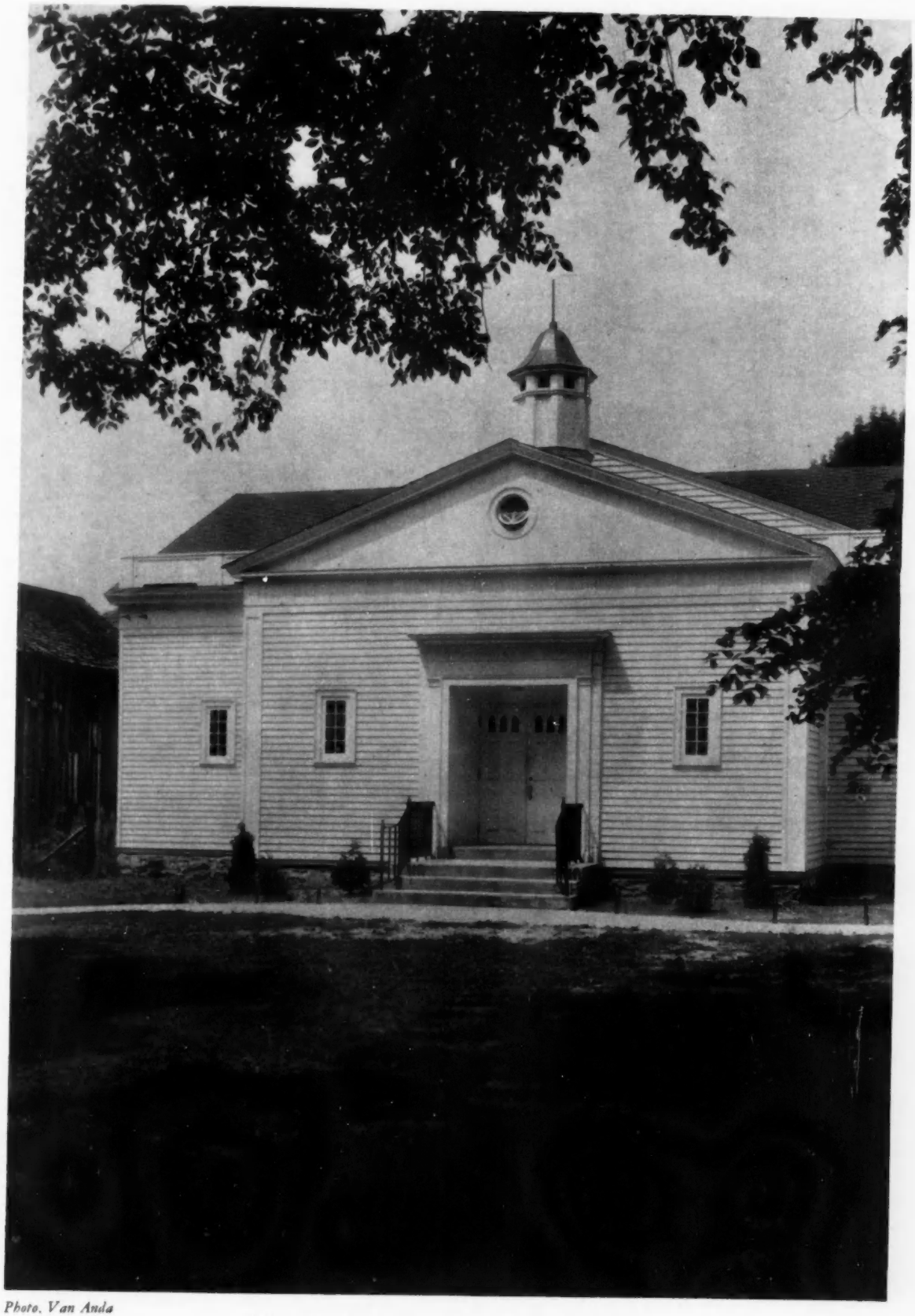
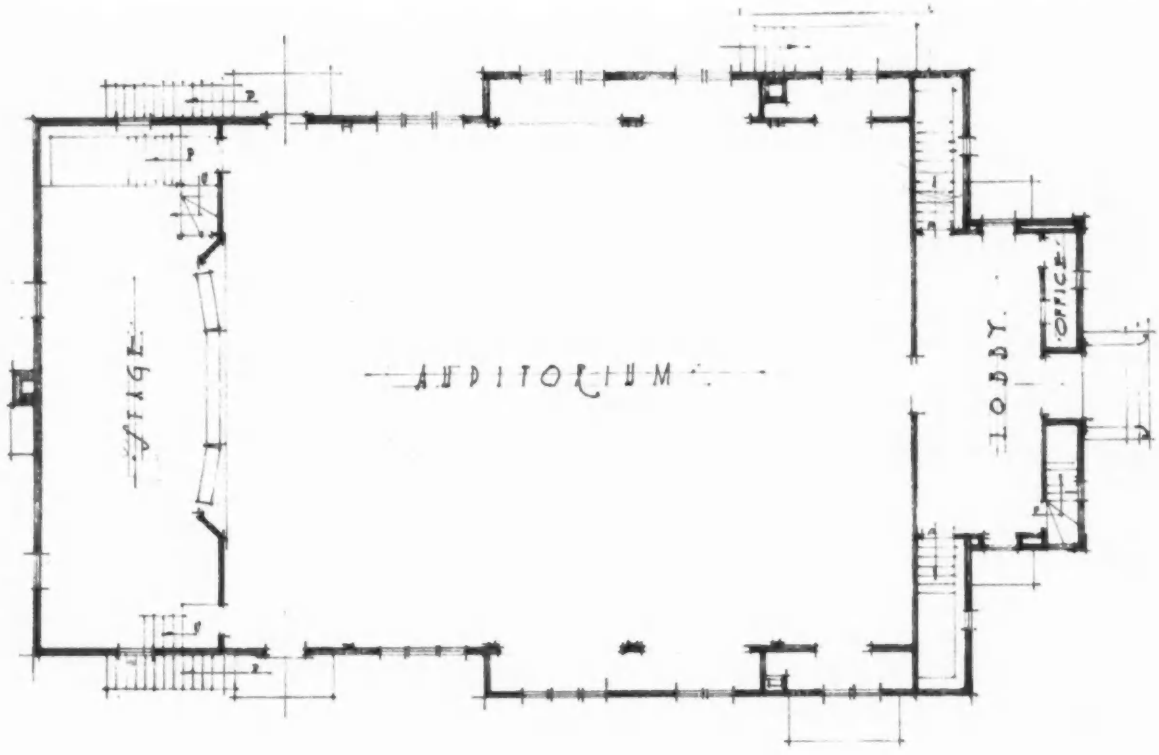
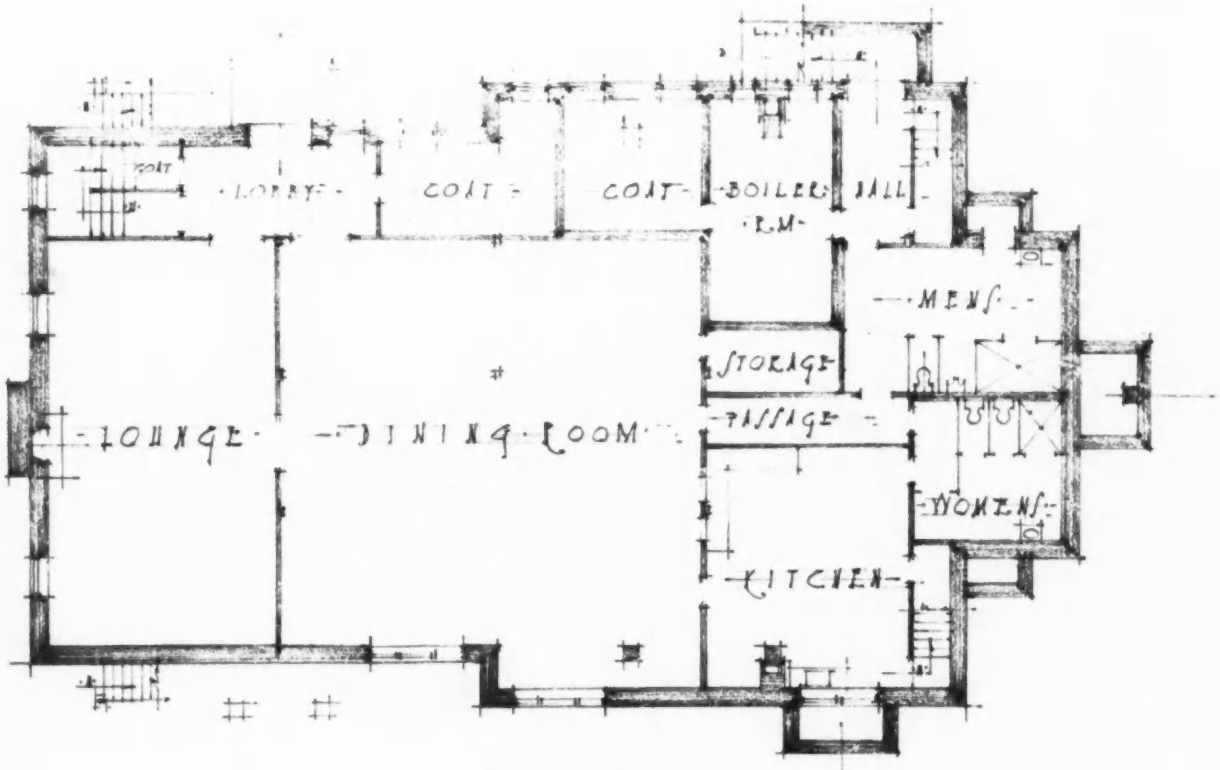


Photo. Van Anda

Kent Community House, Kent, Connecticut
CHARLES W. WALKER, ARCHITECT



First Floor Plan

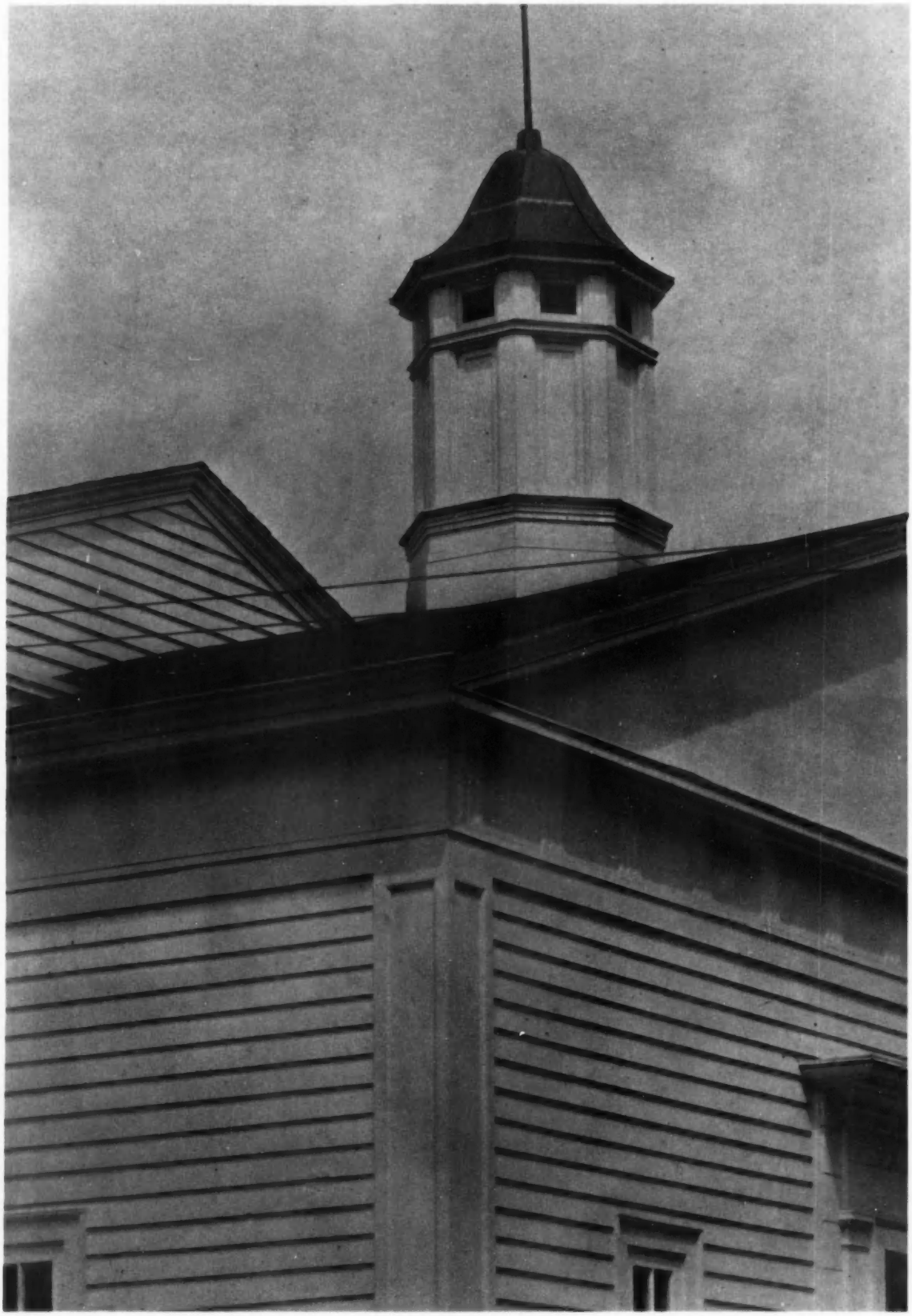


Basement Floor Plan

Kent Community House, Kent, Connecticut
CHARLES W. WALKER, ARCHITECT

Photo, Van Anda

Entrance Detail
Kent Community House, Kent, Connecticut
CHARLES W. WALKER, ARCHITECT



Photo, Van Anda

Gable Detail and Belfry
Kent Community House, Kent, Connecticut
CHARLES W. WALKER, ARCHITECT

THE AMERICAN WOMEN'S ASSOCIATION BUILDING

BENJAMIN WISTAR MORRIS, ARCHITECT*

THE PROBLEM:

To house independent self-supporting women in attractive quarters at not too high a cost.

•

THE APPROACH:

A financial schedule was first set up on the basis of the land, building cost, operating cost, and financing.

The protracted financing negotiations gave the architects three years in which to prepare their plans. A plot was first purchased on 23rd Street but it was believed a better could be had, so this original plot was sold after the present location at 57th Street had been acquired.

•

FINANCING:

In accordance with the conservative financing, the plan is such that, if at any time the Club should fail, the building could be used as a hotel of the Shelton type.

•

PLAN:

In relation to site. Permanent outside exposure is assured to all the higher portion of the building on the valuable west side (facing the river) because the owner of the adjoining property consented to a permanent building height of not more than 63 feet. Until other high buildings may be erected in adjoining blocks, the west rooms will continue to give a view of the Hudson River, and will permanently overlook 9th Avenue.

The fact that a 20 foot corner lot on 57th Street and 8th Avenue also remains in other hands relieves the A. W. A. building from the necessity of expensive set-back construction there and gives it the advantages of an inside plot.

In relation to income. The ground floor and the lower mezzanine are arranged for a maximum outside rental from stores, concessions and offices. The corridor on the ground floor (page 24) is independent of the social circulation of the building, a commercial expedient; as an arcade from 8th to 9th Avenue it adds to the business desirability of the stores. The assembly room produces a fine rental from the surrounding concessions, and is arranged so that it can be rented for banquets to outside organizations; it seats 1200.

In relation to convenience. 1257 bedrooms; 1257 baths; every room an outside exposure. On the sub-basement floor note swimming pool, also foot-pool through which swimmers pass on their way in.

Set-backs are few and large; therefore inexpensive and usable (see page 21).

Inside court permits a garden.

•

MASS PRODUCTION:

A full-sized typical room was set up and a close study was made of the occupant's needs and of the most efficient arrangement for mass-production. It was determined, for example, that though the space was strictly limited it would still permit bridge games, etc. The ducts between rooms (page 26) carry heat and piping; they are of minimum size to perform this service and also to give room for mechanical repairs. The entire nest of piping connections for every room was assembled at the factory and the final connections were quickly made at one point for every 2 rooms. The layout at the job was trued with surveying instruments.

•

INTERIOR:

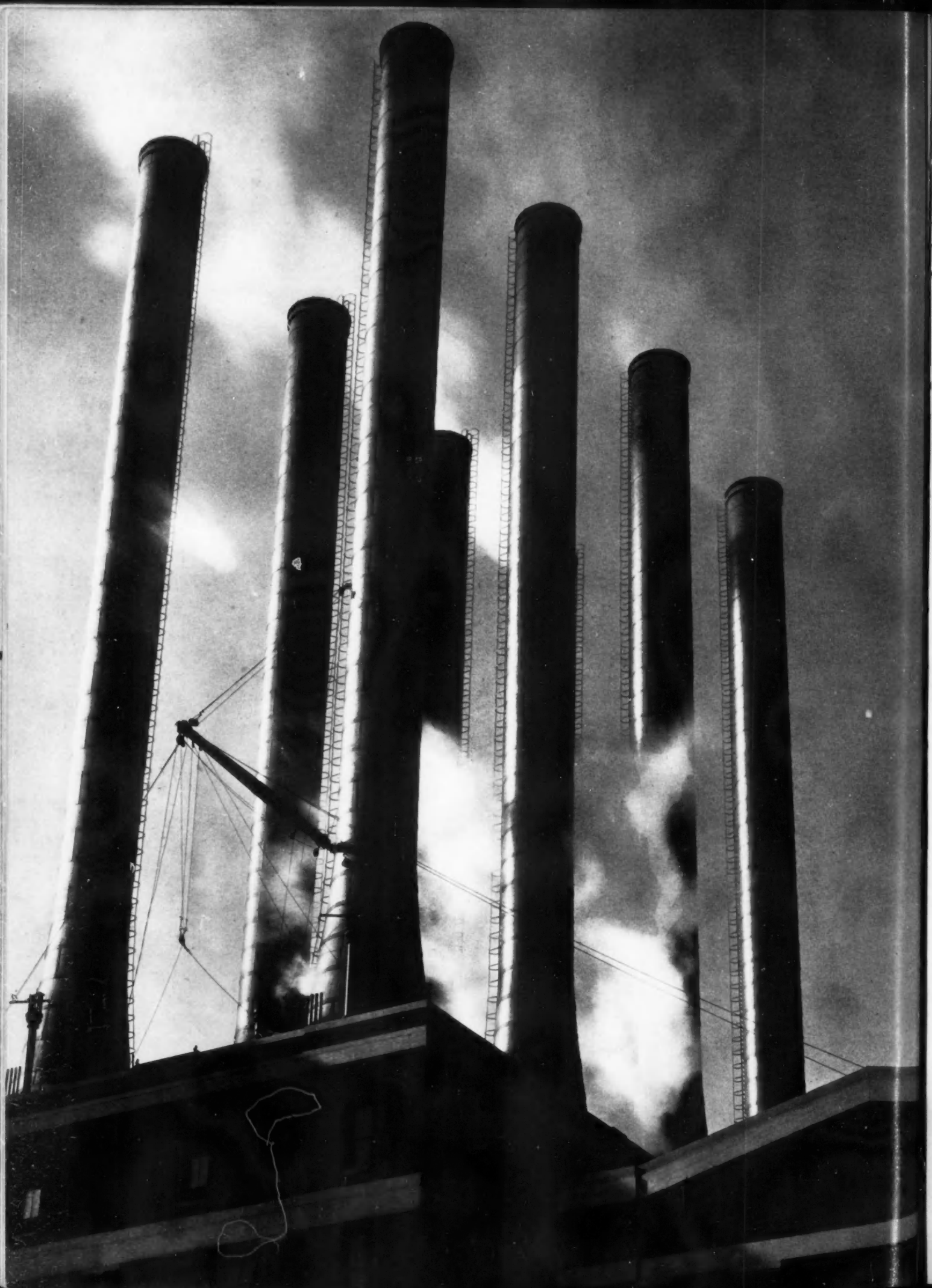
Though the bedrooms in plan are nearly all alike, every room has been finished in a different color. The usual treatment is of rough plaster with bright primary hues.

•

CONSTRUCTION:

The usual steel skeleton with veneer of 4 x 8 brick facing and back-up of hollow tile; 2 coats of mastic in the upper portion.

*Plans and photographs will be found in the gravure section beginning on page 21.



STANDARD PRACTICE IN THE DESIGN OF CHIMNEYS AND FIREPLACES

The following information on chimney and fireplace construction applied to dwelling, apartment house, school and industrial construction was compiled with the assistance of heating engineers, architects, the American Oil Burner Association, the National Board of Fire Underwriters and Domestic Engineering.

Chimneys for Oil Burners

For oil-burning equipment used in connection with domestic heating boilers and furnaces the prime requirement is that there be uniform draft of low intensity. A chimney with ⅔ as much flue area is required for an oil burner as when coal is used. There is, however, the possibility that an oil-burning plant may be forced back to using coal and therefore the inside chimney size recommended in Table A should be used as a guide. Of equal importance is the external construction above the roof. It is essential that the chimney extend at least two feet above the highest part of the building to avoid back drafts from wind currents. The top should be designed so that the flue lining extends to the uppermost point of the chimney. It is preferable to have the flue for the boiler isolated from other flues and under no circumstances should smoke pipes from other equipment, such as a laundry stove, hot water heater, etc., be run to the boiler flue.

With respect to oil burning installations in large commercial and industrial applications it is recommended that in every case the boiler and burner manufacturer both be consulted before the chimney is designed. If this is done the burner air register or ports can be correctly designed and the height and capacity of the chimney can be proportioned to give adequate draft for the maximum operating requirements and no more. Because of the fact that oil burning requires less draft and less chimney capacity than coal for an equivalent release of overhead, the cost of chimney construction can be materially reduced if this procedure is followed.*

Small house heating oil burners are frequently joined to chimneys of 40 feet, or even less, in height. The best results, especially for schools and public buildings, are obtained with chimneys about 80 feet high. This height is sufficient to generate the required intensity of draft to pull gases through the boiler and breeching; greater heights are seldom necessary.† Where chimneys are of greater height the excess draft can be reduced by a damper.

Table B on page 46 is plotted to cover sizes of chimneys from 30 inches to 10 feet in diameter and boiler horsepower up to 6,000.

* American Oil Burner Association, Inc., New York City.
† *Domestic Engineering*, September 21, 1929. Page 155.

CONSTRUCTION OF CHIMNEYS

All chimneys shall be of brick or stone laid in Portland Cement mortar, reinforced concrete (in earthquake regions) and should extend at least 3 feet above the point of contact with a flat roof or 2 feet above the ridge of a pitch roof, and shall be properly capped with terra cotta, stone, or other approved incombustible weatherproof material.

Brickwork or reinforced concrete of smoke flues of all boilers, furnaces, large cooking ranges, shall be at least 8 inches in thickness and lined with flue tile. Walls of smoke flues used exclusively for ordinary stoves or open fireplaces shall be not less than 4 inches thick and lined with flue tile. Brick set on edge shall not be permitted in chimney construction.

Where two or more smoke flues are contained in the same chimney, the walls between the several flues shall be not less than 4 inches thick. The walls of stone smoke flues shall be 4 inches thicker than required for brick or reinforced concrete. No smoke flue shall have smoke pipe connections in more than one story of a building.

Every smoke flue contained in a chimney shall have an area of at least 64 sq. inches and shall be lined with hard burned terra cotta or fire clay flue lining made smooth inside. The flue lining shall start from the bottom of the flue, or from the throat of the fire-

TABLE A

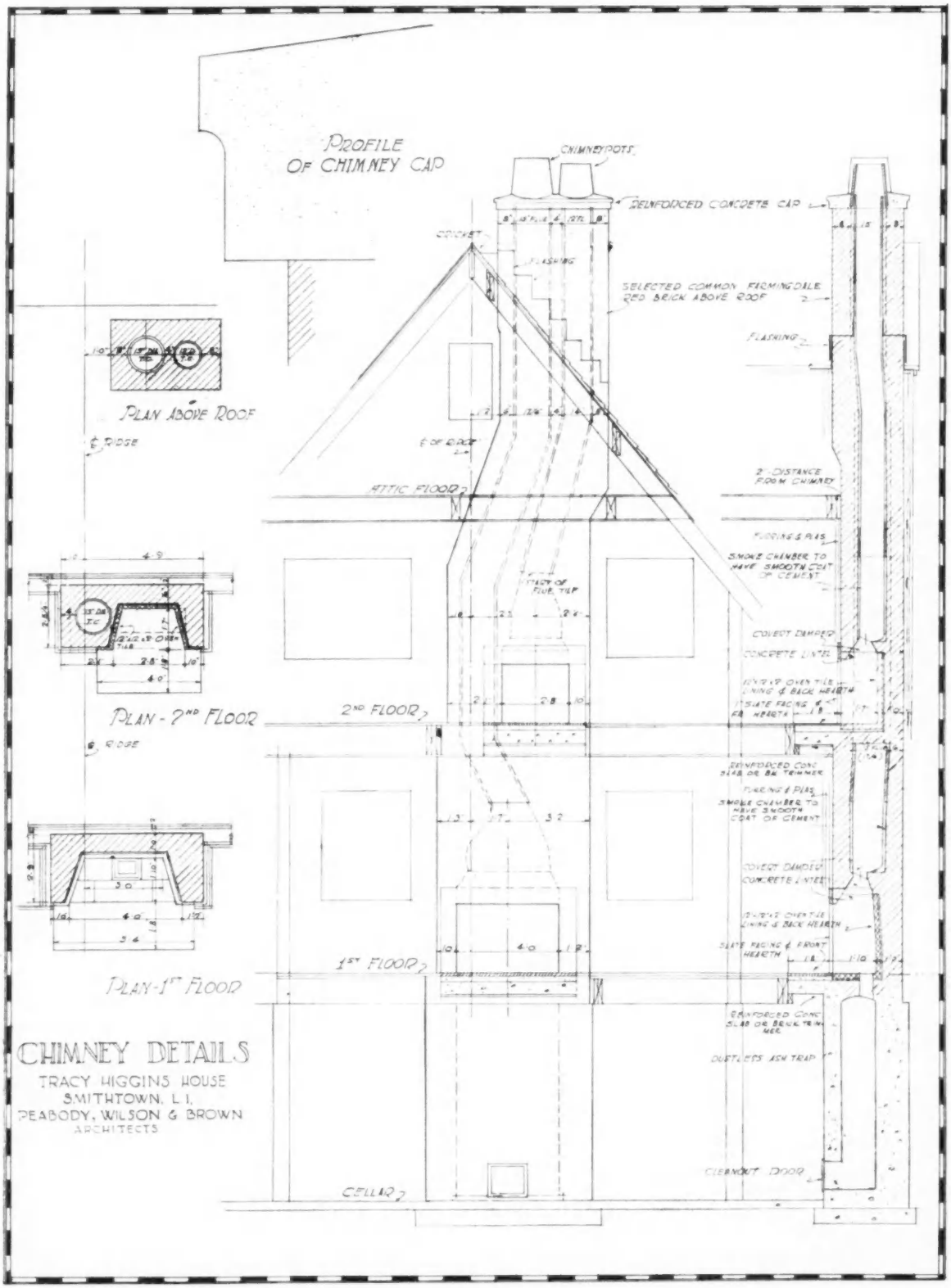
Minimum Chimney Flue Sizes and Heights Recommended for Furnaces and Low Pressure Steam and Hot Water Boilers

Area dimensions given are inside measurements of masonry walls of the chimney

Warm Air Furnace Capacity in Leader Pipe sq. in.	Boiler Capacity Hot Water Rating sq. ft.	Boiler Capacity Steam (Direct) Rating sq. ft.	Dimensions inches	Height feet
To 450	To 700	To 450	8 x 12	35
800	900	600	8 x 12	35
1000	1100	700	8 x 12	40
	1500	1000	12 x 12	35
	2500	1500	12 x 12	40
	4000	2500	12 x 16	40
	5800	3600	16 x 16	45
	7300	4500	16 x 20	50
	8700	5400	20 x 20	55
	10000	6400	20 x 24	60
	12000	7400	24 x 24	65
	14000	8400	24 x 28	65
	15000	9400	28 x 28	70
	17000	10400	28 x 32	70
	19000	11400	30 x 30	70

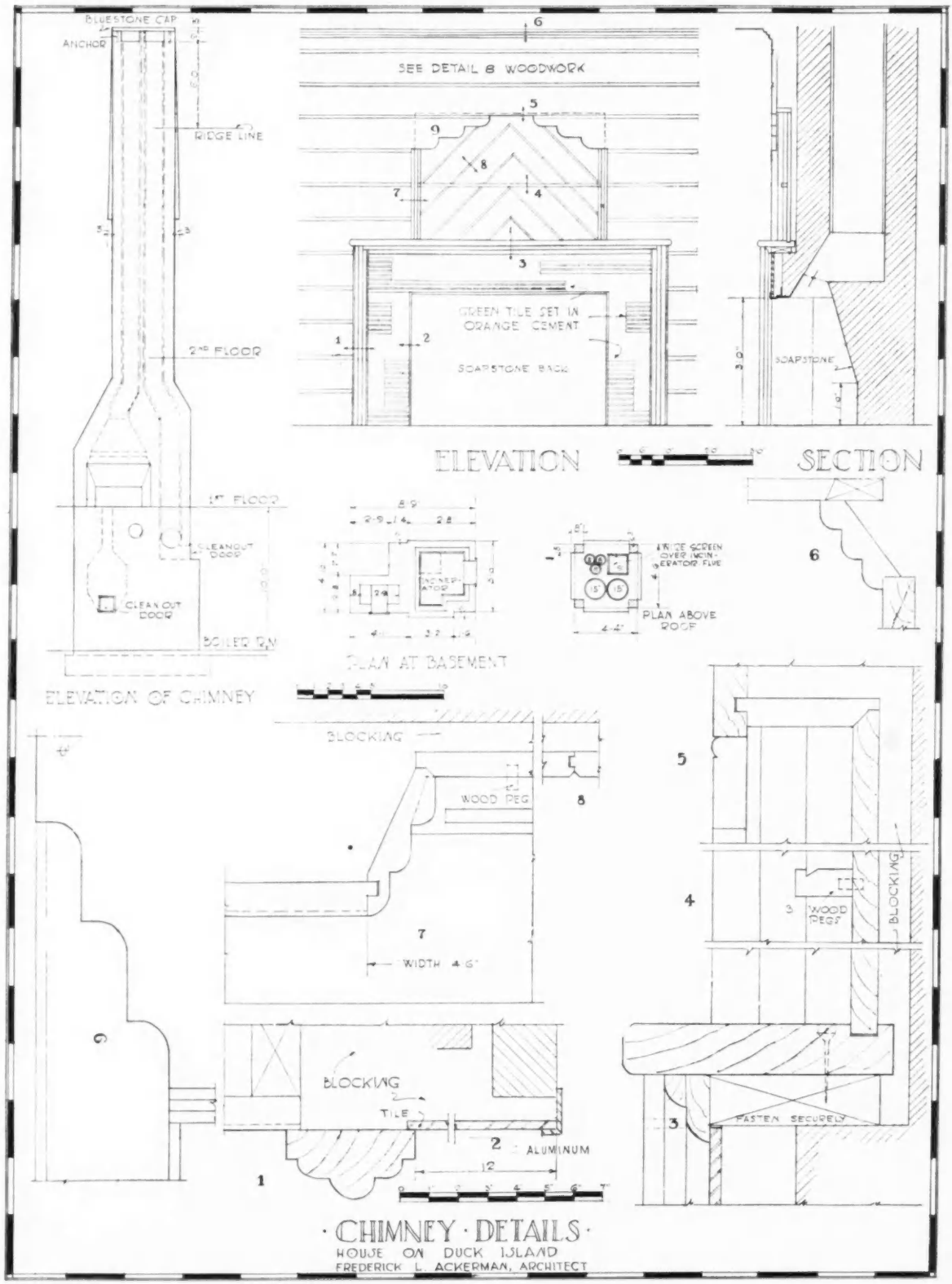
Handbook of Domestic Oil Heating, 1930.

