THE ARCHITECTURAL RECORD

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• NEXT • MONTH •

SPECIAL ISSUE ON STORES AND OTHER COMMERCIAL BUILDINGS

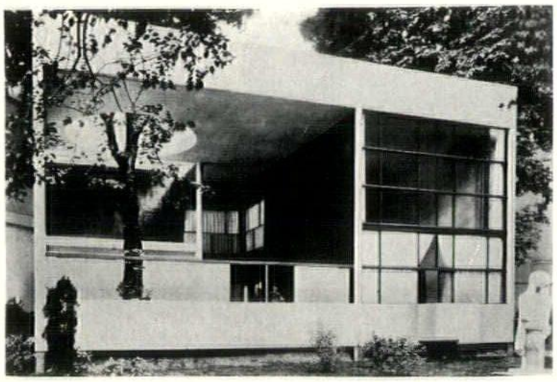
DATA FOR PLACING AND PROPORTIONING RETAIL STORES AND SERVICE ESTABLISHMENTS IN A RESIDENTIAL COMMUNITY. By Howard W. Green • PLANNING: The Men's Shop, Specialty Shops for Women • FEATURED SHOPS AND BUILDINGS: Washington Branch, Corn Exchange Bank Trust Company, New York City—Fellheimer and Wagner, architects . . . Office Building for the Upjohn Company, Kalamazoo, Michigan—Albert Kahn, architect . . . Lincoln Theater Building, Miami Beach, Florida—Robert E. Collins, architect; Thomas W. Lamb, consulting architect . . . Union Bus Station, Jacksonville, Florida—W. Kenyon Drake, architect . . . Hahn Store, Washington, D. C.—Pioso, Peterson and Associates, architects . . . Market Building, California—Van Pelt and Lind, architects . . . Julius Kayser Store, New York City—Edward I. Shire, architect . . . TVA Stores • TECHNICAL NEWS AND RESEARCH • NEWS OF THE MONTH • BUILDING TRENDS

NEWS OF THE MONTH

THIRTEEN YEARS OF FAIR-BUILDING REVIEWED IN CURRENT EXHIBIT

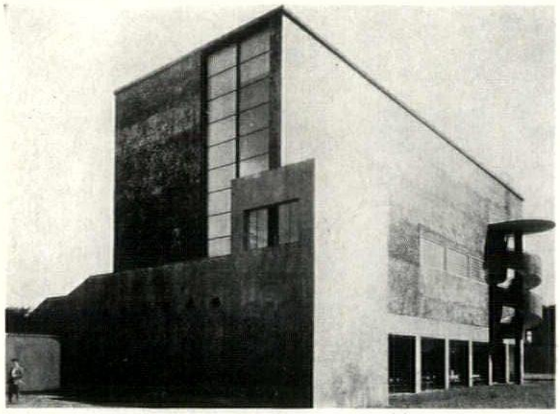
Fairs are as old as civilization; but great expositions are the phenomena of modern industrial society. Beginning with the London Fair of 1851 expositions have seen a steady development in size, complexity, and frequency. Since the World War they have become annual affairs of increasing scope. Planned for the near future are many on a scale not heretofore attempted—1937 International Exposition at Paris; 1939 World's Fair in New York; and the San Francisco Bay Exposition, 1939.

The social and political importance of these expositions can no longer be ignored: and the problems they raise for the designer demand a more progressive approach than heretofore. To place these problems before the designers of New York's World's Fair, the Museum of Modern Art last month opened a small and not exhaustive exhibit of recent expositions and issued a bulletin by Henry-Russell Hitchcock, Jr., on the development and significance of the modern exposition. The exhibit, according to the Museum, "is intended briefly to show the success with which the modern idiom has been expressed in Fair architecture and the flexibility with which it lends itself to various uses. Emphasis has been placed on unity of design and coherence of planning rather than on social implication. The Stockholm Exposition makes explicit what becomes apparent in a study of these expositions: that a Fair planned with a strong central theme, one related to man's needs in modern civilization, will probably result in a Fair logically planned, homogeneous in style and of contemporary value." (Photos from Museum Exhibit.)



1925
PARIS
FRANCE

Pavilion de L'Esprit Nouveau
Le Corbusier, architect



1928
BRNO
CZECHOSLOVAKIA

Pavilion of City of Brno
Bohuslov Fuchs, architect

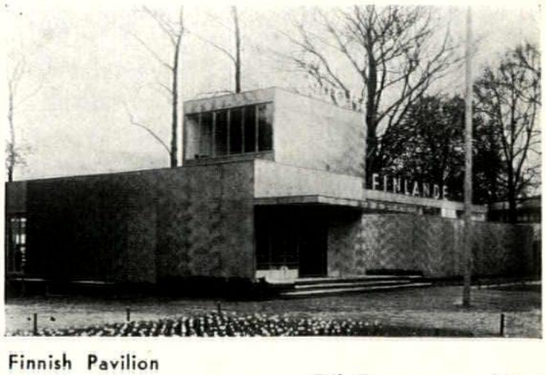
1928
COLOGNE
GERMANY

Pavilion, Associated Workers' Press
Hans Schumacher, architect

1929
BARCELONA
SPAIN

Pavilion of German Republic
Mies van der Rohe, architect

1930
ANTWERP
BELGIUM



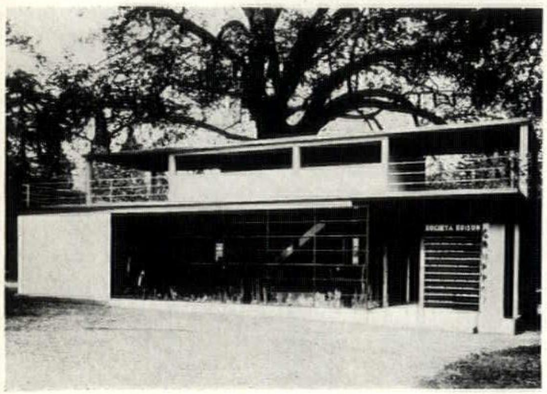
Finnish Pavilion
Erik Bryggman, architect

Musical Instrument Pavilion
E. Gunnar Asplund, architect

1930
STOCKHOLM
SWEDEN

1934
CHICAGO
ILLINOIS

Chrysler Motor Building
Holabird and Root, architects

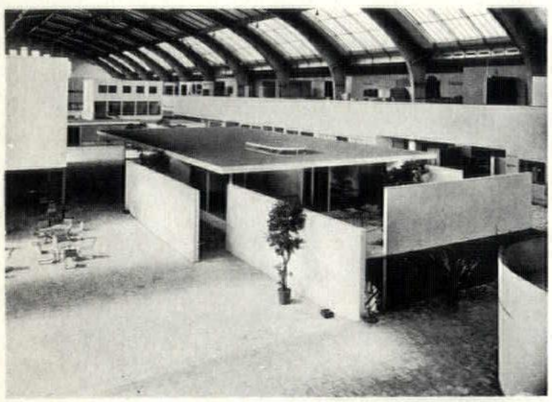


Electrical Pavilion
Figini and Pollini, architects

1930
MONZA
ITALY

1935
BRUSSELS
BELGIUM

Czechoslovakian Pavilion
Bohuslov Fuchs, architect



Building Materials Exposition
Mies van der Rohe, architect

1931
BERLIN
GERMANY

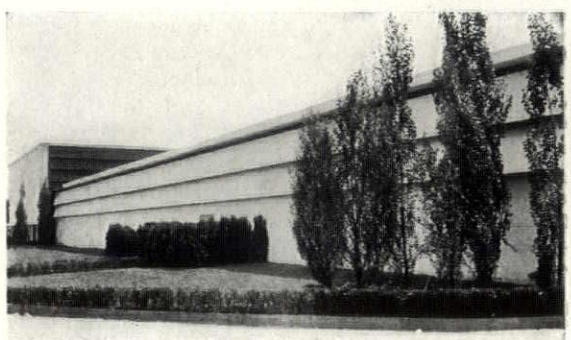
1936
DALLAS
TEXAS

Magnolia Oil Company Pavilion
William Lescaze, architect

Press Pavilion
Luciano Baldessari, architect

1933
MILAN
ITALY

1936
CLEVELAND
OHIO



Hall of Progress

NEWS OF THE MONTH

Wide World Photo

NOT WAR BUT PEACE

Nowhere is the close similarity between modern instruments of construction and destruction more clear than in scenes like this: a jackhammer crew at work on the Grand Coulee Dam site in the Pacific northwest.

"THE WHOLE BOAT GIGGLES FROM STEM TO STERN"

The English super-liner, "Queen Mary," which made her maiden trip to this country last month, has been the cause of heated controversy in English architectural and decorating circles. The work of the huge staff of professionals and craftsmen who took over the "Queen Mary" when the naval architects had finished has not met with the approval of all critics. Serge Chermayeff, F.R.I. B.A., writing in *The Listener,* says:

"The beauty of the ship, her gracile slenderness, as one looks along her tapering and swelling hull from some point exactly in front of the bows, or, as seen from the opposite bank, her precipitous side-on splendor, is so satisfying that the seeker after beauty, who has no intention of crossing the Atlantic, may be advised to go no further. Inside waits disappointment. And yet nine-tenths of the interior would have been well enough, and something more than well, if only the people who settle these things could have let it alone. The ship is lined in wood as a ship should be, lined with veneers of every texture and color, ordered as often as not with considerable taste. But the good wood surface has been broken up and disfigured with what business men call 'art.'

"They will be calling us highbrows next"

● "It was decided by those who decide these things that the 'Queen Mary' should be decorated. The experiment might have been interesting. There are plenty of serious artists in England, some of whom are not only serious but gifted. To what extent they are gifted for decoration on the grand scale we do not know. Here was a chance of putting them to the test. Gifted and serious artists, however, do not commend themselves to a certain kind of business man, and assuredly the men who ordered and interfered with the decoration of the 'Queen Mary' are of that kind. So, any serious artist who has had the misfortune to be stumbled on by the management has, it seems, been diverted from his or her natural bent; has been hampered by stupid and ignorant instructions, and, when all else failed, has had his or her achievement stultified by a crushing inappropriate setting. About the wholly or partially frustrated efforts of these artists I shall have a word to say presently; but neither they, nor the veneer-setters, set the tone of the boat. That is set by the 'management,' and what the management wants, and gets, is the humoristic-artistic. That is the prevailing note: the Teddy Bear style. Nothing is suffered to be merely good-looking, it must be funny as well; which means that hardly anything is good-looking, and that almost everything is vulgar. The managers, having voted recklessly for decoration, have been overtaken by terror lest they should be accused of a taste for art—'they will be calling us highbrows next.' To escape this deadly impeachment they have decided to make a joke of it. The decoration of the 'Queen Mary' is facetious.

Comic strip raised to the power of one hundred

● "To name the persons who have disfigured this beautiful ship with their titterings in paint, wood, glass, plaster and metal, would be invidious, and is, fortunately, unnecessary. Their doings may be compared with those of the mosaicists—almost all of them—who have defiled the glorious interior of Westminster Cathedral; happily these are not indestructible. The better of them—those that titter least are merely feeble, the worse are quaintly vulgar. They do not matter; it is the prevailing mood that matters; and this, we may take it, was inspired by the management. The artistico-comical creeps all over the ship, and proclaims the frivolous and frightened attitude to art of rich people who are not sure of themselves. The whole boat giggles from stem to stern. Even the modest unpainted studio, a small room provided with a piano for practice, has not escaped the infection: the carpet, the very windows, are prettified with treble clefs, crotchets and quavers. In the gymnasium are comic boxers, in the cabin nursery . . . but the cabin nursery will not bear remembering. There is something peculiarly depressing about a comic strip raised to the power of a hundred.

They should have left the wood alone

● "The answer to this criticism is, no doubt, that the company knows what its customers like. I wonder. It may be so, but, like Malvolio, I think more nobly of the soul. It is significant, perhaps, that the 'tourist' (second) class apartments are much to be preferred to the 'cabin' or first. Here both veneer and glass have been used with surer and more consistent taste and with better effect. You cannot expect much business man's art for a second-class fare. But, considering the interior as a whole, I do believe, if the business men could not leave the wood alone—which, being business men, they could not—they would have done better to hand the ship over to some large firm of upholsterers, who would have fitted it out in any style of period-plenishing from Middle Minoan to Art Nouveau."

PRIVATE CAPITAL TO TRY SUBSISTENCE HOMESTEADS

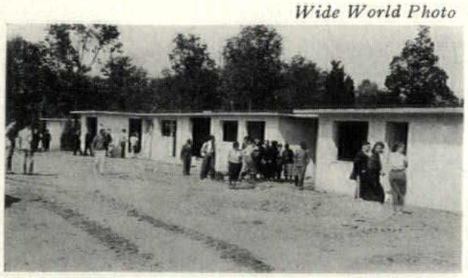
Entrance of private industry into the field of subsistence homesteads was forecast in a statement by FHA's Stewart McDonald last month, when he announced the President's "enthusiasm" over a plan to extend FHA mortgage insurance to such projects. The plan aims at a gradual movement of industrial workers from urban and suburban areas to small homes on one- and two-acre plots several miles from city limits. "Movement into these areas should be encouraged in every possible way," according to McDonald, "because it will relieve congestion within the cities and will enable people to raise produce in their own gardens."

The entrance of FHA into the field of subsistence homesteads marks another step in the New Deal's efforts to put into effect a program of decentralization of the industrial population.

18 SUBSISTENCE HOMESTEADS NOW COMPLETE

18 of the 33 projects transferred to it from the Division of Subsistence Homesteads last year have been completed by Resettlement Administration, according to an RA report. This brings to a total of 1,436 the number of families provided for: with the program complete, 2,761 families will have been cared for. Although it is felt in many quarters that, due to widespread rural distress, Federal relief measures should be expanded, a recent decision of the Federal Appellate Court threatens the entire RA program (*see News of the Month*, May 1936).

Wide World Photo



GARMENT WORKERS PICNIC PREMATURELY

200 garment workers and their families held a picnic at RA's new project at Hightstown, N. J., last month to celebrate the occasion and inspect their future homes. They were premature: the project, along with the entire 1935 Relief Act, was declared unconstitutional the next day. The $1,800,000 "greenbelt town," scheduled for completion around June 15, may be finished with funds already allotted.

PWA SUCCESS STORY

According to H. M. Lane, president of the Alta Vista Housing Corporation, all you have to do to put your town on its feet is to start a housing project; at least, the phenomenal growth of Alta Vista, Virginia, is attributed in part to the impetus furnished by the PWA limited-dividend project.

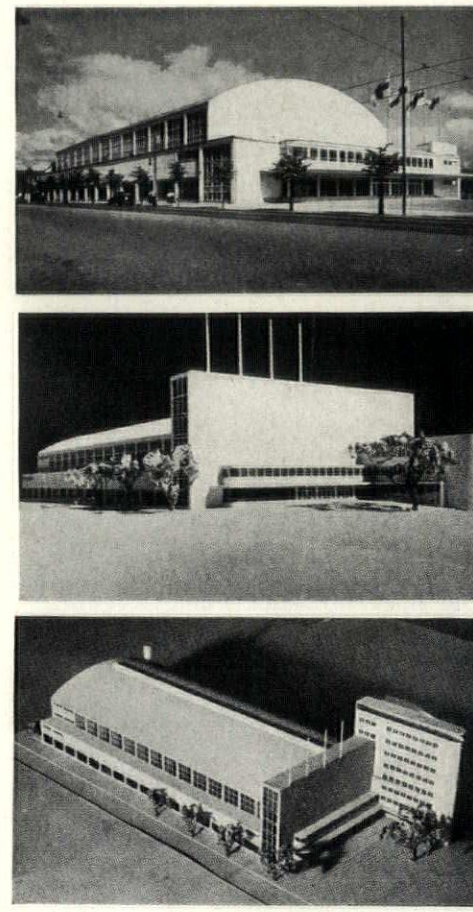
Because of totally inadequate housing "industries in the town had been unable to attract the right kind of workmen." The Housing Corporation completed 50 houses in September 1934, which rent for between $3 and $4 per house per week. Demand for these houses reached a high point last month when one vacancy brought 49 applicants. The Corporation is contemplating additional structures.

HINDU ART "SAVED" BY AMERICAN TOBACCO

When Doris Duke, heir to the Duke tobacco millions, visited India last year with husband James Cromwell, she was much taken by India's ancient art of marble inlay. Forthwith she ordered a series of marble panels inlaid in floral designs with jade, cornelian, lapis lazuli, mother-of-pearl and other semi-precious stones. These panels are to deck a bedroom and bath in the new Cromwell mansion in Palm Beach, Florida. The order, which occupied many craftsmen for months, is a break for the nearly extinct industry, and several maharajahs, "stirred by the Cromwells' patronage of a dying art," are considering following their example by engaging the newly discovered craftsmen. The Cromwell order is said to be the biggest since the days when emperor Shah Jahan built the Taj-Mahal for his leading woman.

ONE ITEM THE DESIGNERS FORGOT

The famous vegetable garden atop Rockefeller Center, New York City, now boasts a scarecrow. According to A. M. Van Den Houk, horticulturist at the Center, the city sparrows so took to the seeds in the skyscraper garden that a scarecrow was felt necessary. After a trip through New Jersey and Connecticut in search of a horrendous model, Mr. Van Den Houk found it was the rush season for scarecrows and was forced to construct his own from clothing bought at a local Salvation Army office. The scarecrow, complete to a flower in its buttonhole, now keeps away the "absolutely brazen" birds.



Photos courtesy of Bauwelt

FINLAND PRE-PLANS FOR EXPANSION

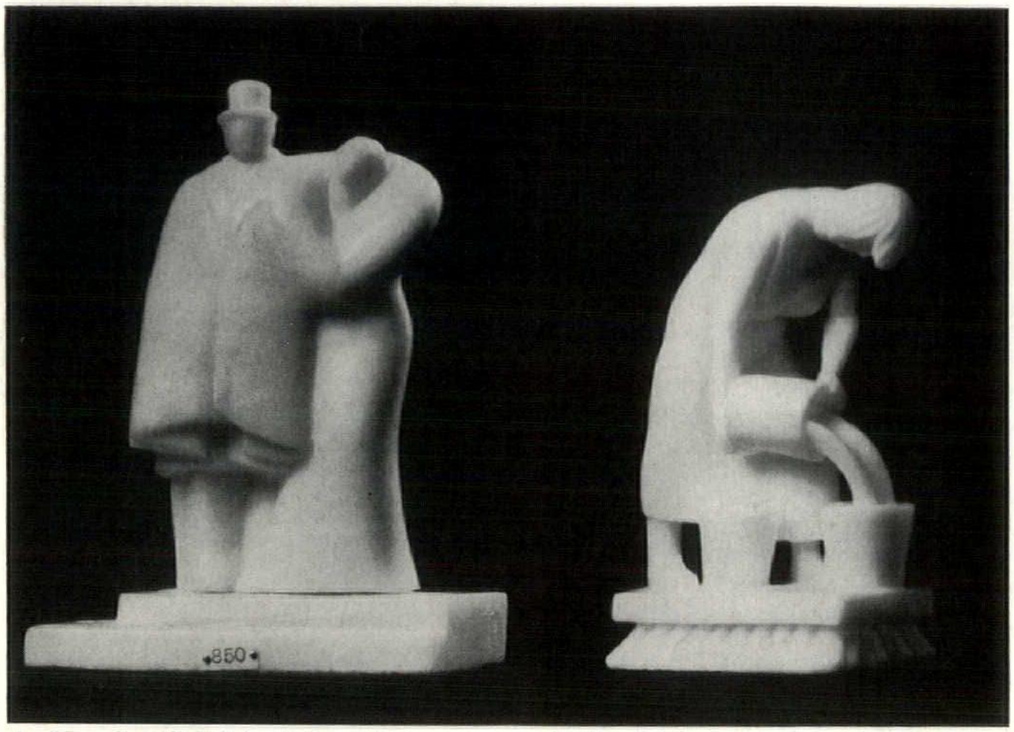
The new city market hall of Helsingfors has been pre-planned for expansion. To the present structure (1) will be added later a six-story bank of exhibition rooms (2) the blank walls of which will be used for advertising. At a still later date it is planned to add an eight-story office building (3) to the right of the exhibition rooms. The architects are A. Hytönen and R. V. Luukkonen of Helsingfors.

Architecture D'Aujourd'hui

AN INTIMATE VIEW OF "DER FUHRER"

An unusual view of the dining room in Adolf Hitler's Bavarian retreat. Nowhere is the reaction of the third Reich better exemplified than in its domestic architecture with its use of sloping roofs, hand-painted china, peasant-inspired furniture, and hand-embroidered pillows. Notice the figure of a Storm Trooper at the top of the chandelier.

NEWS OF THE MONTH



1. "Opening Night," by Helen Beling. 2. "Scrub Woman," by Duane B. Bryers

CLASS CONTRASTS IN SOAP

Running the gamut of subject matter (from animals to religion), entries in National Soap Sculpture's Twelfth Annual Competition have been judged and are now on exhibit in Rockefeller Center. The two entries shown above are first and second prize winners in the "advanced amateur class." The exhibit will later tour the country.

DEAD ARCHITECT TO ATONE FOR MISTAKE

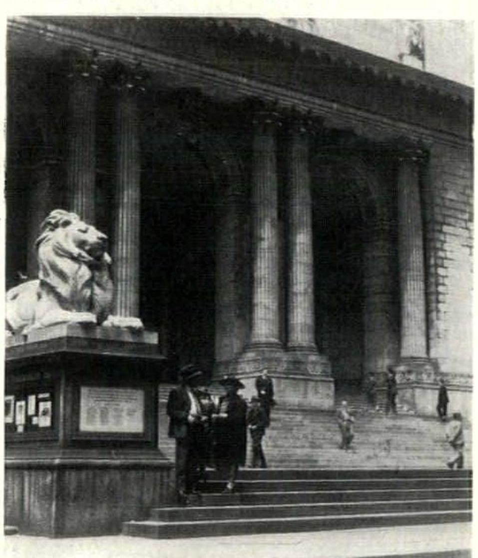


Photo by Zimmerman

New York's Public Library never satisfied its architect.

So conscious was Thomas Hastings of the errors of his youth that when he died in 1929 he left a fund of $100,000 to atone for them. Hastings, together with his partner John M. Carrere, was designer of New York's Public Library. The commission, which came as the result of a long and rather novel competition, had never fully satisfied architect Hastings. Before his death he was aware of what he considered errors in the design of the building and resolved that they should be corrected. The fund which he bequeathed for this purpose only became available with the recent death of his wife.

The Fifth Avenue portico was what bothered Mr. Hastings. Although he refused to release them he had long before his death completed the plans for the remodeling of the portico. He felt that the entrance was too heavy and, if his plans are carried out, the pediment will be brought forward and supported by eight Corinthian columns instead of the six columns and two piers which now support it.

This revision will bring the Library even closer to Fifth Avenue, a point which Mr. Hastings fought spectacularly before the Library was built. The legislative Act which made the erection of the Library possible was so worded that the building had to occupy the site of the old Reservoir on Fifth Avenue. Mr. Hastings, architectural composition in mind, proposed that instead it be placed on the Sixth Avenue side with all of Bryant Park developed as approach.

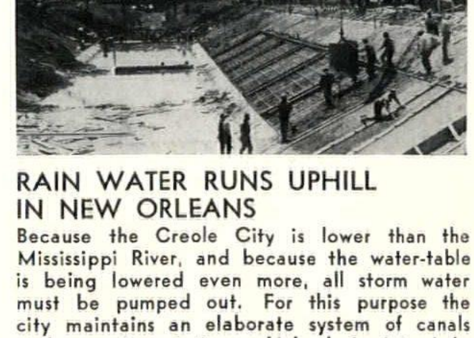
But Mr. Hastings' proposal went down to defeat. Jacob Riis, well-known figure of the time, raised the cry "Save the parks for the people." The newspapers made the issue a popular one although the park about which they were fighting was "associated in the popular mind with waste paper, beggars, and unemployment." The Bill went through as originally drafted and, later, the competition for the building was won by Carrere and Hastings.

Ironically enough, Bryant Park, as redesigned by the WPA last year, forms the approach to the back of the building which Mr. Hastings so desired for the front.

TREASURY DEPARTMENT SELECTS SCULPTORS

Two sculptured models—one of Noah receiving from the dove the good news that the flood would subside, the other of a mother and child receiving a message from an absent family member—have won for their respective owners a $7,500 commission. Two models, part of the 400 entered in the competition of the Treasury Department's Painting and Sculpture Section, will be developed into sculptures to ornament the Bronx (N. Y.) Post Office.

Charles Rudy, New York sculptor, and Henry Kreis, Essex, Connecticut, winners of the competition, will transfer their designs onto white marble blocks, 4' x 14' in size. In executing the sculptures, such alterations as may be necessary to harmonize the designs will be made.



Wide World Photo

RAIN WATER RUNS UPHILL IN NEW ORLEANS

Because the Creole City is lower than the Mississippi River, and because the water-table is being lowered even more, all storm water must be pumped out. For this purpose the city maintains an elaborate system of canals and pumping stations which drain into Lake Pontchartrain. Shown above is a new canal being constructed with PWA funds.

Main Elevation

KEALLY-LIVINGSTON DESIGN WINS OREGON COMPETITION

The $132,000 commission for designing the proposed Oregon State Capitol was last month awarded to Francis Keally and Goodhue Livingston, New York architects. Besides the winners of the competition, in which some 123 designs were submitted (at an estimated production cost of $100,000), five runners-up were awarded a $1,500 prize. They are: Wesley Sherwood Bessell of East 52nd Street, New York; de Young and Moscowitz of 205 East 42nd Street, New York; John A. Thompson and Gerald A. Holmes of 101 Park Avenue, New York; Walter T. Karcher and Livingston Smith of 1520 Locust Street, Philadelphia.

Mr. Keally, well-known designer and prominent in competition work, is a graduate of the University of Pennsylvania. Five years ago he won the competition for the pioneer monument at Harrodsburg, Kentucky.

Mr. Livingston, who is a graduate of the Columbia School of Architecture, is a member of the firm of Trowbridge and Livingston, designer of many financial institutions in the east, including the J. P. Morgan Building and the Mellon National Bank in Pittsburgh.

CONFERENCE TO DISCUSS CHURCH ARCHITECTURE

The North American Conference on Church Architecture will meet October 9, 1936, at the Cathedral of St. John the Divine in New York City. The conference, which will be devoted to discussions of modern problems in church architecture, is open to all architects, designers and builders. Among the speakers tentatively accepting are the Rt. Rev. Bishop William T. Manning; Dr. Ralph Adams Cram, architect; Dr. Francis Onderdonk, University of Michigan, who will speak on ferro-concrete construction in churches; Professor Leopold Arnaud, School of Architecture, Columbia University.

LORD OF SAN SIMEON JOINS FAIR BOARD

William Randolph Hearst, publisher, was among the 35 men added recently to the Board of Directors of the San Francisco World's Fair of 1939.

CONTROL OF STRUCTURAL PESTS NOT ARCHITECT'S JOB

As modern construction becomes increasingly complex the architect finds his field increasingly invaded by specialized technicians. This trend in California has recently taken the form of a discussion between the State Pest Control Board and the architects. The Board, set up under the Structural Pest Control Act, is designed "to safeguard the public by requiring that those persons who apply chemicals be cognizant to the danger of human life in the improper use of insecticides, fumigants, or allied chemicals."

Glen V. Slater, Register of the Board, writing in the *Architect and Engineer* for May, points out that the registration laws for architects and engineers do not permit the practice of any profession other than that for which the architect or engineer is specifically certified, registered, or licensed. Control of structural pests, according to Mr. Slater, is not included in the planning and designing of buildings: "Certainly, if it had been intended that the control of pests was the function of the architect and engineer, such would have been included in the definition recited in each Act." Precautionary measures against structural pests in buildings under construction are one thing: the right to advise or specify the use of chemicals or poison to rid an existing structure of pests is quite another, according to Mr. Slater.