ON OPPOSITE PAGE: FORD PLANT CHIMNEYS
Photograph by Charles Sheeler



CHIMNEY DETAILS OF APPROVED CONSTRUCTION

Note section above fireplace opening
with firechamber lined with oven tile



FIREPLACE AND CHIMNEY DETAILS

Six flues are grouped in single chimney stack with wire screen over incinerator flue. Fireplace opening is lined with soapstone

place, and shall be carried up continuously throughout the entire height of the flue. If the thickness of the masonry surrounding the throat is less than 8 inches in any part, the lining shall start at bottom of the lintel. The ends of the sections of all such lining tile shall be laid on cement mortar and the tile shall be built in as the flues are carried up.

No parging mortar nor plaster shall be used on the inside of any fireplace, chimney or flue.

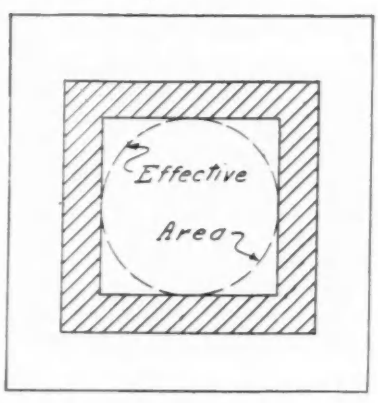
Chimneys for High Buildings

Where the height of a building requires that a chimney be built much higher than the installation requires, then allowance must be made for excessive draft. Practically, this is no disadvantage as excess draft can always be brought down by the introduction of a damper which, when held partially closed, will introduce sufficient resistance to offset the excess of draft. It is better, however, to introduce this increased resistance by reducing the size of chimney, thus cutting down the installation cost.*

Chimney stacks for large industrial boilers shall extend at least 10 feet above the highest point of any roof within a radius of 50 feet and no woodwork shall be within 3 feet of any part of such chimney.

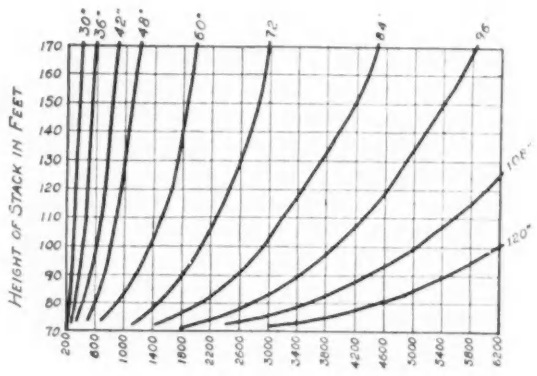
Shape of Flue

The circular flue has been determined from experience to be the most efficient but because of construction difficulties the square or rectangular flue is in more general use. The loss in effective area in a square or rectangular flue is not so great as was once generally supposed. Because of the spiral action of smoke it was common practice to figure the effective area of a square flue as the area of an inscribed circle within the square. This meant that the area which would be considered of real value for the flow of gases would be only 78 per cent of the area of a square flue. It is now accepted that a 10 per cent allowance for angles is ample for a satisfactory draft. The ordinary flue, when of rectangular shape, should never have the long dimension over three times the length of the short dimension; two times the short dimension is preferred.



H. L. ALT
In *Domestic Engineering*, p. 53, Oct. 19, 1929

* *Domestic Engineering*. Page 97, Oct. 19, 1929.



– TOTAL HORSEPOWER (BOILER) DEVELOPED –
CHIMNEY SIZES FOR OIL BURNING

Domestic Engineering, p. 155, Sept. 21, 1929

TABLE B

Increase Flue Area Above Sea Level

Flue area must be increased with a greater elevation above sea level because of more rarefied air. Also the height of the chimney must be increased. The following correction should be made to the area to allow for higher altitude.*

	Add Per Cent		Add, Per Cent
At Sea Level	0	At 4,000 ft	16
At 1,000 ft	3½	At 5,000 ft	20
At 2,000 ft	7	At 6,000 ft	26
At 3,000 ft	11	At 8,000 ft	37

FIREPLACE CONSTRUCTION

All fireplaces and chimney breasts where mantels are placed, whether intended for ordinary fireplace use or not, shall have trimmer arches or approved fireproof construction supporting hearths. The arches and hearths shall be at least 20 inches in width, measured from the face of the chimney breast. The arches shall be of brick, stone, hollow tile or reinforced concrete of approved thickness. The length of the trimmer arch and the length of the hearth shall not be less than the width of the chimney breast. The hearth shall be of brick, stone, tile or other approved fireproof materials. Firebacks of all fireplaces shall be of solid masonry not less than 8 inches thick.

The inside area of chimneys used for fireplaces should approximate an area of 1/10 the area of the opening of fireplace into room. If the fireplace opening in the room is 3′ wide and 2′ 6″ high (an area of 1080 sq. inches), then the flue area should be 1/10 of 1080=108 sq. inches. A 12″ x 12″ flue tile is recommended because this size of standard tile has an inside area approximating the 108 sq. inches. (See Shapes of Flue.)

* Harold L. Alt. *Domestic Engineering*. Nov. 16, 1929. P. 102

All fireplaces should be equipped with standard dampers with lever control at side of chimney breast.

It is extremely important to construct the fireplace in accordance with the details shown in drawings that accompany this article. The thin arch above fireplace opening and the shelf at back of damper are located so as to eliminate diverting of smoke into room.

Trimmer Arch

All fireplaces and chimney breasts shall have trimmer arches or other approved fire-resistive construction supporting hearths. The arches and hearths shall be not less than 20 inches wide measured from the face of the chimney breast, and not less than 12 inches wider than the fireplace opening on either side. The arches shall be of brick, stone or hollow tile, not less than 4 inches thick. A flat stone or a reinforced concrete slab may be used to carry the hearth instead of an arch if it be properly supported and a suitable fill be provided between it and the hearth. Hearths shall be of brick, stone, tile or concrete as may be specified. Wood centering under a trimmer arch shall be removed after the masonry has thoroughly set.

Mortar

Mortar used between the joints of flue linings and in the portions of a chimney above a roof or otherwise wholly exposed to weather shall be mixed. (1 part Portland Cement—3 parts Sand.)

Fire brick used for the lining of flues or facing the interior of fireplaces shall be laid in *fireclay mortar.*

All mortar used in chimney construction, except as specified above, shall be not leaner than the following mixture by volume:

1 part Portland Cement
1¾ part Hydrated Lime*
6 parts Clean Sand

Smoke Test

All flues to which large ranges, heating furnaces, boilers, automatic gas water heaters or fireplaces are to be connected shall be subjected to a smoke test before acceptance, but the test shall not be made until the mortar has thoroughly seasoned. The method of test is to build a smudge fire at the bottom of the flue and while the smoke is flowing freely from the flue, close it tightly at the top. Escape of smoke into other flues or through the chimney walls indicates openings that shall be made tight before the chimney is accepted. The test shall be made by the mason contractor in the presence of the Building Inspector or other official having jurisdiction, and of the owner or his representative.†

* In lieu of hydrated lime, slacked putty lime may be dissolved in the mixing water.

† "A Standard Ordinance for Chimney Construction." Page 11.

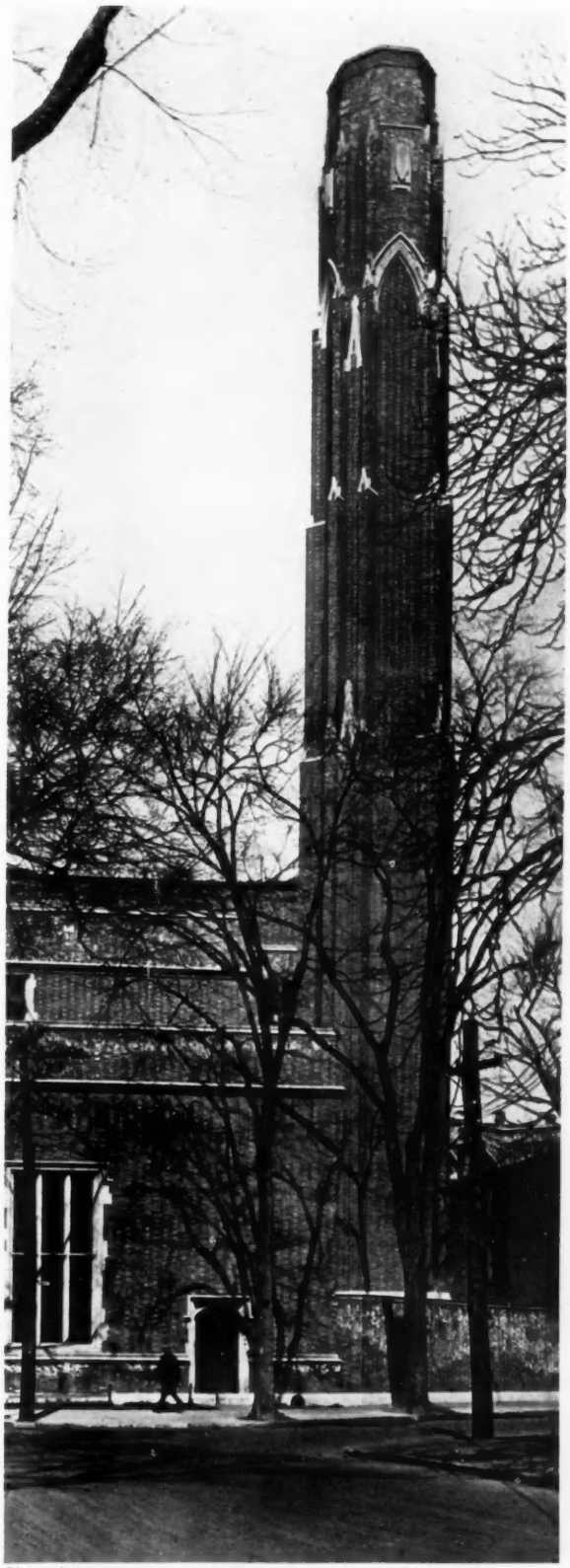
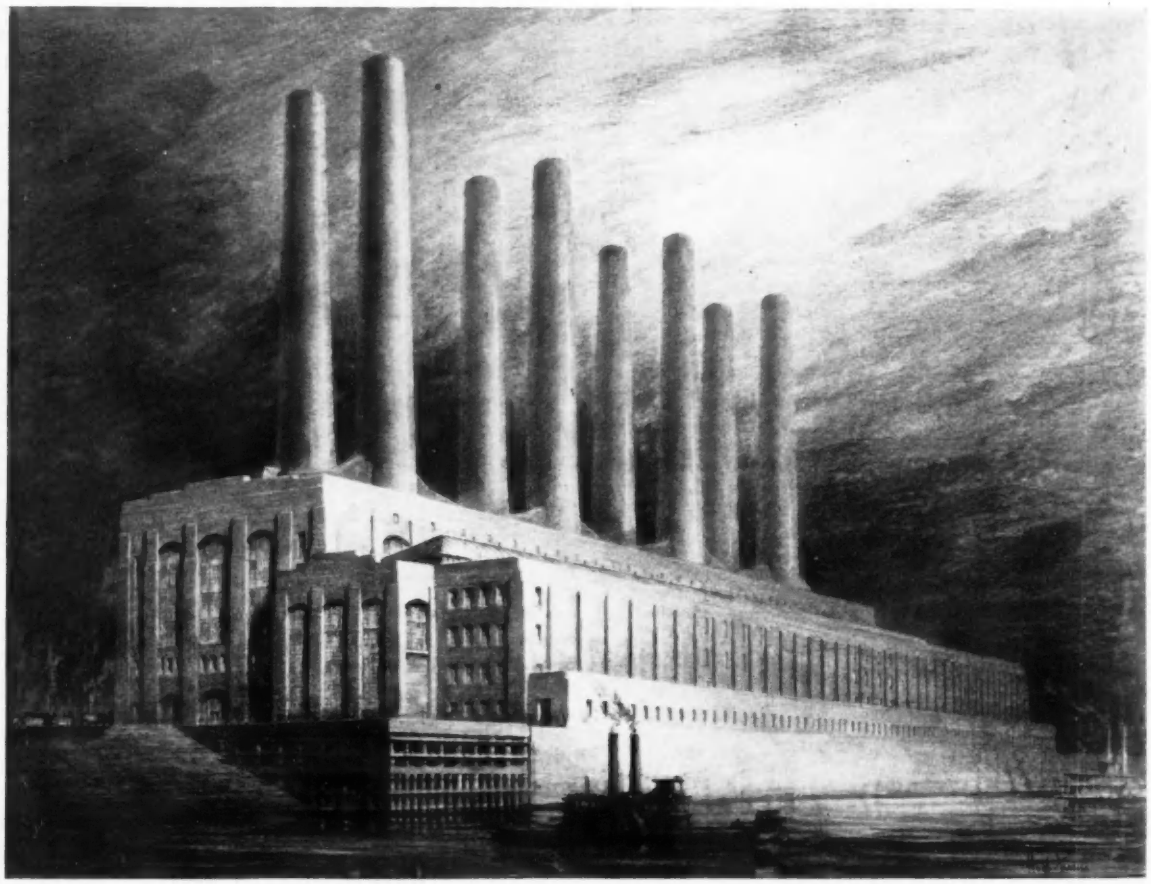
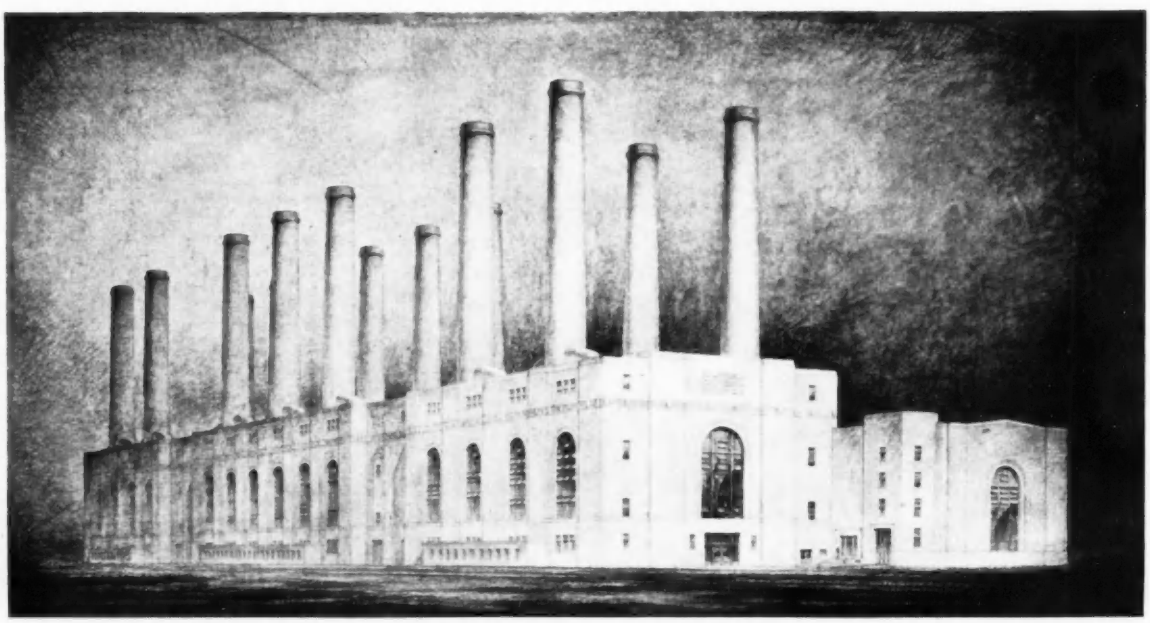


Photo. Clark

YALE UNIVERSITY POWER HOUSE
DAY AND KLAUDER, ARCHITECTS



CAHOKIA POWER STATION, EAST ST. LOUIS, MO.
MAURAN, RUSSELL AND CROWELL, CONSULTING ARCHITECTS



PROPOSED STEAM PLANT, SOUTHERN CALIFORNIA EDISON CO., LONG BEACH, CAL.
STONE AND WEBSTER, INC., ENGINEERS

KEEPING THE ARCHITECT EDUCATED

ARE architects as a professional class opposed to post-graduate study? In a canvass made of 424 graduates of the past fifteen years, from eight of the schools of architecture of America, only fifteen architects (less than 4 per cent) returned to schools in pursuit of advanced study. Compared with graduates in medicine (with over 32 per cent returning for specialization) the architect appears to accept his education as complete with the awarding of his degree; or, by circumstances, he accepts foreign travel and office experience as all that is required to "top off" his formal training.

The value of foreign travel to the young architect today has been diminished because of the altered character of American design and because of an increasing emphasis given by offices to economic and practical requirements of buildings. Several scholarship students abroad at this moment are chafing under the two or three years that they are required to spend in Europe; they feel that they are losing contact with what is being done in America, and that one reaches the saturation point after a year of continued travel. The preparation of laborious *envois* drawings of palaces and town halls is becoming increasingly irksome.

Office experience is unquestionably necessary to the training of the young architect but most architects cannot advance by their own experience alone. As pointed out by Robert D. Kohn at the last Convention of The American Institute of Architects, "office experience is excellent but we have very poor methods of interchanging experience, of letting each other know what each has so learned. If the medical man were to take as little care to follow up what his professional associates were discovering, what the medical research men were ascertaining, if he read as little in the medical journals about what the other medical men were working out as we architects do to find out what the other man is doing, he would be considered hopelessly behind his time."

Adult architects who desire to specialize in some branch of their practice will find that graduate courses for specialization are non-existent in the American college and university. This leaves the school of experience as the sole source of advanced training open to the ambitious architect. It is obvious that something should be done by our profession to develop a scheme of instruction which will keep architects abreast of progress in construction, design and economics. This advanced training, currently known as adult education, would be in the nature of "re-exposure" to scientific data and recent developments. It is also to enable mature individuals to meet more successfully the newer problems which have arisen with changes in thought and practice due to research and new discovery.

An educational program formulated to assist the adult architect could comprehend one or more of the following endeavors:

1. Schools of architecture could provide graduate study in special branches with special emphasis given to current trends in design, construction, the business of architecture, social sciences related to housing and building.

2. The American Institute of Architects could develop a scheme of adult education through its Chapters and also by widening the scope of its annual convention, which would permit a more systematic interchange of ideas than now exists. Information

could be imparted under the direction of specialists in allied fields as well as by architects. Obviously such study should be made available with the least possible interruption to office routine.

3. The establishment of a summer or winter school of instruction to which architects may go for brief periods of special study.

An experiment in adult education is now being made by the Columbia University Club. This organization has instituted five courses; in finance and banking, international relations, economics, psychology and social science. There is one meeting in each subject every week at which a Columbia Professor informs hard headed business men of the newer developments in his particular field. The experiment is proving so successful that class groups were limited to an enrollment of twenty for each course and in spite of an entrance fee of thirty dollars. As reported by the *Columbia Alumni News* the "alumni go back to school—and like it."

A. Lawrence Kocher.

"THE HOUSES IN WHICH MIDDLETOWN LIVES"

HOW fares the average American under architecture? What does it do to his own home, what does it mean to him where he comes in most intimate contact? The humblest small-town architect knows, but the architectural magazine does not quite say. Professional literature is concerned with inventions, with new construction, and usually with rather large undertakings: but what a walker sees on the street also includes all the tall errors of the past, the remnants, the jerry-building, the helter-skelter of small wretched units. It is to painters such as Edward Hopper and Charles Burchfield that the American historian of the future will have to turn for a transcription of *this* reality. But recently the complete scene in a middle-sized American city has been splendidly put into print by two sociologists in their book called *Middletown;* and in this book is drawn together, from the real estate records and the figures of the telephone companies and the tax returns and census reports and other similar sources as well as from personal interviews, a vivid picture of the home of the average American.

GLOUCESTER STREET
Painting by Edward Hopper

"Middletown's 38,000 people live in 9,200 homes: 86% of these homes are in one-family houses, each standing on a separate patch of ground, the latter called, with increasing significance in view of its shrinkage in size, a 'yard'; 10% are in two-family houses, a more common type since 1890 because building costs have risen; 1% in apartments, and 3% over stores . . . The life of a house in Middletown is thirty to fifty years."

Now what has architectural progress done for Middletown? In the newer houses, quite a lot. For instance, a Middletown builder estimates "that the majority of houses

constructed during the last ten to fifteen years have at least 50% more glass surface than in 1890. More air can be let in from without today because more heat can be secured within." And, whereas in 1890 there were not over two dozen complete bathrooms in the entire city, and a leading citizen thought it important to enter in his diary that a neighbor "has a hydrant for his house," today "all new houses, except the very cheapest, have bathrooms, and many old houses are installing this improvement rapidly."

But such indications fall wide of telling the whole story. Despite the professional attention now given to masonry, Middletown is practically built of wood. It remains true, as for the working class, that it "still lives in the base-burner and unheated bedroom era," and as for sanitation, that "many homes still lack not only bathroom, but, in January, 1925, approximately one in four of all the city's dwellings lacked running water. *According to the City Engineer, only two-thirds of the houses had sewer connections in 1924.*" The industrial section is still composed of "bare little one-story oblong wooden boxes with a roof and with partitions inside making two to four small rooms," half-lit, musty, bare.

Now why is it that homes are so difficult to get and so poor, at the height of an era of technical invention, and that there is a building shortage in Middletown just when building and loan associations have made the terms of financing the easiest? It is largely because the straight line to a home is obstructed and detoured by a maze of institutional devices. This is the combination of forces necessary in Middletown to produce a home of the more ambitious sort:

"The site was part of a new subdivision exploited by local real estate men. A landscape architect was brought from Chicago to lay out the subdivision. The house was built by the owners of the real estate. The project was financed by the local banks. The plan was made by an architect. Construction was under the general supervision of a man whose business is described in the local directory as 'Designer and Builder, Real Estate, Investments, General Insurance.' The above man is busy at many things and therefore had another man on the job as general supervisor of work and materials. The foundation was laid by a bricklayer sub-contractor's men. The stone base topping the foundation was sub-contracted to another contractor and his men." Other individual subcontractors are listed, respectively, for plumbing, painting, tinware, and heating.

Is it any wonder that, since cheapness can be secured only by skimping one of these many factors, the luxury of artistic design is the first to go, and that architects have lost more and more homes to the jerry-builders?

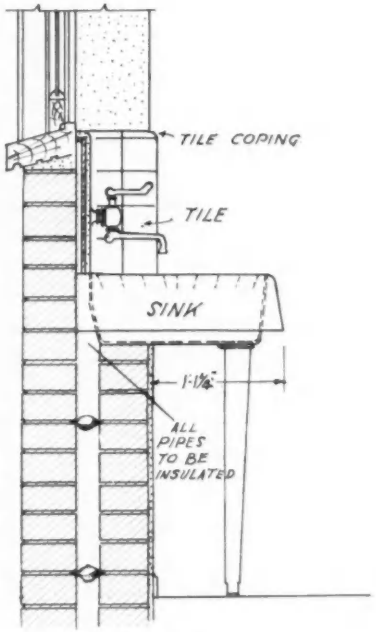
Now a straight line to a home is so universal and permanent a human requisite that it can confidently be prophesied that such a tangle as this will not always continue. There is a direct invitation here to large manufacturers to cut through the Gordian knot by simplification, just as in the automobile industry 1,600 kinds of steel tubing have been reduced to 210, and 800 sizes of lock washers to 16, and uncounted acts by the consumer of specifying and ordering have been brought down to the single act of purchase.

If architects are to retain a hold on the mass of building with the approaching direct methods, or, better, if they are to gain leadership, should they not—as they have already done in Europe—give serious consideration to the problems of the "minimal house," of community planning—of the straight line, in short, to a home?

Perhaps this is not a problem of "Architecture": but an art that drifts away from the mass of the people is in danger not only of losing its volume but of becoming sterile.

DOUGLAS HASKELL.

NOTES ON DRAFTING AND DESIGN

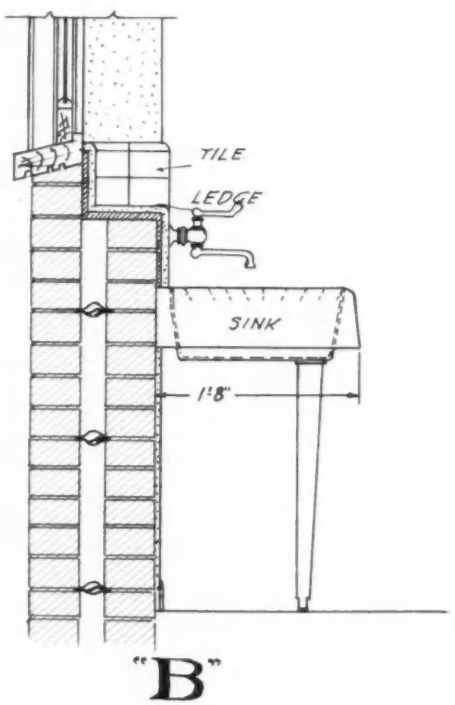


"A"

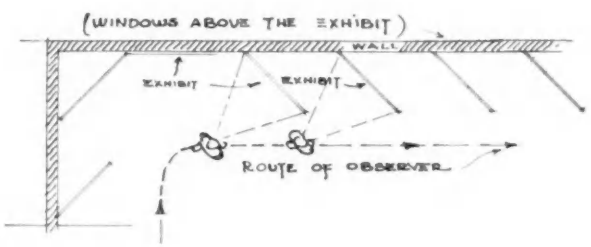
LESS SPACE FOR THE KITCHEN SINK:

With hollow wall and veneer wall construction it is possible to reduce the encroachment of a kitchen sink upon floor space by building the sink and drainboard into the wall as illustrated in A. By this method 6¾ inches of space is saved. It makes for rigidity and permits the lining of the space at the back and ends with glazed tile. In northern climates all pipes within walls must be thoroughly insulated against freezing.

Where space is less important, a shelf for accessories, faced with tile, can be built above the sink as in Scheme B. (Suggestion of Edwin Gunn, Architect, in *The Architect and Building News*, London.)



"B"



HANGING ARCHITECTURAL DRAWINGS:

A novel method of exhibiting architectural drawings was adopted at the exhibition in connection with the second International Congress of Architects held October 24–26 at Frankfurt-am-Main. Drawings were mounted on large zinc sheets, about 6 feet high, hung diagonally to the walls. This arrangement, with windows overhead, made good lighting possible and it also kept visitors moving along near the exhibits, not in the middle of the room.

PLANTS IN A DOUBLE WINDOW:

The architect Karl May of Frankfurt, Germany, has worked out an interesting fenestration in the *Palmengarten* (a tearoom, restaurant and ballroom *ensemble*). Between two systems of glass windows, continuous horizontally on a cantilever construction, plants and vines are allowed to grow. Essentially this idea is that of a greenhouse, elongated and made integral with the facade. To a person sitting at a table in the restaurant the effect is pleasing, especially at night when concealed lighting gives the flowers and plants a fitting display.

•

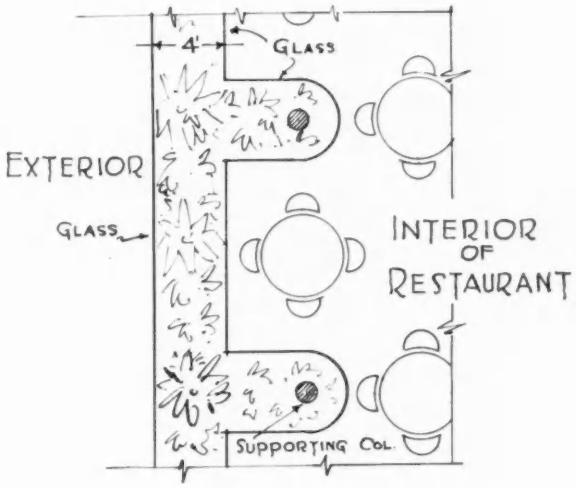
THE HEATING WITHIN TWO WALLS OF GLASS:

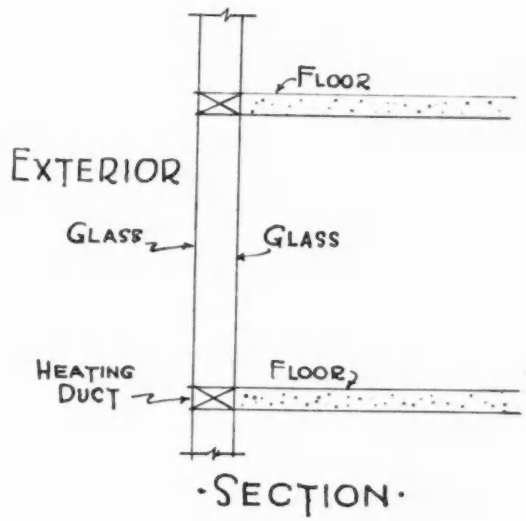
Heating of rooms by heated air within two outer walls of glass, as proposed for the New York Life Insurance Building by Corbett, Harrison and MacMurray, Architects, has already been experimentally worked out by Le Corbusier, according to Norman Rice of the office of Le Corbusier and formerly instructor at the University of Pennsylvania. The building with cantilever construction is now being built in Moscow. It has double glass wall surfaces, fixed so as not to be opened. Between and at each floor level are heating ducts, thermostatically controlled to maintain a constant temperature. The interior thus remains constant, and it is said that there is slight heat loss under this system. There are no heat coils or ducts other than these to supply heat to the interior. Air for ventilation is refiltered.

•

GLASS "SLATE"

The office of Charles Z. Klauder, Philadelphia, has made use of glass in place of slate over a limited area of roofs of dormitories in order to admit light to stair halls on top floors. This is done where an unbroken slope of roof is preferred to dormers. The glass is specially made to slate sizes; it is green in color, of the same thickness as heavy slate, and is attached by means of copper wire.





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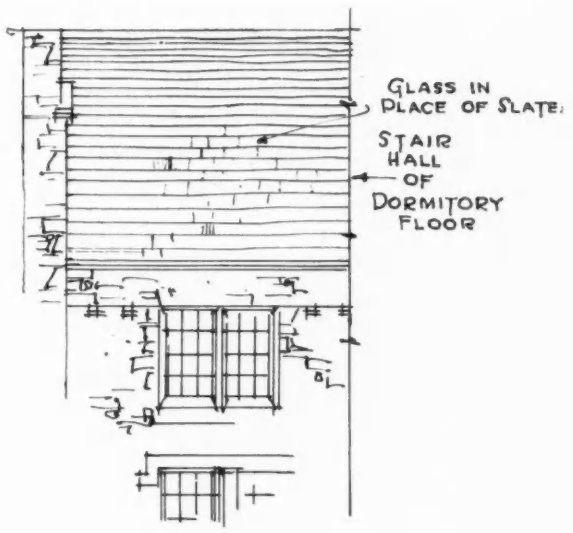
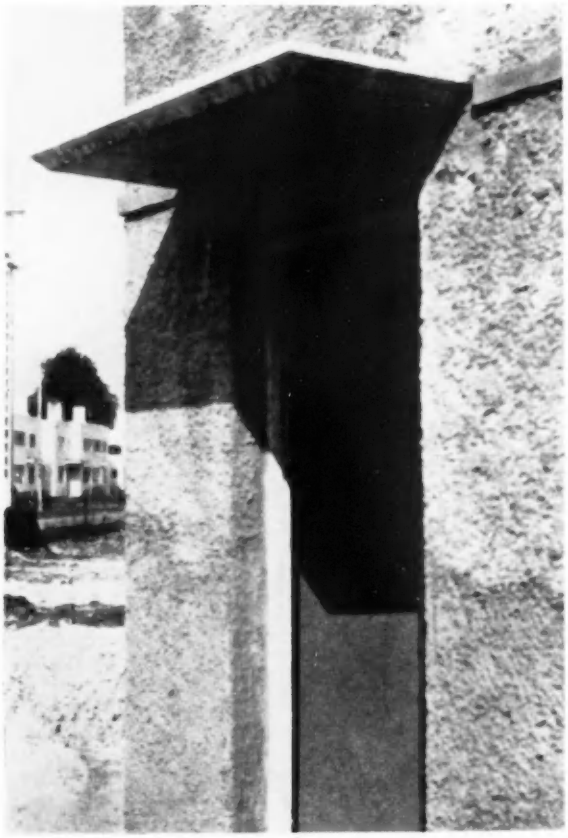




DOOR-HOOD

SILVER END GARDEN VILLAGE
THOMAS S. TAIT, ARCHITECT, OF
SIR JOHN BURNET AND PARTNERS

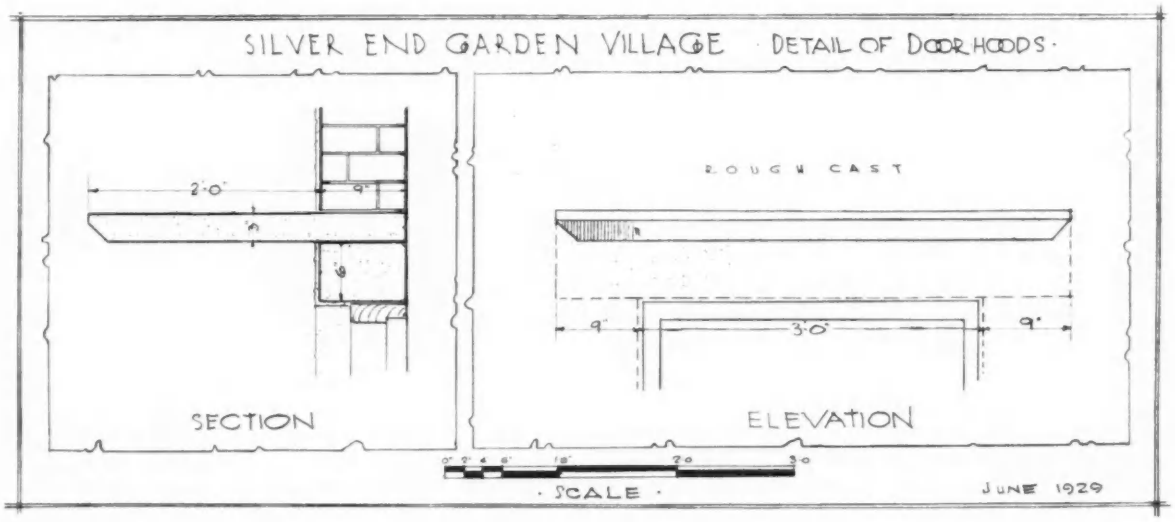
RUBBER STAMP INDICATION

Mart Stam, Architect, has adopted rubber stamps made to scale to indicate beds, chairs and toilet fixtures "to eliminate unnecessary and tedious drafting." Also, for every job a stamp is made of the block plan which then appears on every drawing. An arrow indicates to what part of the building each drawing refers and thus a draftsman seeking a certain sheet loses no time trying to interpret every drawing.

Colored tags clipped to the drawings serve to keep different jobs separate and also are quickly identified.

ONE CONCRETE SLAB

A door-hood of single slab of reinforced concrete at the garden village of Silver End, England. This industrial village was erected by the Crittall Manufacturing Company midway between their Braintree and Witham factories, where employees can live in fresh air and comfort and within easy distance of their work. The majority of houses are sold on a twenty-year purchase system, the weekly rental being approximately $4.00 for a non-parlor type and $4.50 for a parlor type; this includes water, ground rent and improvements.



BULLOCK'S WILSHIRE DEPARTMENT STORE LOS ANGELES

JOHN AND DONALD B. PARKINSON, ARCHITECTS

LOCATION:

On Wilshire Boulevard, a principal motor artery for fashionable traffic and outside the congested business district.

•

THE PROGRAM:

The erection of a five-story building with provision for a future increase to ten floors.

•

PLAN ARRANGEMENT:

The building is not a department store in the ordinary sense but really consists of five floors of specialty shops operating as a single business unit. The building is placed on a third of a city block, the balance serving as free parking area for customers, who, as they drive to the motor entrance at the rear, are relieved of their cars by attendants. This motor entrance and the main entry from Wilshire Boulevard give access to a great central hall. This hall is treated as a clean cube with high marble walls accented by vertical light panels of glass and metal. Each specialty department is equipped with lounging chairs, smoking equipment, mirrors, and it is an important feature of the selling plan that each department has a complete line of accessories to the merchandise in which it specializes, thus enabling the purchaser to be completely outfitted at any place in the store. All cash and wrapping desks are concealed as are also the stock rooms.

•

INTERIOR DESIGN:

The interiors were designed by Feil and Paradise, collaborating with J. D. Peters, Architect.

The sports-wear department is panelled in sycamore trimmed with copper bands. The floor is of travertine. The lighting is in the ceiling and columns. The west wall is decorated by Gjura Stojana with an abstract "sports" mural.

The riding shop is narrow and high, its white walls contrasting with dark oak cabinets and decorated reliefs by the sculptor, Meyer Kreig.

The lingerie department on the second floor has walls faced with glass plates covering gold and silver mirrors. The millinery salon is treated in silver and crystal while the fur room has walls of cork panels and carries strong red and black color in furniture and rugs.

The third floor departs from the individualized treatment of the specialty shops on the first and second floors. Devoted to college and high school girls' wear, it is treated openly as a whole. Lighting is incorporated in the ceiling. Natural color walnut, maple, and satin wood are used here, and carpet patterns and ceiling panels aid the traffic from room to room.

The fourth floor, designed by David Collins, is devoted to the child. It contains many small rooms such as the book and toy departments, children's and infants' wear.

On the fifth floor are located a large tea room, candy counters, and lounges.

•

MATERIALS:

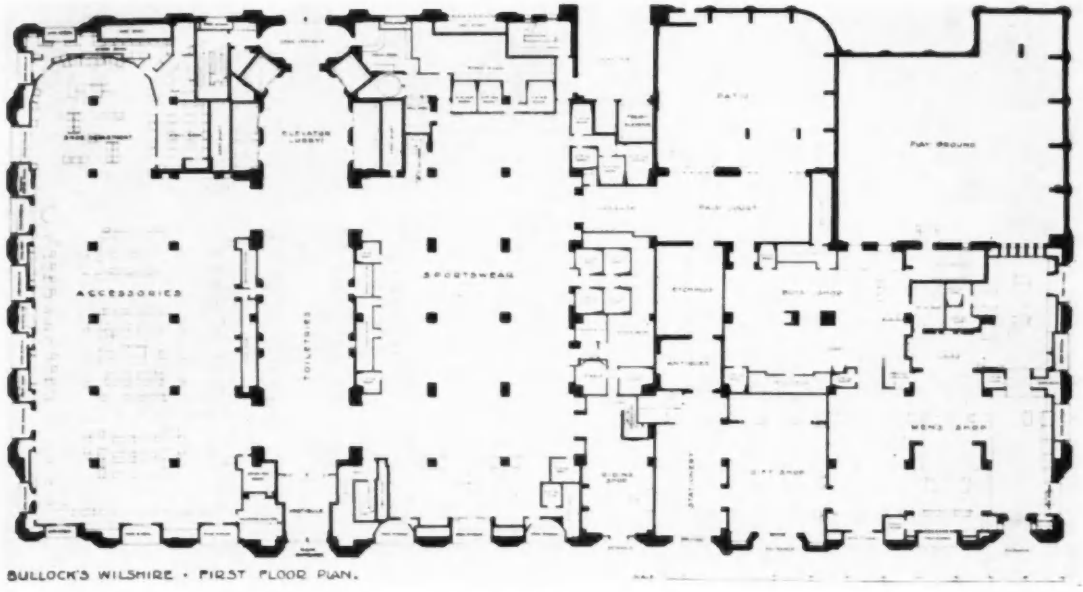
The exterior face of the building is terra cotta, trimmed with deep-green copper spandrels.

Interiors are variously treated with metal, marble, plaster, wood, and glass.

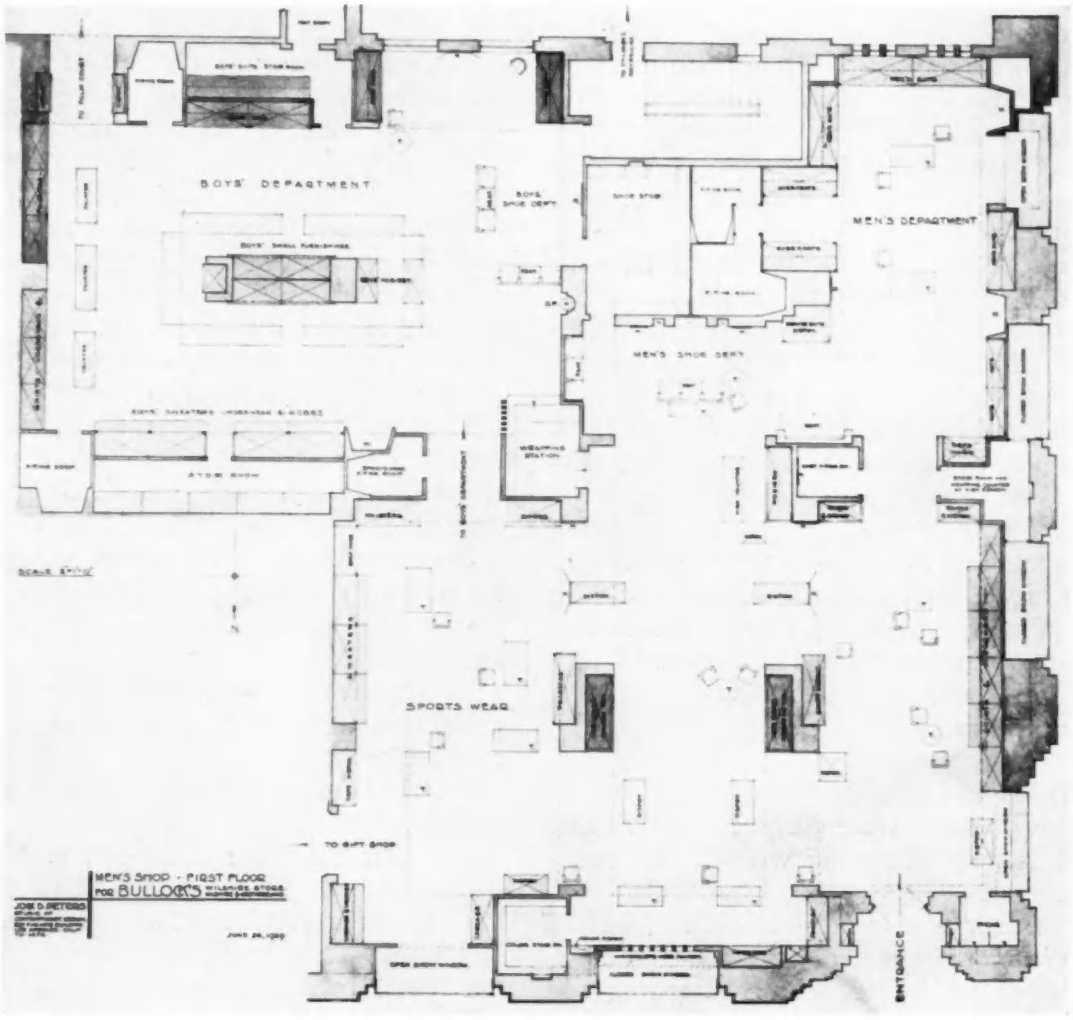
Elevator doors are of copper, brass, and gunmetal.

Floors of travertine and of linotile in gray and black.

Fur room walls of cork.



FIRST FLOOR PLAN



MEN'S SHOP ON FIRST FLOOR

BULLOCK'S WILSHIRE STORE, LOS ANGELES

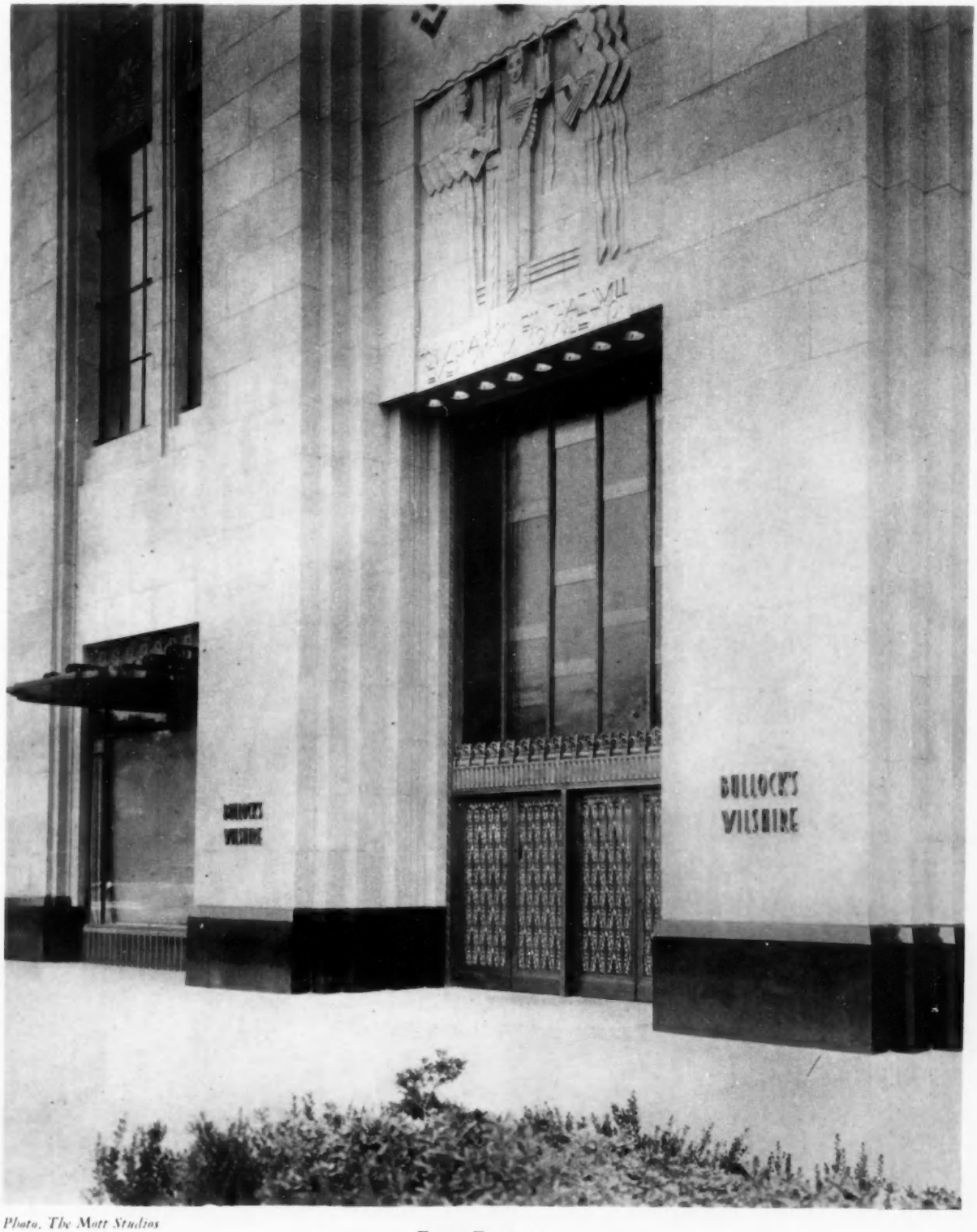
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo. The Matt Studios

View from Westmoreland Avenue
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo, The Matt Studios

Angle with Set-backs
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS



Photo, The Mott Studios

Front Entrance
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo. The Mott Studios

Sports Wear Department (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo, The Mott Studios

Sports Wear Department (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo. The Mott Studios

Corner of Riding Shop (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

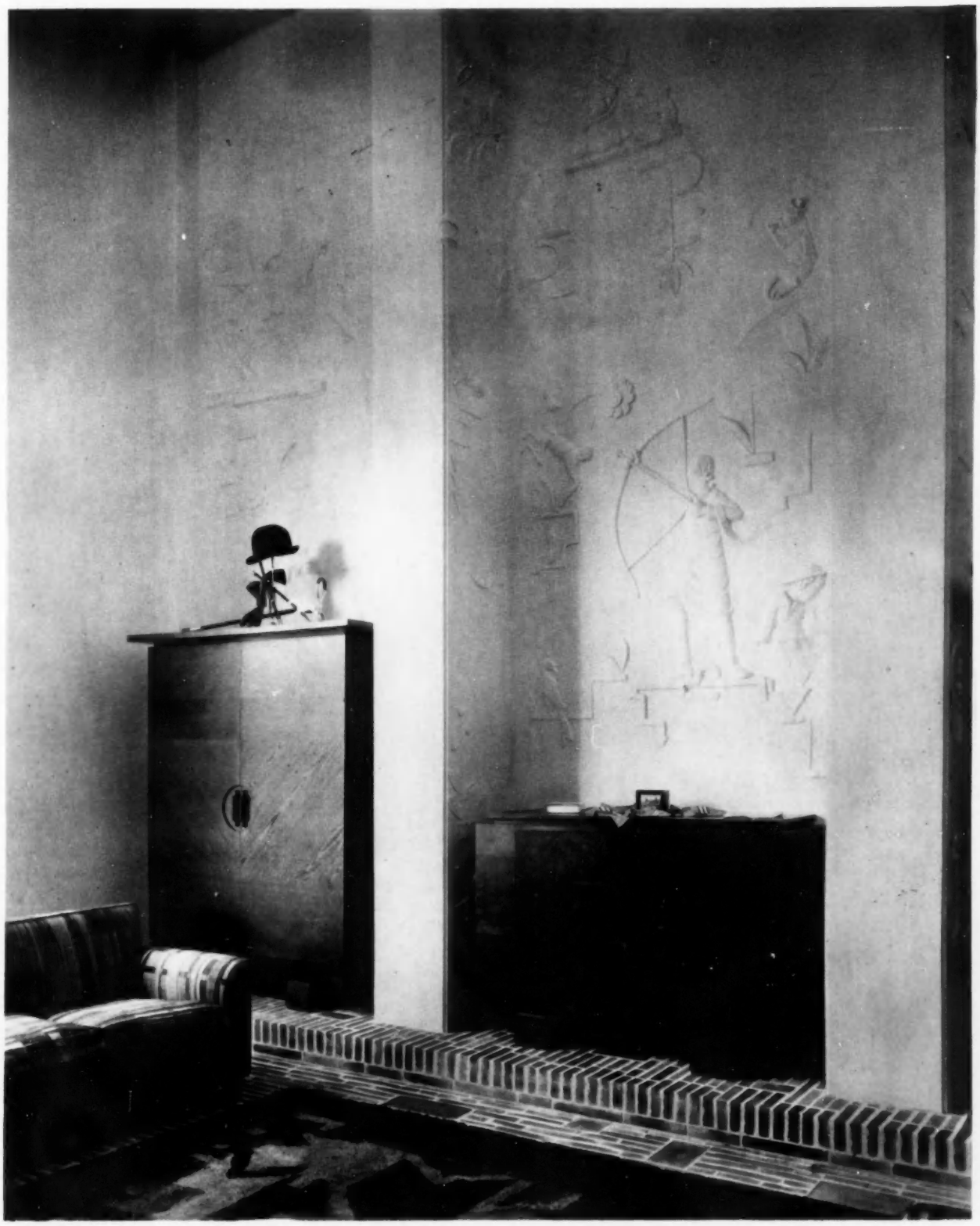


Photo. The Matt Studios

Corner of Riding Shop (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo, The Mott Studios

Northeast Corner of Lingerie Department
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

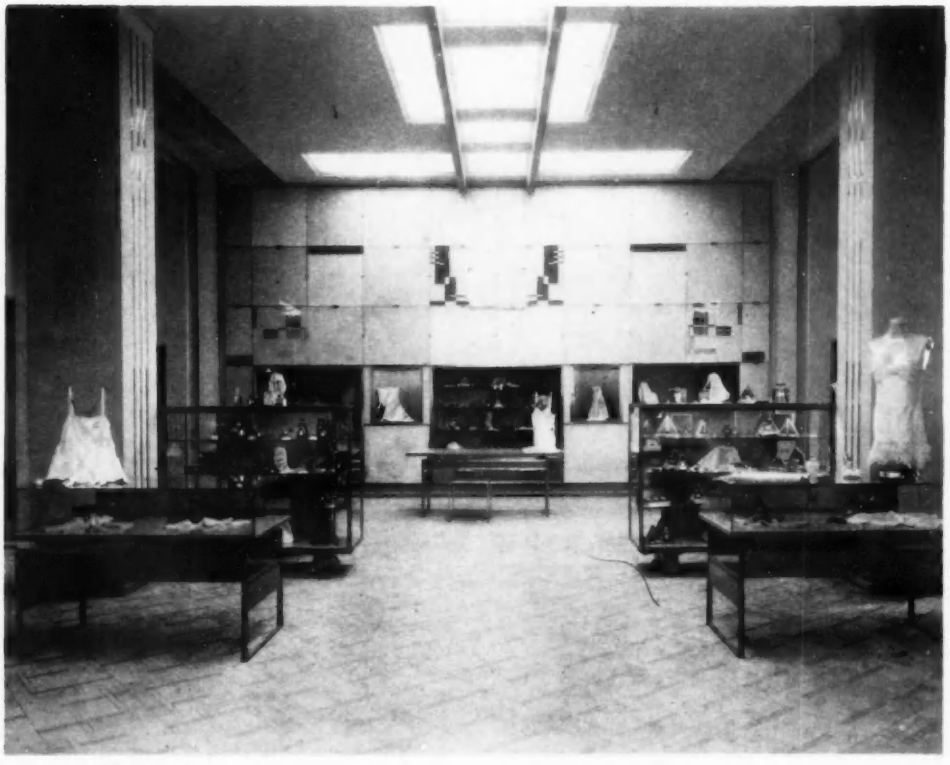


Photo. The Mott Studios

South Wall of Lingerie Department (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo. The Mott Studios

Display Cases in "Collegienne" Shoe Department (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo. The Mott Studios

"Collegienne" Shoe Department (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