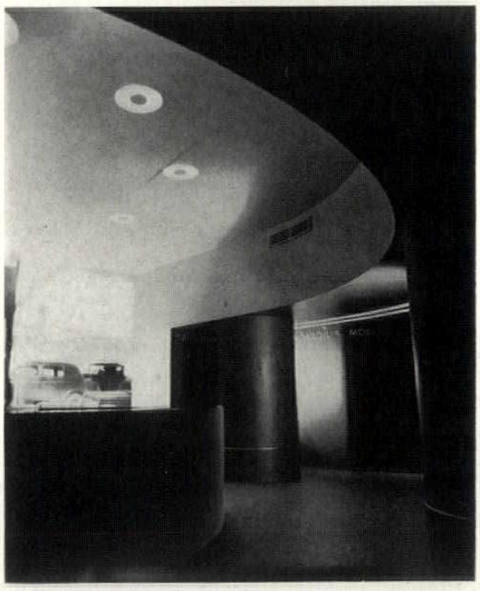
The spread of the termite in this country has been both recent and rapid, but already the exterminating field is a highly competitive one with a rapidly broadening technique. Standardization of chemicals has already been taken care of in California by its Economic Poisons Act. Standardization of methods is the object of the Pest Control Act. Licensed exterminators are the means by which the latter objective is secured.

LEON SOLON AGAIN MEDALIST

Léon V. Solon, secretary of The Architectural League of New York, has been awarded the "President's Medal" of that organization for his "intelligent building up of the League's prestige."

Wide World Photo

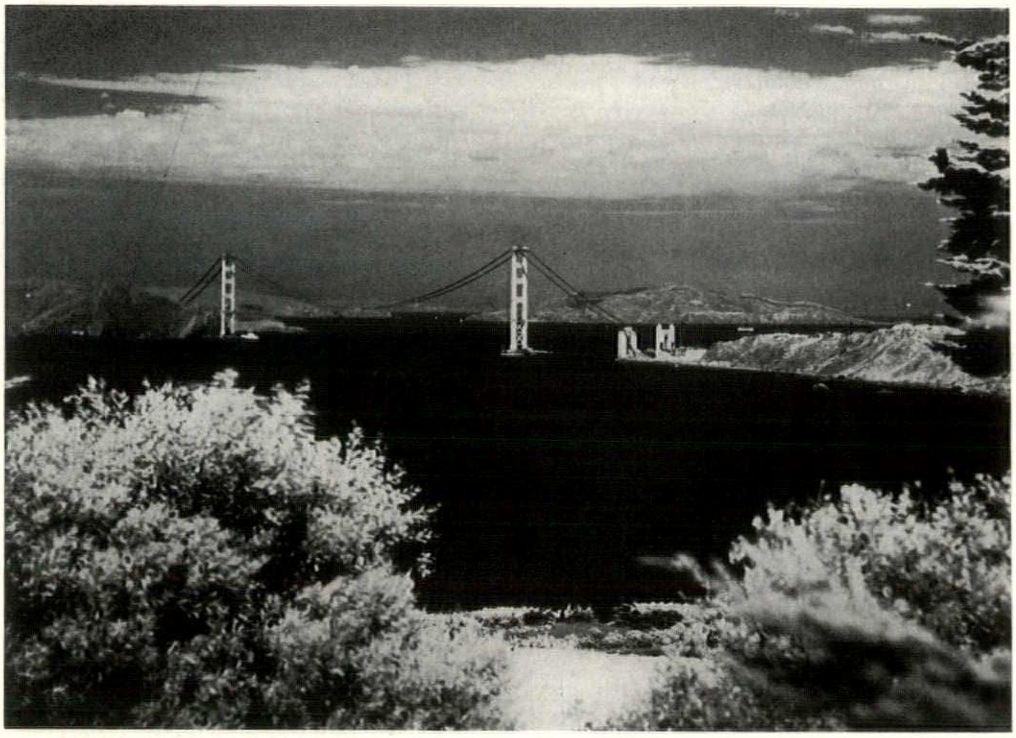
FOR (RICH) MEN ONLY
A new store for men recently opened in London. The structure, which has 9 floors, is designed for merchandise running from trout flies to small aeroplanes, cocktails to evening clothes, all of which are appropriately displayed. The indirect lighting of the façade is achieved by vertical and horizontal troughs. Notably absent are eye-jerking advertising signs. Joseph Emberton, architect.



THEY STILL WANT TO SEE NIAGARA
Free information for tourists is dispensed at the new Bureau designed by Henry Dreyfuss for Socony-Vacuum Oil Company in New York. The color scheme of blue-green and white, with brilliant red accents, is executed in linoleum. Officials of the Bureau say that marked maps to Niagara Falls are still most in demand.

NEWS OF THE MONTH

Wide World Photo

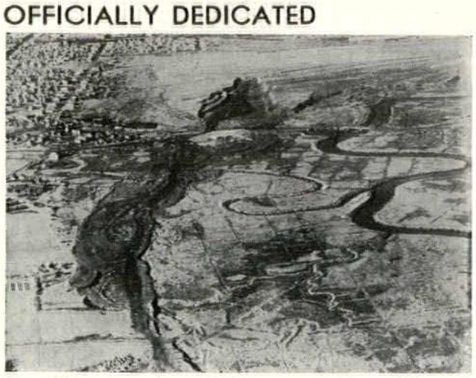


A THING OF BEAUTY

Engineering design reaches new heights of beauty and daring in the Golden Gate Bridge now nearing completion in San Francisco. The structure is the largest suspension bridge in the world. The 36-inch cables are being spun in place.

WORLD'S FAIR SITE OFFICIALLY DEDICATED

Wide World Photo



On the marshes "the expanding life of the future" will rise.

On a rainy night last month, atop a huge ash-pile, Grover Whalen, president of World's Fair Corporation, officially dedicated the Flushing Meadows (N. Y.) site with a bottle of champagne. Speechless and informal though the ceremony was, it initiated a period of great activity for the proposed Fair.

Board of design named

A board of seven, consisting of architects, industrial designers, and engineers to plan and supervise construction of the Fair, has been appointed. Stephen F. Voorhees, A. I. A. president, has been named chairman; Gilmore Clarke, William A. Delano, Jay Downer, Robert D. Kohn, Walter Dorwin Teague, and Richmond H. Shreve complete the staff. The function of the Board will be to prepare and submit to the directors a general plan of the Fair, including the definition of the main theme, limitations of heights and areas for structures, general architectural characteristics including color and light. Mr. Teague, industrial designer, is the only "modernist" on the Board. The Board of Design will work for exhibitors and not for the Fair Corporation. However, the individual designs of the Board members must be approved by the entire design board.

Design workshop established

The new Board of Design will have as its workshop the greater part of the 80th floor of the Empire State Building. The area has never been occupied except for the offices of John J. Raskob and Pierre S. DuPont "who had the southern exposure." Until further expansion is required the Design Board and its staff will work here.

Must have social objective

The "Fair of the Future Committee," an advisory board which advocates advanced design (see *News of the Month*, April 1936), dined last month with the Fair's Advisory Board. In submitting its report, the committee expressed the belief "that the most important question connected with the Fair is the story it will attempt to tell."

"We believe," it said, "that the progress of the Fair must have an underlying social objective. It must demonstrate that betterment of our future American life which may be achieved only through the coordinated efforts of industry, science, and art." The traditional scheme of planning a fair as a number of separate and unrelated structures devoted to machinery, science, transportation, agriculture, etc., should be abandoned, according to the committee, as "such an obsolete arrangement fails to relate the exhibitions to daily life.

"Our plan calls for nothing less than turning the old-fashioned fair inside out and building it around the visitor, rather than leaving the visitor outside to penetrate it only as far as his strength permits. Once within the fair grounds he should find himself led immediately to the heart of the exhibit." The committee suggested no particular architectural style. "If this theme of the expanding life of the future controls the whole plan of the Fair," it asserted, "we need not worry about its architectural style."

NEW BUILDING MATERIALS DISPLAY OPENED

A permanent display of architectural building materials was opened last month at the Procurement Division of the Treasury Department at Washington. The major purpose of this display is to provide a technical reference library of materials for the convenience of both federal and general architects, students of technical universities and manufacturers, to which they may turn for exact information as to form, color, texture and other properties in connection with the design and construction of Federal buildings.

The exhibit is limited to commercially and competitively available American products and every geographical area in the continental United States and Alaska is represented.

COLUMBIA HONORS "QUEEN MARY" DESIGNER

Among the 4,432 receiving diplomas at Columbia University last month was one Stephen Joseph Pigott. Mr. Pigott, member of the 1930 engineering class, was awarded an honorary degree for his work as naval architect of the "Queen Mary," Britain's latest bid for sea-supremacy.

CALENDAR OF EXHIBITIONS AND EVENTS

- **July 6**—Opening, Summer School, Department of Architecture, Syracuse University, Syracuse, N. Y.
- **September 7-12** — Third World Power Congress, Washington, D. C.
- **September 25** — Opening, Courses in Art and Decoration, New York University, New York City.
- **October 9** — Annual meeting, North American Conference on Church Architecture, Cathedral of St. John the Divine, New York City.

OBITUARY

• Dead last month from discouragement was Edgar Chambless, 65-year old writer and sociologist. He for 25 years had sponsored the Roadtown idea of a linear city. Mr. Chambless had for years advocated "a program of laying down homes, villages and cities in straight lines like ribbons across what is now open country and cheap land, so that every one could live in close access to farm and gardens yet with all the advantages of urban life." Mr. Chambless proposed a factory every mile, thus avoiding industrial congestion with its disease, obsolescence, misery, and crime.

According to friends, Mr. Chambless' suicide was the result of disappointment over the failure of the 1939 World's Fair to entertain his theory that the Fair should be built around transportation rather than have the transportation extend for miles along the Fair grounds; that exhibits should be placed in relation to their function or use rather than for their architectural composition and, finally, that the Fair buildings should be prefabricated to eliminate the huge waste of material experienced in other fairs.

George McAneny, Chairman of the Board, World's Fair Corporation, was reported as "displaying more than usual interest in Mr. Chambless' scheme," but members of the recently appointed Architects' Advisory Board "could not remember the Chambless idea."

• William H. Weeks, well-known architect of San Francisco, California, is dead at the age of 72 after a lingering illness. Mr. Weeks, a native of Canada, came to this country as a youth. He had practiced in San Francisco for many years and was the designer of some 1,200 schoolhouses, besides many other buildings throughout the state. His son, Harold H. Weeks, with whom he was associated, will carry on the practice.

NEW PLAY PROTESTS MADE WORK FOR ARCHITECTS

Left to right: Marjorie Brown, Robert Brace, Jan Ullrich, Allen Nourse, Helen Morrow. The plight of the unemployed architect is dramatized in "Class of '29," current Federal Theater (WPA) production in New York. Ken Holden (center) goes on a drinking bout when he discovers his job in an architectural office was bought for him by a fond parent who didn't want his son demoralized. Says Holden, whose passion is prefabrication, "Too many lousy architects—so what? Give 'em relief work, that's what! Make lots of little houses, with lots of little yards with lots of little trees, so there'll be lots of little leaves to rake!"

MINIMAL, NOT MIRACLE

In "an effort to show that a skilled builder, with careful planning, can provide a really low-priced house with the essentials of living, measuring up to minimum standards and good for 30 to 40 years," the FHA has designed a home in the $1,300 price range. In making the announcement of this design, Miles L. Colean, Technical Director, emphasized these points:

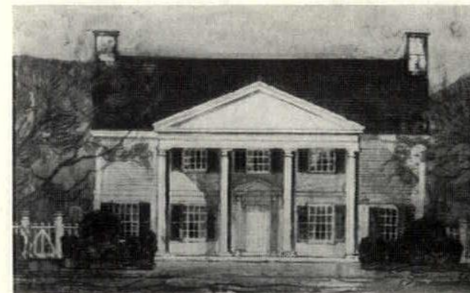
1. This is not a "miracle house," with all the comforts of a mansion, but is a practical, livable, durable structure reduced to the necessities.
2. The home is primarily for small communities or for working men's suburban areas of large cities.
3. This is not an attempt to invade the field of the architect or of any organization providing plans for low-priced homes. The FHA will not issue any stock plans.

Conservation of materials, foundation, chimney, and wall construction; floors, interior finish, sheet metal, windows, painting, cabinets and closets, and hardware, heating, plumbing and drainage, water piping, sewage disposal, are among the subjects treated.

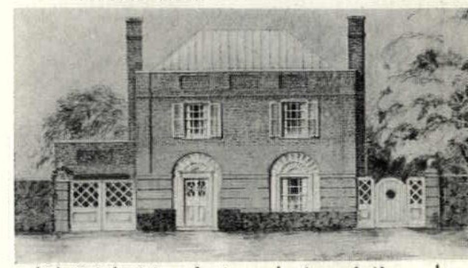
ANNOUNCES COMPETITION

House Beautiful has announced its Ninth Annual Small House Competition, open to all architects and architectural designers. The competition, which closes October 15, 1936, is limited to recently-constructed houses.

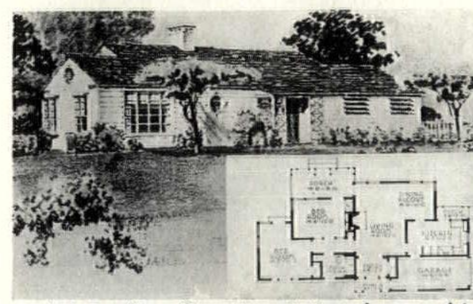
MODEL HOUSES AT 1936 FAIRS



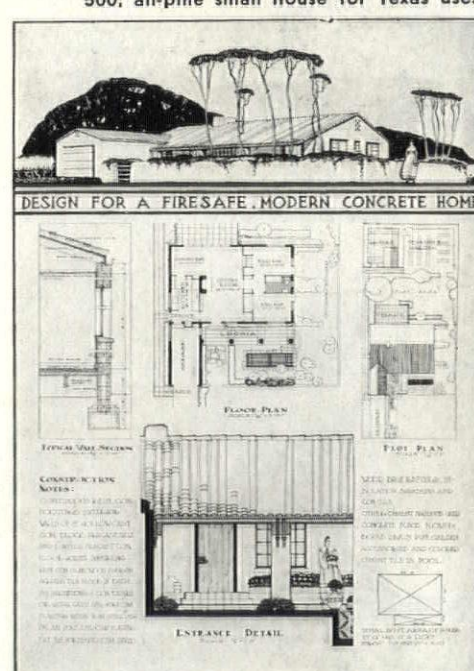
(1) Cleveland Lumber Institute enters the $15,000 class.



(2) Brick Manufacturers' Association shows a $7,500 model in Cleveland.



(3) Southern Pine Association shows a $4,500, all-pine small house for Texas use.



(4) Firesafe and termite proof: Portland Cement Association's $5,000 entry at Dallas.

BROOKLYN BRIDGE

PHOTOGRAPH BY EWING GALLOWAY

HOUSING AND RECOVERY

by William Stanley Parker

In an article in the Harvard Bulletin of February 21, 1936, by Mr. W. E. Shepherd, he estimates the extent to which emergency expenditures of the Federal Government for housing have "created additional purchasing power." After citing the relevant statistics, he asks and answers, on page 633, this question: "To what extent, then, may we say that additional purchasing power has been created by the injection of such a sum into residential construction?"

In answering this question he analyzes the recent annual expenditure of $210,000,000, which he had deduced as being the expenditure for housing, first for direct labor and then for indirect labor. His totals add up apparently to the $210,000,000, with no indication of any recognition of the value of such expenditures as they turn over in the other subsequent pockets of the community.

The indirect workers referred to are the persons employed in shops or mills that produce the materials and equipment used on the work—the direct workers being those employed at the site. Why eliminate from such an estimate all appraisal of the purchasing power created by the expenditure of the funds after they pass from the hands of the "direct" and "indirect" workers into the hands of local shopkeepers and others?

It is quite clear that the bulk of the wages so paid is spent by these direct and indirect workers probably within two weeks, and surely within a month, under present conditions. They doubtless go first for the various cash and carry purchases of food, clothing, transportation or gasoline, movies and other day to day incidentals, and secondly for rent, coal, and light and, probably thirdly, in many cases to pay accumulated debts for some or all of such expenses during previous weeks or months, which third factor is merely a delayed series of first and second factors.

If this is so, the $210,000,000 of purchasing power given to direct and indirect workers in the construction industry provides almost immediately $210,000,000 of purchasing power scattered through the various retail trade and service groups of their various communities and to the owners of property receiving payments on account of rent.

Efforts to trace the further turnover of these funds become obviously more and more difficult but the fact that the turnover continues seems to be irrefutable. The shopkeeper is enabled to pay his assistants or even may be forced to take on again some employees that had been dropped on account of poor business. These employees immediately spend their wages, as the original workers did, for food, clothing, and shelter, and various services and entertainment, and the spiral continues with ever widening radius.

How many times a year does such an original dollar of expenditure turnover through the community? I have never found any one who admitted to a knowledge of the answer to this question, whether he were an ordinary business man or a professor of economics. No one, however, has denied the fact of repeated turnover. No one has stated, in answer to frequent queries, that it was foolish to place the turnover at twenty times a year. Men trained in the study of economics have said that to put the turnover at ten times a year would be conservative.

If there are attempts to determine, as Mr. Shepherd does in his paper, the "additional purchasing power" created by the expenditure of $210,000,000 annually during the past two years for housing construction, why should one not be able to say that the annual purchasing power so created was at least $2,100,000,000 and possibly twice as much as that if we only knew how to estimate it accurately.

If one were making estimates of the *comparative* value of spending $210,000,000 for housing instead of schoolhouses, this turnover factor could perfectly well be omitted as it would be equally effective in either case, although the resulting social benefits might differ. If such expenditures for housing were compared with similar expenditures for roads, the results might show a much broader initial spread through the community in the skilled trades rather than a concentration on common labor, equipment and materials, but after the first turnover the results might become very similar. In all such *comparative* studies the factor of turnover might be largely neglected, but when an attempt is made to determine the positive values of such an expenditure, how can this factor of turnover be omitted from our calculations?

Let us very briefly, for purposes of illustration, consider the direct economic value to Boston of the expenditures involved in the construction of the South Boston Housing project.

Boston must pay its share of the cost to the Federal Government of the National PWA housing program. The total cost is to be about $100,000,000, fifty-five per cent of which must be self-liquidating, the balance being allotted as grants. This $45,000,000 balance, then, will come out of taxes. Boston's share of this Federal tax appears to be about one per cent, on which basis its share of the PWA housing grants would be $450,000.

The cost of construction for the South Boston project has been announced as about $5,000,000. It is estimated that about 75% will be spent for labor at the site, labor and materials in local shops, and the various professional and other local services involved. Without attempting a detailed analysis of this estimate which, however, is believed to be reasonably accurate, it would mean an initial expenditure of $3,750,000 locally, and on the basis of a turnover factor of ten, it would mean a total purchasing power in a year of $37,500,000.

Boston's share of the whole program, at $450,000, would be 1.2% of this one year's purchasing power. This would seem to be a more intelligible and accurate appraisal of the economic value to Boston of this expenditure than merely to compare the $450,000 cost to the first expenditure of $3,750,000. But I do not remember having seen this approach to the problem taken in any published analyses of this broad question that have come to my attention.

CLEARANCE SOLIDS FOR RECREATION BUILDINGS

by GAVIN HADDEN, C.E.

The design of buildings for recreation—for games and sports indoors—is three-dimensional to an unusual degree. For any specific room or unit of such buildings it is not enough merely to apply to the plan a uniform reasonable ceiling height, as for many other indoor activities; almost every game or sport requires a particular headroom and the headroom required is not necessarily uniform over the entire floor area. Moreover, these different headroom requirements, providing as they do for the paths of balls and other implements of play sometimes traveling at great speed, providing also in many cases for the bodies of the participants while moving in unusual paths, may attain considerable heights above the floor. If the designer provides too little headroom the usefulness of the unit is destroyed; if he provides too much headroom, space is wasted with resulting losses in economy.

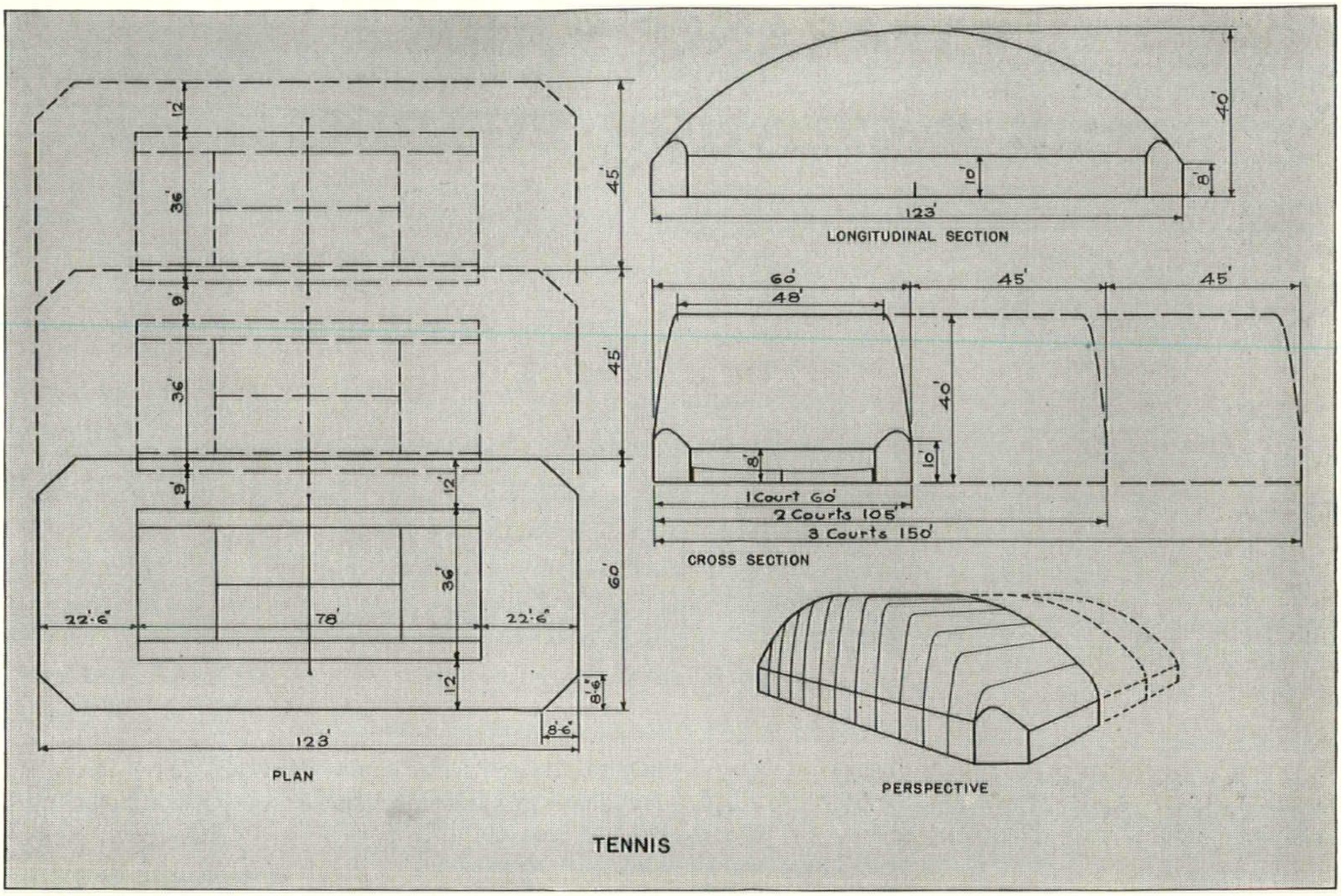
For most of the popular games, whether they are played indoors or outdoors, uniform or "standard" playing conditions are extremely important. Much has been done by widespread international competition, in the Olympic Games and in the Davis Cup tennis matches, for example, to fix throughout the world standard horizontal dimensions for the playing areas; on the other hand, except incompletely in a few cases, nothing has ever been done to fix standard vertical dimensions for the headroom over these areas. At the present time at any rate, the determination of the proper headroom in nearly every case must be a matter of experience and judgment.

For many games even the plan dimensions of the areas required are not fixed. In some cases those who know the requirements well have reached close agreement; in other cases, however, there is no unanimity of opinion whatever and the recommendations of the most experienced students and teachers of the game may be far apart. In these latter cases the task of the designer may be difficult indeed.

The drawings presented herewith are intended to represent, in plan, section or elevation, and perspective, the space actually required for satisfactory and safe participation in the various recreational activities designated. The activities represented are in general those for which special provision may be frequently required. Where standard dimensions for any activity have been fixed by rule, regulation, or recognized and accepted custom, such standard or accepted dimensions have been used; where no standards and no accepted customs exist, those dimensions have been used which study and experience during fifteen years of practice have dictated as being reasonable minima under normal conditions—where other conflicting conditions do not take precedence. This does not mean that designs should never be made with either smaller or larger clearance solids than those shown; on the contrary, the amount of space provided has frequently been more or less than that indicated, because of other conditions. The drawings must be regarded as guides only: they should be used only with the exercise of care and sound judgment.

A study of plans, sections and elevations will show clearly the relative total amounts of space required for the various activities. It should be noted, however, that the costs of construction of the various facilities cannot be compared directly on the basis of their cubage. Roof spans, surfacing materials, special equipment, and the like, have so great an influence on the cost that such comparisons are practically meaningless.

Whenever, as in the case of most of the "open"



Cubic spaces required for sport activities may have and have had a definite influence on the structural design of buildings required to house them. This diagram indicates not only the plan dimensions for indoor tennis but also required cubical areas.

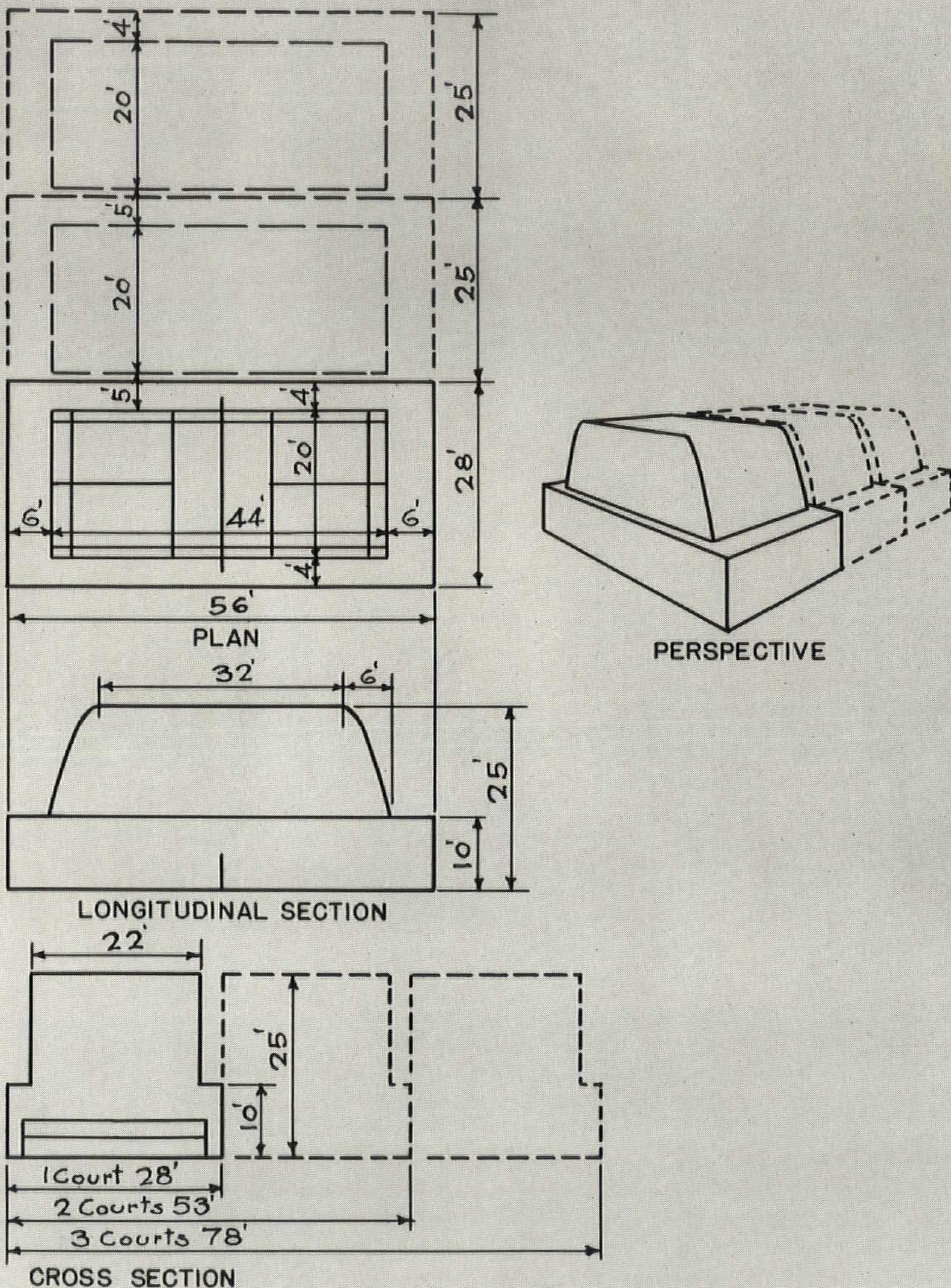
court games (tennis, badminton, paddle tennis, basketball, etc.), a repetition of units without obstruction on the floor between them will conserve space, such repetitions are indicated by broken lines in the drawings. Repetitions can be continued indefinitely.

TENNIS

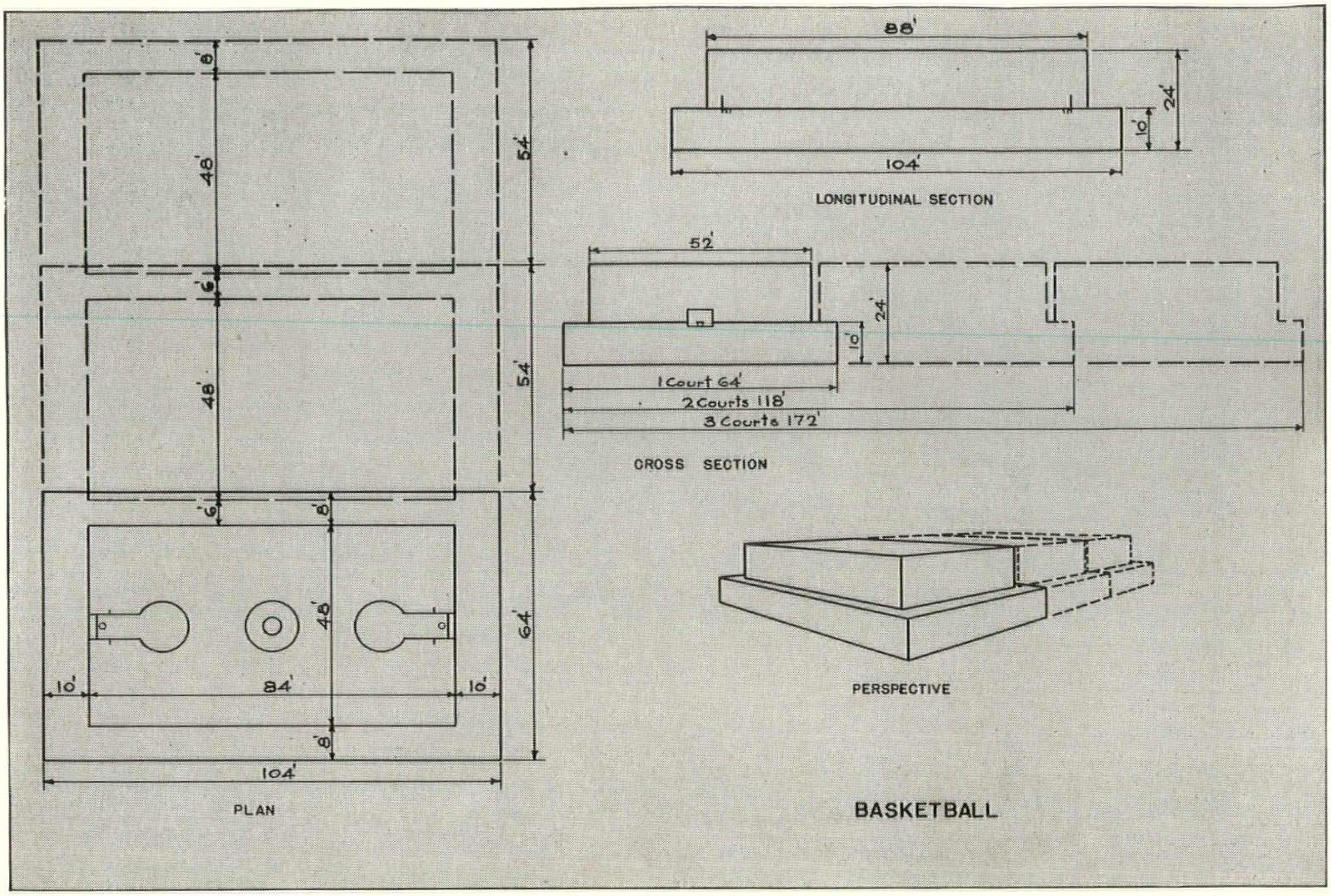
It is interesting to note how the shapes of the clearance solids may have and have had a definite influence on the structural design of buildings required to house them. The readers of this article may be familiar with the writer's "trajectory" types of buildings for tennis courts, with their unorthodox roof forms—the direct result of the required clearance solid.

BADMINTON

Another striking example may be found in badminton court buildings. The clearance solids for two or more badminton courts show, midway between adjacent courts, a narrow rectangular space, not required for play, extending upward from ten feet above the floor. This space indicates a perfect location for trusses supporting the roof, and this space has been so used in multiple court buildings.


4'
20'
25'
5'
20'
25'
5'
4'
20'
28'
6'
44'
6'
4'
56'
PLAN
PERSPECTIVE
32'
6'
25'
10'
LONGITUDINAL SECTION
22'
25'
10'
1 Court 28'
2 Courts 53'
3 Courts 78'
CROSS SECTION

BADMINTON



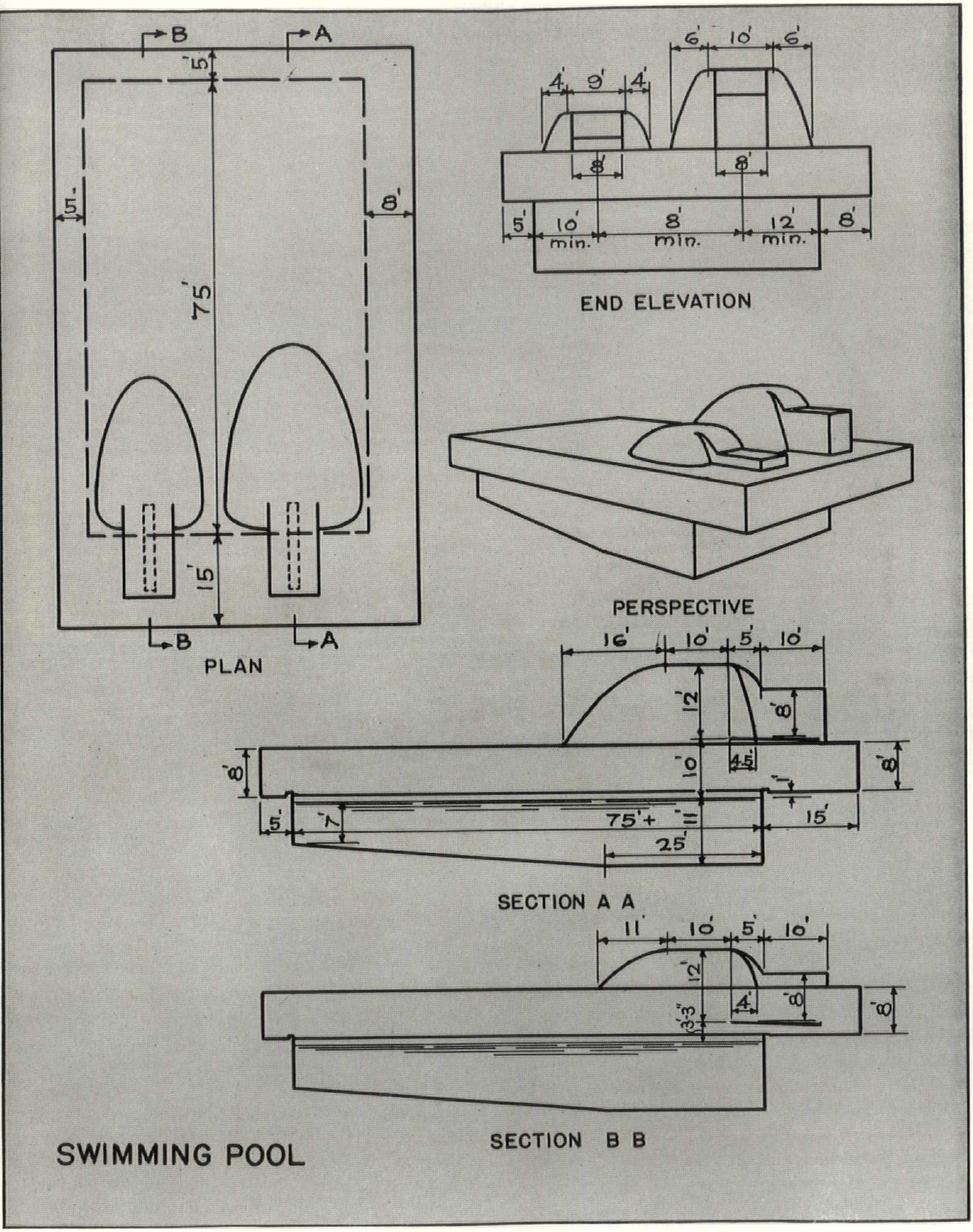
Clearance solids for basketball are more horizontal than for the tennis court building. "The horizontal dimensions shown for the basketball courts are not standard, but are those recommended by the Joint Basketball Rules Committee for men of college age; for schoolboys and for women, different dimensions are recommended."

BASKETBALL

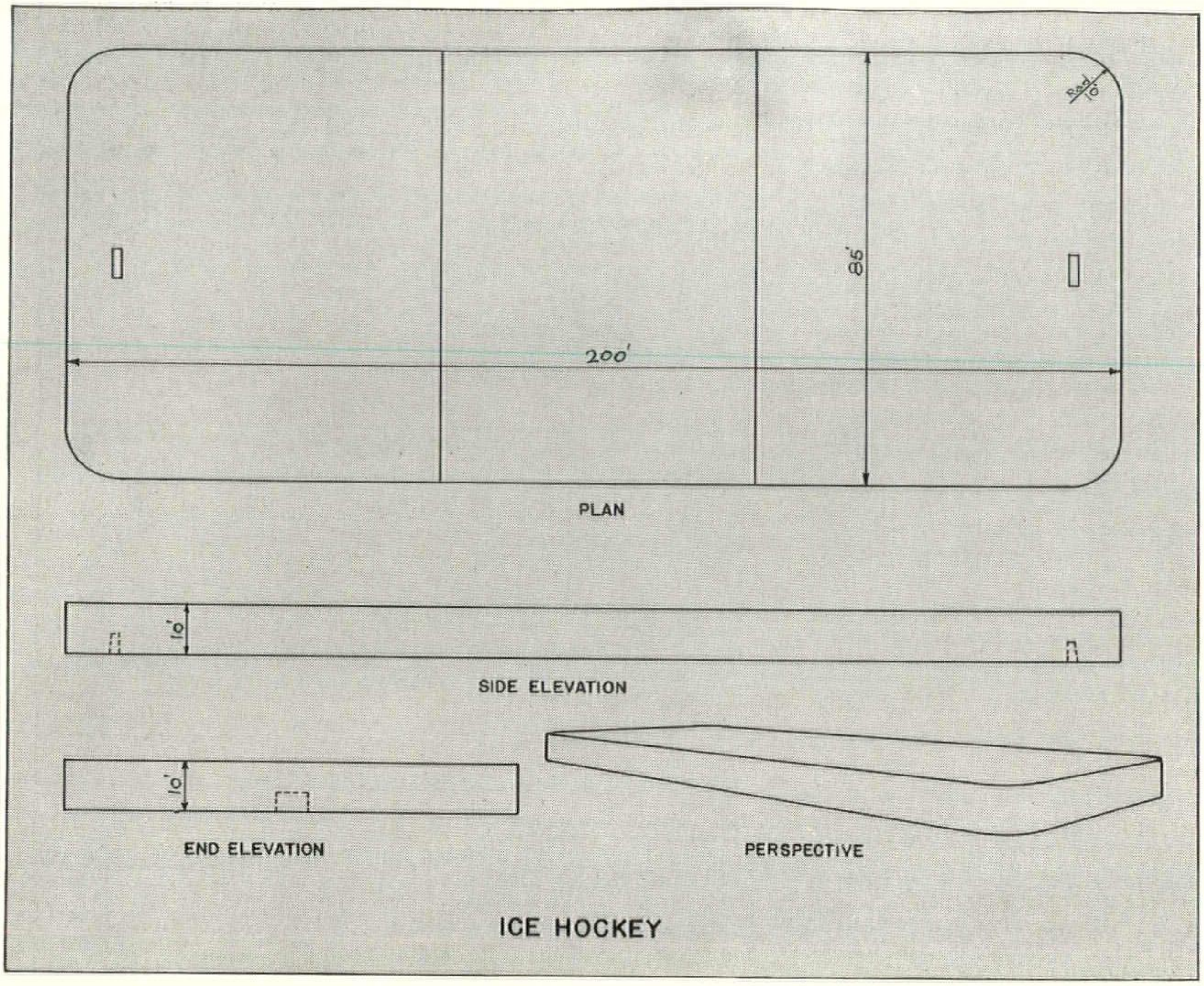
Similar locations for roof trusses, or for trusses supporting upper floors, are indicated in the clearance solids for basketball. The horizontal dimensions shown for the basketball courts are not standard, but are those recommended by the Joint Basketball Rules Committee for men of college age; for schoolboys and for women, different dimensions are recommended.

SWIMMING

The clearance solid of the typical swimming pool room, with its provision for high and low springboard diving, shows clearly and positively what space may be used for galleries or balconies, or for upper stories of a building. It should be noted that for the presentation of this solid an exceptionally wide pool is indicated, in order to permit the separation of the spaces required for the two dives and thus to show them without confusion. In the usual case, the two springboards would be placed closer together (but not less than, say, 8′ center to center) and their spaces would overlap.



SWIMMING POOL



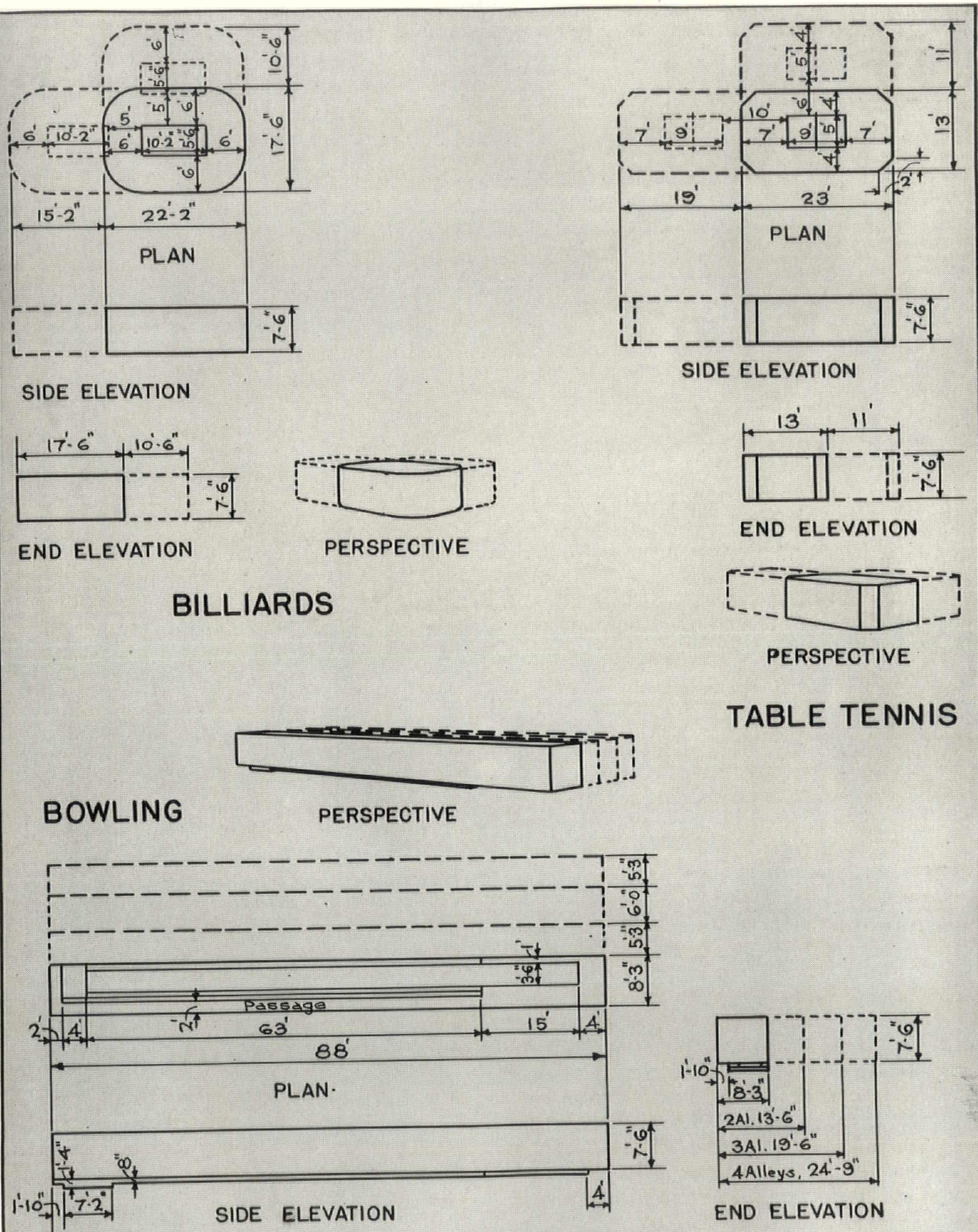
Clearance solid for hockey indicates space reasonably required for playing the game. Ten feet headroom over any part of the playing area may be considered as actually necessary.

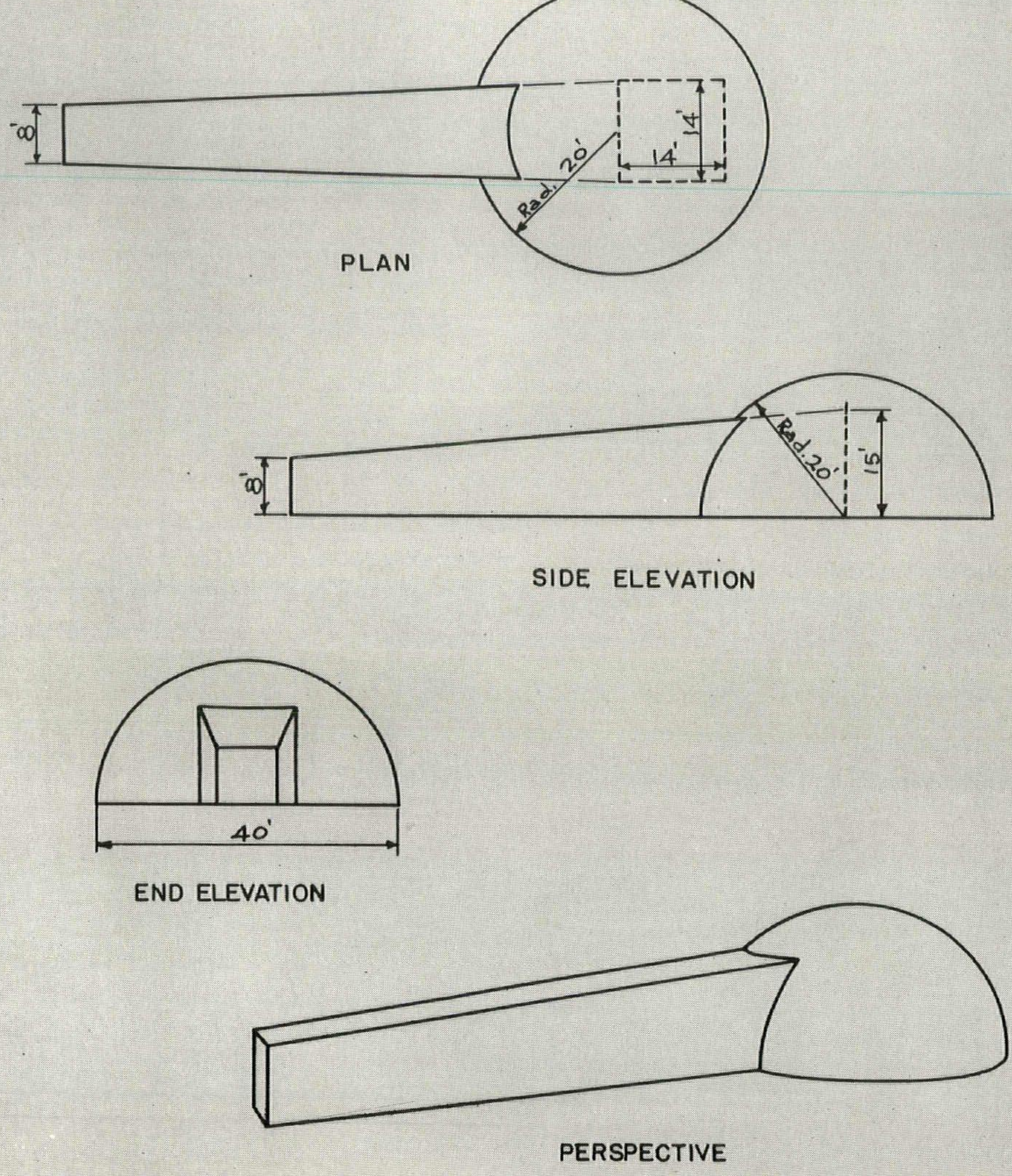
HOCKEY

The clearance solid for hockey includes only the space reasonably required for playing the game. The rules do not permit the players to raise their sticks above the shoulder, and the puck rarely rises more than a few feet above the ice during play. Therefore, although it is perhaps not likely that a rink will ever be built without more than 10 feet headroom over any part of it, a greater height than this is not actually necessary. For practice, as distinguished from formal games, even less than 10 feet headroom will serve satisfactorily, at least over portions of the ice; reliable opinions have held that a headroom of only 8′-6″, over the side areas of the rink for example, would serve satisfactorily for hockey practice, and this lower headroom has been used to advantage in designing for spectators in some special cases. In addition to the space required for play, some outside space is required for penalty benches, etc., but this space need not be provided at any specific location and is therefore not shown in the diagram.

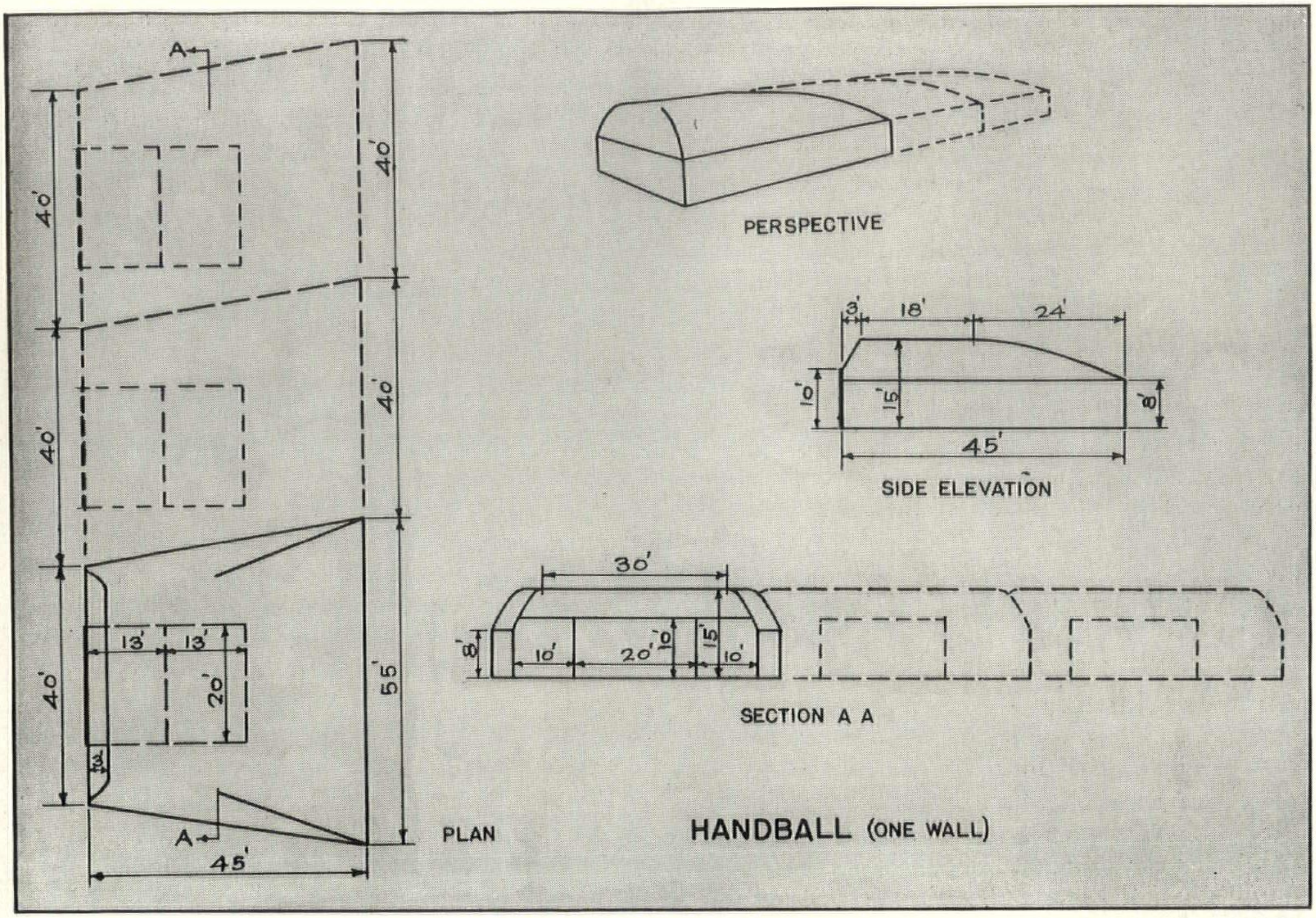
TABLE TENNIS, BILLIARDS, BOWLING

For the more restricted activities—table tennis, billiards (or pool), and bowling—a headroom of only 7′-6″ is shown. Facilities for these activities may often be located in basements, and a low headroom is in no way a handicap for any of them.


PLAN
SIDE ELEVATION
END ELEVATION
PERSPECTIVE
BILLIARDS
15'-2"
22'-2"
17'-6"
10'-6"
7'-6"
PLAN
SIDE ELEVATION
END ELEVATION
PERSPECTIVE
TABLE TENNIS
19'
23'
13'
11'
7'-6"
BOWLING
PERSPECTIVE
Passage
63'
15'
88'
PLAN.
SIDE ELEVATION
7'-6"
4Alleys, 24'-9"
END ELEVATION


8'
14'
14'
Rad. 20'
PLAN
8'
Rad. 20'
15'
SIDE ELEVATION
40'
END ELEVATION
PERSPECTIVE

POLE VAULT



POLE VAULT

The clearance solid for pole vaulting, or rather an earlier similar solid, was used by the writer in determining the location of the cross-bracing for a tall structure under which it was planned to practice this activity. It was intended to place the cross-bracing high enough to permit performers to vault in safety to the greatest possible height, but since the structure was built the world's record for the pole vault has risen from 13′-3 9/16″ (1919) to 14′-4 3/8″ (1932) so that the space provided is somewhat less useful than was intended. The solid here shown would provide sufficient space for vaults of 15′-0″ and perhaps somewhat higher.

This, incidentally, brings up some factors which must be recognized and given due consideration by the designer. He should in some cases consider not only the possibilities of increasing skill on the part of the participants, but also the possibilities of changes in the games themselves and their rules of play. He should also give due regard to the conditions which may affect the validity of *records*. Records are extremely important to the average athletic performer. If at any time he is turning in an exceptionally good performance, it is vital to him that the conditions affecting his performance shall not violate any of the rules governing the recognition and acceptance of his record. For example, the length of the swimming pool shown is 75 feet, so called, the most common length for swimming races indoors. There is a recognized set of official records for races of different lengths and different swimming strokes, all performed in the so-called 75′-0″ pool. The pool may measure somewhat *over* 75′-0″ in length without objection, but if it measures the least bit *under* 75′-0″ no record in that pool can be officially accepted. Therefore it is usually important to specify that the pool shall have a finished inside length of, say, 75′-0½″.