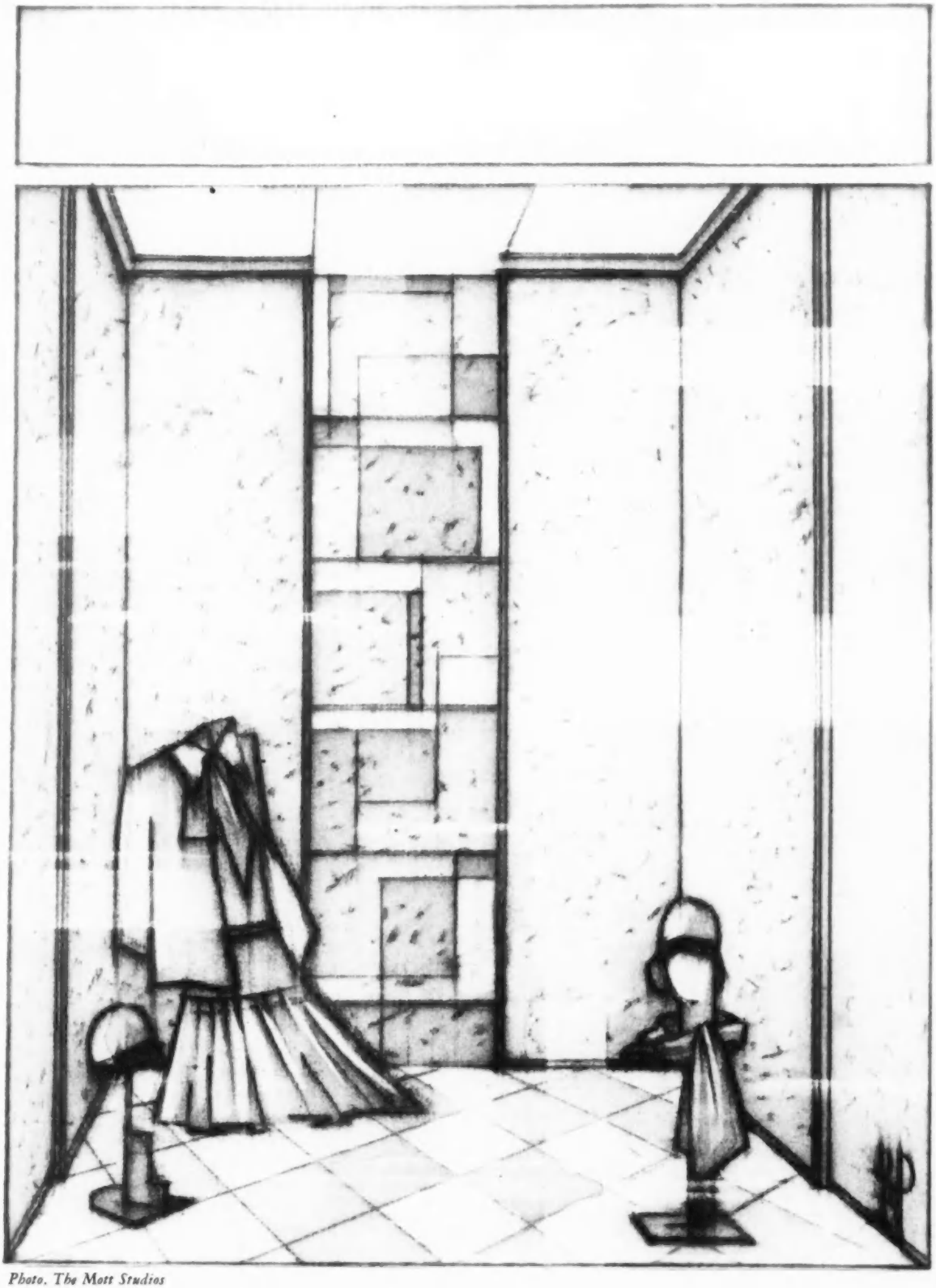
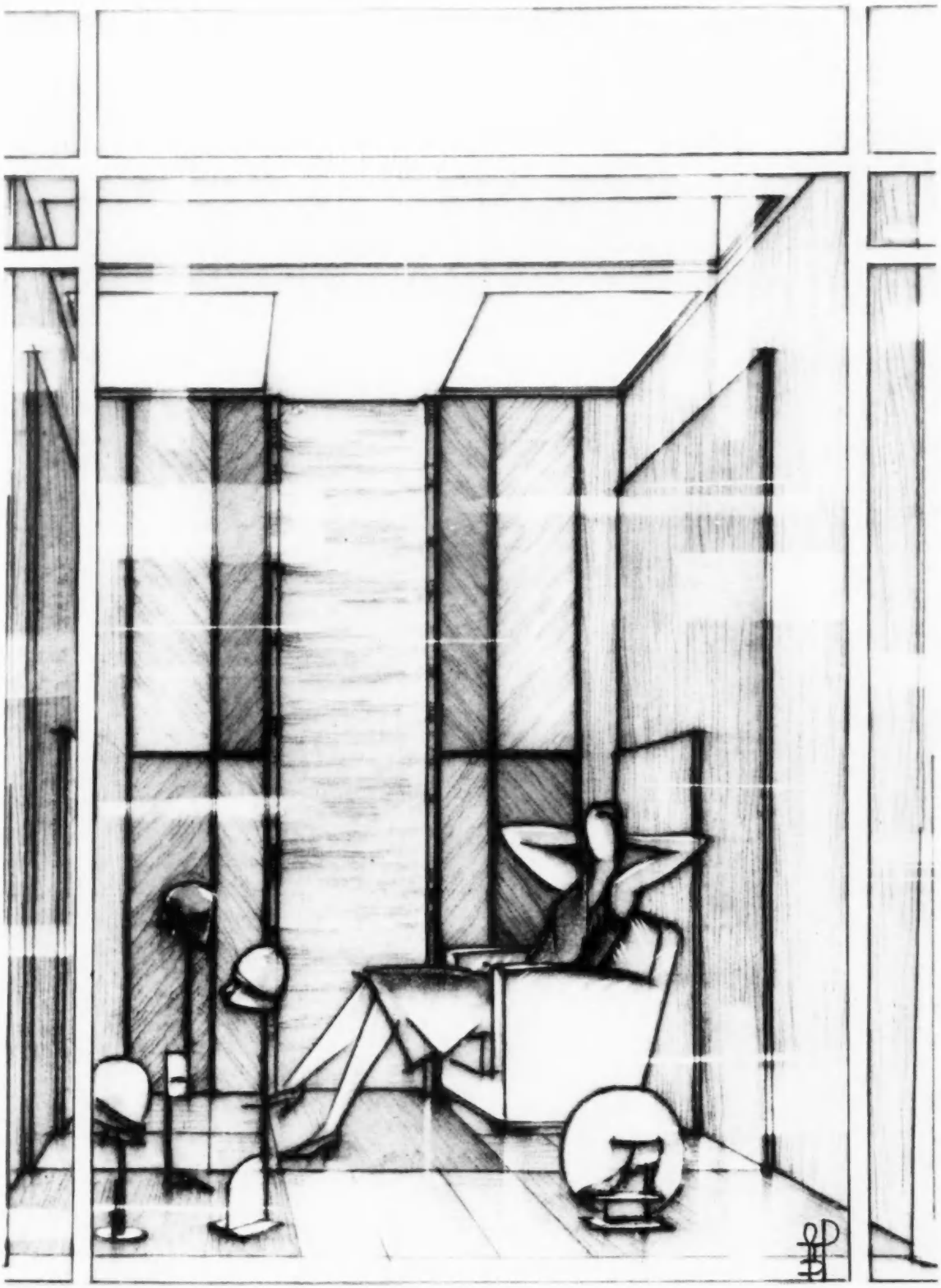


Photo. The Mott Studios

Show Window (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS



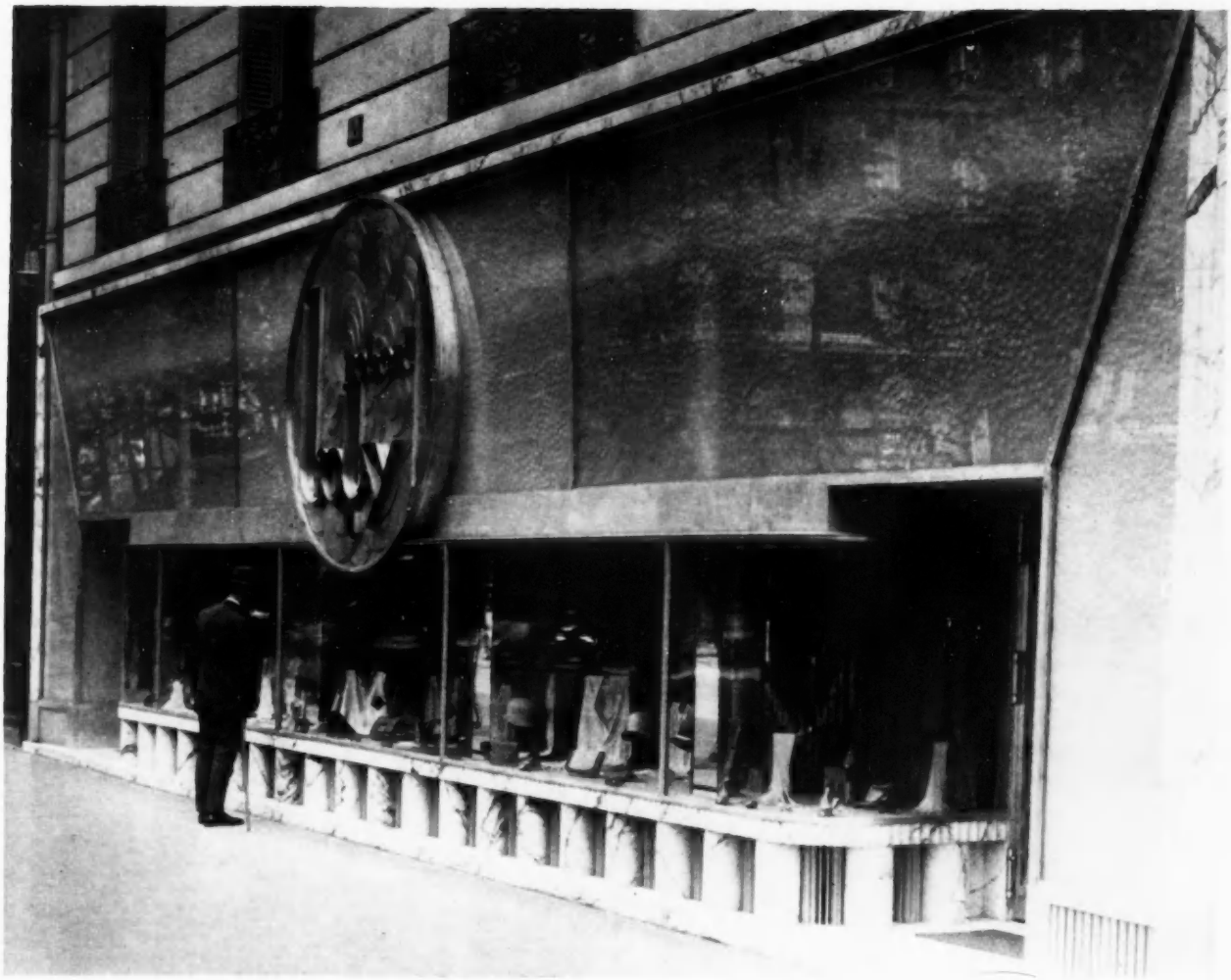
Photo, The Mott Studios

Show Window (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Photo. The Mott Studios

Display Cases in Toiletries Department (Designed by Jock D. Peters, Associate of Feil and Paradise)
Bullock's Wilshire Department Store, Los Angeles
JOHN AND DONALD B. PARKINSON, ARCHITECTS

PARIS SHOP FRONTS AND INTERIORS



Robert Bely Department Store, Paris
PIERRE PATOUT, ARCHITECT
√ Greenish tinted glass, black and white streaked marble, chromium plate

Perfume Department
Robert Bely Department Store, Paris
PIERRE PATOUT, ARCHITECT
Walls stone-gray, wood-work black, upholstery gray and buff streaked mixture; floor covering rubber with design in light gray, slate and blue

Lingerie Department
Robert Bely Department Store, Paris
For color scheme, see opposite page

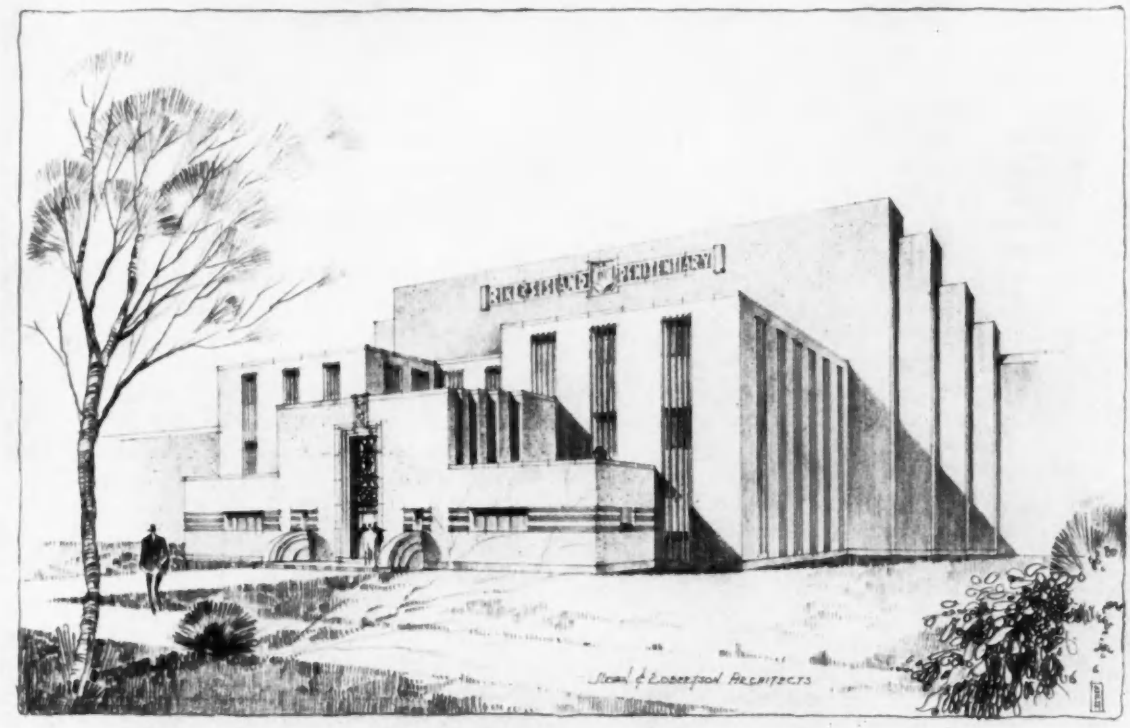
Shoe Shop "Enzel" Paris
RAYMOND NICHOLAS, DESIGNER
Stucco Walls and Stand with aluminum alloy strips; ceiling illumination through white opaque glass, shoes in wall recess are on marble blocks, upholstery green velvet

B. J. Klotz & Co., Decorators, Paris; B. J. Klotz, Designer
Facade in Oak

THE ARCHITECTURAL RECORD

TECHNICAL NEWS AND RESEARCH

JANUARY · 1930



Riker's Island Penitentiary, New York, Sloan and Robertson, Architects

PRISON ARCHITECTURE

Previous Studies: Swimming Pools, Storage Garages, Apartment Houses, The Small House, Airports, Store Buildings, Kitchen Planning, Sound Proofing the Hospital, Planning High School Buildings, New Construction Methods, The Country House, Planning the Art Museum.

Future Studies: Principles of Remodeling, The Motion Picture Theatre, and others to be announced.

PRISON ARCHITECTURE

BY ROBERT L. DAVISON

With the Cooperation of
THE NATIONAL COMMITTEE ON PRISONS AND PRISON LABOR
and

PRISON AUTHORITIES: *Dr. E. Stagg Whitin, Executive Director National Committee on Prisons and Prison Labor; Sanford Bates, Superintendent of Prisons, Department of Justice, Washington, D. C.; Dr. A. W. Stearns, Commissioner of Correction, Commonwealth of Massachusetts; B. L. Scott, formerly Director of Restoration Welfare Department, State of Pennsylvania, now Executive Secretary, Pennsylvania Prison Society, Philadelphia; Colonel J. D. Sears, Board of Managers, New Jersey State Prison, Trenton, and Dr. Hastings H. Hart, Consultant in Delinquency and Penology, New York City.*

ARCHITECTS: *Charles R. Greco, Boston and Cleveland; Alfred Hopkins and Associates, New York City; Sloan and Robertson, New York City; Zimmerman, Saxe and Zimmerman, Chicago.*

We wish to express our thanks for drawings and other data furnished by the Federal Government, and the States of Massachusetts, New York, New Jersey, Pennsylvania, Illinois, District of Columbia; also drawings and photographs from the offices of several architects.

PRISON design in America is extremely backward. This is largely due to the method of procedure. The architect commissioned to design a jail or prison (generally without previous experience) studies the limited and meagre architectural literature available on the subject. He visits the latest and best prisons that he can find. In every one of them he may be guided by the local authority who will expound on the wonderful locking devices, tool-proof steel and escape-proof qualities of his respective jail, but will frown upon and denounce as impracticable any suggestions that may be made to improve the prison through radical departure in plan or construction from the type he is used to in his State. The architect as a rule does not dare to go contrary to those who *ought to know* and he carefully avoids experiment. He therefore plans his new building on the lines of those already built which are recommended as being the best of the type required.*

We hope that the principles given here, with endorsement from leading prison executives and architects who have done prison work, will help the architect in reaching, *and getting approval of, a logical solution.*

The architect, rather than merely visiting a great number of prison buildings, should first become thoroughly acquainted with modern thought on detention of those awaiting trial and the treatment of criminals.

* Responsibility for the continued use of the cage type of cells, with their steel walls and bars and complicated locking devices, rests almost entirely with the cell manufacturers.

High pressure salesmen frequently convince prison officials that the only way to prevent escapes is to adopt their complicated steel system. These officials in turn influence the board of trustees or building committee, who, as a rule, will not consider any suggestion by the architect to improve conditions unless it is backed by the warden or jailer. Inasmuch as the warden's principal duty is to keep the men safe, regardless of their condition after release, and inasmuch as he is convinced that the only safe method is the present inside cell block, it is very difficult for the architect to improve conditions.

I. PURPOSE OF PRISONS

In addition to providing security, prison architecture reflects the following two opposed theories of crime and punishment:

> *"To make any impression upon the minds of either convict or the public, there must be suffering (on the part of the inmate) and to make any adequate impression such sufferings as will excite feelings of terror."*[1]
>
> *"The prisoner's environment should bring out the good in him. The Penal Commission wants more of the civilizing influences of a normal community life for the prisoners of the District of Columbia."*[2]

It should be borne in mind when considering these two theories that *it is the certainty of punishment* rather than the severity of punishment which is the deterrent. Prevention of crime should be secured by our detective service and judicial procedure rather than by the use of the prison as a "scarecrow." (England with better prisons and shorter sentences has less crime.)

II. TYPES OF PRISONS

From a legislative standpoint, there are many types of prisons—federal, state, county, city and village—with such names as lockup, workhouse, prison, penitentiary, detention home, reformatory. But *from the standpoint of function* these may be reduced to *two major divisions:* (1) detention prisons and (2) prisons for individuals convicted of crimes.

From the standpoint of prison planning and management these two major divisions should be sub-

[1] Report of the New York Senate Committee. 1622.

[2] The Penal System of the Dist. of Columbia. Nat. Com. on Prisons and Prison Labor.

divided according to function. For the detention prison the sub-division will be based largely on the reason for detention (the isolation of juries or detention of witnesses) and on the type of crime for which suspects are held, with due consideration for age, sex and physical condition of the person detained.

The *type of plan required* for those convicted of crimes will depend in most cases *not on the crime* or the length of sentence, but on the classification of the prisoner according to the probability of his attempting to escape. The types of buildings within these various security divisions will be further influenced by consideration of the type of housing best suited to reforming the prisoners.

III. INFORMATION AN ARCHITECT SHOULD GET FROM THE PRISON BOARD

Before preparing preliminary sketches,* it is highly desirable that the architect first obtain from his Prison Board information on certain basic factors.

A. SIZE OF PRISON POPULATION (*For Size of Prison*)

A population graph similar to that shown should be prepared to indicate the probable size requirements of the contemplated prison.

B. LENGTH OF SENTENCES (*For Location of Prison*)

Caution in Use of Prison Statistics: There are two ways in which the population of a prison may be viewed. The first is to observe the "run of the mill," or the stream of those coming into or leaving the prison over a period of time. The second is to take the population of the institution on a typical day and to analyze the cross-section obtained. Both methods have their value but for different purposes. For example, 53.5 per cent of all sentences to the Middlesex, Massachusetts, House of Correction during 1928 were for drunkenness, but only 7% of the persons in the institution on a certain day were sentenced for that offense. In most cases the daily cross-section figure will be the determining factor in architectural problems.

Effect of Analysis on Location of Prison: A similar analysis should influence the choice of the location and also the design of the prison.

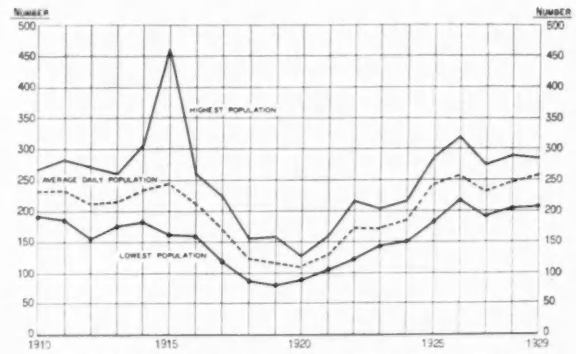
Where a considerable number of the prisoners are released within the first day or two it may be desirable to have the prison in the city or to provide two prisons, one within the city for detention purposes and for those serving under two weeks and the other located in the country for those who are serving longer sentences.

* Even before the commission is obtained, because a logical approach rather than an aesthetic appeal should help get the job.

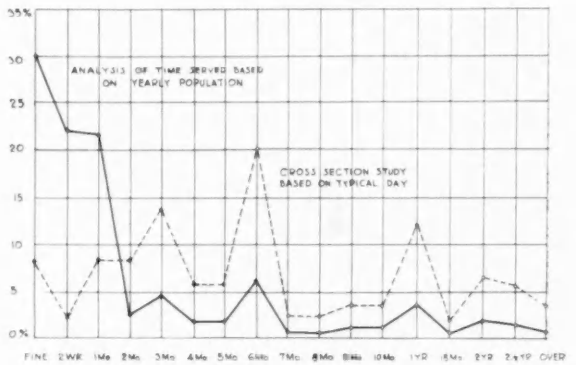
STUDIES OF PRISON POPULATION

IN RELATION TO SIZE AND LOCATION OF PRISON

Department of Correction, The Commonwealth of Massachusetts



A. VARIATIONS IN TOTAL PRISON POPULATION
(The peak in 1915 is due to wholesale arrests of bums sleeping in box-cars)



B. DIVISION OF THE POPULATION ACCORDING TO LENGTH OF TERM SERVED
—Shown in two different ways. The first, that based on *yearly population*, is misleading; the other, based on *daily cross-section*, is more dependable

1. Analysis of Time Served (Based on Yearly Population)

Time Served	Number	Totals Carried Forward
1 day	19.9%	19.9%
1 day–2 weeks	32.3%	52.2%
2 weeks–1 month	21.9%	74.1%
Over 1 month	25.9%	100. %

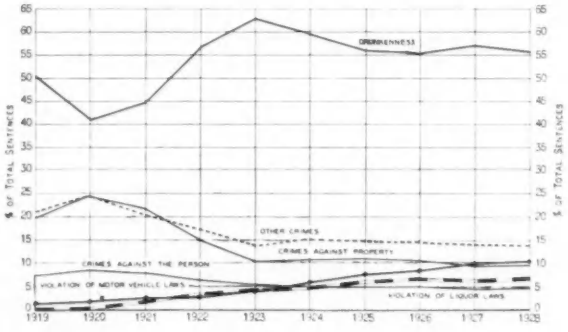
2. Cross-Section According to Length of Sentence, on a Typical Day

Sentence	Number	Totals Carried Forward
1 day	8. (Fines)	8.
1 day–2 weeks	2.	10.
2 weeks–1 month	8.3	18.3
1–2 months	8.	26.3
2–3 months	13.5	39.8
4 & 5 months	5.6	45.4
6 months	20.	65.4
7 & 8 months	2.	67.4
9 & 10 months	3.3	70.7
1 year	12.2	82.9
Over 1 year	17.1	100.

STUDIES OF PRISON POPULATION

IN RELATION TO SIZE AND LOCATION OF PRISON

Department of Correction, The Commonwealth of Massachusetts



C. DIVISION OF POPULATION ACCORDING TO CRIME COMMITTED

1. Analysis Based on Yearly Population

Offense	Percentages of Total Population	Probability of Attempt to Escape: Negligible	Probability of Attempt to Escape: Questionable or Considerable
Drunkenness	53.5%	53.5%	2.6%
Liquor laws	12.6	10.	
Motor vehicle	9.6	9.6	6.8
Larceny	6.8		
Non-support	4.8	4.8	
Assault and battery	2.9	2.9	
All other offenses	9.8		9.8
		80.8%	19.2%

2. Analysis of the Cross-Section on a Typical Day

Predatory crimes			20.6%
Liquor	15.4%	15. %	
Non-support		15.4	
Motor vehicle		11.7	.7
Assault*	10.7		
Assault with intent to rape†	8.	6.	2.
Drunk		7.	
Narcotic		2.	.8
Vagrancy and loitering		2.3	
Other offenses			6.1
		69.4%	30.6%‡

* Generally for fighting when drunk.

† Generally for relations with a mature girl under legal age who consented to sexual relations.

‡ The Massachusetts report states that the analysis of offenses committed indicated "that probably less than 15% were socially dangerous." (For a State or federal penitentiary this might be 20 to 35%). "Some of these men have been thoroughly institutionalized and have learned the advantages of being a good prisoner. As a group, however, they are the ones who will require careful supervision and for which at least a *part of the institution must be made secure. The remainder should not* require the repressive supervision which sometimes pervades a whole institution because of a small number who do need strict supervision."

C. OFFENSES COMMITTED AND PROBABILITY OF ATTEMPT TO ESCAPE (*Safe-Guards to be Provided*)

If the architect has to take maximum precautions only to prevent jail breaks of possibly 15% to 30% of the prisoners, and less precautions to prevent escape of possibly another 15% to 30%, it leaves him comparatively free to design a building which will have proper light, ventilation and heating, and will be sanitary, efficient and *economical*. What is even more important from the penological standpoint is that he can provide for the proper classification and segregation of the different classes of prisoners.

Different treatment for different classes of prisoners is highly desirable and the breaking up of the prison into small units is a mechanical device which aids in breaking up the treatment into small units.

(Further discussion of this point under Classification.)

It is quite possible that for the group not requiring special security provisions, accommodations similar to "model working men's hotels" such as the Mills Hotels, Salvation Army Barracks, etc., might be provided, with enough work so that a sentence is not a rest.

D. PHYSICAL AND MENTAL CONDITION OF PRISONERS

The length of sentence and crime committed are the dominating factors in determining the location and type of prison to be built, but the physical and mental classification of prisoners will influence the interior planning.

An estimate should be made of the number of prisoners suffering from various diseases and provision made for isolation and treatment of communicable and venereal diseases. This is especially important in women's prisons, where a considerable percentage will require treatment. (See graph and plan.)

Mental defectives and criminal insane should be kept separate from other prisoners and when possible, sent to special institutions.

E. INDUSTRIAL QUALIFICATIONS

An analysis of the industrial qualifications of prisoners, if considered in the light of the length of sentence, would indicate what prison industries were possible, but the decision as to what prison industries were desirable should be based on "State's use" market, with due regard to the possible employment of the prisoners in that industry in the same section of the country after release from prison. As the market for prison goods is generally restricted to "State's use", and is frequently affected by prison industries in other states, it is highly desirable that the architect and the Prison Board obtain expert advice on this subject. Such advice may be obtained free from the National Committee on Prisons and Prison Labor.

IV. TYPES OF BUILDINGS FOR VARIOUS GROUPS

Division of a prison into units with varying degrees of security presupposes that prisoners are properly classified upon admittance and that the prisoners will be treated in accordance with modern principles of penology. You cannot have proper treatment of prisoners without properly planned buildings, and properly planned buildings will not be satisfactory unless there is intelligent classification and handling of prisoners.

It might be suggested here that prison authorities will sometimes find it advantageous to change their administrative routine with the addition of new buildings. A routine should not dominate new plans that had its inception in the very fact that the old buildings permitted nothing better.

A. BUILDINGS GIVING MAXIMUM SECURITY

As most prisons are built on the assumption that all prisoners require maximum precautions to prevent escape, an examination of existing prisons (prison farms excluded) will indicate the type of building considered necessary to prevent prison escape. It should be borne in mind that in practically all cases the prison building is surrounded by a high wall (either the wall of a building or free standing).

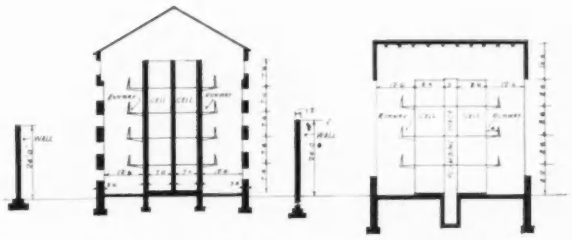
It is desirable that the group requiring *maximum* security be housed in a building connected with the classification prison, where one exists, in order that they may receive special supervision and treatment. Included in this class is provision for the dangerous criminal insane, preliminary to transfer to special prisons for this class.

These prison buildings may be roughly divided into three classes:—cell block within a cell house, cell house with cells that have windows, and a combination of these two types.

1. *The cell block* entirely free from, and yet enclosed within, a cell house may be taken as typical of American prison architecture. This type originated at Auburn, New York, about 1800 and has since been largely copied throughout the country. The earlier prisons of this type had no sanitary conveniences in the cell; many of them still use the bucket system.

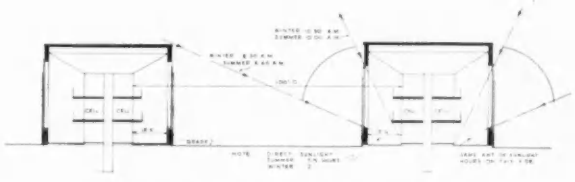
The advantages claimed for this type are that escape is made doubly difficult and administration and handling of prisoners is simplified. This type, however, is not recommended except possibly for maximum security use or for use as a punishment building within the prison, subjecting the prisoner to the demeaning effect of the animal cage type of construction.