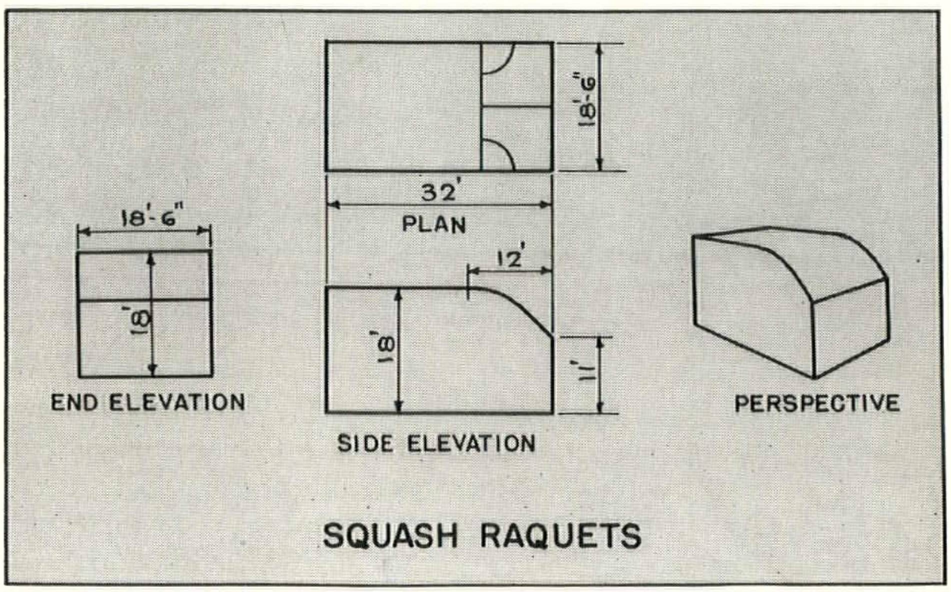
Another consideration which may influence the use of the clearance solids and modifications of them is allowance for mental hazard. As St. Paul has admonished against the "appearance of evil" so the designer must be admonished against the appearance of danger. In some cases if only just enough space is provided for a given activity the performer or player will not realize that there is enough and the mental hazard will prevent him from making a good performance. This consideration applies particularly to activities such as pole vaulting and diving.

If, as frequently happens, a unit is desired which can be used alternately for two or more different activities, then it is a simple matter to combine the clearance solids for those activities and thus determine a unit which will serve each one satisfactorily.

Where provision must be made for spectators, the clearance solids attain increased usefulness, as they show just what space outside of them can be used for spectators and for their seats and supporting structures. Sometimes it is possible to use for spectators some of the space inside the clearance solid, as for example some of the space near the net line in the tennis court solid; in the usual case, however, in designing for spectators it is necessary to add additional spaces to the solids, not only to accommodate the spectators and their seats, but also to provide for unobstructed sight lines. It may be of interest to note here that in considering various means of economizing in the addition of such spaces, a scheme has been developed (for which patent has been applied for) whereby the spectators at certain events are furnished with a reflected view by the installation of mirrors at suitable points on or near the surfaces of the clearance solids. For activities requiring a view from above, steeply approaching the vertical, as in the case of swimming races or squash games, such a reflected view has great advantages to compensate for its indirect and reversed character.

Still another possibility is to provide a vertical view for spectators while they are lying in recumbent, or semi-recumbent, attitudes, with their eyes close to the curved surfaces of some of the solids. For example, it might be possible to provide in this way for a considerable number of spectators at a squash court, covering with spectators' heads the curved clearance surface above the back part of the court. Such spectators could be made comfortable reclining on cushions, with suitable supports for their heads.

These considerations form another story, outside the scope of this article, but they indicate that all the possibilities of use of these clearance solids have not yet been explored.



VIEW ALONG BROADWAY, IN THE BUSINESS DISTRICT

LONGVIEW, WASHINGTON

By S. HERBERT HARE

The city of Longview, Washington, was founded by the Long-Bell Lumber Company, of Kansas City, Missouri, as a center for extensive lumber and mill operations on the North Pacific Coast. It is one of the few cities which have been completely planned in advance of development. The area included, as shown in the accompanying general plan, was 14,000 acres, having seven miles of deep water frontage on the Columbia River and five miles of shallow water on the Cowlitz River. The city was to be in no sense a "Company" or mill town, but a general industrial and seaport city, attractive to various industrial groups. It was also the particular wish of the late R. A. Long, Chairman of the Board of the Company, that the city be attractive as a place of living for working people, with proper recreational and educational facilities and suitable protection for those making investments in homes.

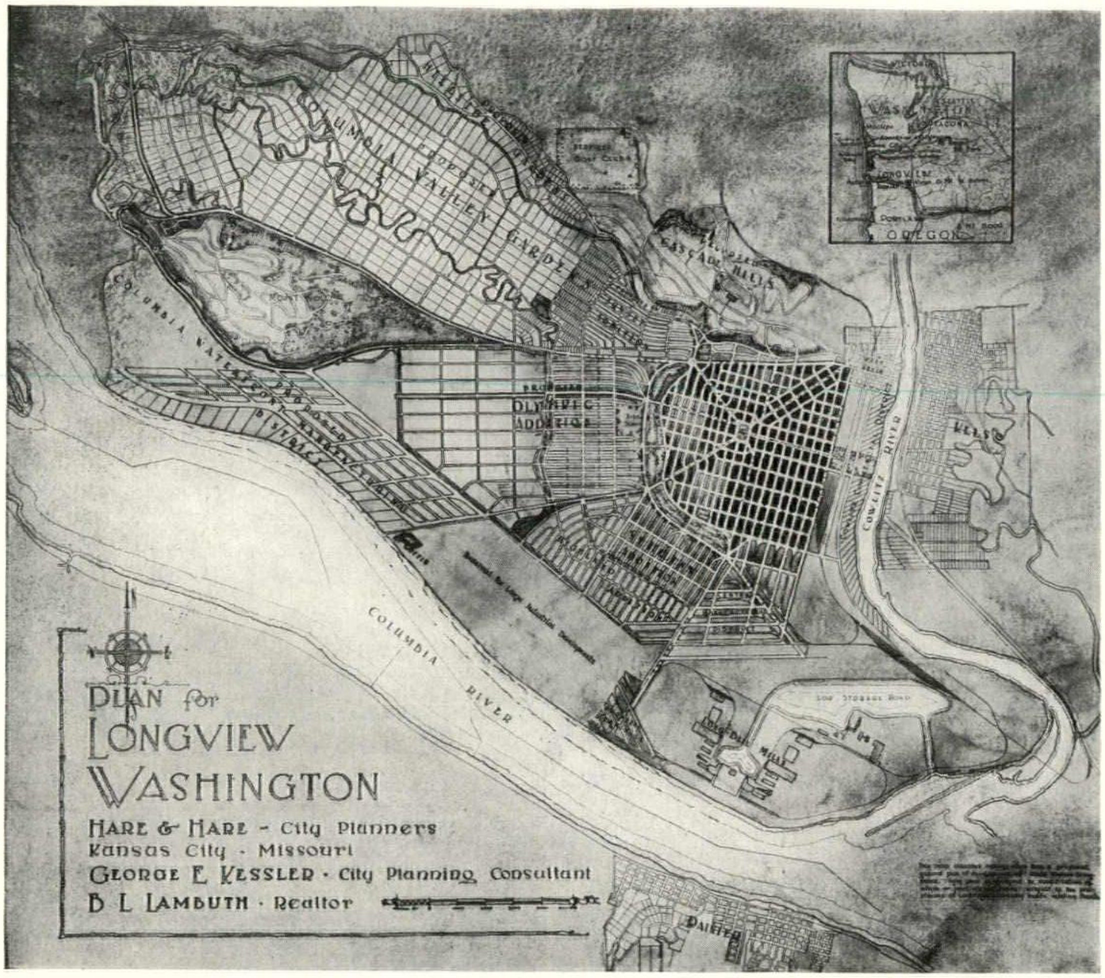
THE SITE

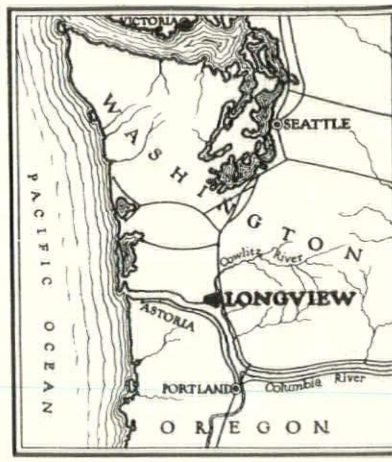
The location on the Columbia River at the mouth of the Cowlitz was particularly strategic, with ocean shipping and adequate fresh water harbor facilities at the first point of contact with the transcontinental and coastwise rail lines. In addition to the lumber activities in the district, there are extensive areas of rich agricultural land in the many flat valleys.

The town site is a fertile valley of triangular form, bounded by the Columbia and Cowlitz Rivers on the southwest and east respectively, and on the north by hills rising to an elevation of about four hundred feet within the limits of the site. Mt. Solo, an abrupt hill nearly six hundred feet high, rises in the westerly end of the valley.

THE PLAN

After consolidation of land holdings and collection of statistical information regarding several smaller industrial cities, the planning of Longview was started in June 1922. The firm of Hare & Hare, of Kansas City, Missouri, was chosen as city planners. The late George E. Kessler, of St. Louis,





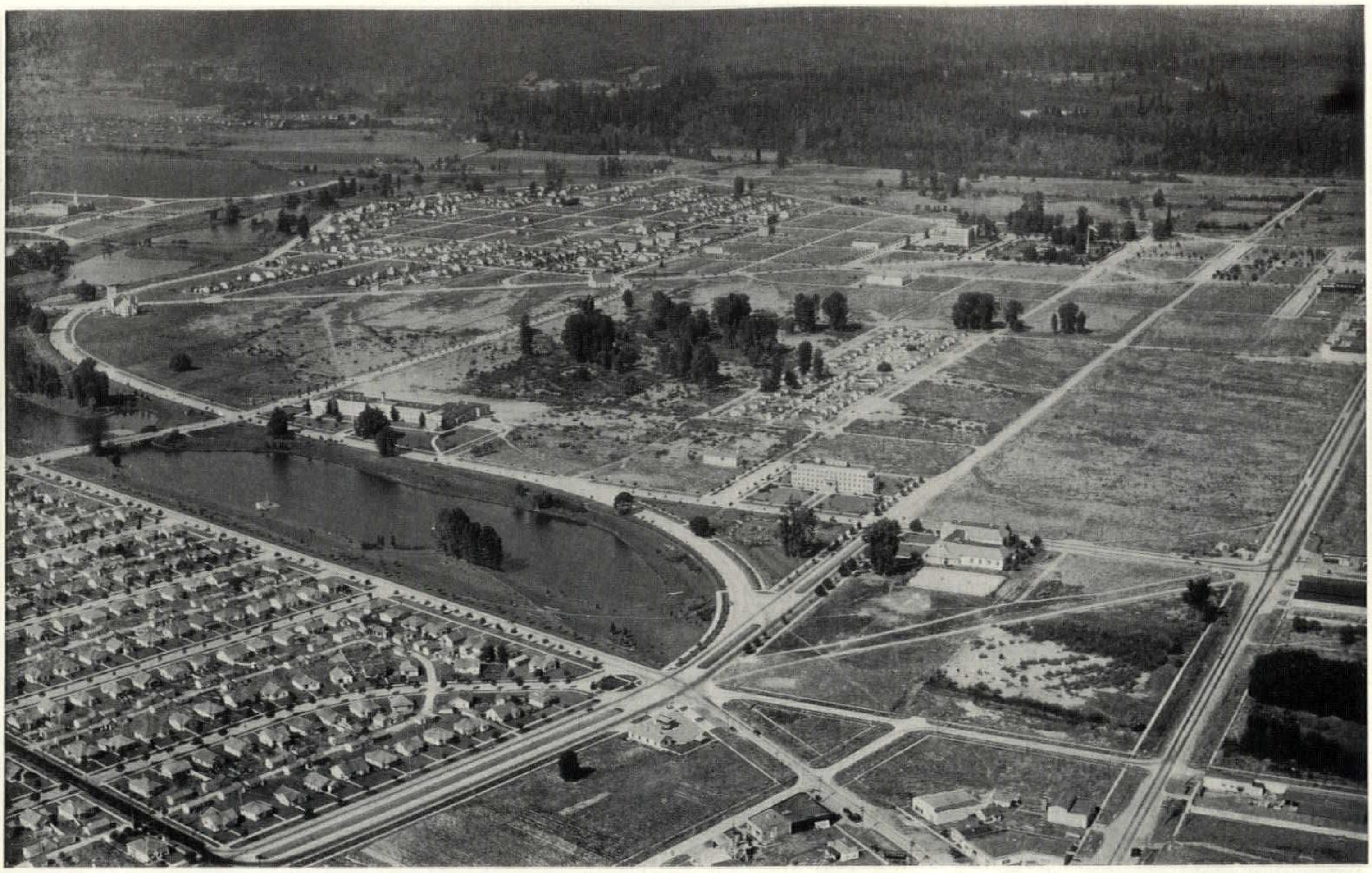
GENERAL PLAN OF THE FOURTEEN-THOUSAND-ACRE TOWN SITE, SHOWING RELATION TO COLUMBIA AND COWLITZ RIVERS

served as planning consultant until his death early in 1923. Mr. B. L. Lambuth, of Seattle, was assigned to head the real estate operations, and collaborated in the planning from that point of view. Mr. J. C. Nichols, developer of the Country Club residential district in Kansas City, Missouri, rendered services as a real estate consultant in site selection and development. Engineering services were furnished by the company's staff headed by Mr. Wesley Vandercook.

The street plan is a system of major thoroughfares for through traffic, and secondary streets serving local needs. The major thoroughfares are both circumferential and radial, including main lines of traffic to the retail center, with by-pass routes around, so that traffic is not forced through this center. Connections to the various bridges, the port, and the highway toward the ocean on the west are provided. These thoroughfares are from one hundred to one hundred and twenty feet wide. The minor streets are mostly arranged in a fairly uniform rectangular pattern on the flat portions of the site, and are adjusted to the topography in the broken areas. This rectangular pattern, however, is adjusted at the point of meeting with the main diagonal thoroughfares so as to avoid unnecessary acute angle intersections. The local streets range from fifty to sixty feet in the residential districts to eighty feet in the business district. Paving widths vary from twenty-four feet on minor streets to sixty feet on major thoroughfares.

Twenty-foot alleys were provided in the business district and in most of the residential districts. This latter provision was based on certain local customs as to delivery and storage of slab wood for fuel.

A systematic planting of street trees was made on residential streets and, in a few cases, on main business thoroughfares.



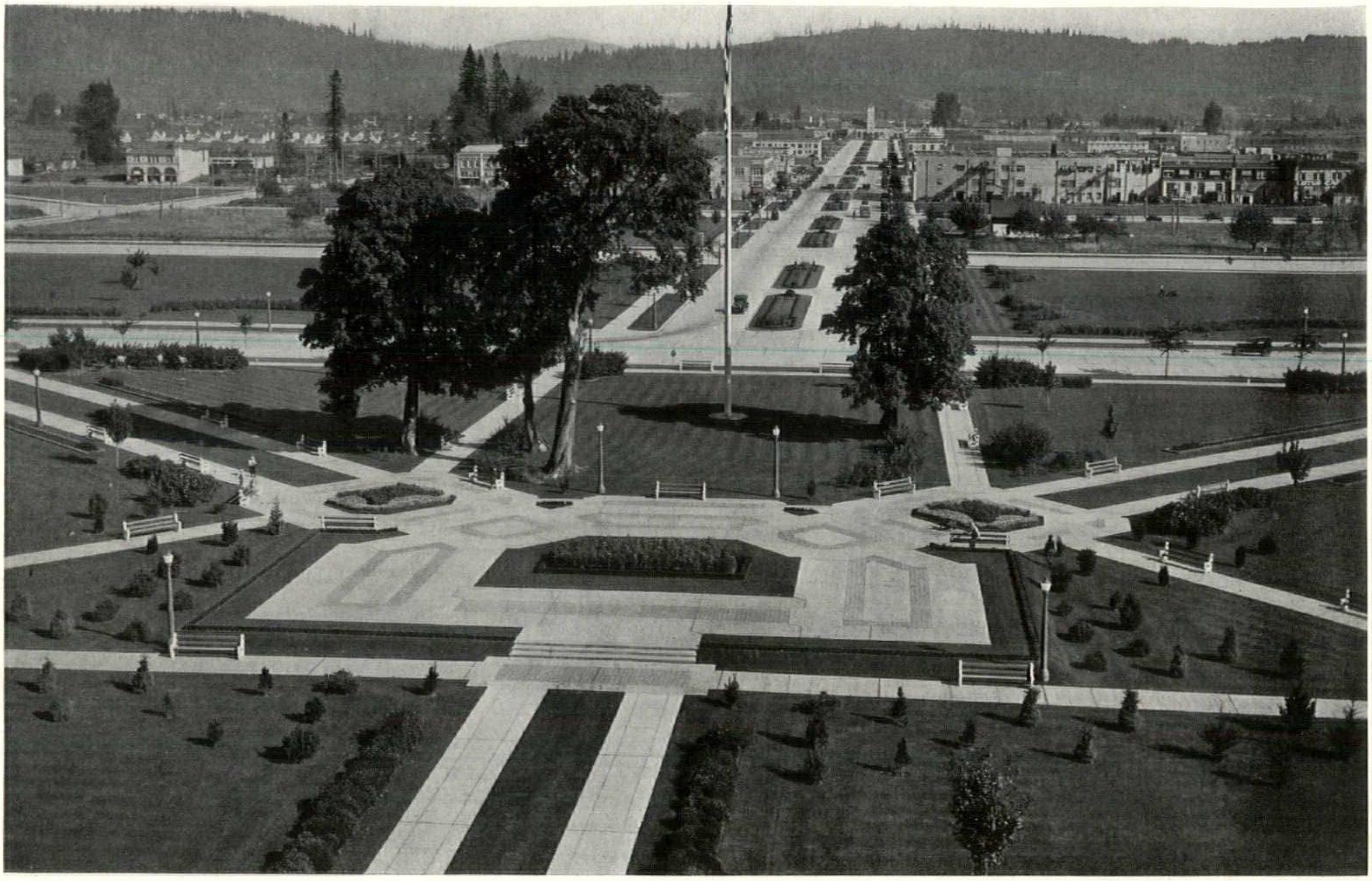
VIEW FROM SOUTHEAST showing Lake Sacajawea Parkway at left with smaller house district in lower left corner, Robert A. Long High School in distance at left, and churches, grade school, hospital and Y. M. C. A. building bordering right side of lake; Jefferson Square in distance at right, and better residential district in distance.

After considerable discussion, a standard lot size of fifty by one hundred and twenty feet was adopted, this size being considered most adaptable to conversion of use in the future. Larger suburban tracts were based on multiples of this size, so as to be subject to redivision.

PUBLIC PROPERTIES

Park areas were provided as a part of the complete plan. A six-acre tract at the center, called Jefferson Square, was established as a setting for public and semi-public buildings. The Longview Public Library, Monticello Hotel, and Post Office have been built adjacent to this park. Other small parks, providing neighborhood recreational facilities, were set aside at intervals. The outstanding park feature of the city is the Lake Sacajawea Parkway, with its adjacent boulevards. In this area of one hundred acres, one and one-half miles in length, an old slough, at one time the bed of the Cowlitz River, was transformed into a continuous chain of picturesque lakes by pumping about 2,000,000 yards of earth for filling in the inner sections of the city. The planning of this chain of lakes, to produce a naturalistic effect both in the lake forms and in the grading of the adjacent land, was an interesting problem in landscape design. The land area about the lakes provides recreation space, while the water area is suitable for boating and canoeing. The landscape development of this area was a gift to the city by Mr. Long.

Land for some lesser parkways was reserved along the main drainage ditches, and the greater portion of Mt. Solo will probably become a large park in the future. Certain of the steeper slopes facing the city on the north, and unsuitable for residential use, will be assigned to park use to protect their natural scenery.



VIEW FROM MONTICELLO HOTEL ACROSS JEFFERSON SQUARE TOWARD BUSINESS DISTRICT (AFTER).

School sites were reserved in the city plan. The Robert A. Long High School which, together with the Public Library, was a gift of Mr. Long, occupies about thirty acres of land at a central location. Three grade schools have been built, with sites of five acres or more each. Twenty-six hundred pupils attend these public schools.

VIEW FROM MONTICELLO HOTEL (BEFORE).

A golf club, with a picturesque nine hole course, has been located in the north hills, and a modern cemetery has been established on a site at the westerly end of Mt. Solo, with a fine view over the Columbia River.

PRIVATE PROPERTY

A zoning map was prepared as a part of the city plan, even though there was at that time no municipality to enact a zoning ordinance, and no enabling act in the state of Washington authorizing the zoning of smaller cities. The allocation of the uses of property indicated on that zoning map, together with control of private property applicable to various portions of the city, were incorporated into complete sets of restrictions. Most of these restrictions were filed with the various land plats, but a few were included in the deeds. These restrictions are of a self-perpetuating type—that is, they

WEST SIDE RESIDENTIAL DISTRICT ACROSS LAKE SACAJAWEA.

are automatically renewed at intervals unless certain steps are taken to discontinue them. Areas are set aside for detached single-family houses, for apartments, for local stores and a central retail district, and for light and heavy industry.

It was of course necessary to start a center of development for each class of use, with reserve space for expansion adjacent to each center. The greatest problem was to determine an economic balance between the cost of premature conversion of uses in the growth of the city, and the carrying charges of reserve land around the various centers of development. The plan, as developed, provides for a population of approximately fifty thousand people without conversion of use.

POPULATION

Only a portion of the entire planned town site has been incorporated, the balance being reserved as suburban area. In the fourteen years since the planning started, the population has reached approximately thirteen thousand, ten thousand of which are in the incorporated section. Approximately twenty thousand people, however, have been added to the district as a result of the Longview development, the adjacent communities across the

LAKE SACAJAWEA PARKWAY.

LIBRARY, FROM JEFFERSON SQUARE

Cowlitz and Columbia Rivers having benefited to some extent. The suburban tracts of one to five acres are popular as home sites with the workers in the mills, and the Federal Government has recently developed a subsistence homestead project of one hundred and forty acres in this area.

Besides the mills of the Long-Bell Lumber Company, unequalled in size in the world, and the large mills of the Weyerhaeuser Timber Company, there are thirty-four other industrial plants, including pulp mills, grain elevator, canning plant, marine oil plants, plywood factory, brass foundry and other plants employing nearly four thousand men, with an annual pay roll of approximately four and one-half million dollars. Both the number of men employed and the annual pay roll have increased materially since 1931. The city is now thirteenth in population in the state of Washington, but twelfth in retail sales. There are one hundred and ninety-two stores, occupying seventy-two business buildings.

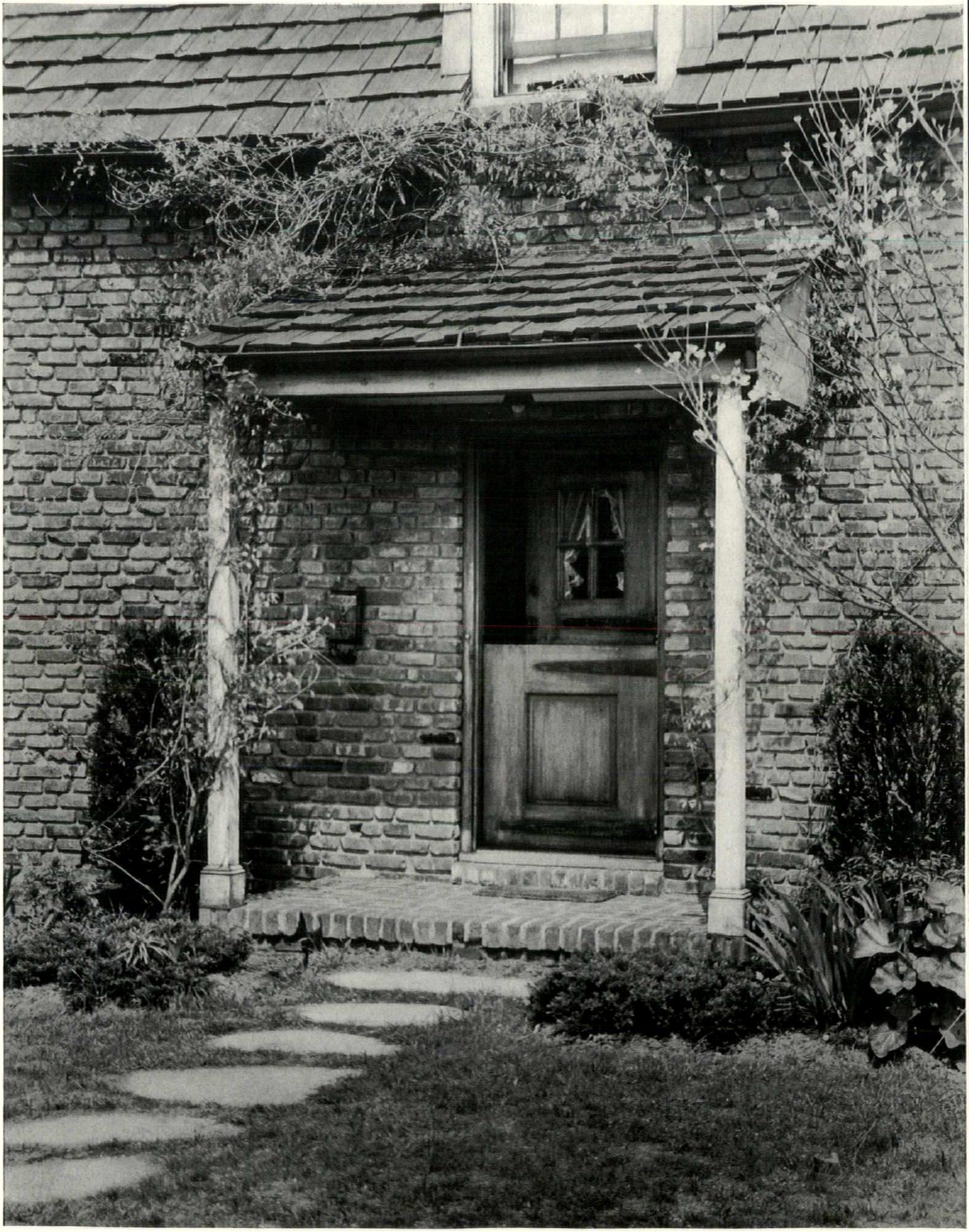
The economic depression has probably been as acute in the lumber industry as in any other field. The city of Longview has suffered along with other communities on the north Pacific Coast, most of which depend largely upon lumber for their business activities. At the present time business is reviving, mills are operating, and there is less than three per cent vacancy in houses, with a small vacancy in business buildings. With the coordinated plan for the physical development of the city, an expansion in population and business development can follow along logical lines under proper control. The gaps between various centers of development previously started can be filled in, and the whole city should gradually become what the original plan contemplated—a complete civic unit, with proper provision for living and working attractive to the highest type of industrial workers and their families.

PORTFOLIO

Photograph by Spreng SWB, Basel

PORCH, LINDNER HOUSE, BASEL, SWITZERLAND F. BRAUNING, H. LEW AND A. DURIG, ARCHITECTS

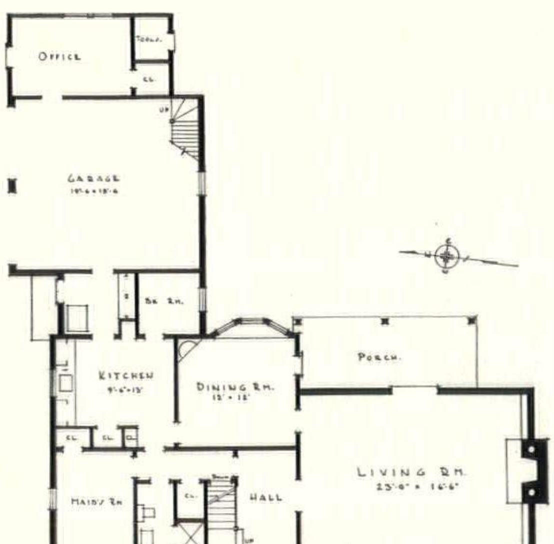
CURRENT ARCHITECTURE



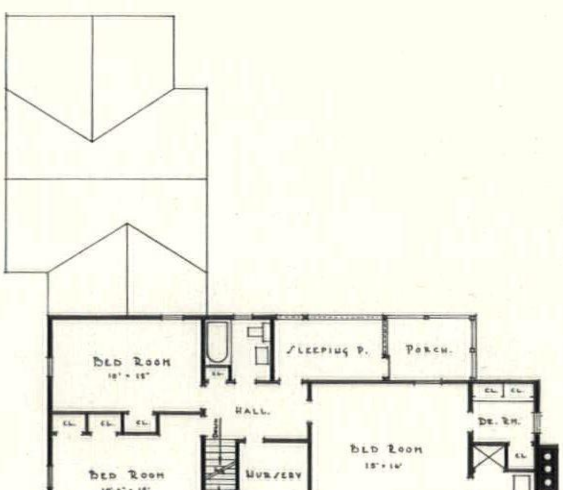
Photographs by Murray M. Peters

HOUSE FOR WALTER UHL — PORT WASHINGTON, N. Y.

H. W. JOHANSON, ARCHITECT



FIRST FLOOR PLAN



SECOND FLOOR PLAN

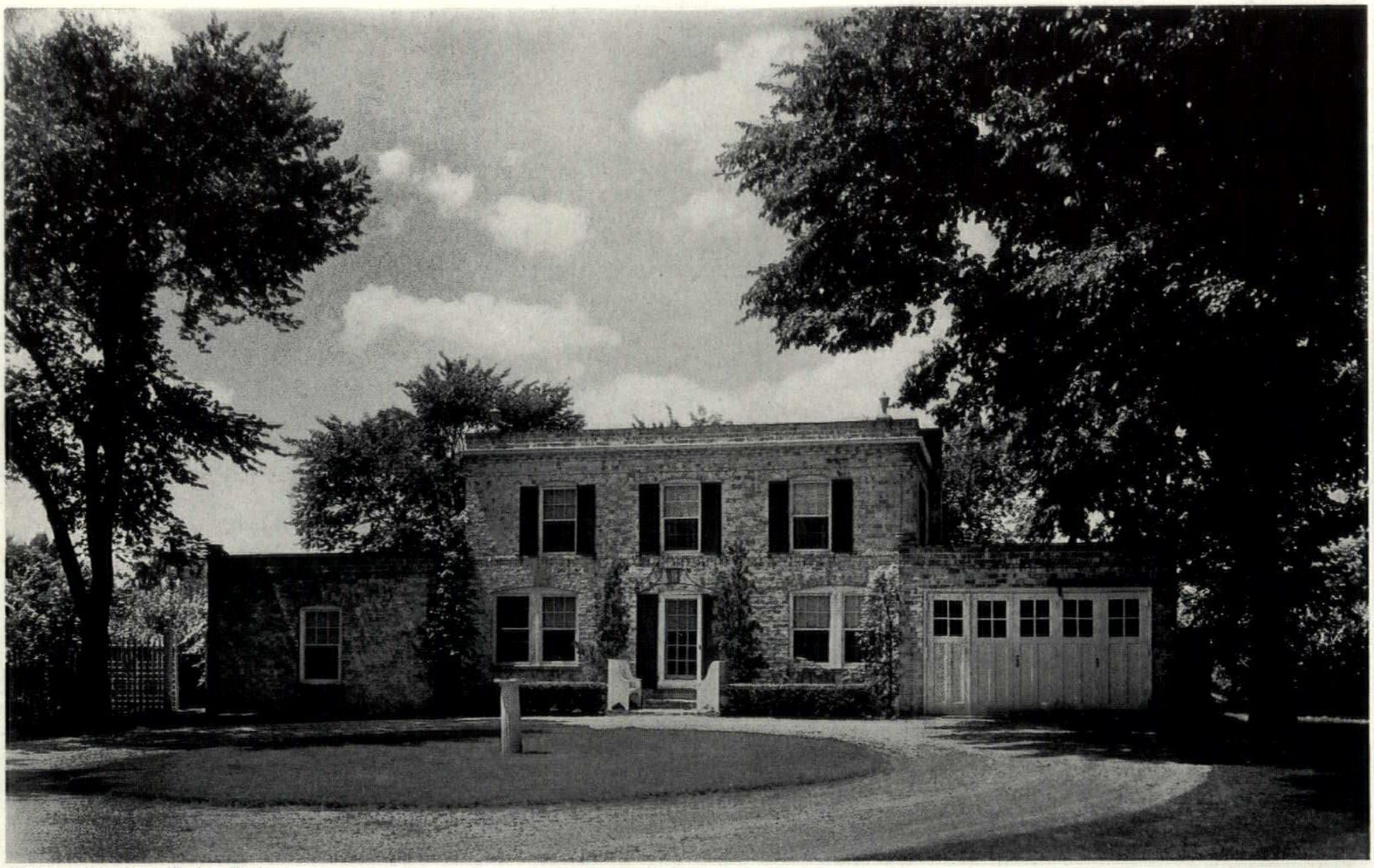
Photograph by Murray M. Peters

HOUSE FOR WALTER UHL

PORT WASHINGTON, N. Y.

H. W. JOHANSON,
ARCHITECT

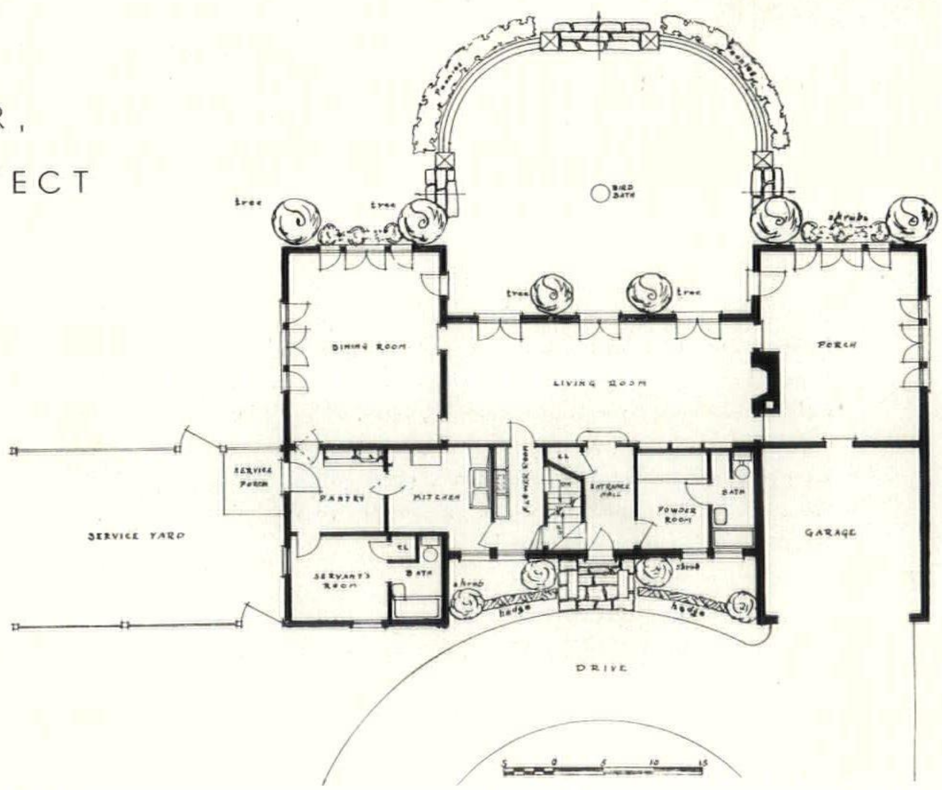
The house exterior is of brick veneer and hand-split shingles. There is a wide use of knotty pine woodwork in the interior and in the basement, where there is a game room (under the living room) and a bar (under the dining room). The cost was $13,750, including landscaping.



Photograph by Jessie Tarbox Beals

HOUSE FOR MRS. CHARLES FULLER — WINNETKA, ILLINOIS

R. F. FULLER,
ARCHITECT



The back of the lot overlooks the Indian Hill Golf Course; consequently, the main rooms of the house are arranged across the back to take advantage of the view.

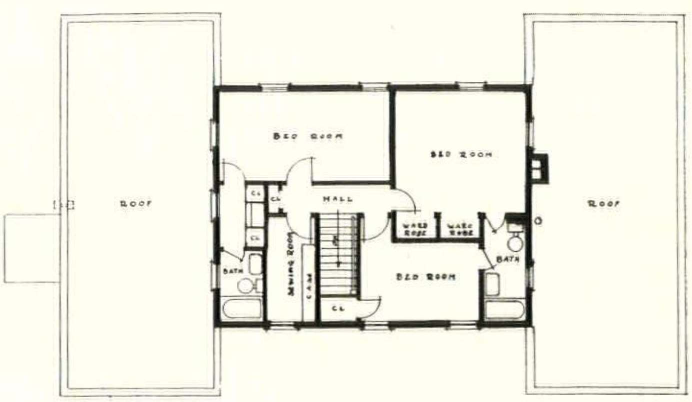
Photograph by Jessie Tarbox Beals

DETAIL OF ENTRANCE DOOR

HOUSE FOR MRS. C. FULLER
WINNETKA, ILLINOIS

R. F. FULLER,
ARCHITECT

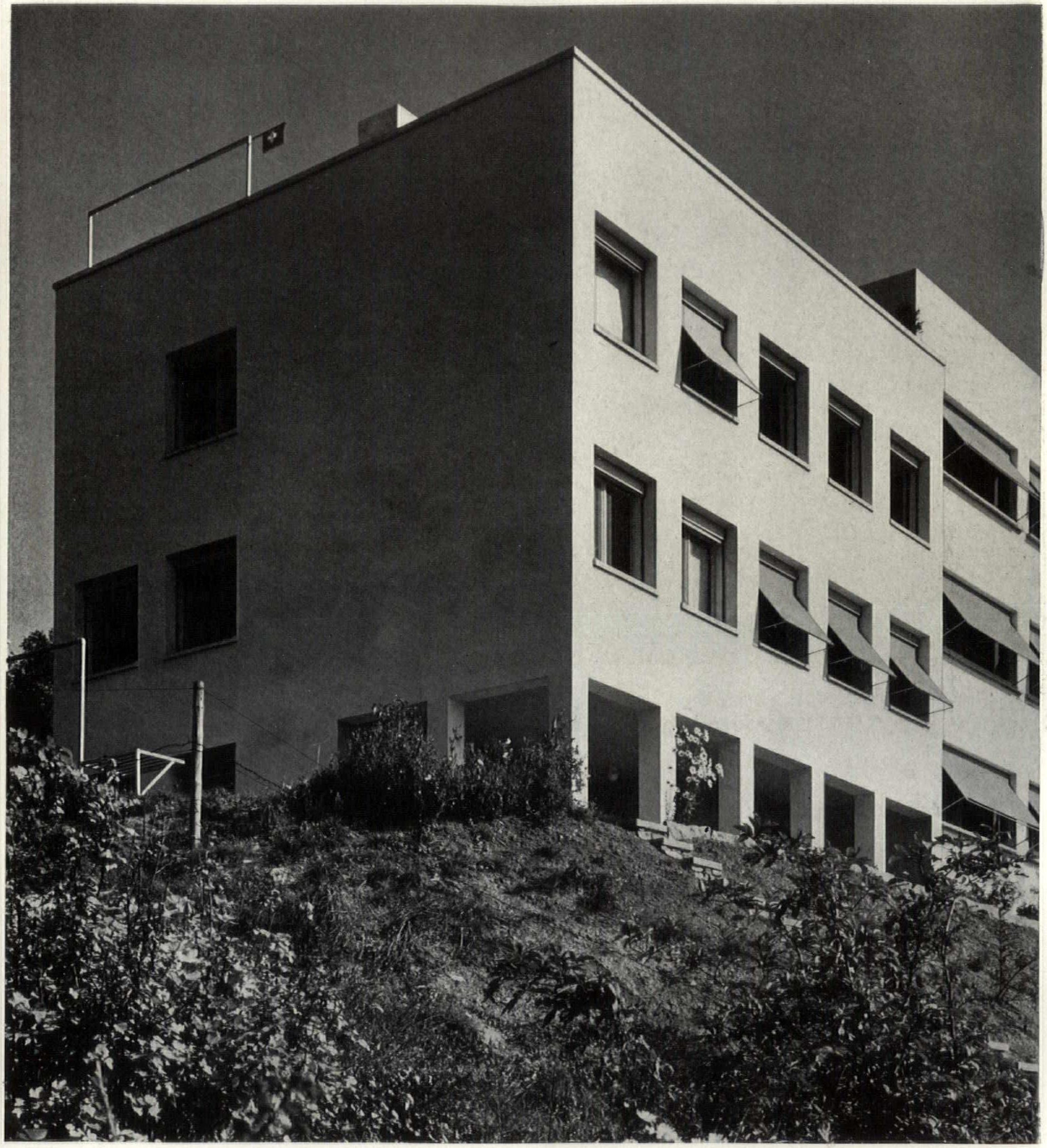
Exterior, common brick painted white; sash and frames white; blinds, bottle green. Entrance hall and living room, canvas with applied molding, café-au-lait; dining room, white dado, white woodwork, wallpaper, vertical stripes and medallions on oyster white ground; powder room, green with built-in French provincial bed; bedrooms in various colors, walls and woodwork being painted to match.



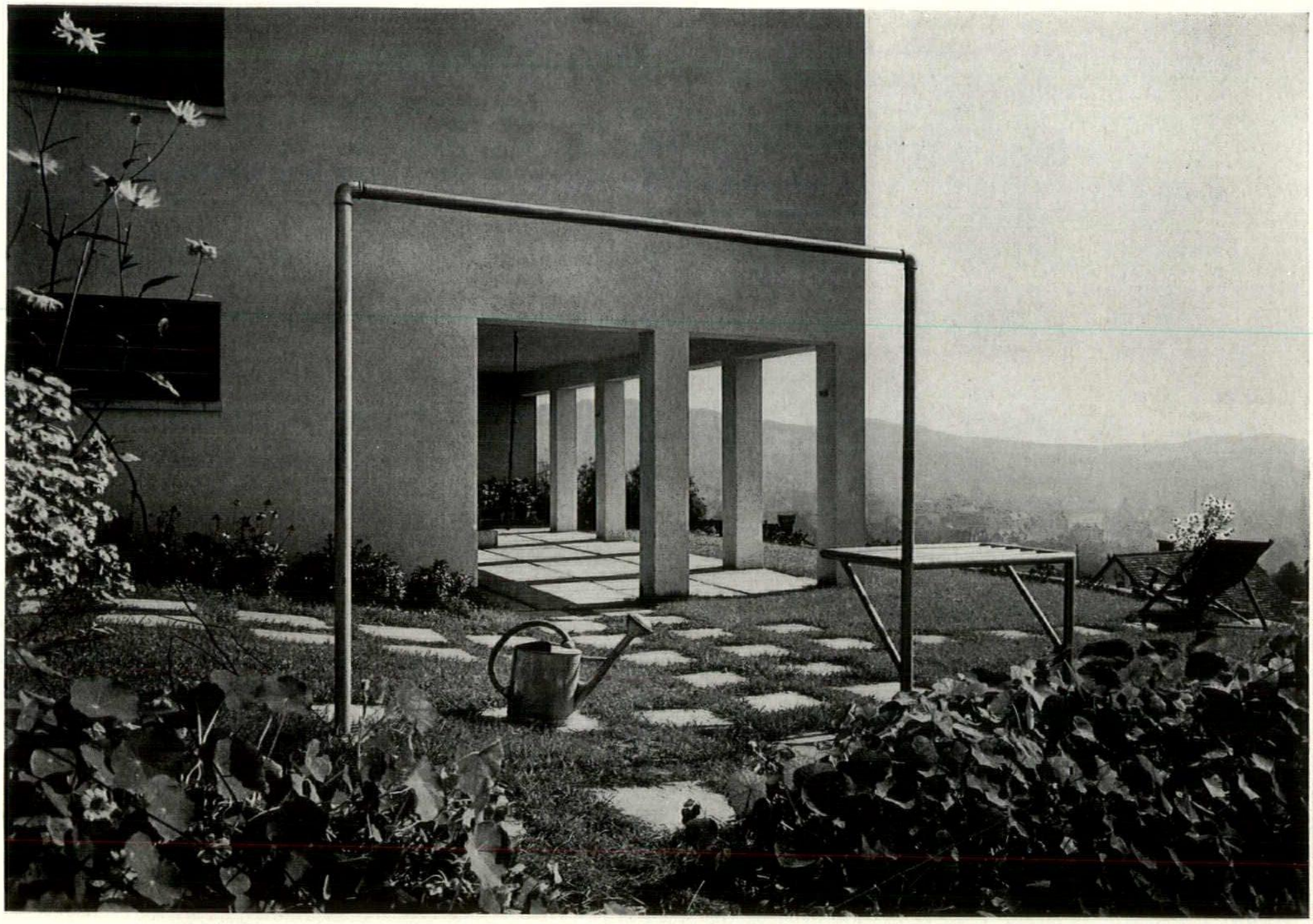
SECOND FLOOR PLAN

HOUSE IN ZURICH, SWITZERLAND

DESIGNED BY ALBERT FREY

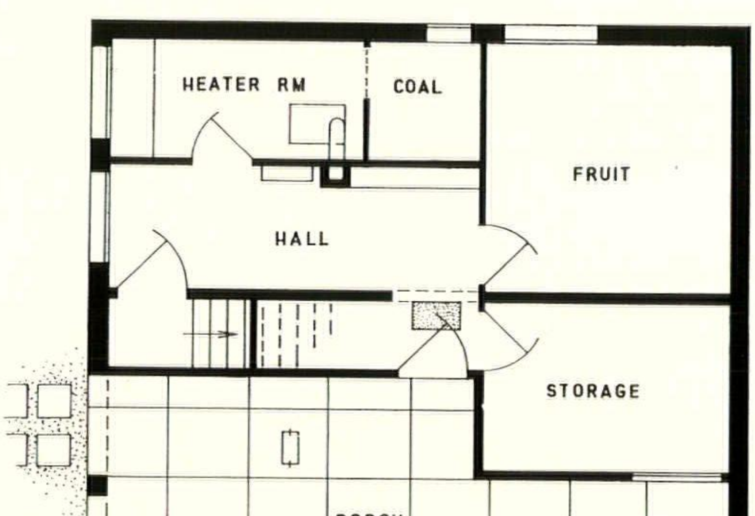


VIEW FROM SOUTHWEST. This view shows the compact form of the house. A near cubicle volume gives the greatest amount of inclosed space with a given area of walls and floors. The broadside of the house which faces south and the view is a receiver of light by a maximum number of windows allowable with the employed masonry construction. The roll-up top shutters are shown projecting out, providing shade and maintaining circulation of air and vision. All openings are standardized. This made possible most economical manufacturing of sills and lintels, windows, shutters and shades.



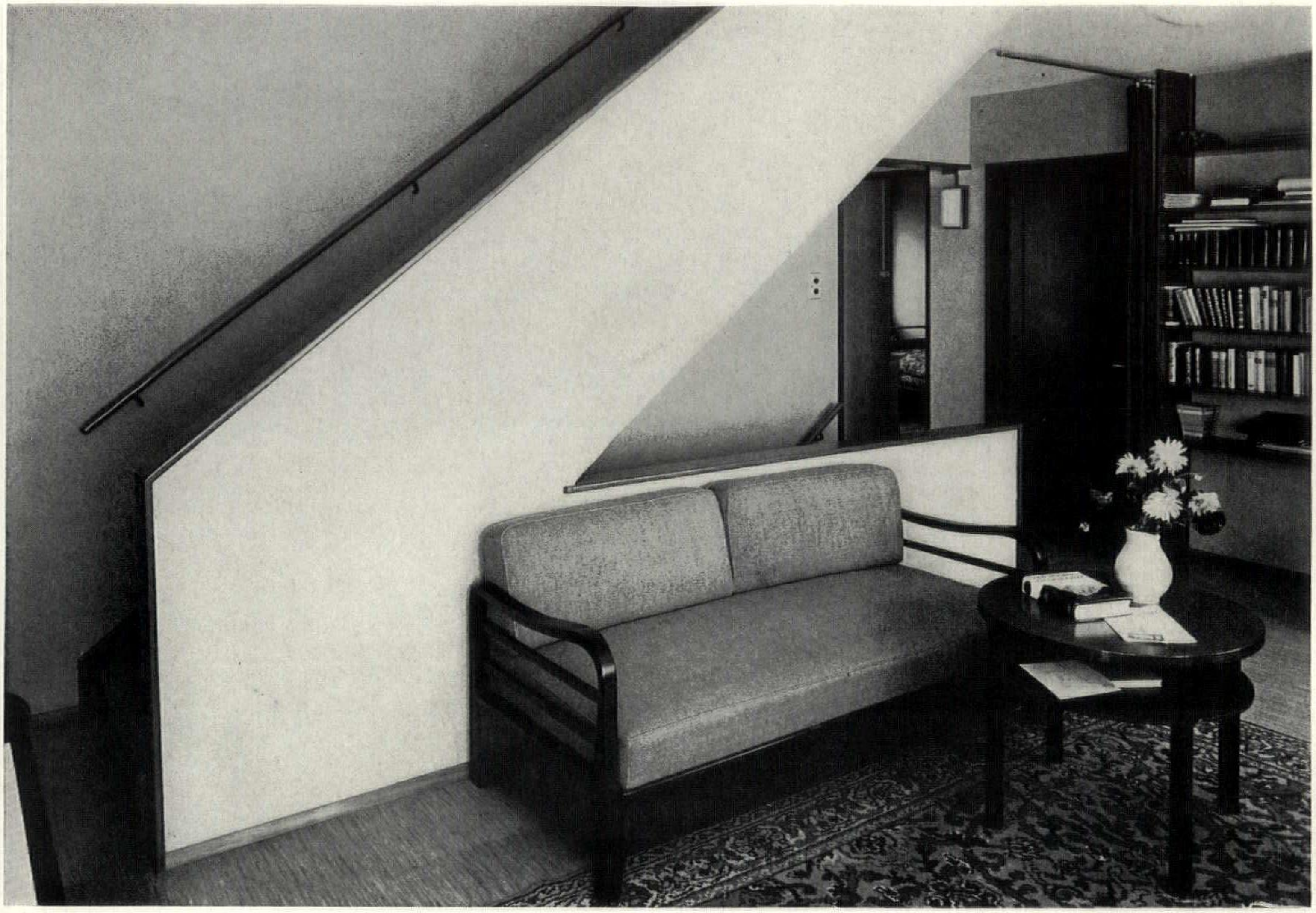
Photographs by Finsler

HOUSE IN ZURICH, SWITZERLAND



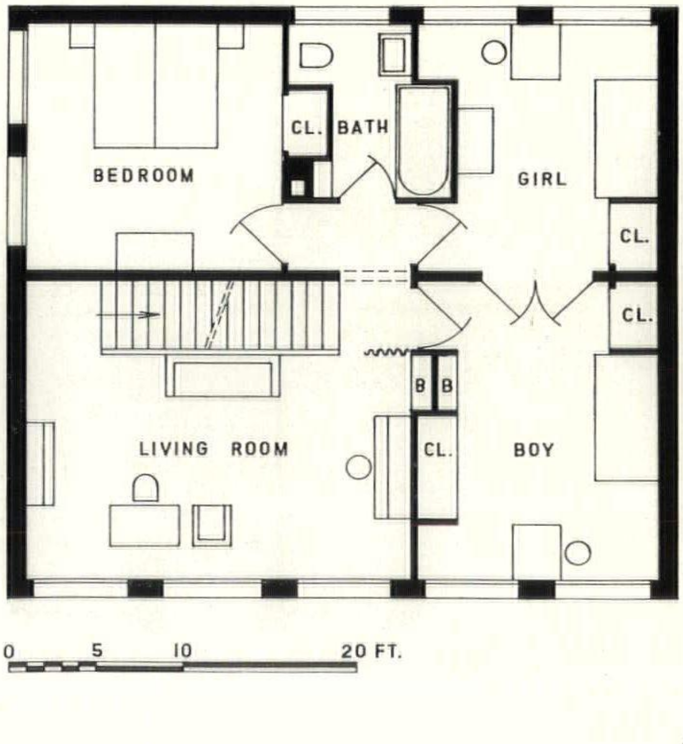
THE ENTRANCE PORCH (above) which provides a well-sheltered entrance to the house, is also a pleasant outdoor sitting and playing space. Before entering the house one enjoys the sweeping view of the city below. The steelpipe framework in the foreground is used in cleaning carpets and rugs.

GROUND FLOOR PLAN. The house is entered by a sheltered porch which faces the view and south. Due to the steep slope of the terrain the porch floor is above ground, while fruit cellar and heater room are below it making that half of the house area a basement. Since there is no attic in the house, being flat roofed, storage space for trunks, garden furniture, bicycle and baby carriage is provided on this floor, conveniently located for easy access from the outside. A work bench is placed under the window of the heater room. The boiler is for a hot-water heating system. A swing for the children is suspended from the ceiling of the open-air porch.

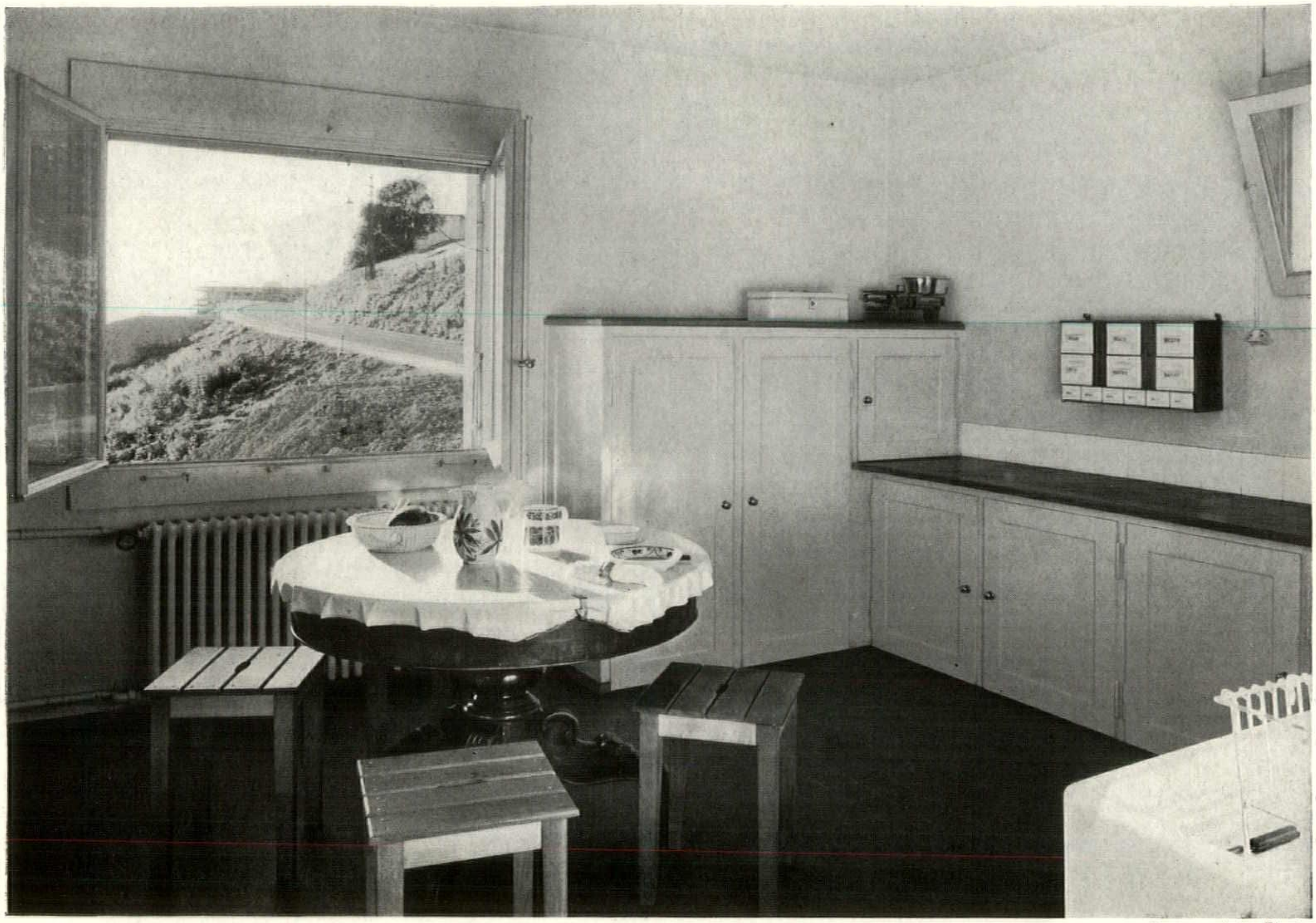


DESIGNED BY ALBERT FREY

THE LIVING ROOM (above) showing the stair which leads up from the hall and continues to the dining room on the floor above. It is part of the room, fitting into the layout and creating new perspectives of the room by the changing eye-height of the person on the stair.