The objection to this type is lack of direct sunlight in the cells, and faulty heating and ventilation. Hundreds of thousands of dollars have been spent on the installation of *forced ventilation* systems which are seldom used due to the cost of operation. When



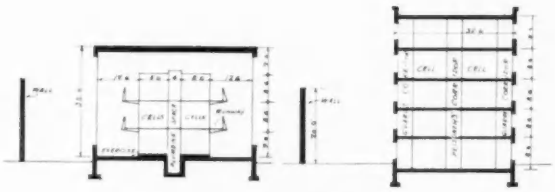
CELL HOUSE, 1820. CELL HOUSE, 1929

OLD AND NEW TYPE OF CELL HOUSE AT SING SING, N. Y.
The new type has larger cells, better light and ventilation, and individual plumbing. The fundamental principle of both types is the same



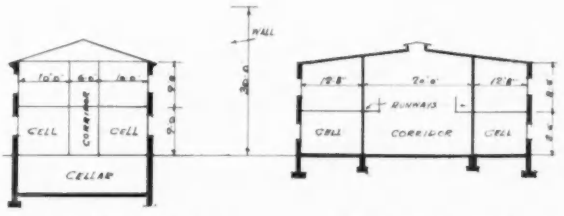
CROSS SECTION THRU CELL BLOCKS SHOWING ANGLES OF SUN RAYS

RIKER'S ISLAND PENITENTIARY, NEW YORK CITY
SLOAN AND ROBERTSON, ARCHITECTS



Left: RIKER'S ISLAND CELL HOUSE (1933)
SLOAN AND ROBERTSON, ARCHITECTS
Modern cells of simplified design and construction

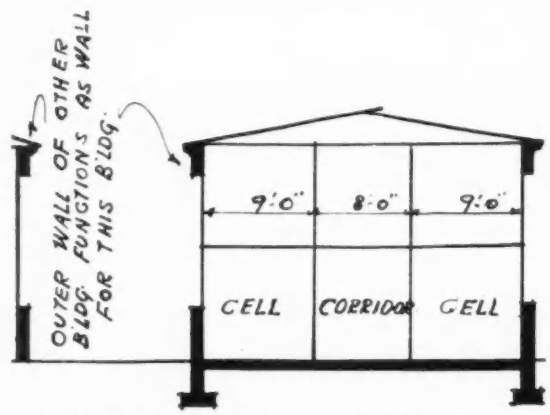
Right. COOK COUNTY JAIL (DETENTION JAIL AND PRISON COMBINED)
ERIC E. HALL, COUNTY ARCHITECT; HALL, LAWRENCE AND RADCLIFFE, INC., ARCHITECTS
Separate corridors for prisoners and for guards



FARM COTTAGE OUTSIDE WALL CELL HOUSE INSIDE WALL

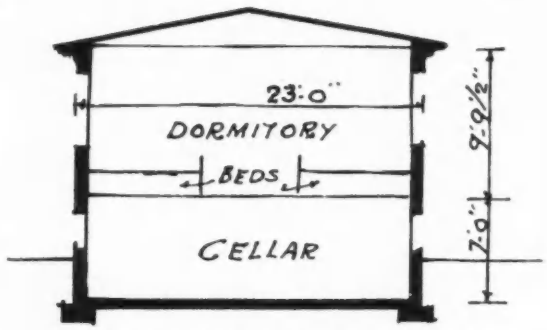
(Dependence on prison wall 30 feet high to prevent escape so that cells are brought to face of wall with advantages of sunlight)

NEW EASTERN STATE PENITENTIARY, GRATERFORD, PA.
ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS
(See page 76 for plans)



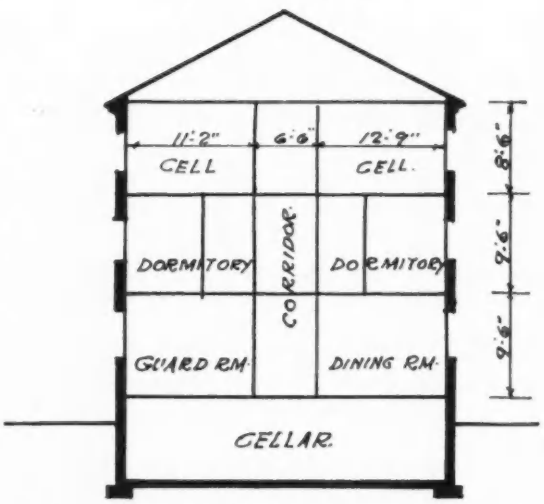
BERKS COUNTY PENITENTIARY, READING, PA.
ALFRED HOPKINS, ASSOCIATE ARCHITECT

Building arranged to care for prisoners requiring varying degrees of security. Exterior wings for honor prisoners working on farm; interior wings and exercise yards for prisoners requiring restraint. Buildings replace the usual prison walls. (See plan on page 78)



MASSACHUSETTS STATE PRISON COLONY, NORFOLK, MASS.
MC LAUGHLIN AND BURR, ARCHITECTS

Combined dormitory and cell type cottage for prisoners in general *within* prison walls. Note provision for various types of prisoners. (See plan on page 79)



STATE PRISON FARM, LEESBURG, NEW JERSEY
Dormitories on the farm. No walls. (See plan on page 80)

fan systems are not used the heat gathers in the upper part of the cell house making the upper cells unbearably hot while the lower cells are cold.

2. *The outside cell system* brought to Pennsylvania from England by the Quakers is seldom found in other states although it has proved satisfactory in Pennsylvania.

Most wardens will tell you that this arrangement is out of the question—that a jail so planned is no longer escape-proof. But no jail is escape-proof. For escapes from the outside cell system the carelessness of the guards is more responsible than the cell design. (In all Europe there is not a jail or a penitentiary that does not have the cells on the outside walls. European criminologists fail to understand why the progressive American persists in planning his building on these antiquated lines, in view of the fact that the strength of light is in direct proportion to the square of distance. In other words, a cell 5 feet away from the window gets only 1–25 the light to be had through a direct window.)

Artificial ventilation becomes of secondary importance in a jail in which the cells are individual rooms with outside window, as an ordinary steam or hot water system of heating can then take the place of costly forced hot air systems.

Because of improved light, ventilation and heating, better psychological effect on the men and lower cost, the outside cell is to be preferred over the interior cell block.

3. *A compromise* between these two systems is often seen in city and county jails. The prisoners, either in individual cells or bull pens, are kept 3 or 4 feet away from the outside windows by a wall of bars. This is advisable when there is no surrounding wall to prevent passing in of contraband, but is not necessary if the jail is in a tower surrounded by walls. In this type of construction, ventilation and heating are more easily controlled than in the central cell block. The inner barrier makes it more difficult for the prisoner to work on bars of the outer windows without being detected than if he were in an outside cell. The principal objection to this type is the reduction in direct sunlight, the impossibility of individual control of ventilation, reduced privacy and increased cost compared to outside cells.

B. BUILDINGS GIVING LIMITED SECURITY

For those requiring only limited security it is the concensus of opinion that a building of ordinary standard construction within a properly constructed, lighted and guarded enclosure is sufficient precaution against escape. This building may be constructed without bars but should have doors and windows so constructed as to prevent exit without breaking them (Page 98).

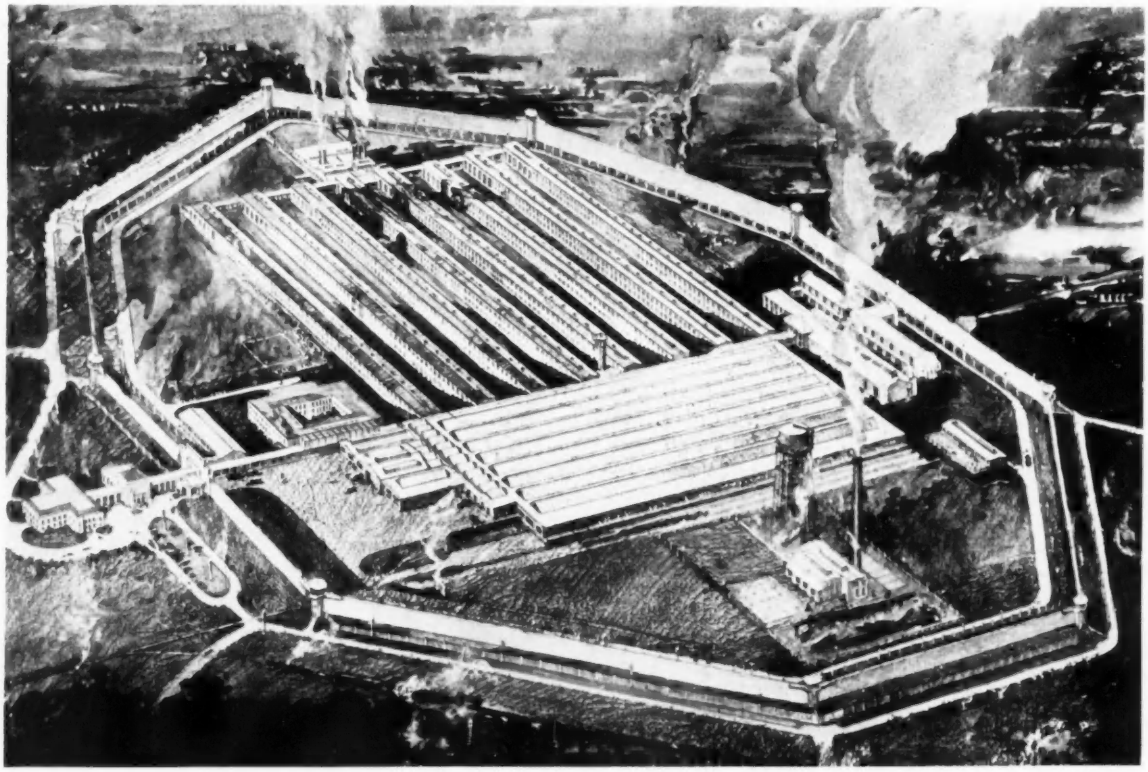
This is a matter of policy which must be determined by the prison boards on the basis of their analysis of the prison population.

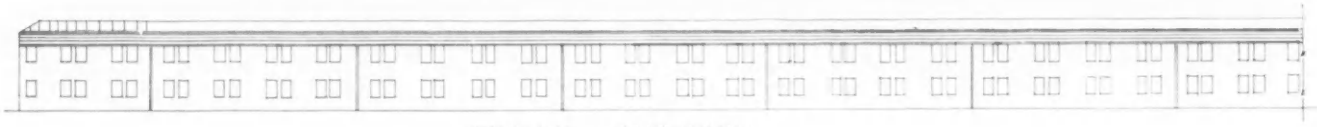
OLD CELL BLOCK (See diagram page 73)

OLD CELL

NEW CELL

SING SING PENITENTIARY, OSSINING, NEW YORK

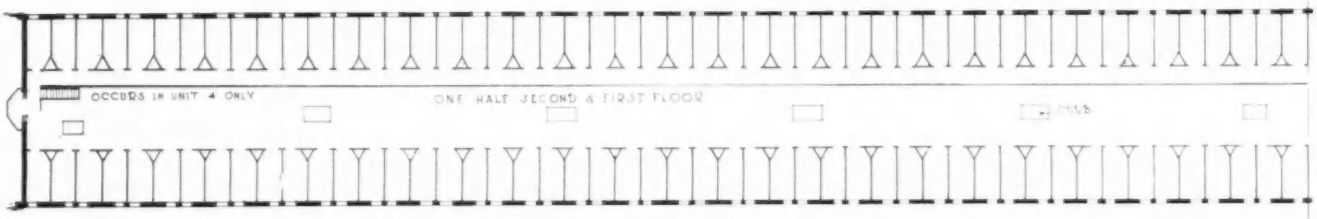




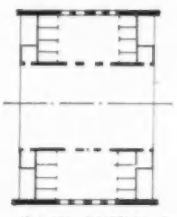
· TYPICAL · ELEVATION ·

Unit 5 Dining Hall	Unit 4 200 Cells	Unit 3 Baths	Unit 2 200 Cells	Unit 1 Stairs

Key Plan



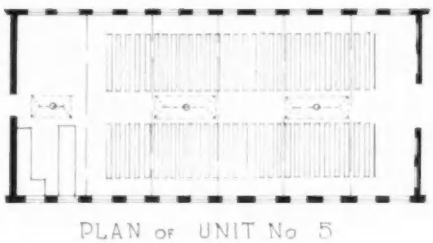
PLAN OF UNITS NOS 2 & 4



PLAN UNIT No 3

THE NEW EASTERN STATE PENITENTIARY, GRATERFORD, PA.

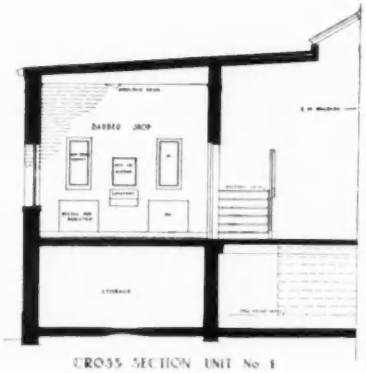
ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS



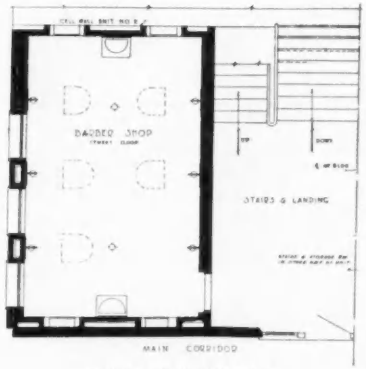
PLAN OF UNIT No 5

DETAILS OF CELL HOUSE NEW EASTERN STATE PENITENTIARY

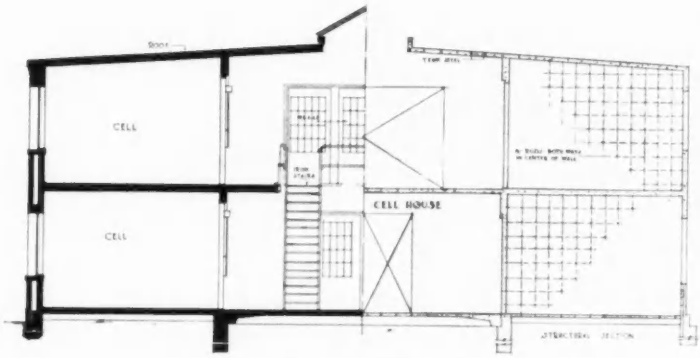
GRATERFORD PENN.



CROSS SECTION UNIT No. 1

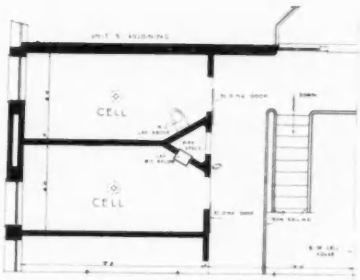


FLOOR PLAN UNIT NO. 1



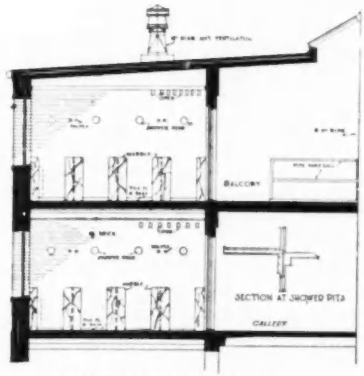
CROSS SECTION THRU UNIT NO. 4

UNIT NO. 2 SIMILAR



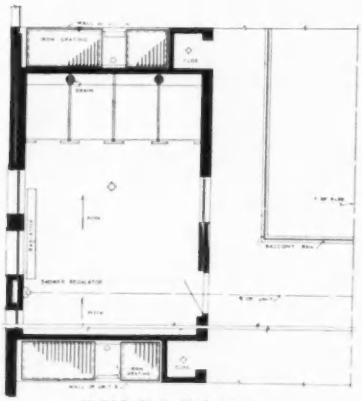
SECOND FLOOR PLAN

UNITS 2, 3 & 4 SIMILAR

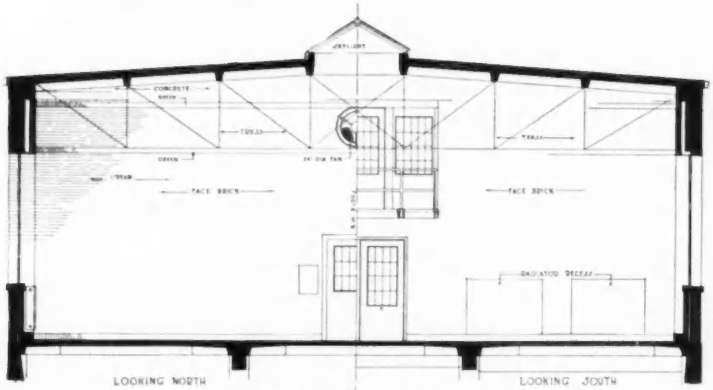


TRANSVERSE SECTION UNIT No. 3

SCALE



FLOOR PLAN UNIT NO. 3



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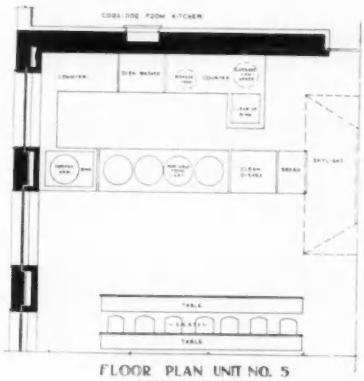


FLOOR PLAN UNIT NO. 5

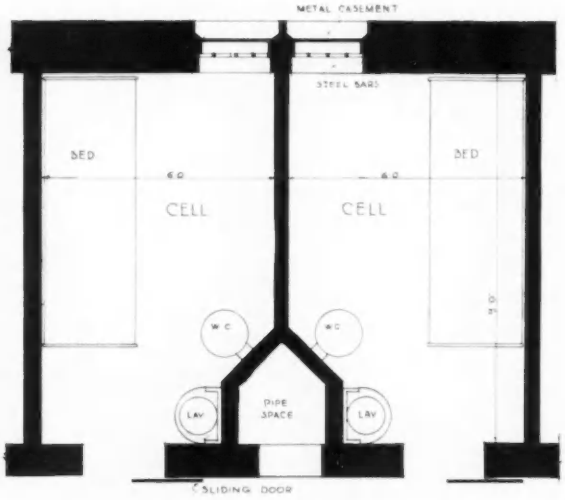
CAFETERIA IN DINING ROOM

ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS

BERKS COUNTY PENITENTIARY,
READING, PA.

ALFRED HOPKINS ASSOCIATES, ARCHITECTS

Buildings grouped so as to eliminate prison wall



TYPICAL CELL

56 CELLS PER FLOOR
2 FLOORS IN EACH CELL BLOCK

BERKS COUNTY PENITENTIARY,
READING, PA.

ALFRED HOPKINS ASSOCIATES, ARCHITECTS

Generally speaking, it is advisable regardless of the size or type, to provide for division of the building (either by isolation of floors or by party walls) into units of from 25 to 50 men. Shower baths and toilet facilities should be provided within this subdivision and some authorities also favor dining rooms within this smaller unit.

C. BUILDINGS FOR MINIMUM SECURITY GROUP

Prisoners not requiring security are generally housed on prison farms or in road camps because of the many advantages this arrangement offers over the older type of walled industrial prison.

On a farm the health and mental outlook of the prisoners are better and the institution may become, to a considerable degree, *self-supporting*, the produce from the farm being used in hospitals and other state institutions.

Experience has shown that these farms do not require the old cell house or masonry wall. (This view is not concurred in by many prison wardens.)

There are two factors both of which tend to prevent his escape from these farms. In the first place, the probability of recapture and the penalty for escape is generally sufficient to deter any attempt, and secondly, the probability that privileges will be withdrawn from the balance of the prisoners if escapes take place causes the prisoners as a group to exert watchfulness and pressure on members who might otherwise wish to escape. The danger of escape apparently has no relation to the crime committed or the length of sentence. An analysis of the records on the Leesburg, N. J. Prison Farm (cottage system, no bars, wall or fence—see plan, page 80) shows that twenty per cent of its prisoners were convicted of murder or manslaughter. Escapes from this prison farm in 10 years have been less than one-half of 1%, and all but 4 men were recaptured.

The men in this non-security group are sometimes housed in existing farm houses or cottages, but if barracks are built for them it is essential that no bars be used as their presence would be an aggravation and incentive to escape.

The question whether single or ward sleeping rooms should be provided is discussed later.

D. NORMAL RATIO OF VARIOUS CLASSES OF SECURITY

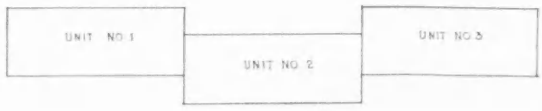
Generally speaking, one-third of the prisoners can be placed in buildings without any provision for security (other than a frequent check-up on the number of prisoners) while approximately two-thirds will require some degree of security. This group will need to be kept behind prison walls (or buildings so placed as to form a wall). Within this security group possibly one-half will require specially planned buildings to prevent escape. The balance within this group will require only limited precaution, aside from the prison wall, to prevent their escape. The ratio of these various classes will vary considerably in different localities. Generally speaking, a greater percentage of men will be in the non-security group in the northern and western states, while southern states where the colored population is high and eastern states with a large foreign population will have a smaller non-security group. This ratio of security groups will also vary greatly among various classes of prisons. As already shown by the analysis of prisoners in the Middlesex County Prison, approximately 75% of the prisoners fall within the non-security group. This ratio also seems to be true of the prison at Guelph, Ontario, Canada. At the Federal Reformatory at Chillicothe, Ohio, prisoners are housed in old army barracks, with practically no precaution against escape, aside from having men sleep on the second floor and making frequent check-ups on the number of prisoners. On the other hand, Federal prisons, aside from reformatories, may require maximum security for approximately 25% and some security for an additional 50%, while probably only 25% can be permitted on farms.

V. SIZE OF PRISON UNITS

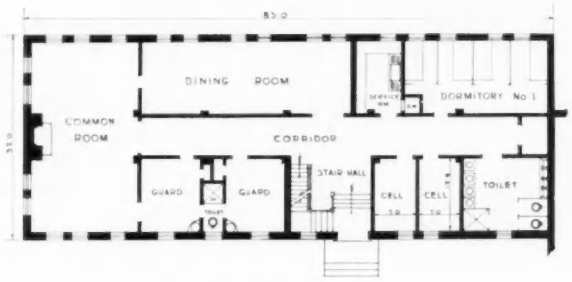
As previously stated, penologists strongly advocate provision for separate units of 25 to 50 men in order to permit proper classification and treatment of different classes of prisoners. This is desirable whether individual rooms or dormitories are used. Several of these units may be joined together to use as central dining hall and recreation rooms; or a central kitchen may be used but the food delivered to small dining rooms as at Norfolk, Massachusetts, where cottage dining rooms accommodate only 50 men.

There is a decided tendency in the handling of juvenile reformatories and reformatories for women to use the cottage system whereby 20 to 40 are housed and fed in a separate building with some attempt at obtaining a home atmosphere. This method can also be applied to the better class of men on prison farms.

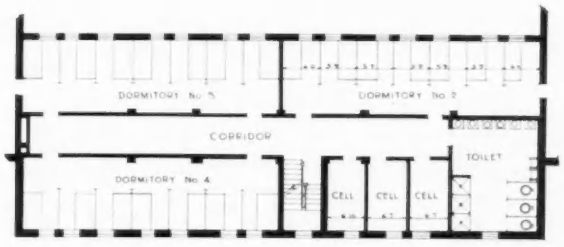
If a skyscraper prison were built, either on a farm or in a city, it would be simple and economical to arrange on each floor separate self-contained units of 25 to 50 men. The main cooking would be done in a central kitchen and distributed by elevator to each floor where the food would be served.



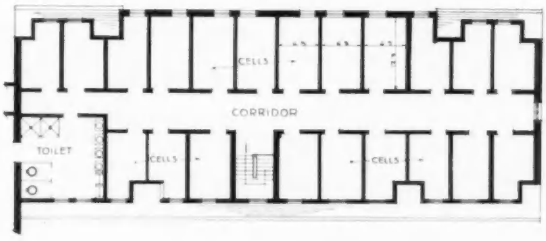
KEY PLAN
ALL UNITS ARE CONSTRUCTED THE SAME ON EACH FLOOR



FIRST FLOOR PLAN
UNIT NO. 1
SAME LAYOUT FOR UNITS NO. 2 & 3 ON FIRST FLOOR



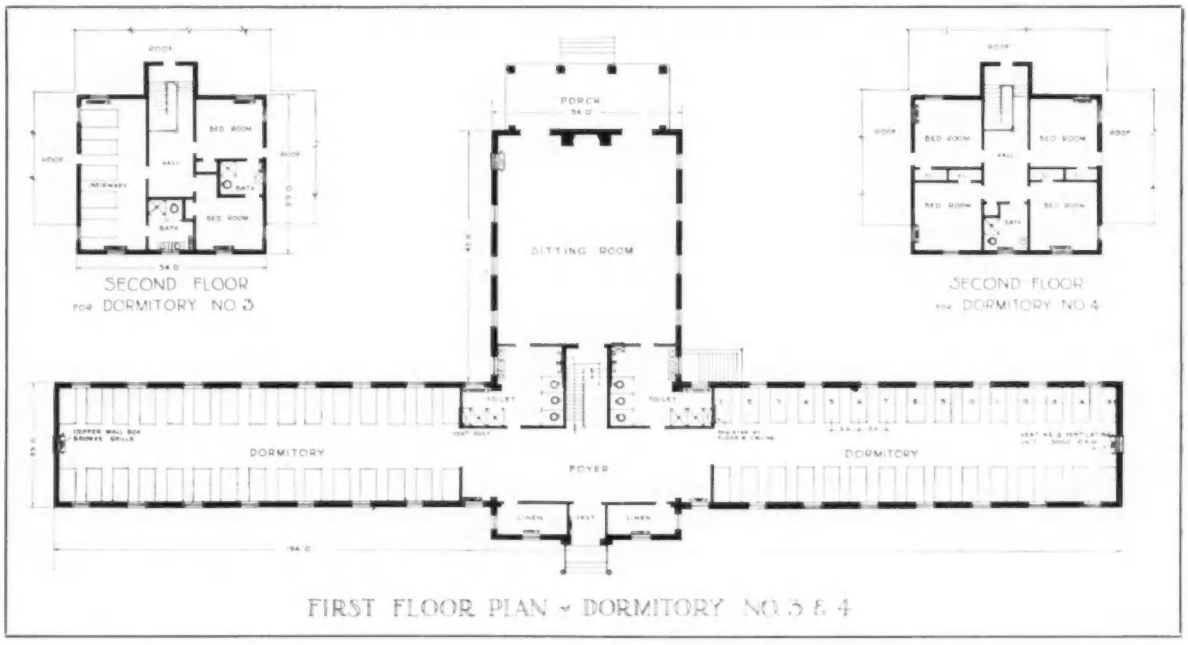
SECOND FLOOR PLAN
UNIT NO. 2



THIRD FLOOR PLAN
UNIT NO. 3

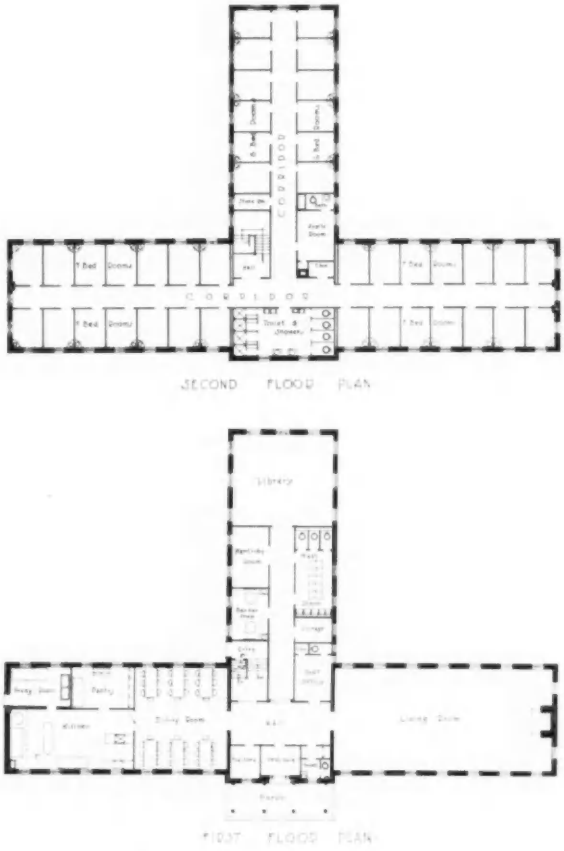
MASSACHUSETTS STATE PRISON COLONY, NORFOLK, MASSACHUSETTS

MC LAUGHLIN AND BURR, ARCHITECTS; RICHARD D. KIMBALL COMPANY, ENGINEERS



FIRST FLOOR PLAN - DORMITORY NO. 3 & 4

Above: DORMITORIES ON PRISON FARM AT LEESBURG, N. J.
DEPARTMENT OF INSTITUTIONS AND AGENCIES, DIVISION OF ARCHITECTURE AND CONSTRUCTION
Cost under $500 per prisoner for dormitory alone. Total cost, including land, kitchen, boiler house, cannery, and farm buildings, $1,000 per prisoner



COTTAGES OUTSIDE WALL
NEW EASTERN STATE PENITENTIARY, GRATERFORD, PA.
Zimmerman, Saxe and Zimmerman, Architects

VI. DORMITORY SLEEPING ROOMS

"Dormitory" in this article is used to denote "a sleeping room containing several beds" rather than in its other meaning of "a building for sleeping".

For more than a century the cellular system of prison construction, with a separate cell for each prisoner, has prevailed in American prisons. But during the past twenty years there gradually has come into use the dormitory system. At first dormitories were employed only for short term prisoners convicted of misdemeanors; but recently they have begun to be used in state prisons for long term prisoners.

A. REASON FOR ADOPTION OF DORMITORY

The principal reason for the adoption of this type of plan has been the increased cost of constructing the old type of cell house. Before the Great War substantial fireproof prisons could be built for sums ranging from $1,200 to $2,000 per cell; but plans for the Detroit House of Correction were estimated to cost $3,000 per bed, the Ohio Penitentiary at least $5,000 per bed, and the cost of the cell house for 500 men at Rockview, Pennsylvania, was $1,882,000, or $3,760 per prisoner, as against an average cost per man for a cottage dormitory at Lorton, Va., of $440.

B. DORMITORIES ARE BEING USED to a limited extent by the New York State Prison at Sing Sing, the Indiana State Prison at Michigan City, the Michigan

State Prison at Jackson, the Illinois State Penitentiary at Joliet, Massachusetts State Prison Colony at Norfolk and Prison Farm at Leesburg, New Jersey, District of Columbia and by the most of the Southern state prisons.

C. CELL OR SINGLE ROOM VS. DORMITORY. (In this discussion it may be well to bear in mind that a dormitory may be preferable to an inside cell but not to an outside room.)

The advantages of dormitories are: (1) they cost less to build, (2) they have better ventilation than inside cells, (3) some prisoners prefer to be together. On the other hand: (1) some prisoners prefer to live in separate rooms, (2) dormitories give rise to continual contacts which may be bad, (3) they are less secure than individual cells or rooms. With regard to possible homosexual practices there is not much difference between the two. Prevention is largely a matter of classification, segregation, and proper guarding in either case.

While an institution with only separate outside cells or rooms may be considered satisfactory, it is extremely doubtful whether one which has only dormitories will be found adequate. In case it is not, the choice for a proposed institution will be between the separate cell (or room) and the combination of room and dormitory plans. If the combination is decided upon, the ratio of separate rooms to dormitories should be indicated by the analysis of prison population prepared by the prison board and should be based on the psychiatric analysis of the prisoners and their assignment to minimum or limited security groups and the man's own desire for privacy. The experience of other institutions cannot be taken as final because there is a surprising variation in the type of prisoners in different institutions. Prisoners at Chillicothe and Guelph resemble the class of men generally found at college while other institutions may be made up largely of illiterate immigrants of all races and nationalities.