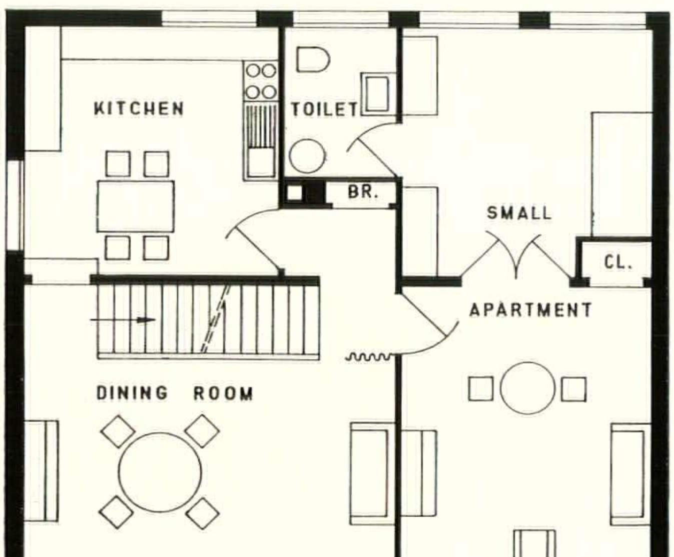


FIRST FLOOR PLAN. The stair which comes up from the hall on the ground floor opens directly into the living room. The space of a separate staircase is saved or partly given to the living room. Bedrooms and bath are directly accessible from the head of the stair. Living room windows face south. The boy's and girl's bedrooms may be combined into one large room for playing, by opening of the double doors between the two rooms. Adequate storage space for clothes, linen and books is built-in and distributed for each room as needed.



Photographs by Finsler

HOUSE IN ZURICH, SWITZERLAND

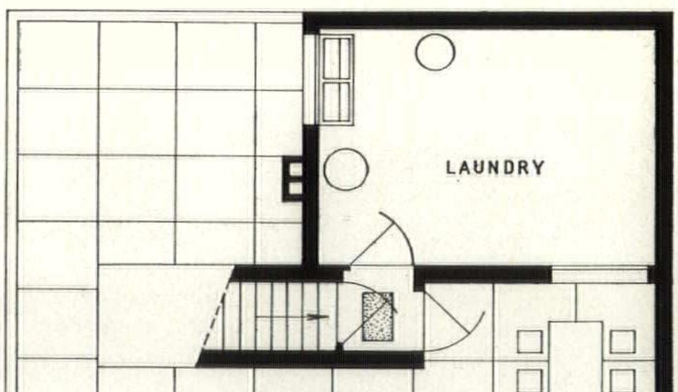


KITCHEN. Since the kitchen is also used as a breakfast room it is ample in size. Cabinets are at most convenient heights and there are no horizontal surfaces above eye-level where control of dust collection would be difficult. Because the kitchen is the workshop of the housewife for a good part of the day a pleasant outlook from at least one window has been thought a good feature.

SECOND FLOOR PLAN. Straight up from the living room leads the open stair into the dining room. Because of the restricted building area these rooms are arranged above each other instead of side by side. Through the open stairwell, close connection of the two floors is maintained and interesting perspectives are created by the introduction of the third dimension, the vertical relation. The kitchen on this floor has the advantage of being separated from living and bedrooms and as it is above them, odors from cooking will not travel through the rooms but escape to the roof. A small apartment for a relative of the owner was part of the requirements. Its location on this floor afforded better separation from the rest of the house.

DESIGNED BY ALBERT FREY

THE ROOF TERRACE. The sitting space here enjoys full privacy, light, air, sun or shadow as may be desired, and a magnificent view.

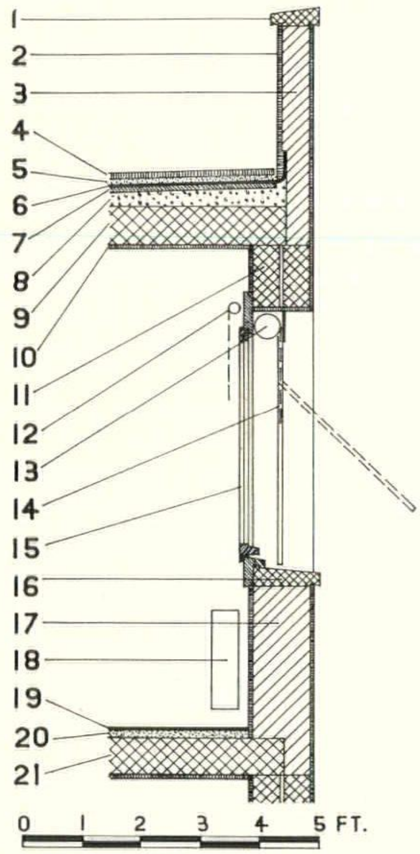


ROOF TERRACE PLAN. The flat roof is almost entirely given over to a terrace for outdoor living, sun-bathing and playing. One flight of stairs from the kitchen, it is ideal for outdoor eating. Flowers and shrubs grow well in the abundant light and air. The terrace gives privacy from neighbors and from street noises. The laundry has been located on this floor because the ordinary place for this room, the basement, was too low for drainage to the street sewer. Clothes drying is done on part of the terrace, convenient and clean.

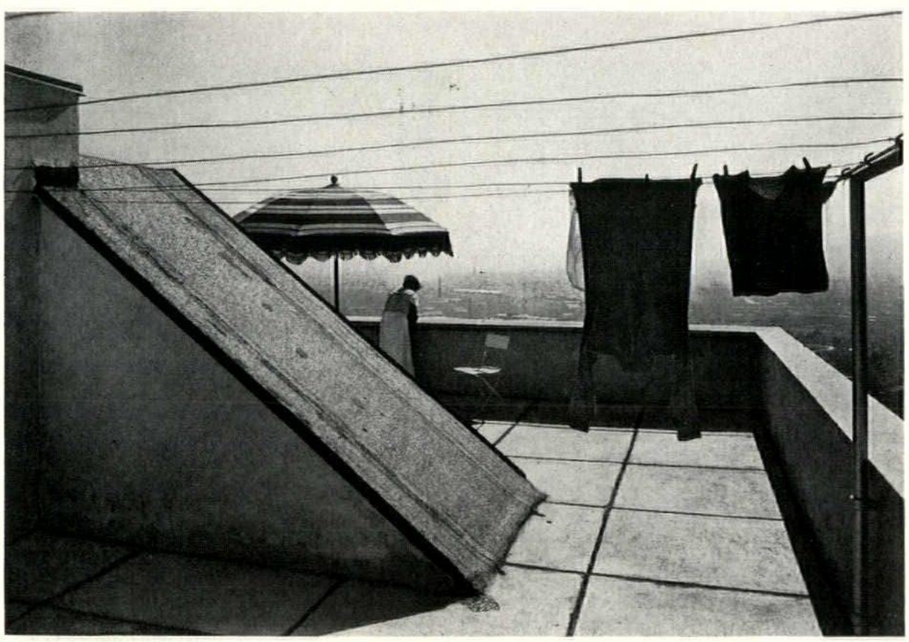
HOUSE IN ZURICH, SWITZERLAND

DESIGNED BY ALBERT FREY

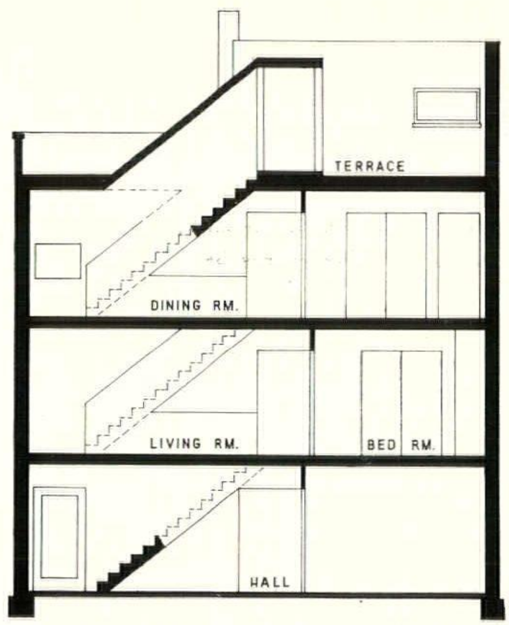
DETAIL SECTION, VERTICAL, THROUGH FLOOR, WALL, WINDOW AND ROOF TERRACE



(1) Parapet cover of synthetic stone.
(2) Cement stucco.
(3) Cement tile wall, 6-inch.
(4) Cement terrace floor slabs, 3 to 4 feet square, 1½ inches thick.
(5) ½ inch sand to allow for difference of expansion and drainage of rain water.
(6) Built-up roofing, 3-ply felt and asphalt.
(7) 1-inch cork insulation applied with hot asphalt.
(8) 3 to 6-inch cinder concrete for insulation and to provide pitch towards interior drain pipe.
(9) Reinforced concrete floor with hollow tiles dividing concrete into rib and slab.
(10) Plastered ceiling.
(11) Precast concrete lintel, 2 pieces with airspace to reduce transmission of heat or cold.
(12) Shade.
(13) Roll-up shutter made of wood lath with spring steel bands. ½" spaces between lath give circulation of air.
(14) Channel rails at sides for shutter. May be put out like awning.
(15) Double-glazed in-opening casements, wood.
(16) Synthetic stone sill.
(17) 12-inch hollow tile wall, terra cotta blocks.
(18) Thin steel tubing radiator, for hot-water circulation. Quick heat conductance, light weight, crackproof to freezing.
(19) Linoleum flooring.
(20) Mastic floor insulation.
(21) Reinforced concrete floor with hollow terra cotta tile blocks.



PART OF THE ROOF TERRACE is used for drying laundry. The wires used for hanging are of stainless steel.



CROSS SECTION showing how the different rooms are connected by the stairway. The line of travel from ground to roof is the shortest possible. The stair openings favor air movement between floors, helping uniform heating in winter and quick cooling in summer by opening of terrace doors allowing the rising warm air to escape.

OFFICE OF SCHOEPPL AND SOUTHWELL, ARCHITECTS

MIAMI BEACH, FLORIDA

Building: reinforced concrete and cement block walls on concrete piling; steel sash, Detroit Steel Products Co.; Ludowici white interlocking tile roof; plaster throughout, hard white finish, Certain-Teed Products Corp.

FIRST FLOOR

ENTRY AND SECRETARY'S OFFICE: quarry tile floor; wood cornice; walls and ceiling painted bone white; woodwork glazed dirty white.

OFFICE NO. 1: asphalt tile floor; wood cornice; walls and ceiling painted bone white; woodwork black; floor black, red and white.

OFFICE NO. 2: brown linoleum floor; brown wainscot; white walls and ceiling; wood cornice; shelves and woodwork trimmed in red.

OFFICE NO. 3: green asphalt tile floor; green wainscot and trim; white walls and ceiling.

SECOND FLOOR

STORAGE FILE ROOM: asphalt tile floor. J-M Flexboard wainscot, white walls and ceiling.

DRAFTING ROOM: green asphalt tile floor, green wainscot and trim, white walls and ceiling.

Benjamin Moore & Co. paints used throughout. Venetian blinds at all windows. Indirect light in all rooms.

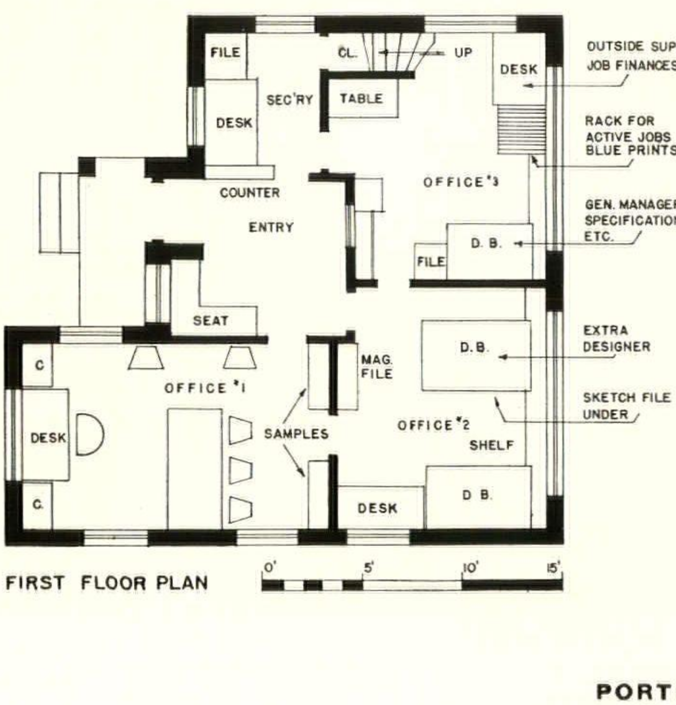
SCHOEPPL & SOUTHWELL, ARCHITECTS

Photographs by Gottscho

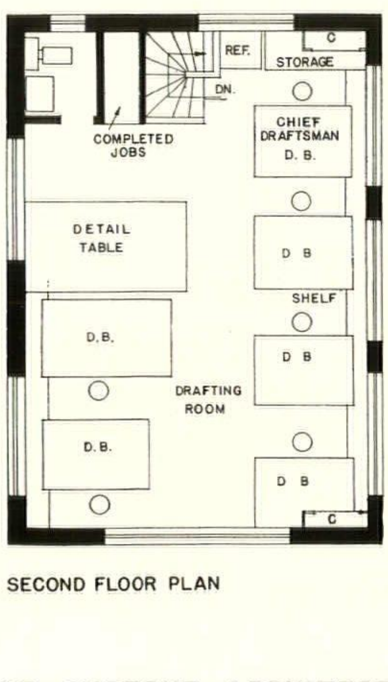
Photographs by Gottscho

OFFICE OF SCHOEPPL AND SOUTHWELL, ARCHITECTS MIAMI BEACH, FLORIDA

SCHOEPPL & SOUTHWELL,
ARCHITECTS



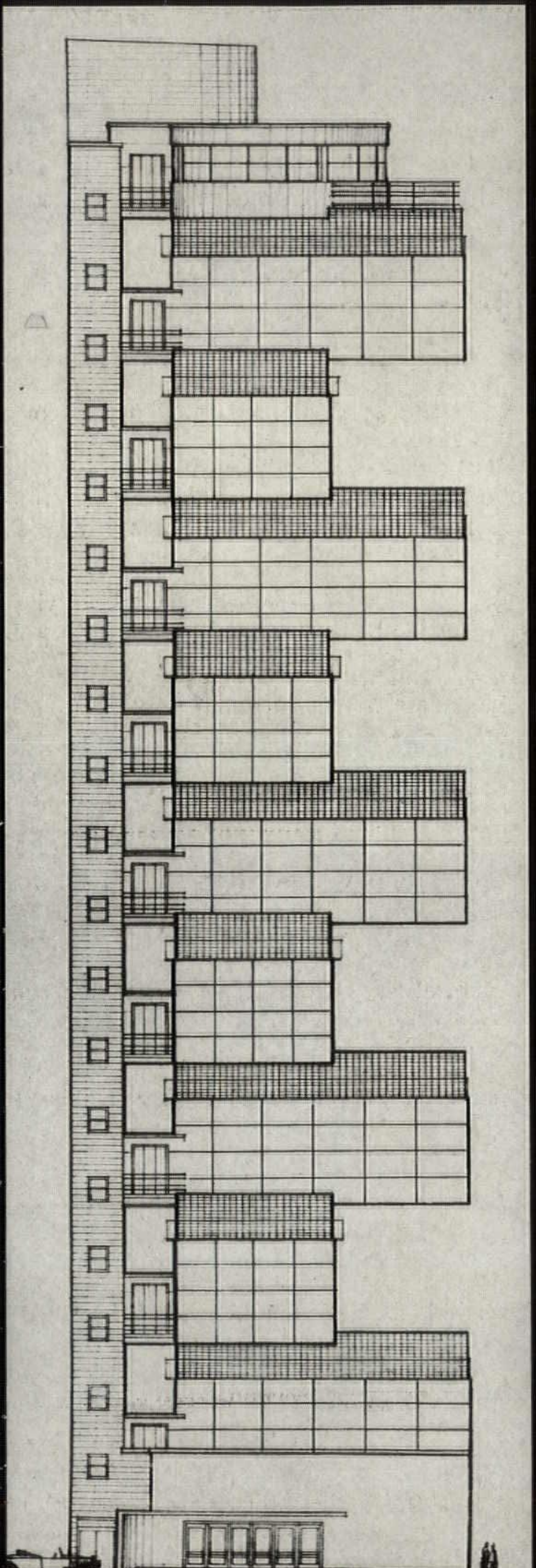
FIRST FLOOR PLAN



SECOND FLOOR PLAN

PLANS FOR A CONTEMPORARY MUSEUM, NEW YORK CITY

HOWE AND LESCAZE, ARCHITECTS



SCHEME 4

FRONT VIEW

small squares indicate glass surface

A PROPOSED

MUSEUM OF CONTEMPORARY ART FOR NEW YORK CITY

by HOWE AND LESCAZE, ARCHITECTS

On June 2, 1930, the architects prepared drawings for a Museum of Contemporary Art with a proposed location in New York City. Previous to this the architects, at the request of the Building Committee of a local museum, had prepared three preliminary schemes.

Each of the preliminary schemes offered a different solution of the lighting problem:

SCHEME 1 provided continuous topside lighting through ribbon windows;

SCHEME 2 through a façade entirely of glass;

SCHEME 3 through skylights located at the setback of each floor.

In each of these three schemes there were only two possible sources of light: from the front, facing the street; and from the rear, facing the court. Further studies by the architects led to the development of Schemes 4, 5 and 6, shown on the accompanying pages.

SCHEME 4 combines topside lighting with skylighting. Each gallery obtains light from every direction—north, south, east, and west—as well as through a skylight;

SCHEME 5 is, in some measure, a variation of Scheme 4;

SCHEME 6 develops some features of Scheme 2 and offers a novel solution of the traffic problem: visitors would be taken up to the uppermost floor and would go down through the galleries by means of a quarter of a flight of stairs at every exhibition room.

The vital factors, in the order in which they should be considered in designing a museum, are:

1 LIGHT

Correct supply of both natural and artificial light, and the control of their intensity and direction.

2 DISPLAY AREAS

Adequate wall and floor space, properly arranged for the intelligent display of diversified exhibitions.

3 VENTILATION

Constant maintenance of the temperature and humidity necessary for the safekeeping of paintings, notwithstanding varying outside conditions.

4 TRAFFIC

Concentrated means of vertical circulation, and simplified method of circulation on each floor.

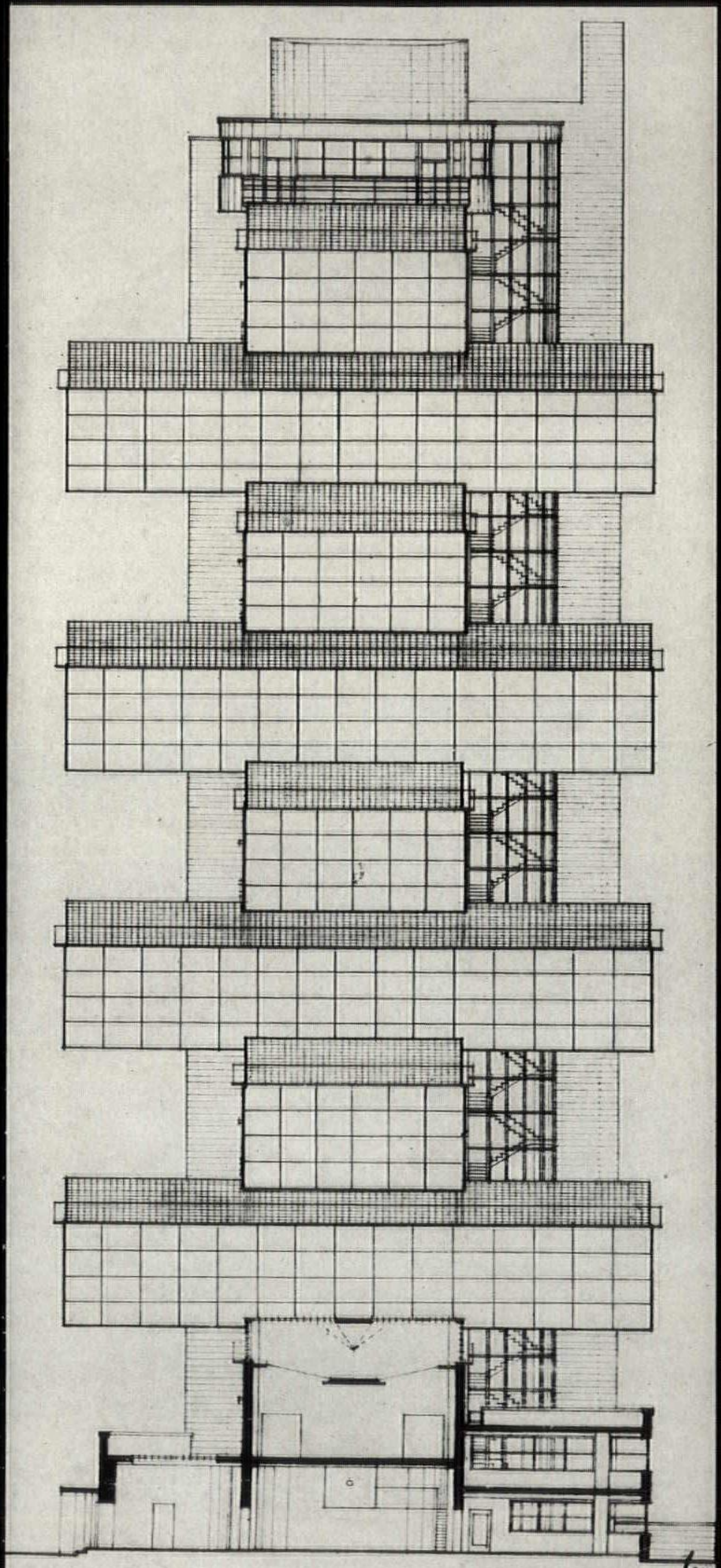
5 STORAGE

Storage and facilities for receiving, shipping, and repairs.

LIGHT Above each gallery is a light-mixing chamber with sides and top of structural glass. Its base is the continuous diffusing sash constituting the ceiling of a gallery. A model of such a gallery with light-mixing chamber was built, one-quarter of its actual size, at the request of the architects and, under their supervision, by the Structural Glass Corporation. The purpose was to determine the

PLANS FOR A CONTEMPORARY MUSEUM, NEW YORK CITY

HOWE AND LESCAZE, ARCHITECTS



SCHEME 4

SIDE VIEW
section through first and second floors

efficiency of the chamber. The tests by a photometer (a meter for gauging the intensity of illumination) established that:

a) The intensity varied from thirteen to eighteen foot-candles or lumens per square foot. In consultation with the architects a lighting expert stated that experiments had shown fifteen foot-candles to be the ideal illumination for paintings.

b) The light is strongest on the wall space between a line drawn at four feet, and another at eight feet from the floor, in other words, within the picture hanging space.

c) The intensity in the present premises of the museum is from five to nine foot-candles.

The detailed report of these tests is in the files of the architects.

For the regulation of the light, the chamber is equipped with light-controlling blades and reflectors. A photo-electric cell automatically controls the gradual closing of the blades as daylight increases. It also controls their opening as daylight decreases, and finally turns on the electric light in the reflectors as darkness approaches.

The light chamber is easily cleaned from an outside balcony that encircles it, and is of sufficient height to permit of easy access for workmen.

The outlook from the glass-inclosed staircase, and the street view from the broad window in the lobby of each floor relieve possible museum fatigue.

DISPLAY AREAS The total length of unencumbered wall available for hanging pictures in

each east-west gallery	is 136 linear feet;
each north-south gallery	212 linear feet.
The total clear floor area in	
each east-west gallery	is 1,344 square feet;
each north-south gallery	1,936 square feet.

VENTILATION The light-mixing chamber also contains heating pipes as well as ducts for humidifying and ventilating which, through grilles, control the atmosphere of each gallery.

TRAFFIC An information booth is placed on the entrance floor. Three passenger elevators and a glass-inclosed staircase lead to the galleries above; in rush hours a fourth elevator, otherwise for freight, may be used for passenger service. The arrangement of the galleries eliminates traffic confusion even on a crowded day. Each gallery is a unit in itself with its entrance and exit leading only to the elevators and staircase, not into any other room. Thus there is no cross traffic and, while in one gallery, there are no glimpses of more pictures in adjoining galleries to distract the attention.

MATERIALS The facing of the exterior walls is a smooth and refracting surface such as marble or white glazed brick; the finish of the interior walls is a smooth plaster painted a flat and rather dark color.

DESCRIPTION OF SCHEME 4

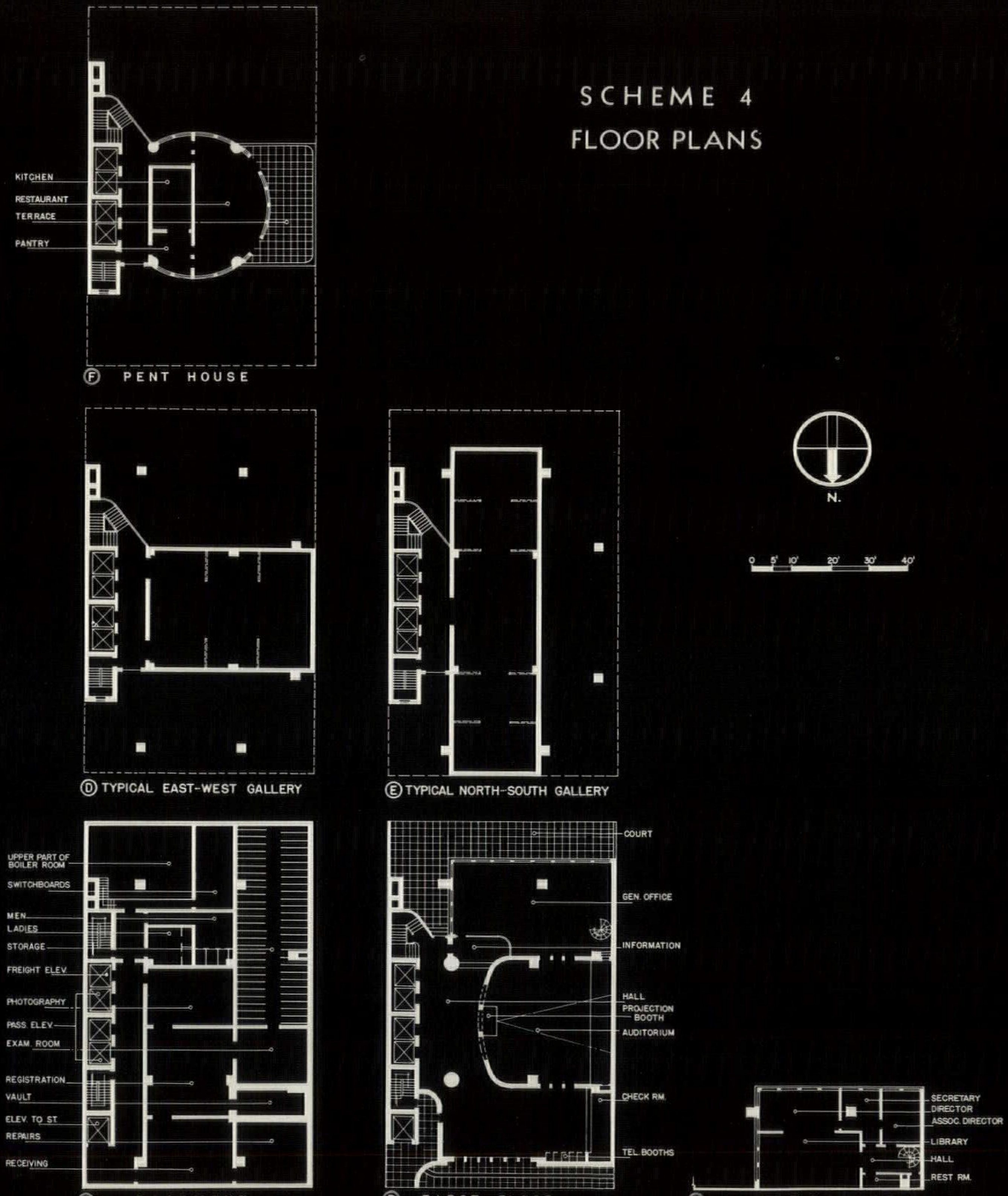
The building is composed of an arrangement of horizontal blocks placed above one another and at right angles to each other. There are nine of these blocks, five short ones extending east to west, and four long ones extending north to south. Each constitutes an exhibition gallery. All of them abut a tall narrow tower which contains the elevators, glass-inclosed main staircase, and the fire stairs. Besides these nine gallery-blocks, the building contains two basements, a main floor with auditorium, and a roof restaurant with open terrace.