The Westchester County Penitentiary, which has one of the best physical structures of any short-term institution in the country, has only outside separate rooms, and the authorities there are very well satisfied with the arrangement. The inmates take considerable pride in furnishing and keeping their rooms clean and orderly. The officials believe that this interest shown by the inmates helps create a wholesome morale which may be of influence even after their leaving.

At Guelph, Ontario, Canada, where there is a particularly high class of young prisoners, dormitories are provided for 80% and cells for 20%. At Massachusetts State Farm both kinds of housing facilities are used and the authorities believe that the combination in ratio of 50–50 is satisfactory. At the federal reformatory at Chillicothe the prisoners are now housed in old army cantonment dormitory type

APPROXIMATE COST ESTIMATES FOR A STATE PRISON, CAPACITY 2,000 INMATES

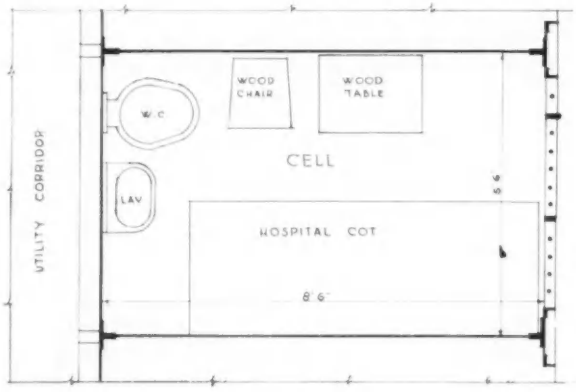
Note—Estimate exclusive of land, grading, excavation, railroad tracks, drains, walks, surface drains, ground lighting, service and waste lines and structures, water and sewer systems, fire lines, telephone lines, shop equipment and accessory equipment; but inclusive of utility equipment.

ITEM	Total Cubage	Rate	Estimated Cost
4 Cell blocks	3,478,000	57½c	$2,000,000
Industrial:			
8 Shop buildings	6,720,000	40c	$2,688,000
1 Lumber shed	236,000	25c	59,000
1 Dry kiln	49,000	35c	17,000
			$2,764,000
Utilities:			
1 Power house	.....	Assumed	$500,000
1 General stores	254,000	40c	102,000
1 Bakery	113,000	40c	45,000
Bakery equipment	.....	.....	20,000
1 Maintenance shop	147,000	40c	59,000
Maintenance equipment	.....	.....	17,000
1 Salvage yard	120,000	25c	30,000
1 Incinerator	.....	Assumed	12,000
1 Garage	102,000	40c	41,000
			$826,000
Accessories:			
1 Administration	250,000	60c	$150,000
1 Hospital, 64 beds	228,000	60c	137,000
1 Punishment, 26 cells	95,000	57½c	55,000
1 Bath house, laundry	202,500	50c	101,000
1 State shop	185,625	40c	74,000
1 Kitchen, dining unit	510,000	55c	281,000
1 Auditorium	560,000	50c	280,000
2 Greenhouses	136,500	25c	90,000
			$1,168,000
Miscellaneous:			
Wall	7,540 lin. ft. @ $55		$425,000
Fence	1,425 lin. ft. @ $2.00		3,000
12 Watch towers	Assumed		25,000
			$453,000
Total	.....		$7,211,000

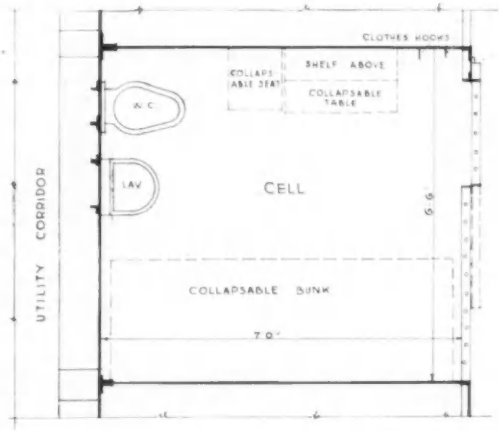
The Crime Commission of New York State.
Report of the Sub-Commission on Penal Institutions, 1928.

DORMITORY COSTS, LORTON, VA.

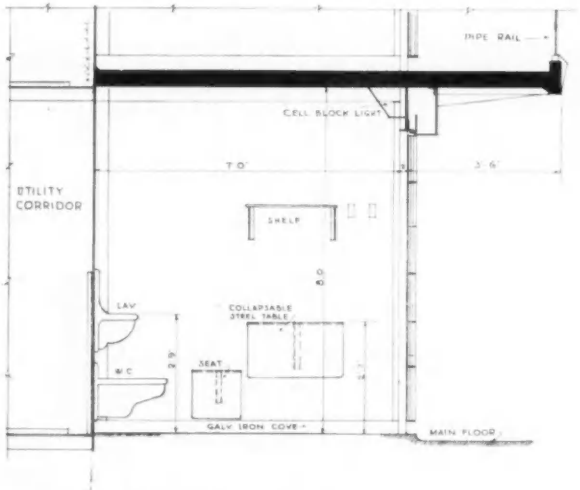
	Number of Beds	Total Cost	Cost per Prisoner
12 Standard Dormitories	600	$270,000	$450
2 Disciplinary Dormitories	120	45,000	375
2 Disciplinary Cell Houses	144	141,000	980
Totals	864	$456,000	$527



SING SING
TYPICAL CELL NEW BUILDING
46.75 SQ FT AREA
SPACE FOR EACH INMATE 924 CU FT (NET)



RIKER'S ISLAND PENITENTIARY
45.50 SQ FT AREA
SPACE FOR EACH INMATE 1023 CU FT (NET)



CROSS SECTION OF CELL

SING SING AND RIKER'S ISLAND CELLS
Showing Improved Arrangement Without Increasing Floor Area

barracks, but the new prison, aside from the punishment and admittance prison which will be of cell-block construction, will have an even division between individual rooms and dormitories.

D. DORMITORIES NEED DAY ROOM SPACE AND LOCKERS

In the past, failures of dormitory systems have often been due to the fact that no provisions were ever made for what is technically known as "day-room space," which is as necessary in prisons as in hospitals for the insane, or in charitable institutions. Plans should allow fifty square feet of sleeping space in the dormitory and fifty square feet of space in the day-room.

Individual lockers should be provided for every prisoner. This not only greatly improves the appearance of the room but lessens trouble from petty thievery.

E. SIZE OF DORMITORIES

"The study and practice of mob psychology has demonstrated that when a group of fifty men are continually together there arises an inner controlling group, numbering from seven to eight men, this number decreasing in irregular steps down to the one man who dominates a group of from ten to twelve. Using this fact as a basis for further experiments, it was decided that a mean between these two numbers (27) resulted in the most satisfactory group arrangements."*

"Although the dormitories in the various institutions over the country vary in size from a capacity of four to two hundred persons, the most logical size for an institution which contemplated classification of its population would seem to be that with a capacity of about twenty-five. When the group is larger than this, administrative difficulties may arise in supervising the men."†

VII. DETENTION JAILS AND SHORT TERM PRISONS

As previously stated, prisons may be divided, from the standpoint of function, into two major divisions: detention prisons for those awaiting trial and prisons for those serving sentence. Since in the smaller towns and in many of our largest cities these two functions are generally mixed this dual use must be taken into consideration in planning a jail, but the emphasis should be placed on the problem of short time detention for those awaiting trial.

A. DETENTION JAILS

These are for the detention of those awaiting trial, for witnesses, for the isolation of juries (juries can

* Laying of Corner Stone of Sing Sing Classification Prison. Sing Sing Prison Press. Ossining, New York, 1920. Pages 15, 16.
† Report of Massachusetts Prison Board. Middlesex County Prison.

probably in most cases best be cared for at a public hotel). As a matter of convenience and economy, detention jails are also often used for prisoners serving short sentences. Sentences of over a week or two should (although this is not now a general practice) be put into county or state prisons or on prison farms. As this detention jail will house all types of criminals, considerable care must be taken to make a portion of the jail practically "break-proof." In addition, the building must be so designed as to resist mobs or jail deliveries.

In undertaking a solution of this problem the architect should keep in mind that *only a limited number of those confined in a jail are proved guilty of the crime for which they were arrested. Witnesses, the innocent, and those not convicted of crime should not be subjected to greater hardships or humiliation than is absolutely necessary*, during the time they are detained. And of those who are guilty, many are held for very minor offenses, such as motor vehicle or prohibition violations.

Everyone recognizes that most of our jails and prisons are schools of crime. The destructive effect of these institutions is chiefly due to the fact that prisoners are placed two in a cell, or are herded together in "tanks" or "bull pens" which hold from three to twenty prisoners of all classes, the mere boy up for motor vehicle violation being in contact with hardened offenders.

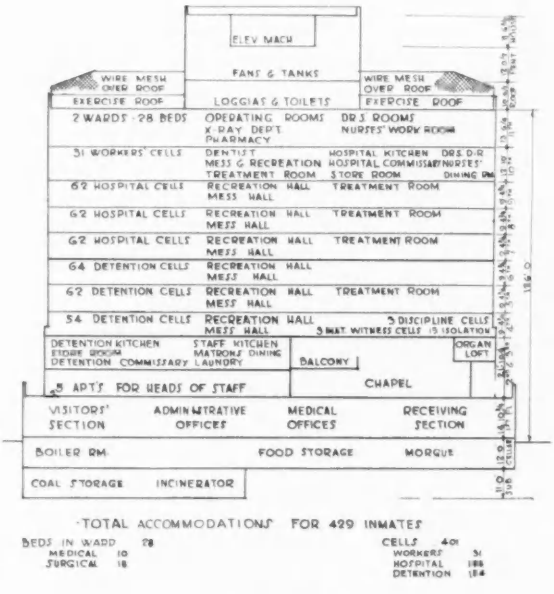
This evil can be prevented entirely by building police station lockups and jails in such a way that every prisoner shall be kept in his own cell or room and shall not have any association with other prisoners. Every cell should be about 6 feet wide, 8 feet long and 8 to 10 feet high. The cells or rooms should have outside windows designed to admit a maximum of light and air. No bars will be necessary if the "detention sash" type of window is used (Page 98). Cells for those suspected of predatory crime should be on upper floors or separated from the window by a corridor space of three or four feet (unless the jail is surrounded by a high wall or is in a tower) to prevent passing of contraband to prisoners and to prevent a prisoner's sawing the window bars.

Every cell or room should be supplied with toilet and a washbasin. The beds should be so constructed as to permit the easy extinction of vermin. The cells or rooms should be built in rows of 10 to 20, with as many successive floors as may be necessary, but every floor should be entirely separate and distinct. The walls and foundations should be of sufficient strength to permit additional floors later as needed.

A jail should have an outdoor exercise yard or some courts so arranged as to be serviceable during all weather conditions, and so planned as to make classification possible during recreation hours.

Small Town Hall: In small towns the prison may be located in a tower connected with the village hall, police station, fire station or other public buildings.

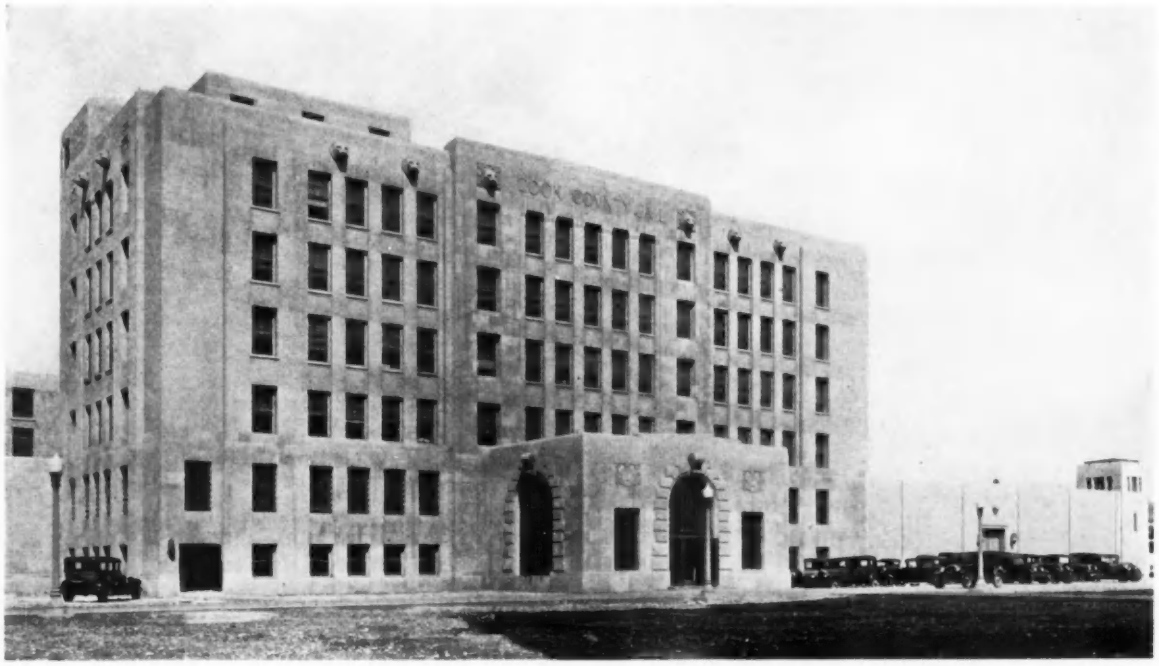
GENERAL VIEW



ANALYSIS

HOUSE OF DETENTION FOR WOMEN, NEW YORK CITY

BENJAMIN W. LEVITAN, ARCHITECT; SLOAN AND ROBERTSON, ASSOCIATES



ADMINISTRATION BUILDING

COOK COUNTY JAIL, CHICAGO

ERIC E. HALL, COUNTY ARCHITECT, OF HALL, LAWRENCE AND RADCLIFFE, INC., ARCHITECTS

TYPICAL COURT ROOM

COOK COUNTY CRIMINAL COURT HOUSE, CHICAGO

ERIC E. HALL, ARCHITECT, OF HALL, LAWRENCE AND RADCLIFFE, INC.

A properly designed tower would not only be in a better position to withstand mob violence but would also provide safer keeping of prisoners at lower cost for the building than would a prison located on lower floors. In the small village this lockup might well be placed in conjunction with the hose tower of the fire station, a properly guarded elevator being provided.

This combination of functions in the one building will reduce construction and administration costs and have numerous advantages. Where a tower is used, it will be an easy matter to provide segregation of various classes of prisoners, the more desperate cases being kept on the upper floors while witnesses, juries, etc., can be kept on the lower floors. A tower would provide a pleasing architectural feature for the village.

The jail should have connected to it simple shop rooms in which plain work can be given to those serving a sentence, or those awaiting sentence who are inclined to activity.

In small towns where it is necessary for the jail to house men and women as well as juveniles, these groups should be entirely distinct and separate—so arranged for and so placed that they cannot possibly come within one another's eye-sight or ear-shot from the time of entering to the time of exit.

City or County Jails in a City: There is a decided tendency (as shown by the new buildings in Los Angeles, St. Louis, Memphis, New Orleans), to place the jail on the upper floor of the court house or city hall.

The new Cook County Criminal Court and Jail Building (Chicago, Ill.) was originally planned as a

skyscraper jail and court building, but, "The program had to be entirely changed. A skyscraper jail and courts building could not be built for less than ten million dollars." (The Western Architect, September, 1929. Page 56.) Asked why the new design was cheaper to build than a skyscraper type of jail, the architects said, "We do not feel that the condition in Chicago could disprove your statement 'that the skyscraper type of jail construction is more economical than the system which we used'," but added that "conditions in Chicago were quite singular. Had the skyscraper project been carried forward in Chicago in the Loop, the County would have been confronted with immense land values."

Laying aside questions of relative site costs, since cheap land will not increase cost of building (assuming same physical conditions of site), there seem to be many reasons why the skyscraper type (15 to 22 stories) is generally preferable to the older type of jail building. In the first place, a moderately tall building costs less to build per square foot of net usable floor area than a fireproof building of 6 or 8 stories.

A cost estimate for office buildings by Mr. W. C. Clark of S. W. Straus & Company follows:

Cost per square foot of net usable floor area: 8 stories $9.66; 15 stories $10.50; 22 stories $9.59; 30 stories $10.11.

The cubic foot costs are:

8 stories $.504; 15 stories $.51; 22 stories $.535; 30 stories $.572 and 75 stories $.706.

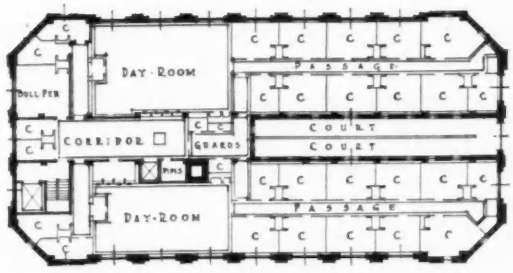
All figures are exclusive of land cost. In addition, the skyscraper type eliminates the need of costly tunnels required to connect buildings grouped as at Chicago and on prison farms.

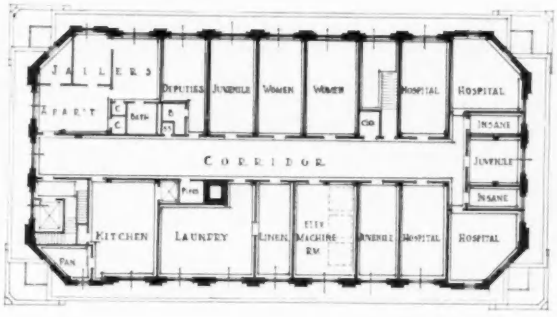
In the skyscraper type food can be delivered more efficiently and rapidly than by wagons through tunnels. The skyscraper also permits the use of outside cells or rooms with a minimum of bars without increasing the possibility of escape. This reduction in steel means a considerable saving in cost. The tower also permits a large degree of segregation of various classes of prisoners.

Assuming the same size of plot in either case it permits greater space for exercise or recreation. It also permits the elimination of the prison wall. (The exercise space can be enclosed by a wire fence if land is available.) If land is limited, the exercise yards can be provided on top of the court building and prison itself. The tower may be placed on top of the court house or within a court—similar to that of the Nebraska State Capitol.

This type would also be suitable for State prisons, the industrial buildings forming a wall around the tower.

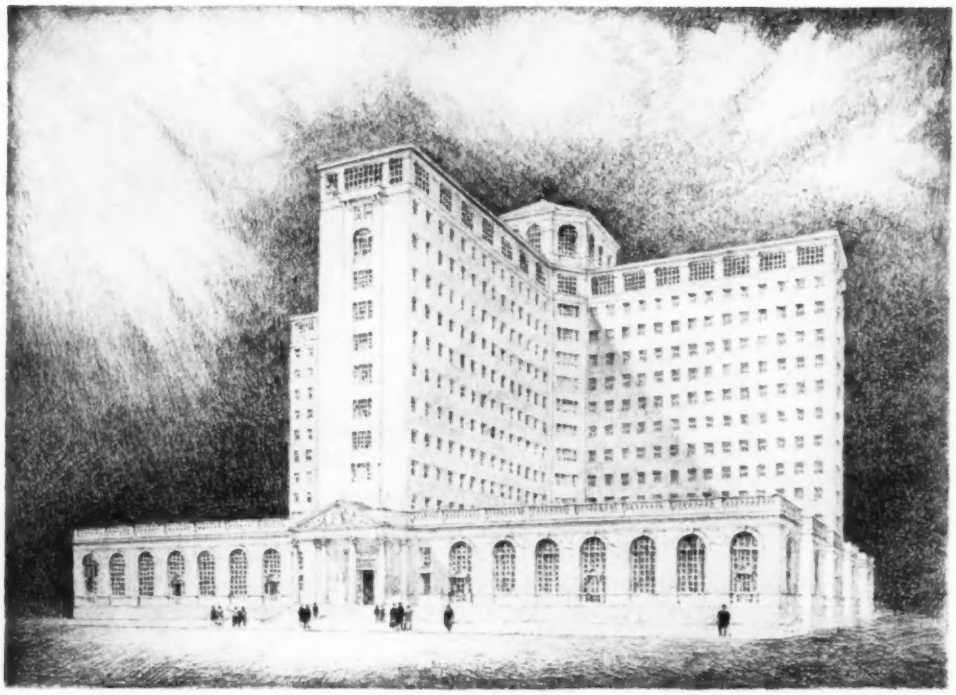
(*Text continues on page 88*)





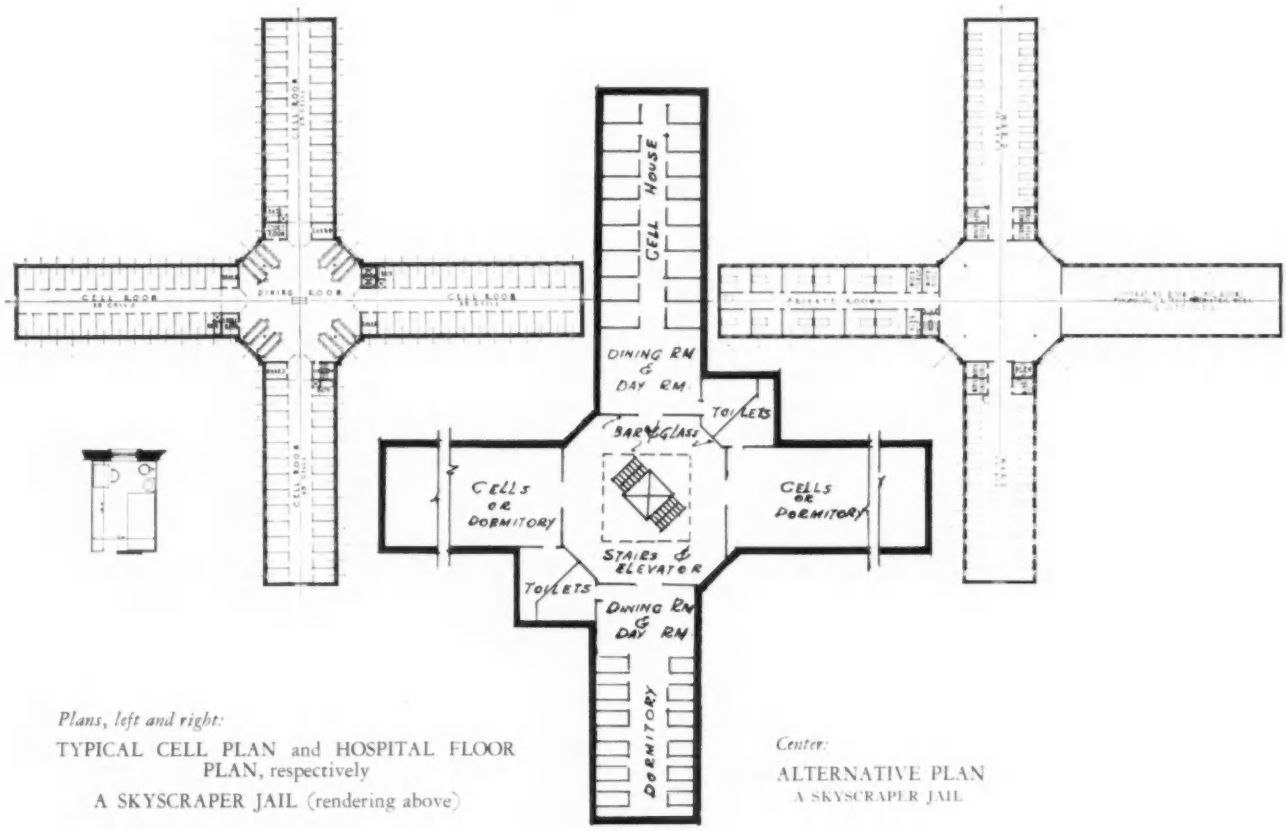
CADDO PARISH COURT HOUSE AND JAIL
NEW ORLEANS

EDWARD F. WEILD, ARCHITECT



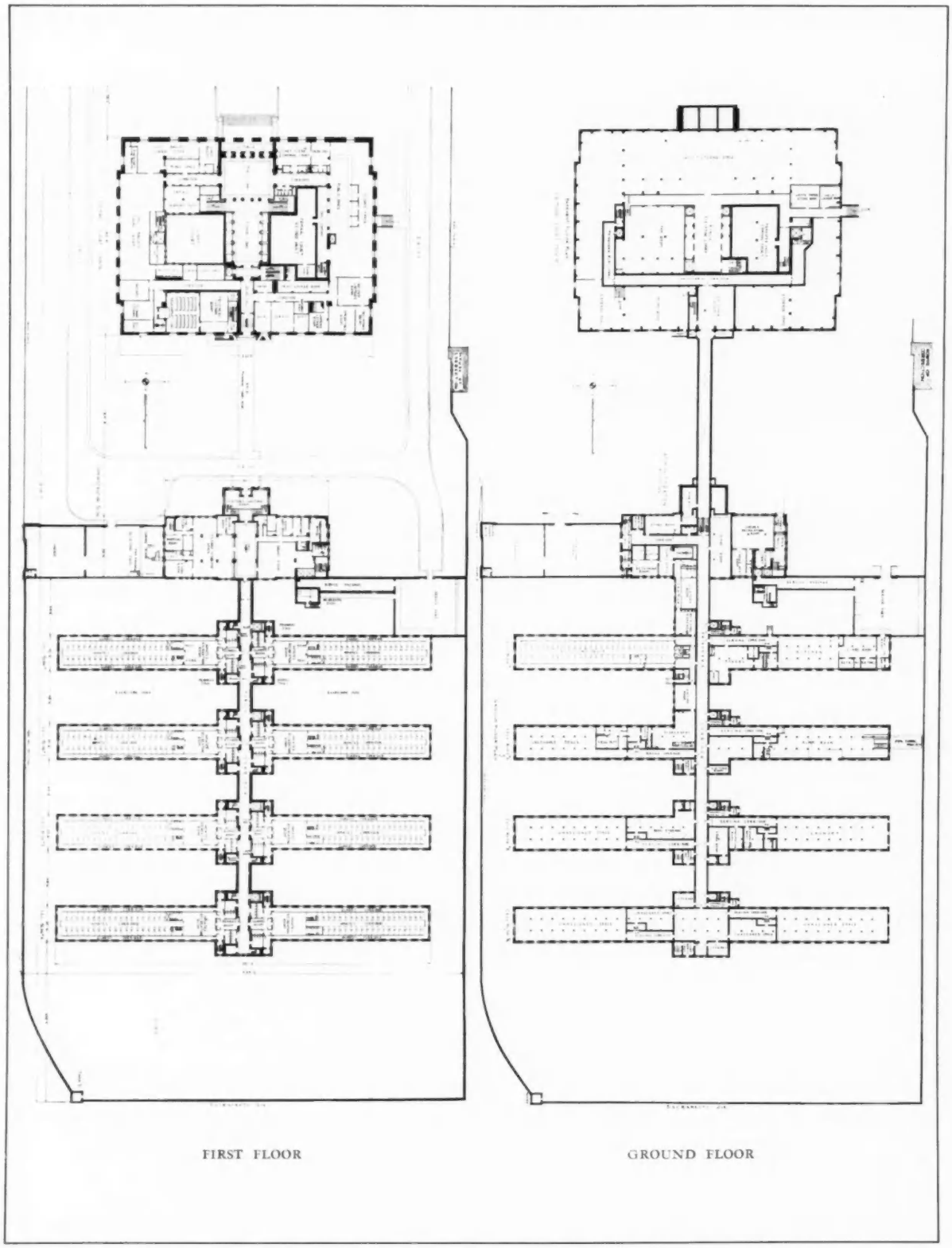
A SKYSCRAPER JAIL

Plan for a metropolitan jail conceived by HASTINGS H. HART, president of the American Prison Association, designed by FRANCIS Y. JOANNES and MAXWELL HYDE, ARCHITECTS



Plans, left and right:
TYPICAL CELL PLAN and HOSPITAL FLOOR PLAN, respectively
A SKYSCRAPER JAIL (rendering above)