SUB-BASEMENT: heating plant, ventilating and humidifying units, electric switchboards and transformers

PLANS FOR A CONTEMPORARY MUSEUM, NEW YORK CITY

HOWE AND LESCAZE, ARCHITECTS

SCHEME 4
FLOOR PLANS



BASEMENT:	rooms for receiving, repairs, storage, registration, examination, photography vault for valuables, men's and women's rest rooms
FIRST FLOOR:	main entrance—hall, auditorium, stairs, elevator lobby, general offices, freight entrance, open court
MEZZANINE:	private offices, board-library room
FLOORS 2, 4, 6, 8, 10:	east-west galleries
FLOORS: 3, 5, 7, 9:	north-south galleries
PENTHOUSE:	restaurant and open terrace

Light is of such paramount importance in a museum that it has dictated the block form of Scheme 4. In order to obtain direct and satisfactory lighting for each gallery, some potential building space has been given over to providing an efficient distribution of light. The following figures indicate that Scheme 4 saves approximately $28,018 by converting 37,358 potential cubic feet into a source of direct daylight lighting for each gallery.

A comparison of Scheme 4 with revised Scheme 1, which would contain the maximum cube permitted by law, shows:

	SCHEME 1	**SCHEME 4**
Height from floor to floor	14 feet	23 feet
Number of floors	10	10 and penthouse
Total height above curb	141 feet	*226 feet
Total cube (including two basements)	816,240 cu. ft.	778,882 cu. ft.
Total cost estimated at 75c a cubic foot	$612,180	$585,000

*Scheme 4 encroaches somewhat on the existing building code, but the architects feel that, because of the open block arrangement, the adjoining buildings and streets gain so much extra light and air that the Trustees can easily obtain the necessary permits from the Building Department.

If two building periods are to be considered for the erection of the museum, the architects recommend that the first one include the first five floors. This would give, beside the two basements, the entrance floor with its auditorium and offices, and four floors of exhibition galleries.

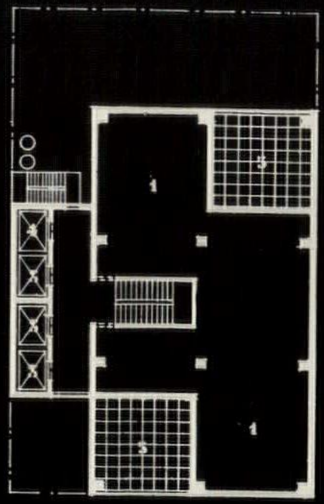
	EXISTING GALLERIES HECKSCHER BUILDING	1ST BUILDING PERIOD **SCHEME 4**	COMPLETED BUILDING **SCHEME 4**
LIGHT	Artificial	Daylight and Artificial	Daylight and Artificial
Total floor area	4,235 square feet	28,100 square feet	43,000 square feet
Galleries net floor area	2,800 " "	6,560 " "	14,460 " "
Offices, etc.	360 " "	2,500 " "	2,500 " "
Storage, etc.	150 " "	3,500 " "	3,500 " "
Wall length for pictures	390 linear feet	696 linear feet	1,528 linear feet
Same with subdivisions		1,096 " "	2,416 " "
Restaurant		1,100 square feet	1,100 square feet
Cost of land and building		$567,500	$887,500
Rent or 6% interest on cost		$ 34,050	$ 53,250

KEY TO NUMERALS ON PLANS OPPOSIT

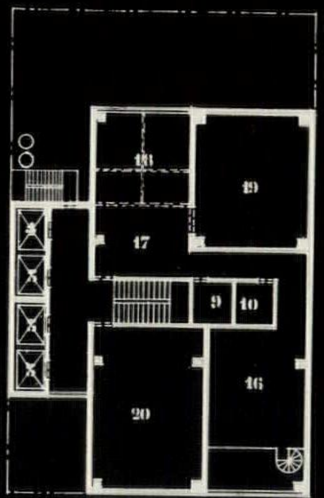
1 Exhibition Space
2 Entrance Hall
3 Passenger Elevator
4 Freight Elevator
5 Glass Ceiling
6 Restaurant
7 Terrace
8 Kitchen
9 Men's Rooms
10 Ladies' Rooms
11 Checkroom
12 Information
13 Auditorium
14 Freight Entrance
15 Telephone Booths
16 General Office
17 Hall
18 Directors
19 Board Room, Libra
20 Examination Room
21 Receiving Room
22 Registration Room
23 Storage Room
24 Photography Room
25 Vault
26 Boiler Room
27 Switchboards

PLANS FOR A CONTEMPORARY MUSEUM, NEW YORK CITY

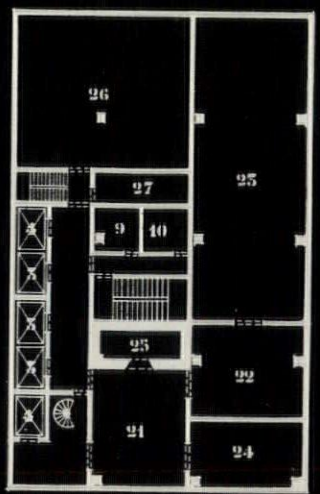
HOWE AND LESCAZE, ARCHITECTS



E GALLERY

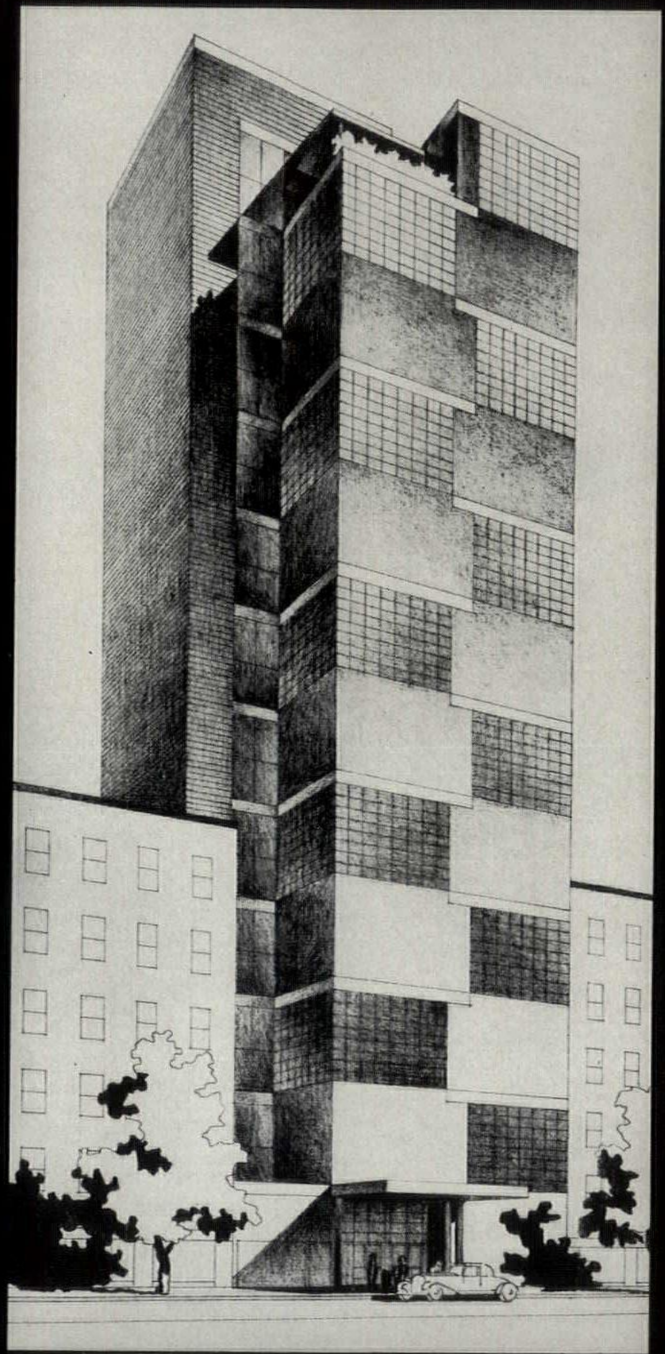


C MEZZANINE



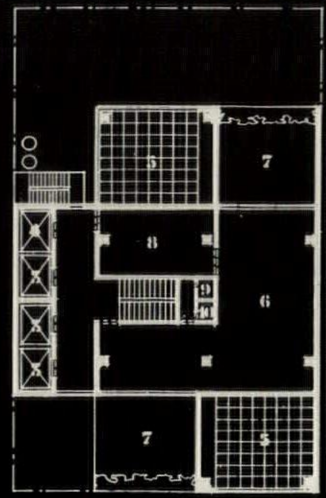
A BASEMENT

0 5 10 20 30 40

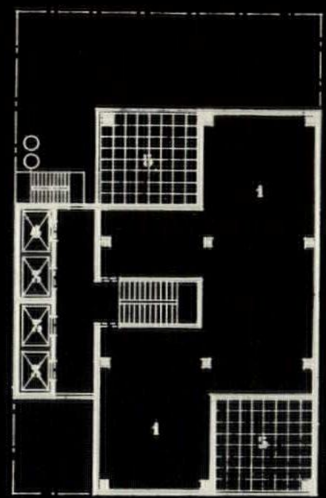


SCHEME 5

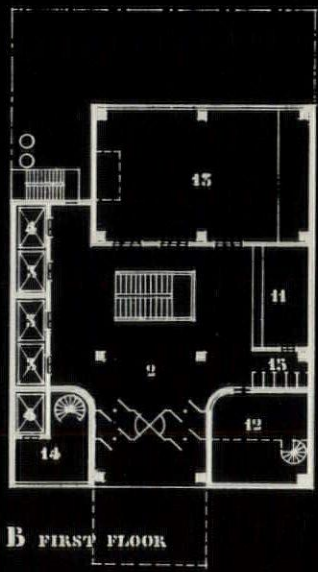
staggered light chambers give
daylight to the galleries



F PENT HOUSE



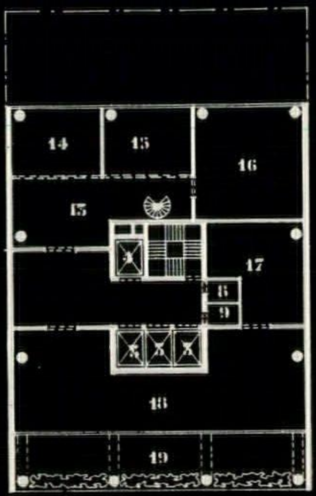
D GALLERY



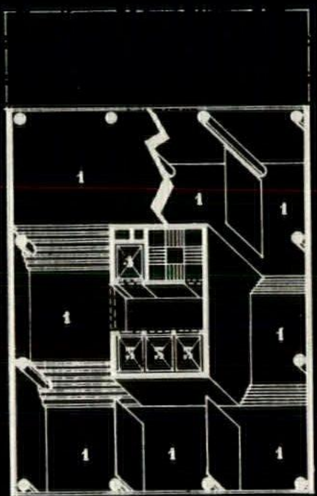
B FIRST FLOOR

PLANS FOR A CONTEMPORARY MUSEUM, NEW YORK CITY

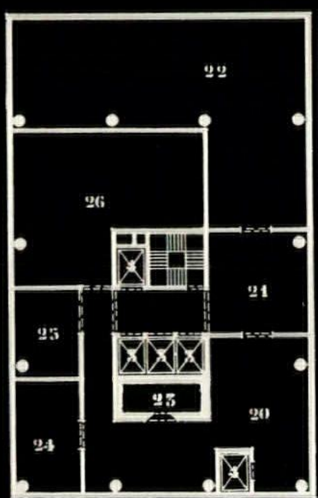
HOWE AND LESCAZE, ARCHITECTS



PENTHOUSE

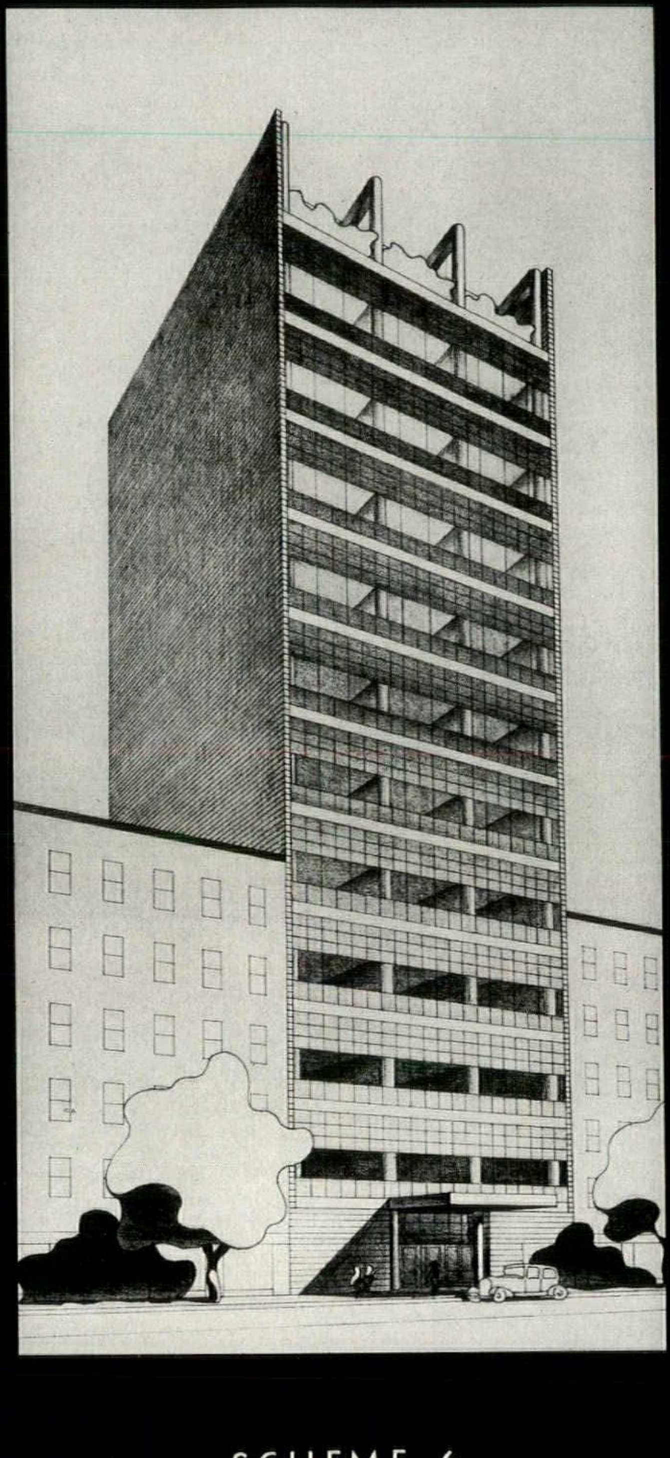


TYPICAL GALLERY



BASEMENT

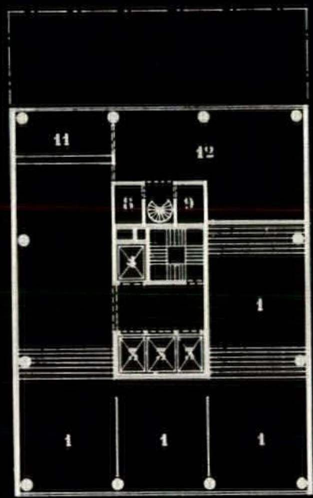
0 5 10 20 30 40



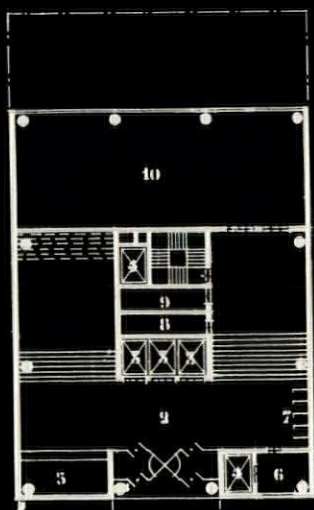
SCHEME 6

entire glass front with alternating strips of clear and opaque glass

1 EXHIBITION SPACE
2 ENTRANCE HALL
3 PASSENGER ELEVATOR
4 FREIGHT ELEVATOR
5 CHECK ROOM
6 FREIGHT ENTRANCE
7 TELEPHONE BOOTHS
8 MENS ROOMS
9 LADIES ROOMS
10 AUDITORIUM
11 INFORMATION
12 GENERAL OFFICE
13 HALL
14 ASSOCIATE DIRECTOR
15 DIRECTOR
16 BOARDROOM, LIBRARY
17 KITCHEN
18 RESTAURANT
19 TERRACE
20 RECEIVING ROOM
21 REGISTRATION ROOM
22 STORAGE ROOM
23 VAULT
24 PHOTOGRAPHY ROOM
25 SWITCHBOARDS
26 BOILER ROOM



STARTING GALLERY



FIRST FLOOR

Photographs by Gottscho

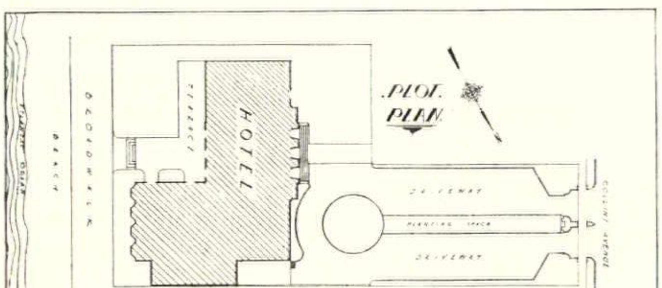
Photographs by Gottscho

ATLANTIS HOTEL

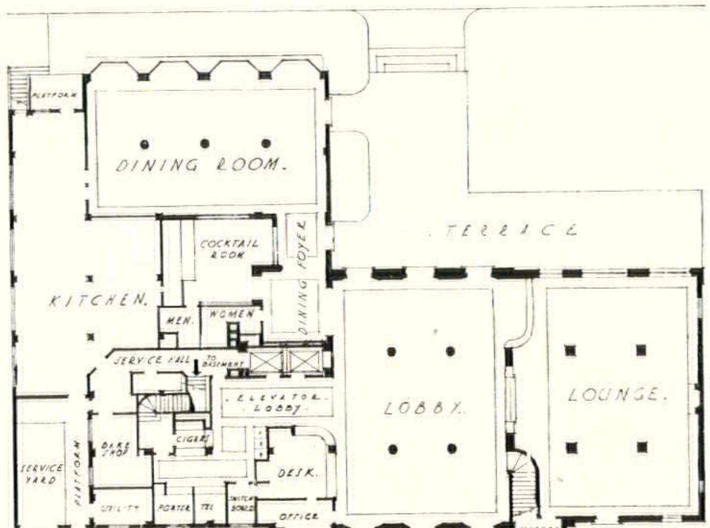
MIAMI BEACH, FLORIDA

L. MURRAY DIXON,

ARCHITECT



PLOT PLAN



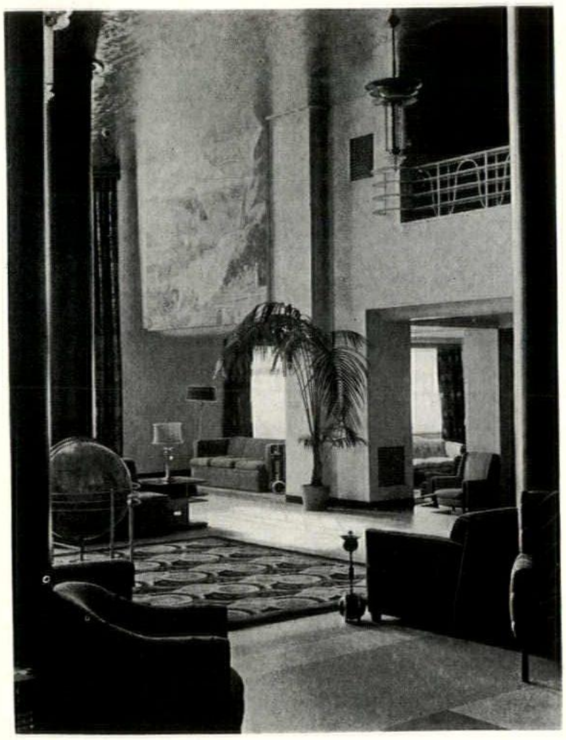
FIRST FLOOR PLAN

Photographs by Gottscho

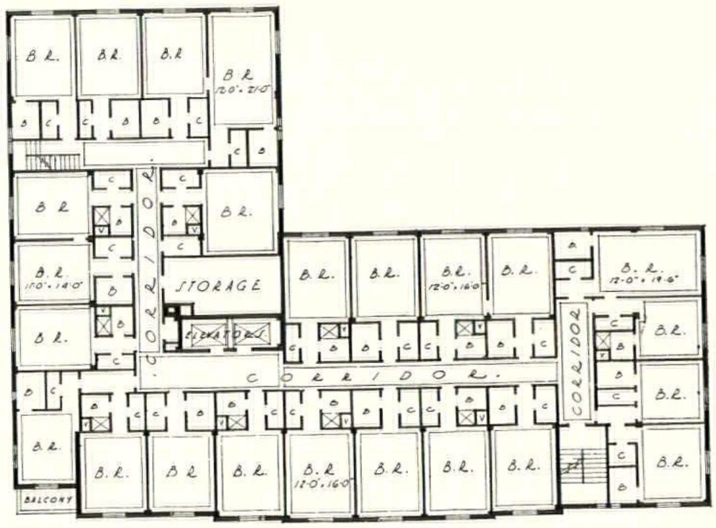
MAIN LOUNGE LOOKING TOWARDS LOBBY

ATLANTIS HOTEL

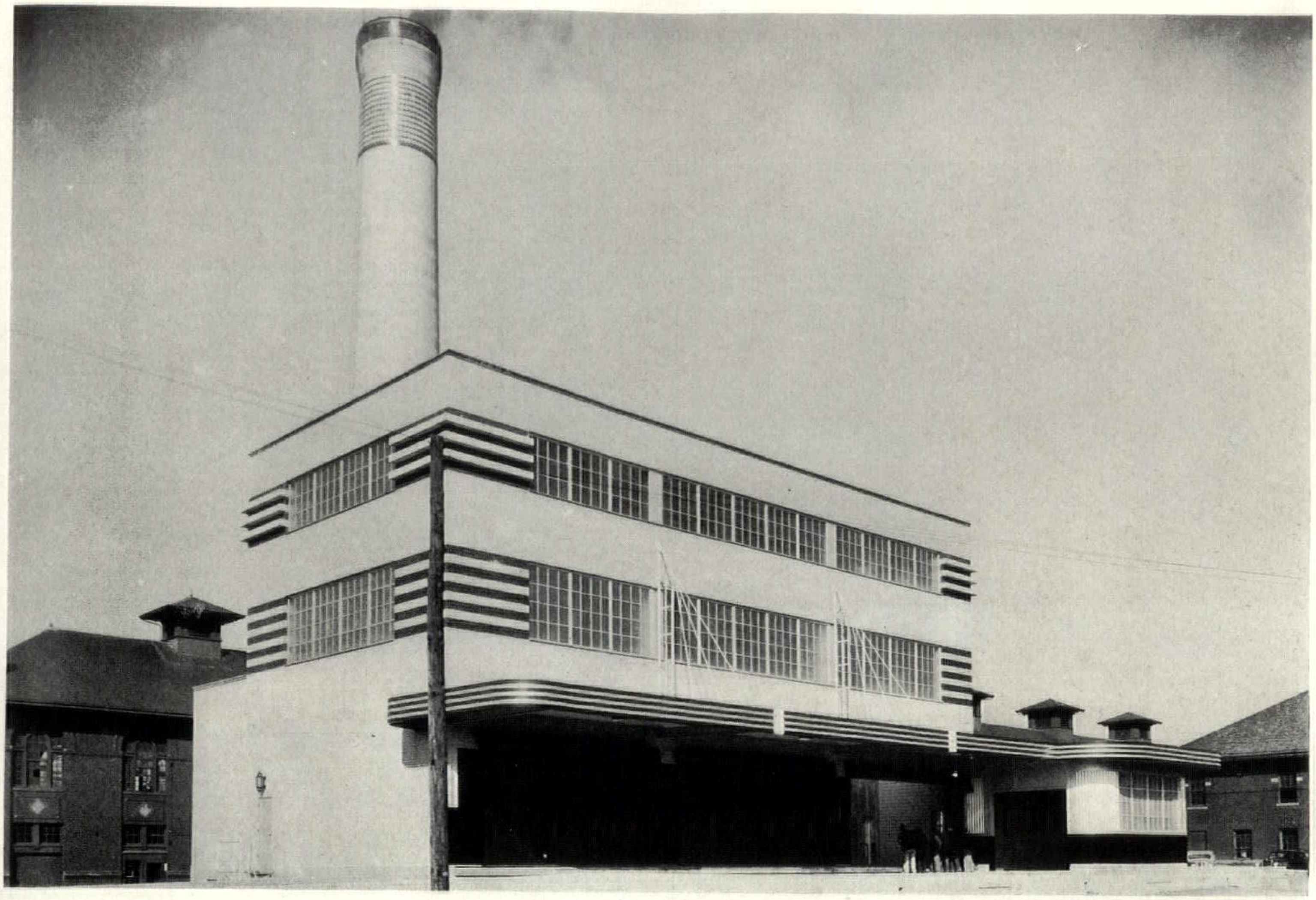
MIAMI BEACH, FLORIDA



L. MURRAY DIXON, ARCHITECT

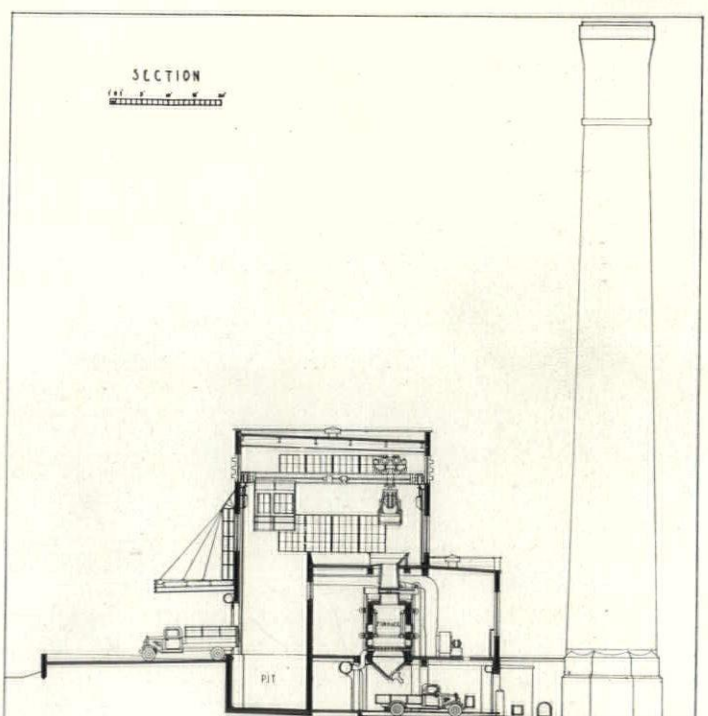


TYPICAL FLOOR PLAN



REFUSE INCINERATOR COLUMBUS, OHIO

EDWARD A. RAMSEY, ARCHITECT



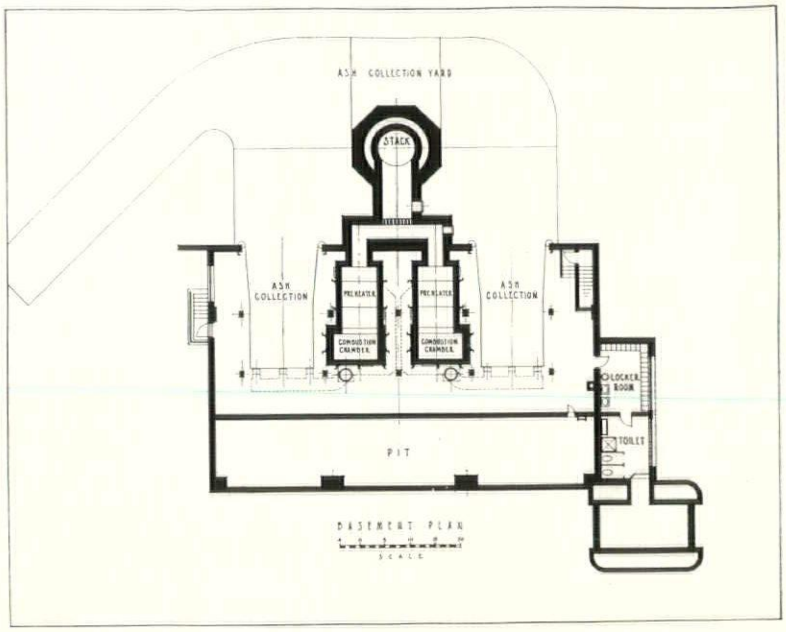
Cross section of plant showing relation between refuse deposited by truck (lower left) to ash removed by truck (lower right).