Center:
ALTERNATIVE PLAN
A SKYSCRAPER JAIL

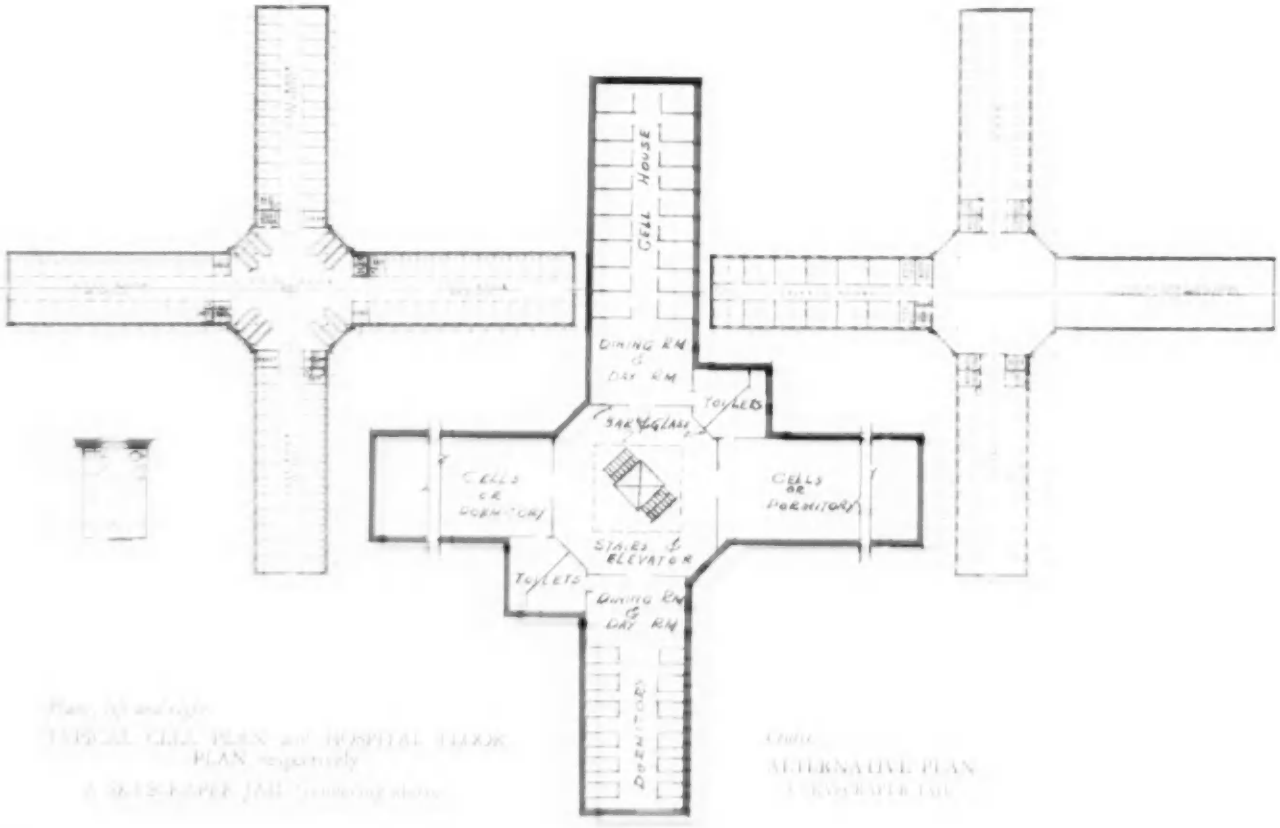


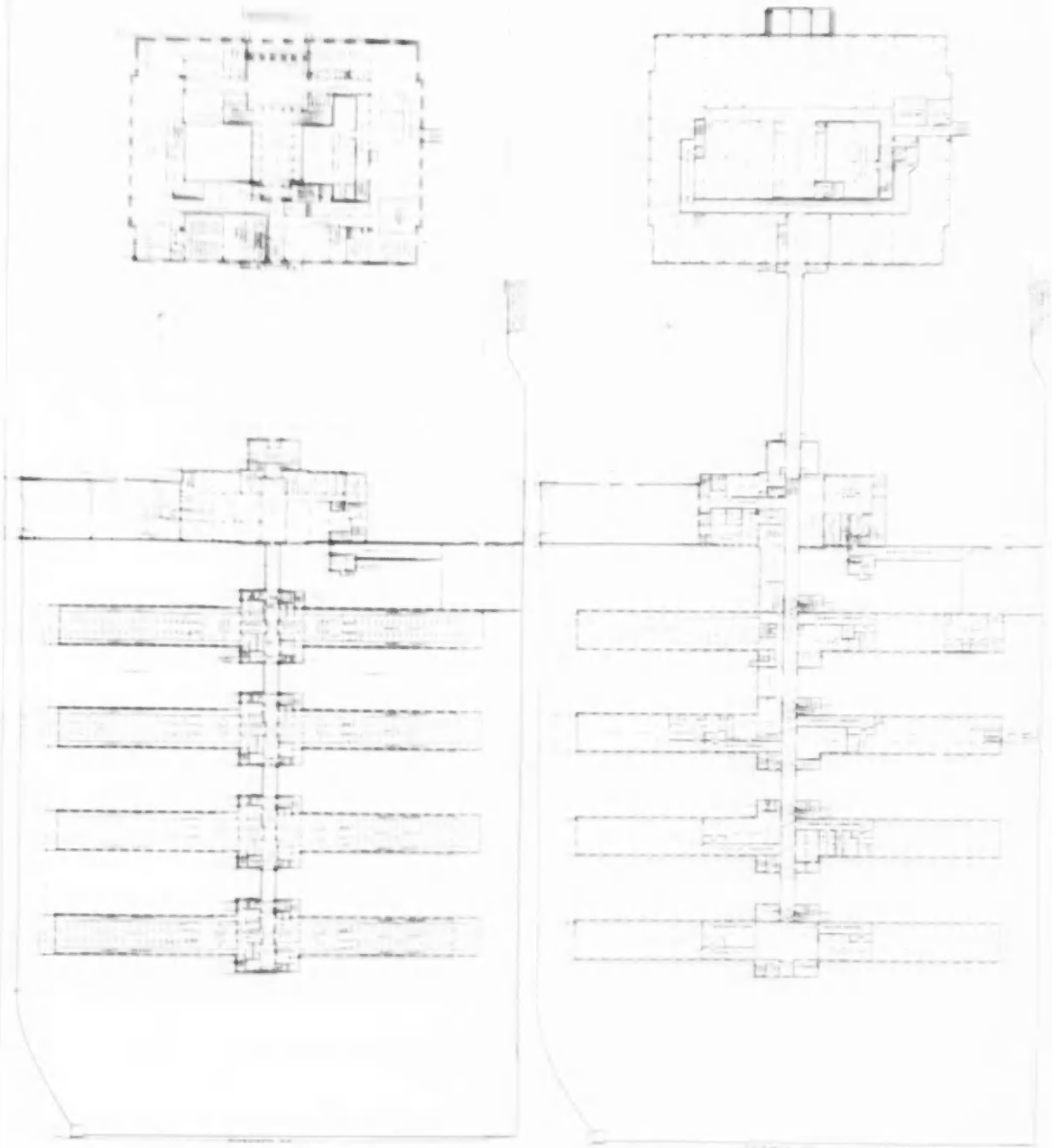
FIRST FLOOR

GROUND FLOOR

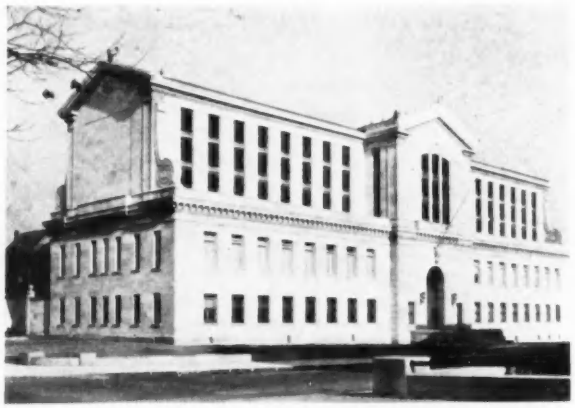
COOK COUNTY CRIMINAL COURT HOUSE AND JAIL GROUP, CHICAGO, ILLINOIS

ERIC E. HALL, COUNTY ARCHITECT, OF HALL, LAWRENCE AND RADCLIFFE, INC., ARCHITECTS

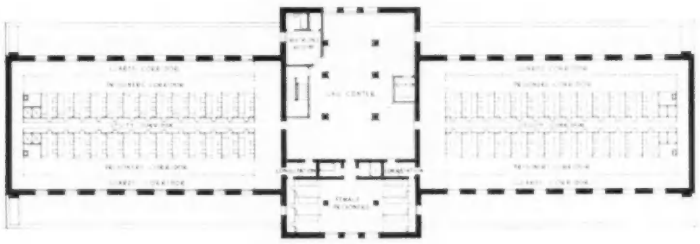

CELL HOUSE
DINING RM & DAY RM
TOILETS
SAR'GLASS
CELLS OR DORMITORY
CELLS OR DORMITORY
STAIRS & ELEVATOR
TOILETS
DINING RM & DAY RM
CELL HOUSE



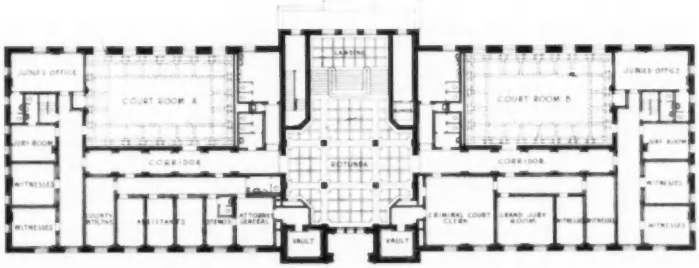
COOK COUNTY CRIMINAL COURT HOUSE AND JAIL GROUP, CHICAGO, ILLINOIS



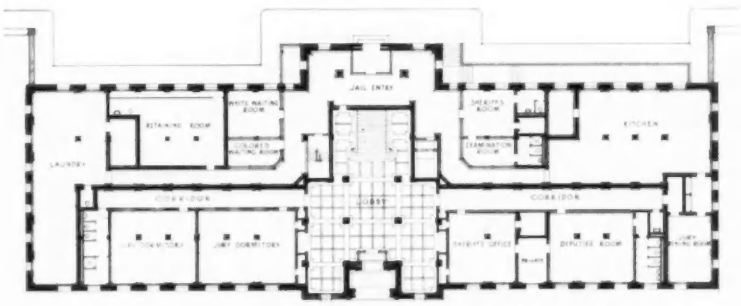
CRIMINAL COURTS BUILDING FOR SHELBY COUNTY, MEMPHIS, TENN.
JONES AND FURBRINGER, ARCHITECTS



JAIL FLOOR



MAIN FLOOR



GROUND FLOOR

CRIMINAL COURTS BUILDING FOR SHELBY COUNTY, MEMPHIS, TENN.
JONES AND FURBRINGER, ARCHITECTS

VIII. PENITENTIARIES OR LONG TERM JAILS FOR THOSE SERVING SENTENCE

(Includes Reformatories, Workhouses, Prison Farms, Etc.)

What makes the penitentiary different from the detention prison is the necessity for industrial buildings and the opportunity for a greater variety of types of housing facilities to be provided.

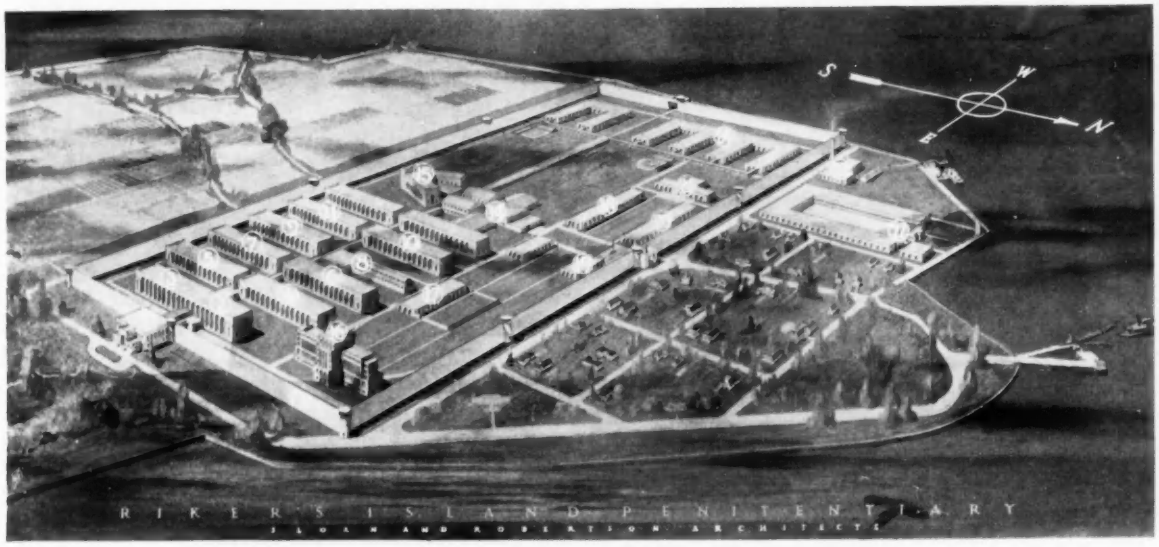
A. SIZE OF PRISON AND OF DIFFERENT SECURITY GROUPS

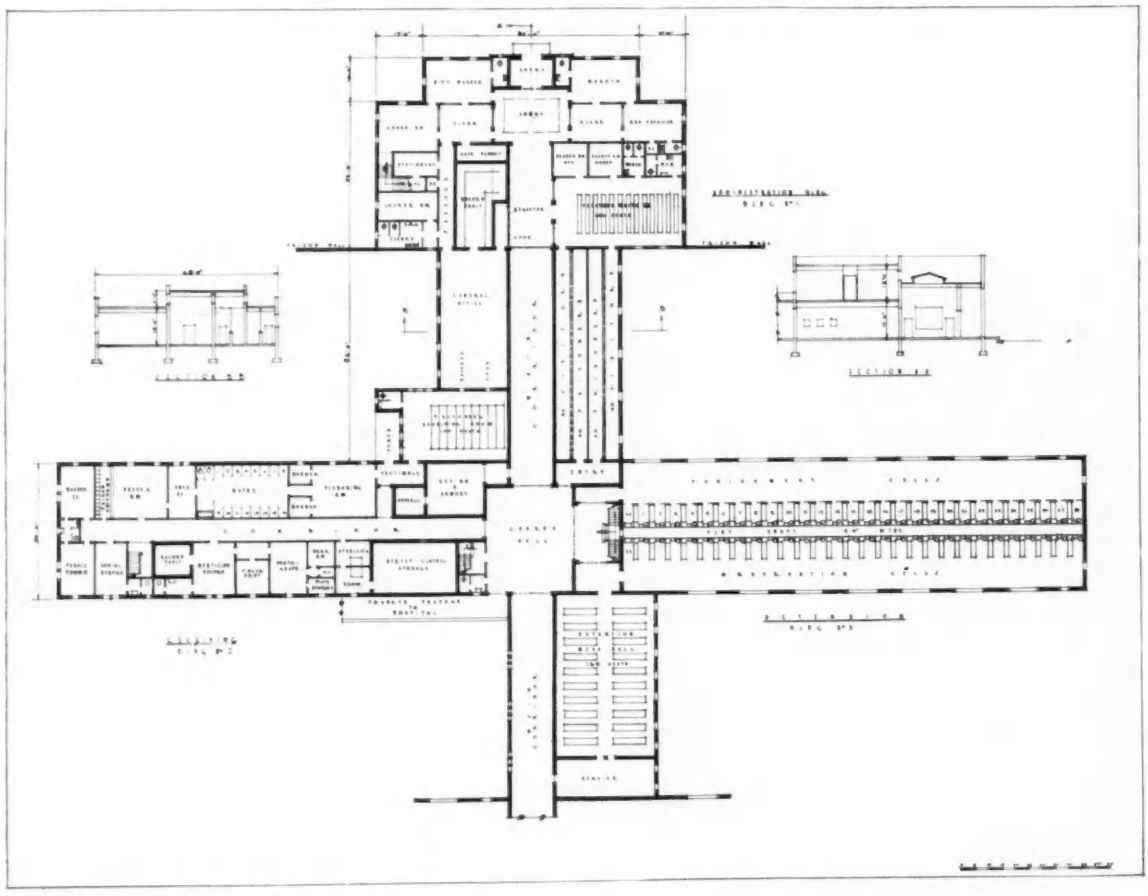
Some prison authorities, especially European penologists, feel that a prison population should be between 350 and 500 in order that the prisoners would receive more personal attention from the warden. Several of these units may be grouped together so as to take advantage of central utilities but if this is done a deputy warden should be placed in charge of each unit. It is highly desirable that every unit be completely segregated from other units and that every unit have the type of housing, industry, recreation and degree of security suited to its needs. Although larger prisons may have a lower per capita plant and wall cost, most prison executives advocate 1200 as the maximum desirable capacity. Where more than 1200 men are grouped in one institution it will be difficult to provide complete segregation for all the activities, and administrative and disciplinary problems will become more difficult.

1. *Minimum Security Group.* Under normal conditions an architect would plan to house approximately 300 of these 1200 prisoners in cottages or barracks outside of the prison walls. This group would be employed on the prison farm, which should have an area of at least one acre per man.

2. *Maximum Security Group.* For the group within the prison wall, the architect should provide a classification building with two classification cell houses, with a capacity of approximately 150 each, one cell house to be used for detention of incoming prisoners and the other cell house for detention of dangerous criminals, those undergoing punishment or otherwise requiring special attention. These cell buildings may be of the exterior cell type, although it may be desirable to have one building of the interior cell block type for punishment. If the admittance cell block is also of this type it will acquaint incoming men with what the prison used to be and with what the punishment cells will be like unless they behave themselves.

3. *Limited Security.* For the balance of





RIKER'S ISLAND PENITENTIARY, NEW YORK CITY
SLOAN AND ROBERTSON, ARCHITECTS

those within the prison wall, roughly 600 prisoners, dormitories and private cells or rooms should be provided as indicated in the discussion of Dormitory Rooms, Pages 80–82.

B. CLASSIFICATION PRISON OR PRISON BUILDINGS

If prisons are to be built with varying degrees of precaution against escape it is absolutely essential that there be a proper classification of prisoners on admittance to an institution.

Aside from the division of prisoners into groups according to liability of attempt to escape, it is important that there be a grouping according to the needs of various types of individuals.

Individualization in the treatment of offenders is the *fundamental principle* underlying *modern penology*. If we may use the hospital as an analogy, it is not sufficient merely to send a sick man to the hospital: his trouble must be *diagnosed* and he be sent to the proper ward for *specialized treatment*. Grouping of offenders into homogeneous classes is a necessary part of the machinery of individualization for which an architect must plan. Although there is not much dispute as to the validity of this principle of individualization and classification, there is no unanimity of opinion regarding the basis of classification. No rigid classification has yet been evolved by which inmates may be grouped while in the institution. Institutions which hope to do effective work must evolve their own classifications based upon a study of their respective populations.

For the carrying on of this examination and classification of prisoners it is essential that a Classification Prison be built, either as an individual institution or as part of a main prison. All prisoners, upon being committed to prison, should spend from 2 to 6 weeks in this classification prison before being sent to the prison or prison group where they are to start sentence. This prison will consist of administration building, wing or hospital building in addition to the admittance cell house and, when part of a large prison, a punishment cell house already spoken of.

1. *Accommodations Required for Classification Administration Building.* In planning a classification prison for a state averaging twelve to fifteen hundred commitments a year, it is desirable to provide accommodations for approximately the following staff: a superintendent or director of the prison, three psychiatrists, two to four psychologists and six field investigators (one office for the six will be sufficient as they will be in the field most of the time), two stenographers and two filing clerks. This is a desirable organization for classifying incoming prisoners, acting on the special cases after commitment, and making recommendations to the payroll board or governor on pardon applications.

If, however, it is intended to follow up cases after commitment and attempt treatment on a scientific, psychological and psychiatrical basis, this force should be increased by the addition of two psychiatrists, four psychologists, two additional stenographers and an additional filing clerk. In planning the administration building for this organization, individual rooms should be provided for each of the psychiatrists and psychologists, there should be a room for stenographers and a record room, library and conference room and a store room for supplies. In addition, there should be two lecture rooms or group test rooms which will accommodate between 20 and 30 prisoners, three or four laboratory rooms approximately 14 x 18, prisoners' waiting room with lavatory, also lavatory for officials.

In planning this building, attention should be given to acoustics, since the ordinary prison wall, either of glazed brick or of cement plaster with cement floor and ceiling, causes a great deal of reverberation. In the new classification prison at Sing Sing, which is supposed to be the "last word", the staff members report that they cannot use the conference room because of the reverberation of voices and noise from exposed water pipes. The glazed brick walls of laboratories and private offices make conversation difficult and very tiring on the staff. (For methods of overcoming this difficulty, see article on Acoustics, ARCHITECTURAL RECORD, March, 1929.)

2. *Hospital Accommodations.* As incoming men are subject to medical examination on admittance it is customary to locate the hospital in or adjoining the admittance building. No difficulty will be experienced from this arrangement if the classification prison is a separate institution, but if the classification building is but one unit of a larger institution, as at Sing Sing, there will be some difficulty due to the mingling of inmates answering daily sick call with new prisoners. The hospital facilities should therefore be separated from the classification unit by having these units in separate wings or having them on isolated separate floors as in the New Eastern Penitentiary. In the New Eastern plan attention is called to the provision of a small dumb waiter for transmittal of records to the department needing them

Venereal Ward (Admittance Prison or County Jail)*

(a) Examining Room for New Patients: There should be a well equipped examining room in both female and male departments, where all new patients can have a first complete examination made. This room should have one or more surgical (iron white enamel) tables with adjustments for complete vaginal, urethral and bladder examinations. The room should be well lighted, and have special electric connections for instruments demanding artificial light. There should be a sterilizer at hand for immediate sterilization of instruments, and ample closet or

* Minimum Standards for the Prevention and Treatment of Venereal Diseases in Correctional Institutions, by Emily Dunning Barringer, M.D. and Louis I. Chargin, M.D.; National Committee on Prisons and Prison Labor.

cabinet room to provide for instruments and dressings needed for examination.

In this examining room there should be an ample supply of bacteriological slides, sterile swabs, test tubes, an incubator (if possible) and all sorts of laboratory and serological equipment, so that specimens for bacteriologic and serologic examinations can be taken at once under ideal conditions.

(b) Observation Ward, where every patient can receive individual isolation treatment.

An ideal arrangement is a glass partition between patients.

(c) Gonorrheal Wards:

1. Ward for active and sub-acute cases.
2. Ward for chronic cases. (Can be with chronic syphilis.)

(d) Syphilis Wards:

1. Ward for active cases. (This should be strictly isolated.)
2. Ward for chronic cases. (Can be with chronic gonorrhea.)

(e) Sanitary drinking fountains throughout the building, or sanitary drinking cups.

(f) Sanitary open front toilet seats throughout the building and sanitary urinals in the male department.

(g) Shower baths instead of tubs, especially in observation wards.

(h) Cable douche tables, or similar type, installed in treatment room of each ward for women.

(i) In male department there should be a well equipped treatment room, with proper surgical tables, for urethral, irrigation, instillation and treatments.

3. *Admittance Cell Houses.* It is highly desirable that the admittance cell house be closely joined to the administration building so that prisoners may be handled with a minimum of effort and so that the doctors and psychologists may keep the new men under close supervision. This building should be built for maximum security since all types will be kept in it until the department has had opportunity to study, classify and segregate them.

4. *Observation and Punishment Cell Building.* This building should be located close to or as part of the classification administration building, because prisoners sent up for punishment need special observation, regardless of whether their difficulty is physical or mental; some prisoners considered incorrigible have been cured. There is the classic case of an incorrigible prisoner who was reformed by the extraction of an ulcerated tooth, and a jail breaker who was handled by being made a trusty, and so enabled to go outside the cell walls.

C. INDUSTRIAL BUILDINGS

The problem of prison industries will vary so in different states that it is impossible to give more than a bare outline of underlying principles. It is well for the architect to find out from his prison board whether the prison industries are being selected with the primary purpose of punishment for the prisoner "sentenced to hard labor", of making money for the State, or of attempting to reform the prisoner by teaching him a useful trade. The purpose for which the industry is installed will have considerable influence on the design of this unit. If not intended for punishment, the buildings should be as cheerful as possible. If the prisoner is to be taught a trade, the architect may need to provide for a variety of industries with inclusion of class rooms for instruction.

In the selection of a prison industry it is important to bear in mind:

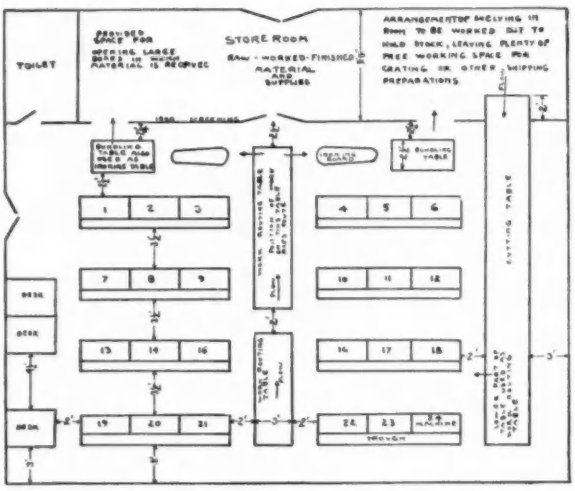
(1) The sale of prison-made goods is rapidly being restricted to use by institutions and departments of a state or its political subdivisions. This being the case, the market should be analyzed before plans are made for a particular prison industry.

(2) There should be an allocation of industries among the states. For example, one state manufactures shoes, another furniture, and so on, and each sells the surplus products, above those which it can use in its institutions, to some cooperating state. The practical working out of this plan is found in the sales of the surplus shoes manufactured in the Massachusetts State Prison to institutions in Rhode Island, and of furniture from the Virginia State Prison to institutions in Pennsylvania and New York. Therefore, before selecting a prison industry the prison board should familiarize itself with prison industries throughout the country. This information may be obtained from the National Committee on Prisons and Prison Labor, the researches of which extend over a long period of years and record the experience, the success and failures in the different states, as well as the requirements of the state use market.

(3) The industry must be suitable for the class of prisoners in question. For example, the selection for men's prisons of women's trades, or of work especially suitable for handicapped workers such as the blind, is a bad mistake.

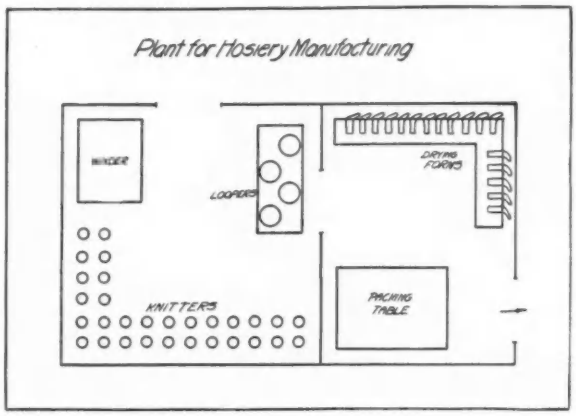
(4) The industry should be one in which the prisoners can obtain employment on release.

Unless the industry is one which requires the use of very heavy machinery it is generally advisable to build a modern type of loft building with columns so strong that future expansion can be taken care of by adding more stories. Due to the great variety of the industries it is possible to install, the best type of structure to build (unless a foundry or other special type is definitely called for) is a three or four story re-



PROPOSED ARRANGEMENT OF A SEWING PLANT

From *Industries for Correctional Institutions for Women*, National Committee on Prisons and Prison Labor



PROPOSED ARRANGEMENT OF A HOSIERY PLANT

From *Industries for Correctional Institutions for Women*, National Committee on Prisons and Prison Labor

inforced factory building approximately 64 feet wide, with 20 foot bays and 13 foot floor to floor height. Because of the possibility of future change in the type of industry housed, it is advisable to plan for a 200 pound floor load. Wherever specific industries have not been decided on it is well to provide 150 square feet of industrial space per inmate. It must be borne in mind that only about half the inmates will work in the industry and that more men will be used per machine than is customary in the ordinary industrial plant. Industrial buildings will be found more satisfactory if they permit a view over the prison wall.

Attention must be given to the provision of ample storage warehouse space for both raw and finished products and supplies for the prison. As the flow of goods will be less steady than in a commercial industry it will be advisable to provide 100% excess storage space.

The industrial buildings should be so placed that they can be completely shut off from the housing portion of the prison. This is a good precaution against petty thievery; it simplifies control in case of riots, and facilitates search in case a man is reported missing at a check-up.

There is some difference of opinion as to whether the classification that is carried on in sleeping and living quarters can or should be carried over into industry. However, the architect should so plan his buildings and site arrangement that this segregation may be carried over should it be desired in the future. The plan for the New Eastern Penitentiary provides for complete isolation of various groups not only in the cell houses, but at mess and at work. The plan of the industrial building as given does not show a division into units corresponding with the cell houses but it is the intention of the architects that this subdivision be obtained by erecting walls or wire fences between the various groups at work in the industrial building.

Attention is called to the site planning (page 76) by which the incoming and outgoing stores are separated from the main portion of the prison population. This is desirable as a means of preventing incoming truck drivers from delivering or dropping contraband to prisoners. This plan is very logical in the relation of the various units, the principal criticism being that the prison is about four times too large. (This is not a criticism of the architect since it is not his function to determine the size of a unit but only to solve the problem given him.)

D. EDUCATIONAL REQUIREMENTS

The extent to which provision must be made for educational facilities will depend wholly on the type of prison population and the attitude of the prison board. In reformatories—and it must be borne in mind that there is very little essential difference between the population in some reformatories and some

prisons—school space is greater than that devoted to industry. In some prisons almost no space is devoted to instruction. With such a variation a thorough analysis of the prison population should be made with special attention to illiteracy to determine the requirements.

E. RELIGIOUS FACILITIES

A large portion of the prison population attends some type of religious services. As different creeds are represented it is desirable that provision be made for several services at the same time. Opinions as to the type of church building which should be built vary. The ideal arrangement is to have a chapel set apart for religious worship, and hold movies, amateur theatricals and concerts in a separate auditorium. Experience has proved, however, that though this is often called for in the plans, when the buildings are finally built the religious and secular services are generally combined. If the dual plan is adopted the chapel-auditorium at Sing Sing offers a good solution. The two rear wings may be shut off by folding doors and used as small chapels and the main auditorium used at the same time. In this plan it will be noted that the altar is placed at the rear of one of the wings. When this room is used for Catholic services the backs of the benches are reversed and the men face the altar. When it is used as an auditorium the seats face the main stage.

Information on chapel design may be obtained from the National Committee on Prisons and Prison Labor who are making a study of this problem in co-operation with various religious bodies.

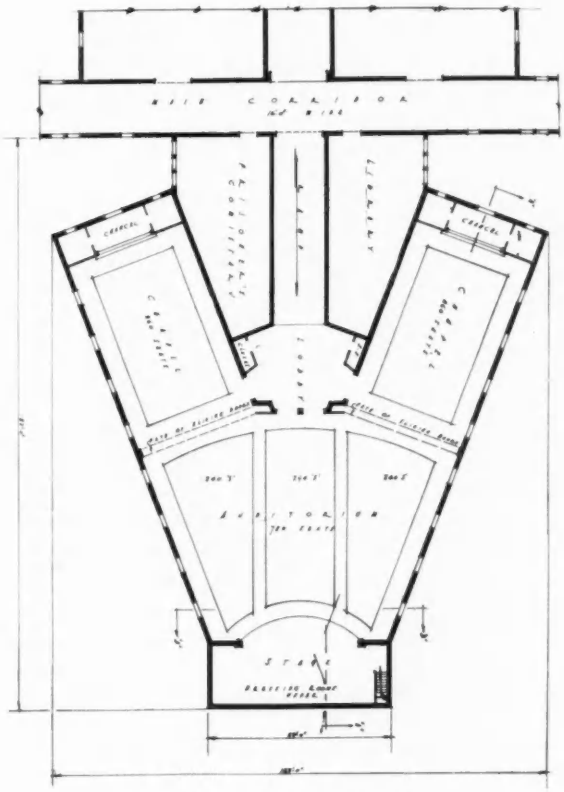
F. RECREATIONAL FACILITIES

Auditorium: Naturally, a moving picture projection booth will be provided. As talking movies are the accepted thing, it will be desirable in planning this auditorium to consider the proper arrangement for acoustics. With the hard cement or glazed walls generally found in prisons, the room will be most unsatisfactory from an acoustical standpoint unless some special measures are taken to overcome this difficulty. Cinder block walls left exposed will provide some of the necessary sound absorption, but proper acoustics will be obtained only by proper relation of the various dimensions of the room.

Athletics: The prisoners' morale must be developed by means of play. This can be done by means of athletic competitions of baseball, soccer, swimming, and all the activities that have proved successful in the Army and Navy.

The planning of recreation should include sufficient elasticity and diversity to give every man an opportunity to play.

(*Text continues on page 95*)



AUDITORIUM AND CHAPELS

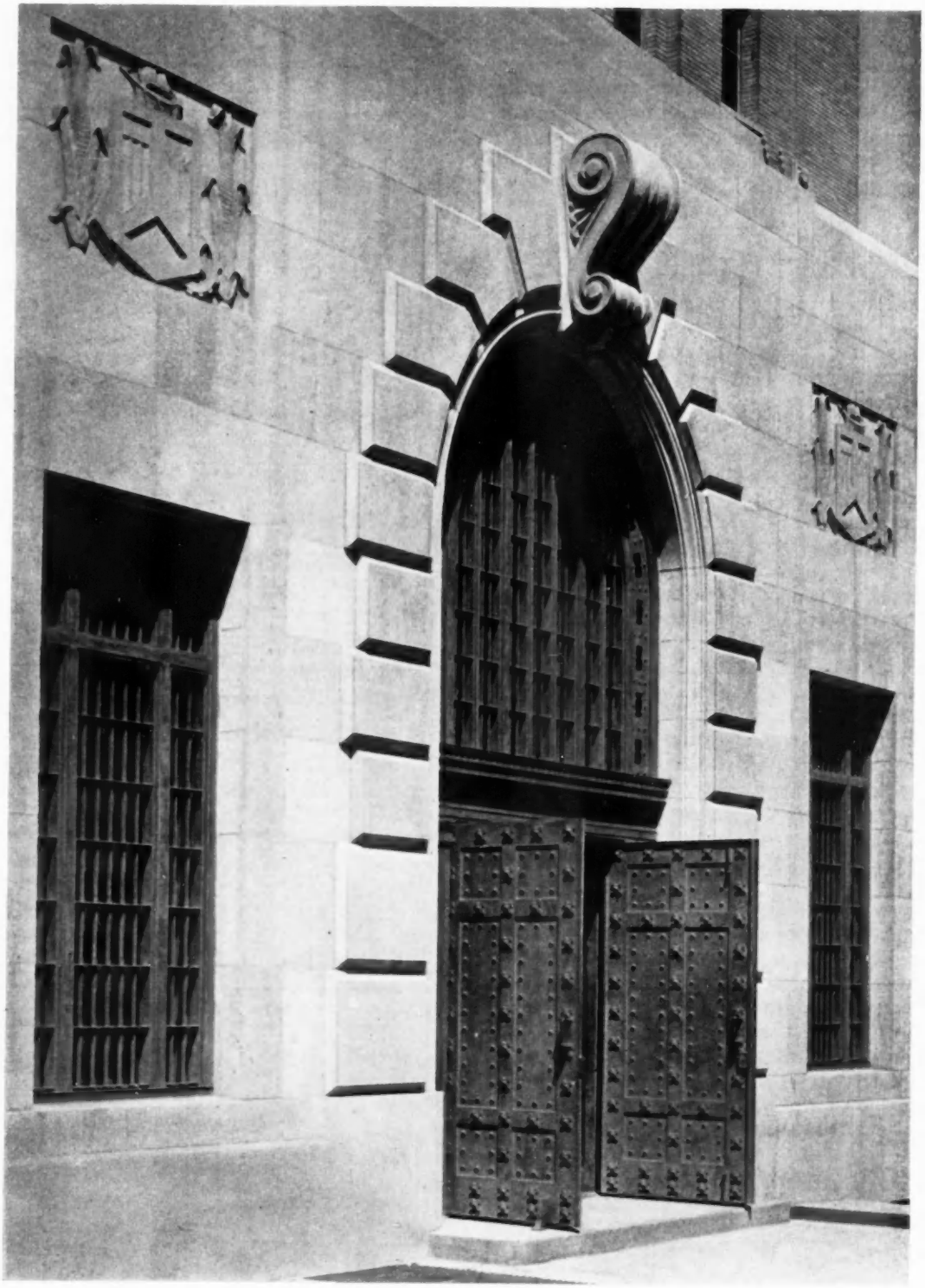
SING SING PENITENTIARY, NEW YORK

FIRST FLOOR PLAN

KITCHEN, BAKERY AND STORAGE ROOMS

THE NEW EASTERN STATE PENITENTIARY

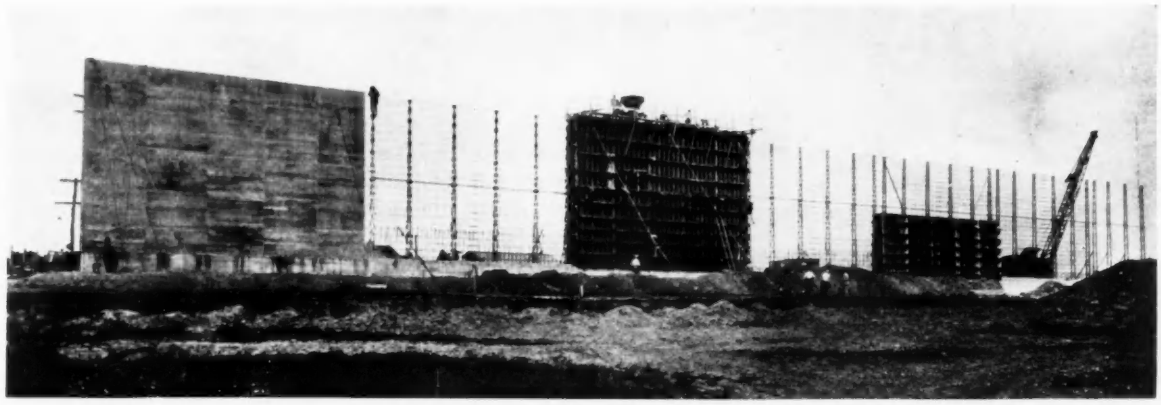
ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS



DETAIL, JAIL ENTRANCE

COOK COUNTY JAIL, CHICAGO, ILLINOIS

ERIC E. HALL, COUNTY ARCHITECT, OF HALL, LAWRENCE AND RADCLIFFE, INC., ARCHITECTS



SECTION OF 30 FOOT PRISON WALL SHOWING REINFORCING

THE NEW EASTERN STATE PENITENTIARY
GRATERFORD, PA.

ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS

IX. CONSTRUCTION AND PLANNING DETAILS

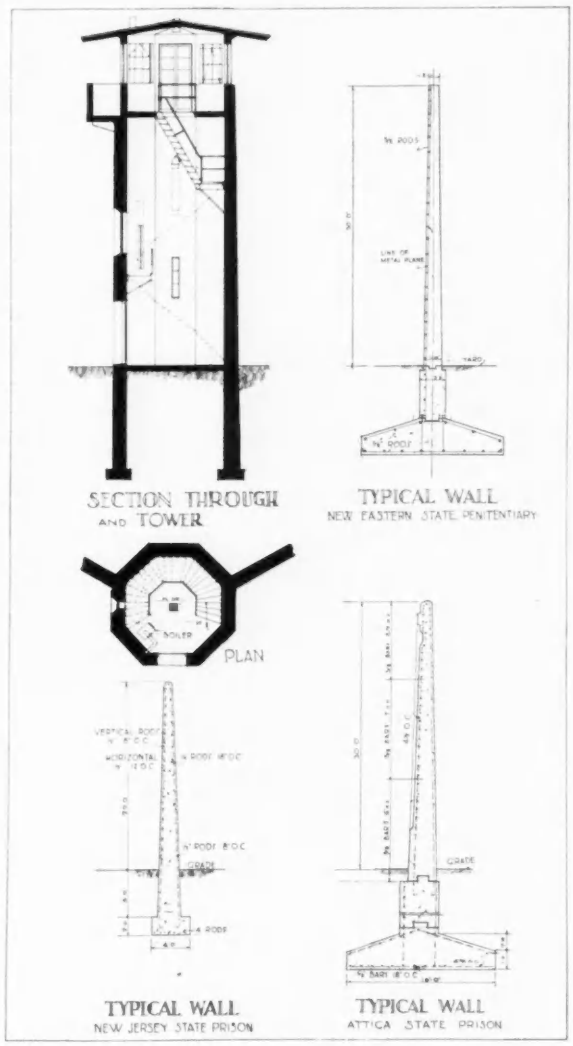
If concrete with the form marks showing is good enough for some of our finest hotels, clubs and churches, it seems preposterous that an expensive veneer of brick should be considered necessary on prison buildings.

A. WALLS SURROUNDING A PRISON

There is considerable difference of opinion as to the desirable height of a prison wall. In the new prison at Norfolk, Massachusetts, the wall is 18 feet high on the assumption that this height is sufficient to prevent a man's vaulting over the wall or being boosted over by other prisoners. It is assumed that since the prisoner will have to use a rope and hook to get over this wall, an additional 5 to 15 feet would not add greatly to the difficulty of escaping. Naturally, the higher the wall, the more difficult to escape, but the problem is largely one of proper balance between different items of expense in the prison. The 18 foot wall is sufficient for the great majority of prisoners but if "break-proof" buildings are not designed for the group requiring maximum security, the wall must be higher or these prisoners must be housed within an inner wall of greater height.

There is a difference of opinion as to whether or not the walls should be surmounted by barbed wire. Some feel that barbed wire, projecting inwards from top of the wall similar to that used on fences around industrial plants, would add to the difficulty of scaling the wall. But even those who suggest using the wire acknowledge that it will be easier to fasten a rope or hook to the wire than to a plain wall with rounded top. Provision may also be made for charging these wires and installing a system which would give an alarm if the wires were cut or grounded. It would not be necessary to keep high voltage in the wire at all times. If the wire does not prove satisfactory in practice, it can be taken down and the supports sawed off.

Future changes and additions in the wall of the new prison at Norfolk, Massachusetts, are provided



CELL HOUSE

WISCONSIN STATE PRISON, WAUKUM, WIS.

A MULTIFLOOR PRISON

A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS

This type of prison is intended for location in a city. The lower three floors are occupied by court rooms, police headquarters, with penal records and offices. A prison yard at the rear would supplement the exercise space on roofs

for in several ways. Bolts are installed in the outer face so that a raised guard walk or an intermediate guard tower may easily be added in the future should this be found desirable. Conduits are also installed in the concrete for future installation of high voltage wires for charging the barbed wire. Conduits are provided for current for flood-lighting and for the telephone system linking up the several guard towers.

Thickness of Wall: There is also a difference of opinion as to the desirable thickness of wall. Most architects favor the solid wall but some architects and engineers prefer piers approximately 2 foot square spaced on 16 foot centers with light reinforced panels between. The advantages claimed for this panel type wall are that it reduces cost and also prevents cracking through provision for expansion and contraction. A serious objection to this type for a prison wall is that the projecting columns form pockets on the outside where anyone throwing in contraband would be able to conceal himself from the view of the guards in the corner towers. This difficulty can be overcome by having the columns covered by light curtain walls on each surface.

Some prison walls are given an insloping projection at the top. The purpose is to make it impossible to grapple the wall with a hook.

All prison walls should be as smooth as possible to make climbing difficult. Some prisons establish a "dead line fence" 50 or 100 feet inside the wall and sometimes also outside the wall. This makes it more difficult to throw in contraband and adds to the difficulty of escape, since anyone within the dead line zone is in danger of being shot or at least is punished.

One way of preventing escapes over a wall is to eliminate the wall. This has proved satisfactory in several institutions, among them being an institution for the insane in Canada and the prison at Occoquan, District of Columbia.

B. ENTRANCES AND EXIT LOCKS

Assuming that a satisfactory wall has been designed it is very important to provide proper entrance and exit facilities. If possible, these should be reduced to three: a pedestrian lock, a vehicle lock and a lock for freight cars. The problem of designing a lock is not primarily one of getting sufficient strength to resist a riot or sudden attack. Rather it is a problem of necessitating an administrative routine that will make it practically *impossible for a prisoner to escape through trickery or through a threat to the life of a guard*. There have been escapes in which prisoners have driven a truck through the lock disguised as prison guards, also escapes through the pedestrian lock by threat to kill the guard unless he unlocked the gates.

The accompanying plan practically eliminates any danger of escape through the locks. A prison guard is stationed in the entrance lock. He has but

one key for all the doors which enter into this lock. This key cannot be removed from the lock except when the doors are closed and locked. The procedure on a prisoner's going out through the lock is as follows: (1) The guard opens the door from the main corridor of the prison into the lock. (2) After the prisoner has entered, the guard locks the door and removes the key which will be used to unlock the exit door. (3) Before doing this he must pass through the door into stair hall and report to the guard in the control room who has an electric control of the lock on the exit door. The purpose in requiring the guard to leave the entrance lock and enter the stair hall with a bullet-proof door between himself and the prisoner or prisoners is to prevent a prisoner who may have obtained fire-arms, from intimidating the guard into letting him through. (4) The guard opens the outer gate.

Should a prisoner attempt to force a guard to let him out without first going into stair hall, the guard in the control room would know something was wrong and he could fire on the prisoner or discharge tear gas in this lock. It would be of no value for the prisoners to get the guard's key as the doors are also electrically controlled by the guard in the control room.

The procedure in the vehicle lock is the same. All of this will slow down movement through the lock but it will create a routine which will prevent escapes through carelessness or intimidation.

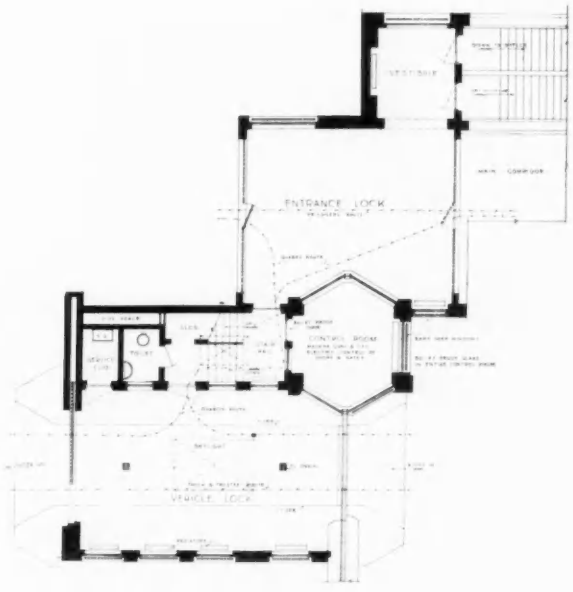
The exit lock for railway cars will also be electrically controlled from the central control room but in this case the intention is to shunt cars only if all prisoners are in their cells and accounted for.

A derail switch should be placed in the lock so that if prisoners capture an engine (as has been done) they cannot crash the gate. The gates must be strong enough to eliminate any chance of a truck's breaking through them.

C. WINDOWS

1. Semi-Detention Sash: Some architects and prison officials believe that the placing of a high wall around the prison gives sufficient security so that the factory type of steel sash may be used instead of the usual barred window. These windows would consist of ordinary industrial sections and construction with 6″ x 9″ lights, the ventilators being of the tilting pivoted type constructed to limit the opening at top and bottom to not more than 6″.

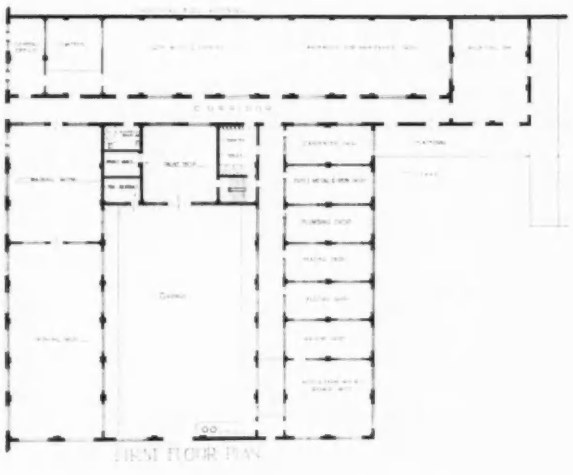
A window of this type using the deepest and heaviest industrial bars now marketed and of the strongest standard industrial construction, glazed from the outside, was recently subjected to a test which showed that a prisoner equipped with a lever could readily pry loose a ventilator leaving an opening of approximately 2′ 10″ x 7″, which is large enough to permit escape. The remaining or fixed portion of the window proved reasonably escape-



PLAN SHOWING ENTRANCE LOCK FOR PEDESTRIANS AND VEHICLES

NEW EASTERN STATE PENITENTIARY
GRATERFORD, PA.

ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS

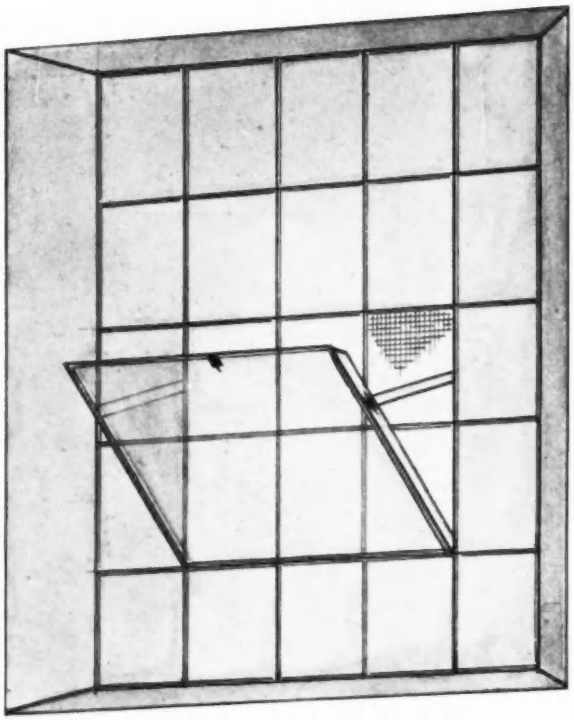


FIRST FLOOR PLAN

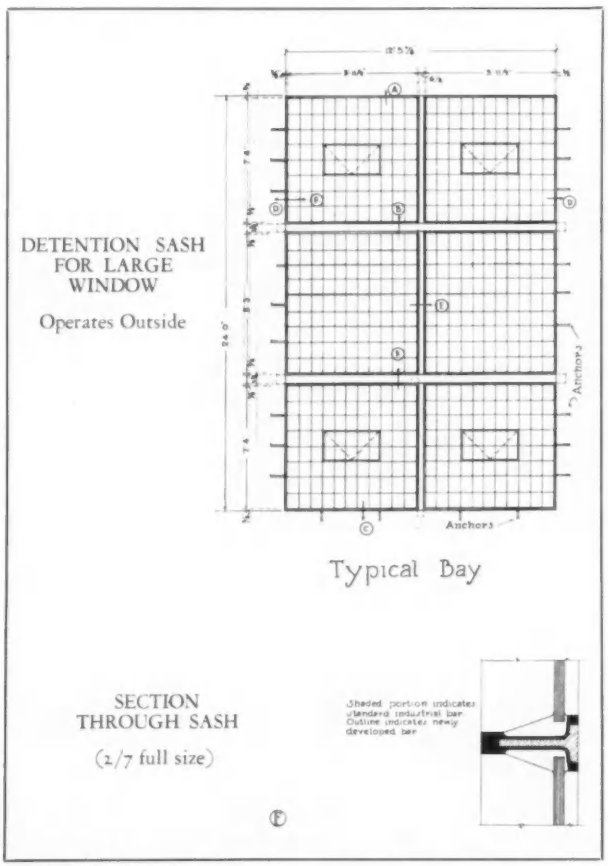
SERVICE BUILDING

NEW EASTERN STATE PENITENTIARY,
GRATERFORD, PA.

ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS



DETENTION SASH FOR OUTSIDE CELL



Courtesy of Wm. Bayley Company

proof although the prison officials interested did not feel that it approached in value the usual bar guard which it replaced. This type of window is satisfactory when its main function is to prevent visiting or leaving the cell without committing an overt act.

2. *Bars or Detention Sash:* While a prison wall minimizes the chance of escape, it is desirable that buildings for prisoners requiring maximum security (and detention jails *without* walls or tower) have window openings as nearly escape-proof as modern methods and design will permit. This may be accomplished by the age-old method of having bars outside the window. This was logical when wood sash were used but now that steel sash are customary, the use of two separate steel units, one to form a guard and another a window, is inefficient and needlessly expensive.

The William Bayley Company, cooperating with prison architects and prison officials, has developed a combined guard and screen which gives an economical solution of the problem; it also effects a marked improvement in exterior and interior appearance through the elimination of the older style of bar guards.

A test conducted in the presence of prison officials clearly demonstrated that more time was required to saw through the new detention sash bar than through the usual round bar used in the old-fashioned guard (both bars having approximately the same carbon content and being equal in hardness). An escape is possible through the old construction by making only one saw cut, but with the detention sash two sash bars must be cut.

Ventilation is accomplished by leaving certain predetermined groups of lights unglazed over which a hinged ventilator is located on the inside face of the fixed window. The ventilator can be completely destroyed in an attempted escape without in any way changing the effectiveness of the window as a guard. Flat metal screens may be attached over the ventilating areas. Where large windows are used, as in dining rooms, the auditorium or windows of cell house containing a cell block, group control of ventilators is obtained by a rack and pinion operating device. This should be located on the outside of the building so that there will be no pipes or rigging inside on which the inmates can climb.

In large rooms it is advisable to place the windows as near the inside face of the wall as possible to avoid ledges at the sills and deep shadows at the jambs, so that a prisoner attempting to work anywhere on the inside face of the window would extend so far into the room as to be easily seen from a considerable distance. For individual cells or rooms the windows should be placed near the outside wall of the building, as this will make it easier to detect broken glass or to discover anyone who might be working on a window bar.

D. CELL DOOR LOCKING DEVICE

A central locking device for cell or room doors should meet the following specifications:

When doors are being opened, they shall snap lock in open position. When in this position they may be released as a group with the control lever or individually by key.

As the doors are being closed, each door shall be automatically blocked to prevent reversing its direction in the last 12″ of travel. This condition shall be releasable individually by key.

When the doors are fully closed, they shall snap-lock. The "snap lock" shall be releasable with the control lever for the group, or individually by key. When in this position the doors may be individually key-locked in addition, to prevent their being unlocked with the control lever.

The locking device should permit "dead locked" position from which it will be impossible to open any individual door by individual key or by springing a snap lock.

This device must be so designed, located and built as to eliminate any chance of tampering with its mechanism. The mechanism must be so planned as to eliminate the possibility of any prisoner's being able to prevent locking or unlocking of other cells by blocking his own door. This is a favorite trick which can be prevented only by provision for independent operation of doors in case one is held.

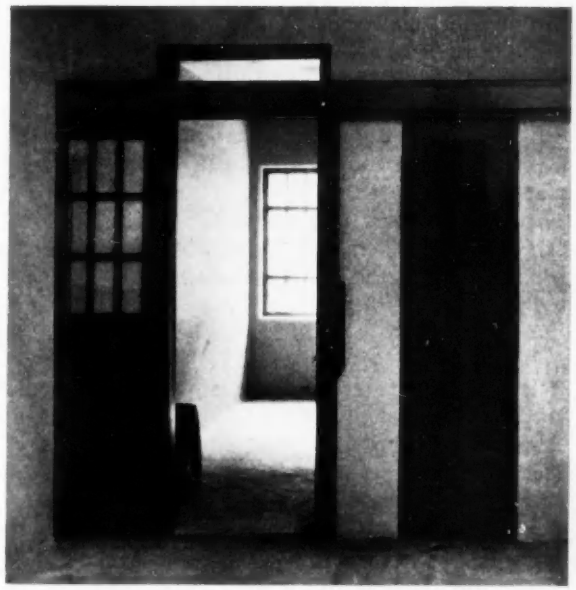
Elaboration beyond these requirements is a needless expense. The accompanying drawing shows a simple locking mechanism which combines these essentials.

E. VISITORS

The precautions necessary to prevent transfer of contraband from visitors to prisoners will vary with the type of prisoner and the judgment of prison warden. The general custom is to search visitors for weapons, drugs, files, liquor, or other contraband when they enter the prison. This is thought to be sufficient in some cases and the prisoners are permitted to see their visitors without any screen between them. In most prisons, however, the visitors' room is divided from the prisoners' room by a wire screen. Sometimes two screens are placed several feet apart to make it more difficult to pass drugs and other contraband. Some recent prisons have installed shatter-proof glass in partitions separating the prisoners from their visitors with special apparatus which permits conversation through the glass but which prevents the passing of any object. It is quite possible that all three types should be used depending on the security group for which plans are being prepared.

F. HEATING

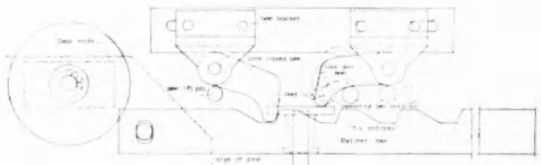
As a general principle it is advisable to use steam heat in public institutions since this or hot water



CELL HOUSE INTERIOR

THE NEW EASTERN STATE PENITENTIARY, GRATERFORD, PA.

ZIMMERMAN, SAXE AND ZIMMERMAN, ARCHITECTS



DETAILS OF LOCKING DEVICE

D. LOCKING DEVICE

OPERATING HANDLE

ELEVATION SHOWING POSITIONS OF DOORS & LOCKING DEVICE OPEN & CLOSED

permits much easier alterations or additions. To prevent waste of heat on mild days it is well to install valves which will automatically turn the steam off and on.

Individual oil burner boilers may be found economical when the cottage system is used if the cottages are widely distributed.

In a large room, such as that containing an inside cell block, considerable care must be taken to insure proper distribution of heat. Unless ample forced circulation is provided for and *maintained*, there may be a difference of 10 or 15 degrees between lower and upper cells.

If the central interior cell block is adopted, a practical heating system is the one to be used at Riker's Island, consisting of a combined heating and ventilating system, placed in the attic, and air ducts carried to a termination near the floor. This system, however, makes it impossible to heat the building without running the fans.

The plan adopted in the Attica and Chicago prisons, of running floors through to the outer walls, prevents an accumulation of hot air in the top of the building and reduces the heating and ventilating problem to an ordinary one.

Special care must be used in selecting vent outlets or radiators, to eliminate opportunities for hiding saws, drugs and other contraband. Steam pipes are generally preferable to radiators on this account. Cells to be used for criminal insane or in jails for detention of drunks must have heating so arranged as to eliminate entirely any possibility of a prisoner's being burned.

Some ventilating systems recently installed have given an easy means of escape.

IN CONCLUSION

It must be remembered that the architect's advice as an authority on construction is modified by the ideas, ideals, and wishes of the boards or officials he finds in charge of the project. The site is part and parcel of the plan and the two must be considered in relation to each other; likewise the type of administration that is proposed must be so definite that the architect can rely on seeing it carried out after the building has been completed.

An efficient building is the expression of a particular administrative plan; radical changes in personnel or procedure will do it violence, and make an inadequate, lopsided or antiquated thing out of the best building that an architect could possibly have worked out. The architect can help to avoid such results by making positive use of his disinterested influence on the side of every proposal that seems nonpartisan and humane.

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CONSTRUCTION STATISTICS

From the records of F. W. Dodge Corporation, Statistical Division. The figures cover the 37 states east of the Rocky Mountains and represent about 91 per cent of the country's construction volume.

First Ten Months, 1929

	TOTAL CONTRACTS		WORK PLANNED BY ARCHITECTS		
	Number of Projects	Valuation	Number of Projects	Valuation	Per Cent of Total
Commercial Buildings	21,023	$ 797,527,100	8,915	$ 604,854,300	76
Industrial Buildings	5,747	649,446,100	2,027	168,254,200	26
Educational Buildings	4,122	336,364,400	3,319	321,734,300	96
Hospitals and Institutions	1,036	126,478,600	767	112,191,800	89
Public Buildings	1,181	108,113,900	674	99,499,400	92
Religious and Memorial	2,002	94,720,200	1,432	83,915,900	89
Social and Recreational	2,211	121,945,100	1,347	98,935,600	81
Residential Buildings	99,877	1,688,154,900	25,548	1,017,811,400	60
Total Building	137,199	$3,922,750,300	44,029	$2,507,196,900	64
Public Works and Utilities	17,209	1,124,159,600	308	31,997,000	3
Total Construction	154,408	$5,046,909,900	44,337	$2,539,193,900	50
Total Construction, first ten months, 1928	173,980	$5,724,047,600	52,028	$3,109,893,800	54