REFUSE INCINERATOR

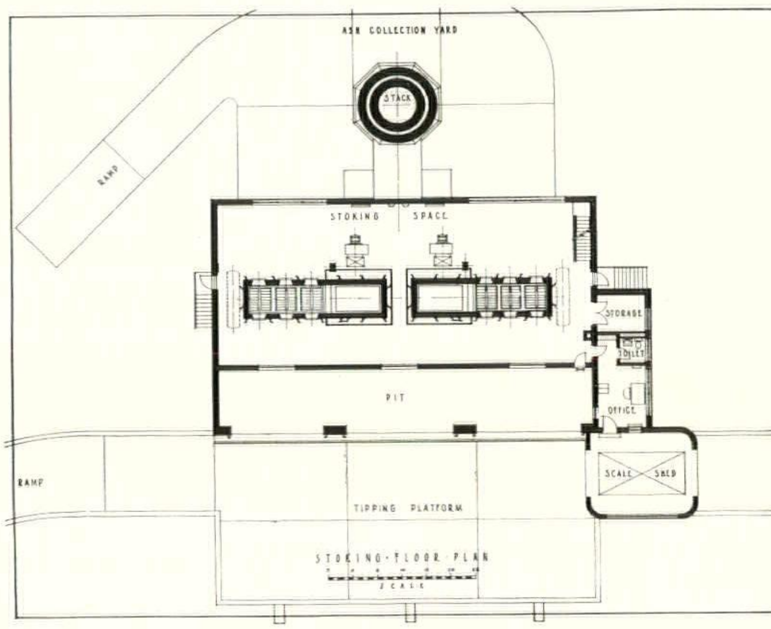
COLUMBUS, OHIO

EDWARD A. RAMSEY,
ARCHITECT

1

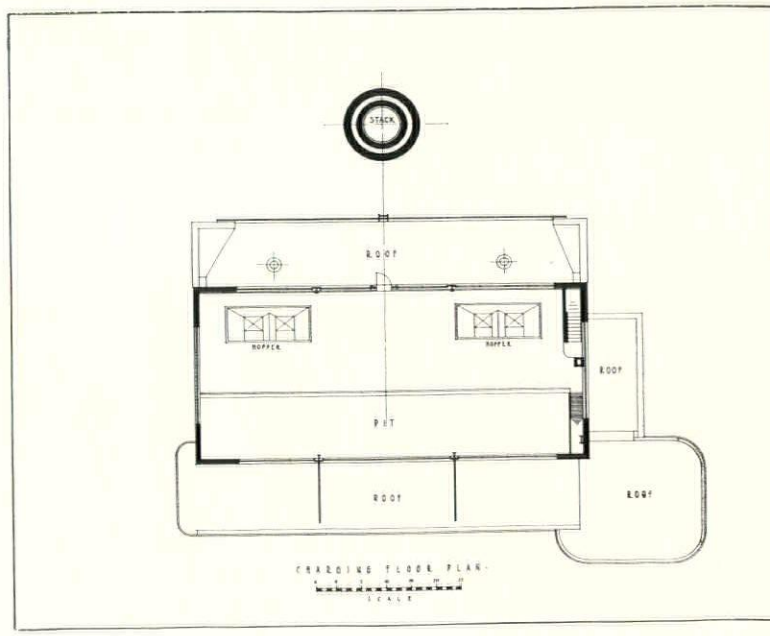


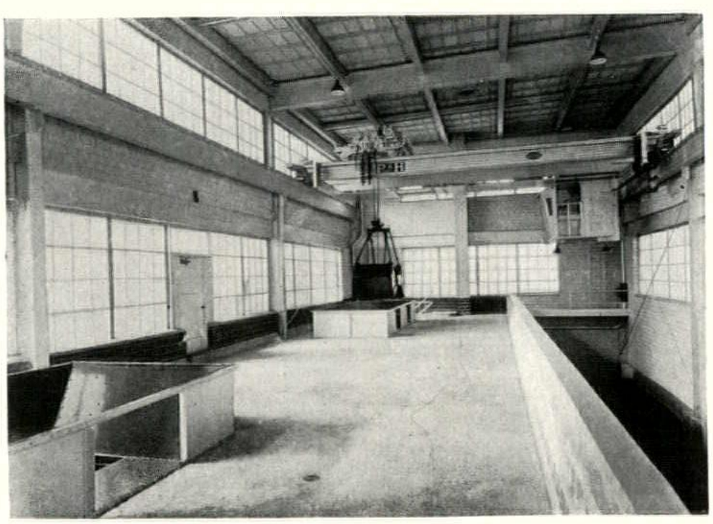
2

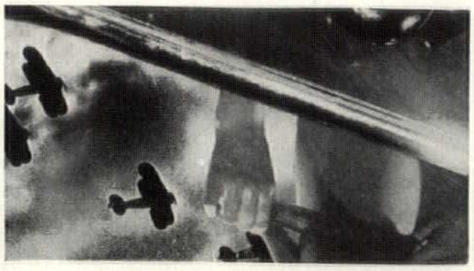


Refuse, brought by truck to the tipping platform (2) is dumped into the pit. Traveling cranes pick it up and dump it through hoppers (3) into the furnace chamber. The ash is then dropped into trucks on the basement level (1) where it is hauled out.

3







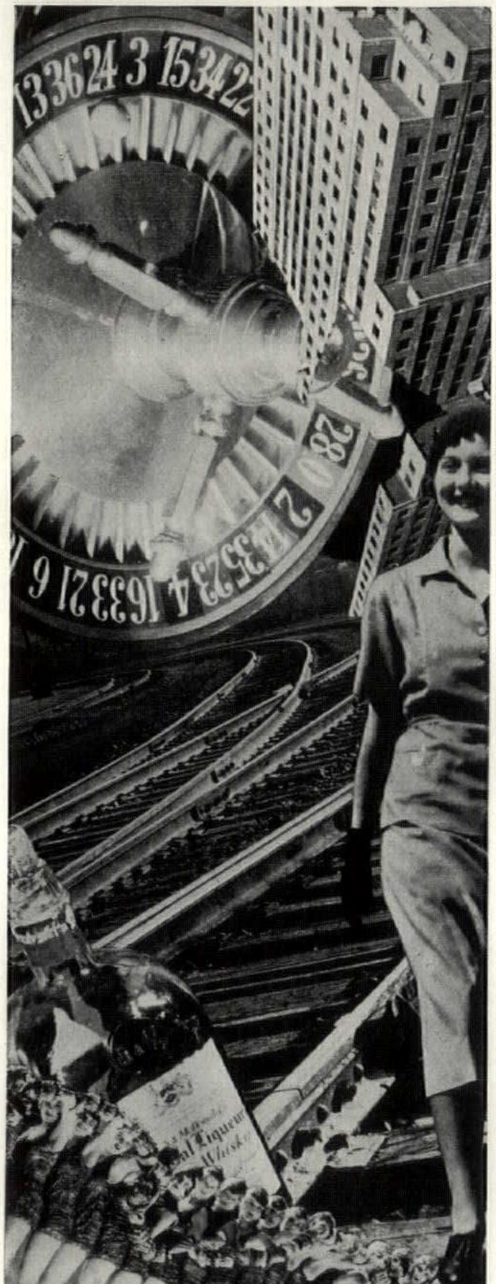
NOTES ON MURALS BY PHOTOGRAPHY

by DRIX DURYEA
of Drix Duryea, Inc.

Murals by photography have become invaluable for the reproduction of any subject, photographic or otherwise, to form a design to the required scale at nominal cost. They are appreciated by architects because the room does not have to be designed or changed to fit them; the murals themselves can be adapted to rooms of any size or character and can be designed to preserve and bring out the best architectural features of the room.

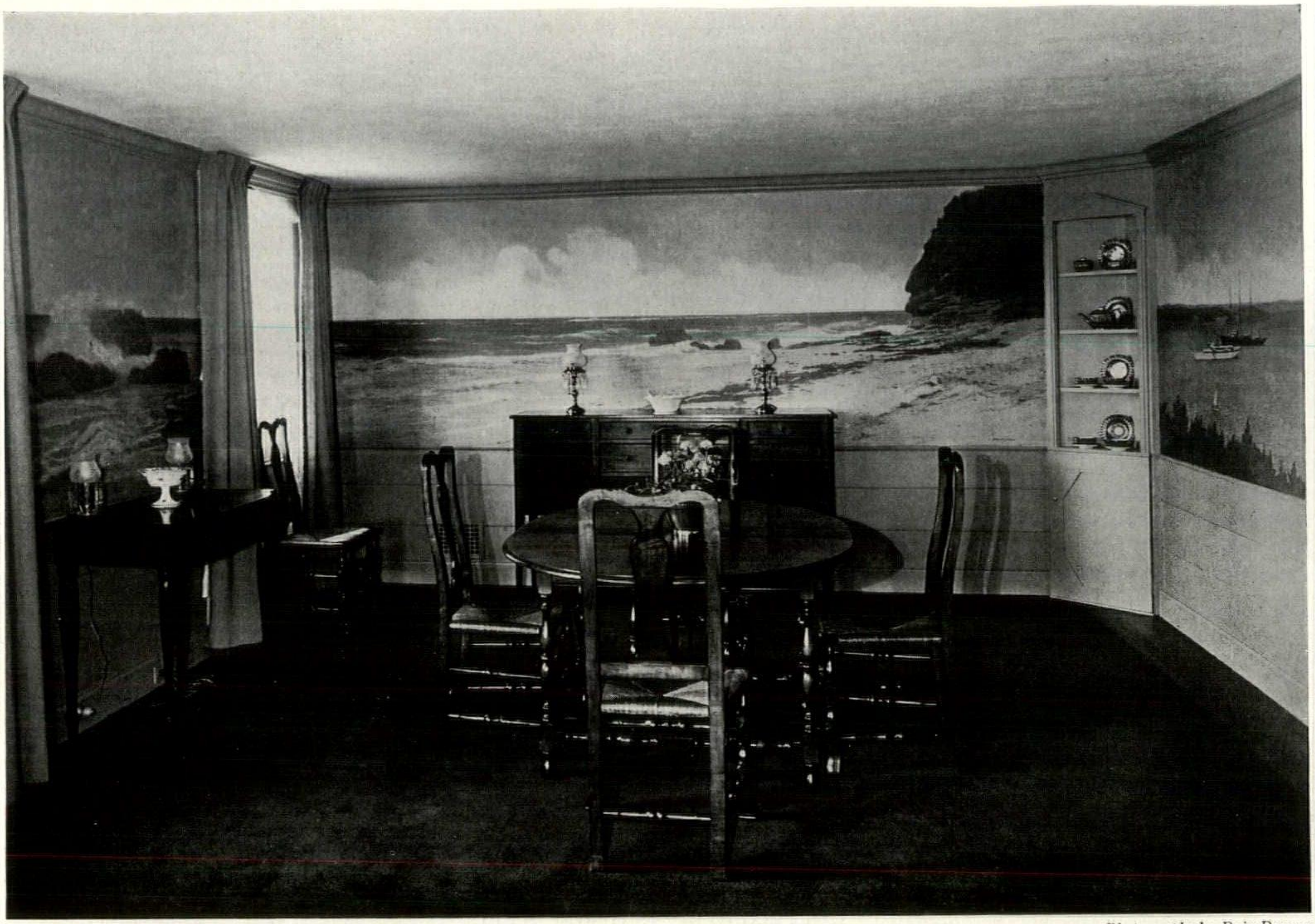
Because of the unlimited sources from which subject material can be had for murals by photography, a great variety of treatment is possible. The murals may be in any monotone color desired or may be hand colored in transparent oils to harmonize with the existing color scheme of the room.

In period rooms murals by photography have an important place. The architect may have seen plates in books in museums and libraries that are exactly the designs necessary



Two of a series of twelve Photo-Montages, "Cosmopolitan New York," used as part of a modern decorative scheme for a bridge club.

Photographs by Drix Duryea



Photographs by Drix Duryea

Residence of Robert Sanderson, Darien, Connecticut. Mural in color from snapshots of Bermuda taken by the owner.

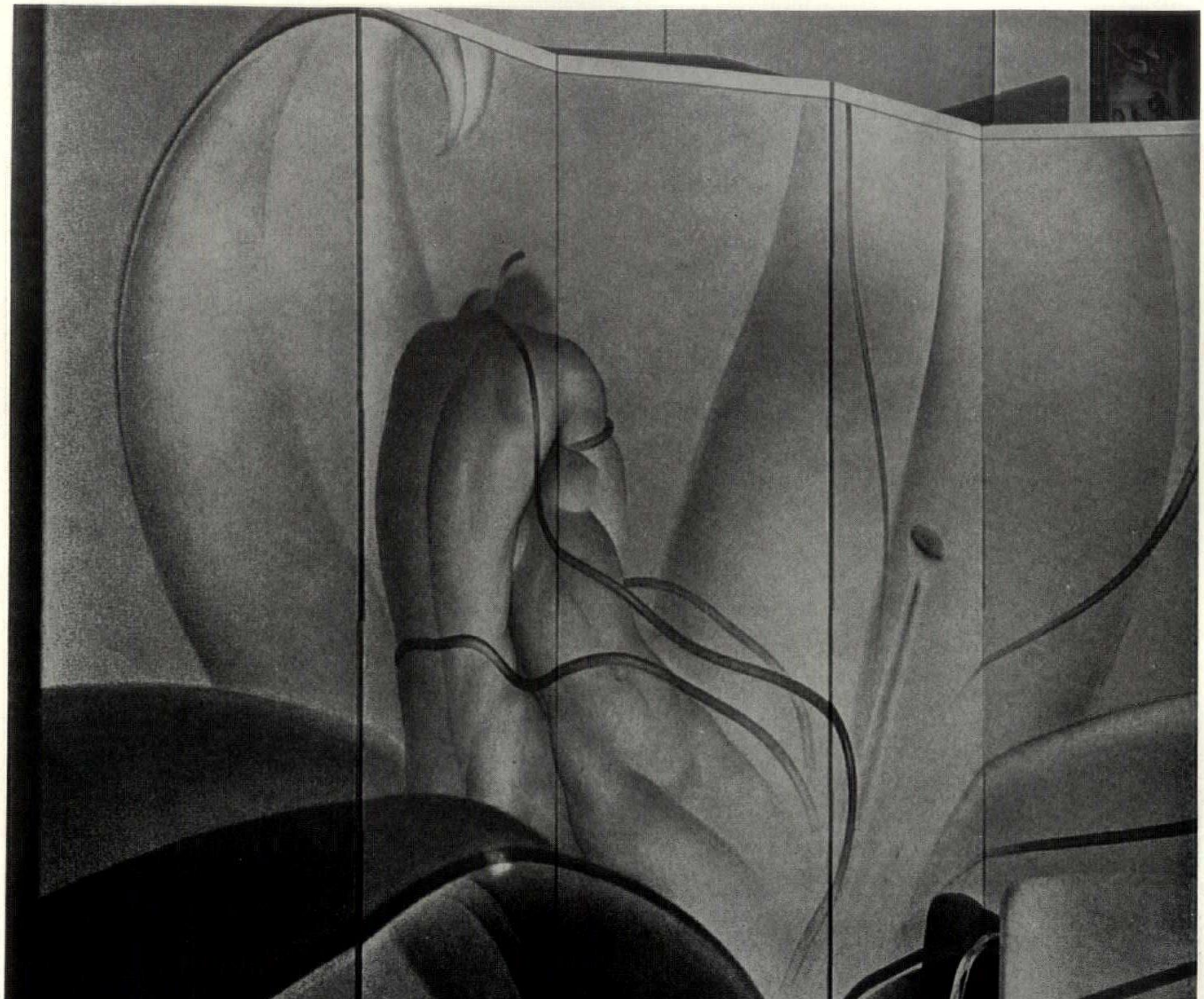
to make the wall treatment as authentic as the other appointments, and it is of value to know that these plates may be reproduced in proper scale and color.

Heretofore, wall designs have been confined to a certain radius of technique and form of execution, due to physical and mechanical limitations imposed upon the artist in large-scale delineation for wall decoration. Many of the more delicate and subtle techniques have been impracticable in a mural. Murals by photography have made possible the transition of any form of technique into mural scale and open a limitless field for the application of suitable designs for the decorator.

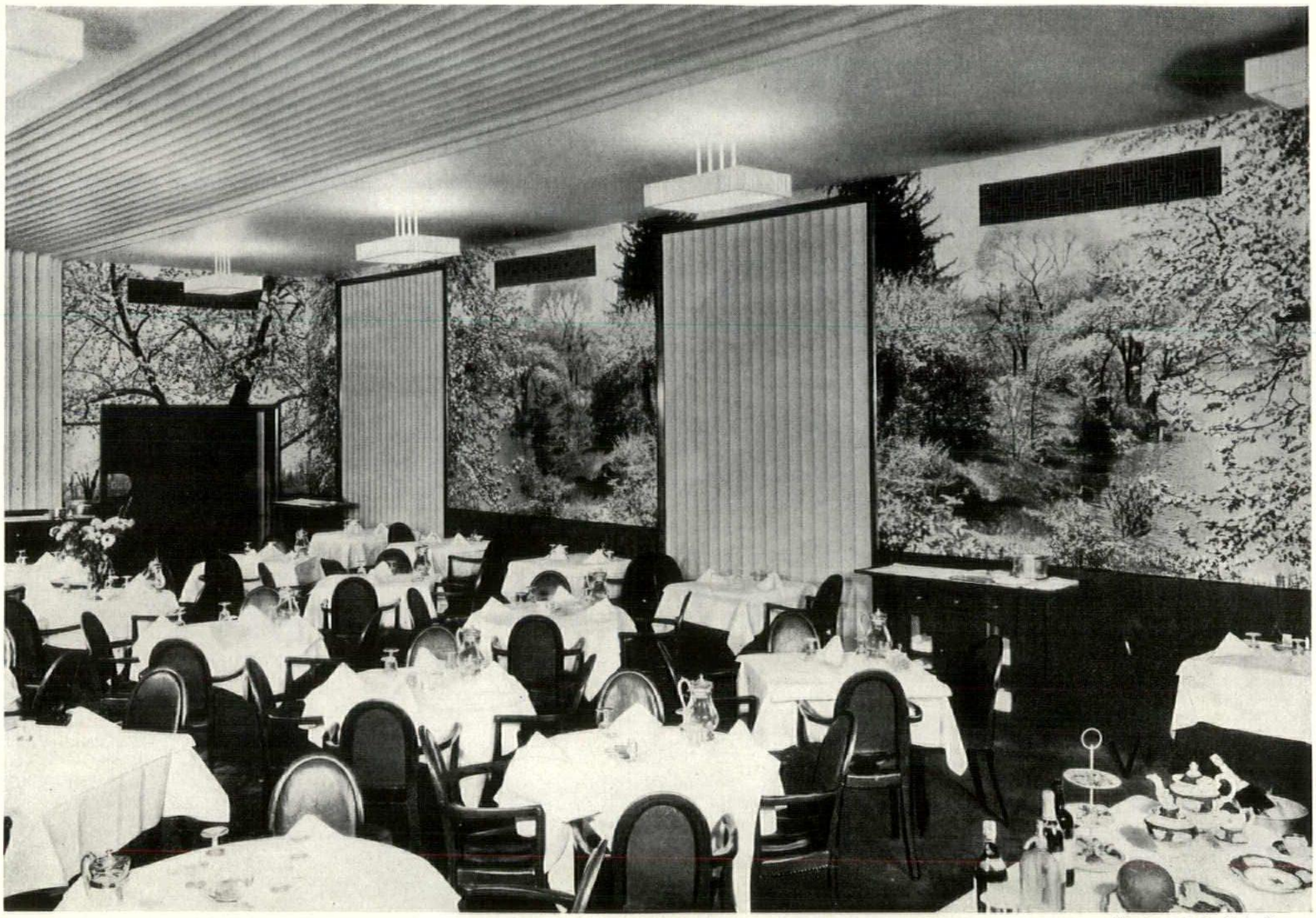
Murals by photography are not confined to photographic subjects. The architect may choose any form of illustration to carry out the desired composition. Old prints and maps, etchings, woodcuts, Persian miniatures, illustrations from magazines of the "Gay Nineties" and old fashion plates and original drawings done in small scale are sources from which excellent material may be obtained. A scenic mural may be composed from old prints of historic and traditional significance to the client and thereby a mural is created, the theme of which is both decorative and applicable.

Such sporting series as "A Trip to Brighton" and "The Quorn Hunt" have been used to form the decoration in the sportsman's home. Old shooting and golfing prints make interesting and striking panels for game rooms and bars. Photographs of sail fishing, yacht racing and aviation have brought life and action into the home of the outdoor enthusiast.

Classical groups on Wedgewood plates or plaques have been effectively embodied in a screen design. Rendered drawings and etchings have been reproduced and finished in soft monotones to coincide with the color scheme of the room. City apartment rooms with dull walls have been brightened up by the installation of a dummy casement window with



Screen from black and white pencil drawing by Major Felten.



"Blossom Room," Huyler's Restaurant, Chicago. Subjects are from photographs of cherry blossoms in Washington, D. C. Murals are done in black and white with a tint to each blossom.

Photograph by Drix Duryea

a photo-mural background showing a landscape or any other subject that gives depth or light.

The confining walls of penthouse gardens and terraces have been decorated with photo-mural vistas.

Subjects that give a sense of depth, such as airplane views or skylines and country scenes, can relieve the confined feeling of the small room.

Some very interesting murals have been created in montage form. We take a group of photographs and compose a design from them, preserving the proper balance of black and white as well as the value of the story that the miscellaneous subjects tell. Industrial concerns have made use of this form of design although some very interesting montages have been made for installation in game rooms of private houses.

Photo-mural paper is made in strips 40 and 50 inches wide and up to any required length. The best surface for a permanent installation is a good plaster wall. The method is first to size the wall and mount muslin where the mural is to go. When the muslin has had sufficient time to dry, the mural is mounted on the muslin and the joints are overlapped, but before they are applied the edges of the strips are carefully sanded down so that the overlapping represents a single thickness of paper. The final step is to apply a coat of flat varnish, which not only protects the surface but makes it possible to clean it from time to time.

If the murals are to be rendered in color, a coat of special gelatin is applied to the surface of the mural and a transparent medium is then applied which makes the surface ready for color. Transparent oils are used for the color rendering and are applied by hand.

Panels, small murals and overmantels can be mounted on a suitable composition board, finished and shipped from the studio ready for installation. In some cases murals of small area are mounted on

Mural in Aetna Life Insurance Company Building, Hartford, Connecticut. James Gamble Rogers, Inc., Architects.

Photograph by Drix Duryea

A display for the NBC control room showing the field broadcasting of a football game, Rose Bowl, Pasadena, California.

muslin backing, rolled up and delivered ready for hanging as a single unit. These two methods allow the coloring to be done in the studio.

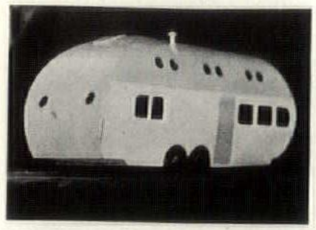
In the case of treating acoustic installations, we have been most successful. Our murals installed in the rotunda of the National Broadcasting Studios in Rockefeller Center presented a particular problem. In this case it was essential to preserve the acoustic qualities of the room. The murals were completely to cover the rotunda wall, 180 running feet making the circumference. This wall was built of Transite tile and canton flannel was mounted directly on the tile; the mural was then mounted on the canton flannel. This gave a sound-absorbing base to the face of the acoustic tiles and proved a very satisfactory method of installation.

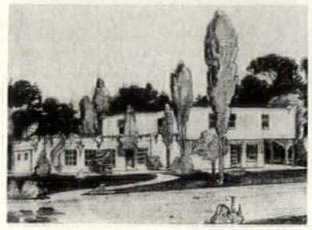
The following is a résumé of the advantage of our method of doing photo murals: The usual method of making photo murals is that of simple commercial enlarging and the apparatus in general use limits the size of the print and does not permit any flexibility in the transition of the subject as regards monotone values and accuracy in the matching and scale of each strip. The joining of these more or less unrelated small sections precludes unity of tonal values. The usual procedure in copying the subject for the mural is to photograph sections of the original subject and enlarge them, the mural being made from any number of negatives which necessarily vary in time of exposure, angles, and so forth. Our method consists of working from a single negative which completes the transition directly from the original. The result is one picture and therefore the whole is an organized unit. Our apparatus used in making the single negative from which the photo mural is made and for making the mural itself has been specially developed and designed for this purpose and is based on a system of lighting which allows for wide flexibility in the control of the three essential factors in making murals by photography: intensity (degree of brilliance), quality (range of monotone scale), and the balance and relation, both in depth of tone and scale of each strip that goes to make up the mural as a whole.

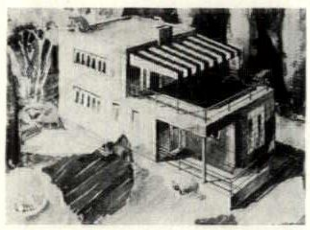
Through our specially-built equipment we are able to project to large areas without distortion and we are able to preserve the full quality of the negative and subject to the extreme dimension.

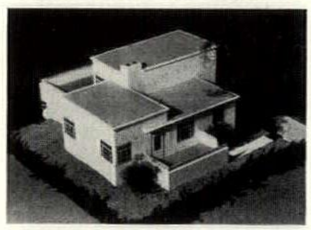
TECHNICAL NEWS AND RESEARCH JULY 1936

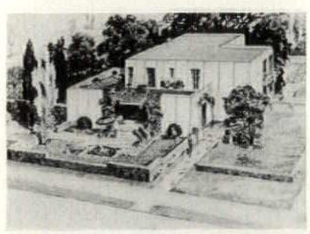
STRUCTURAL SYSTEMS AND DESIGNS

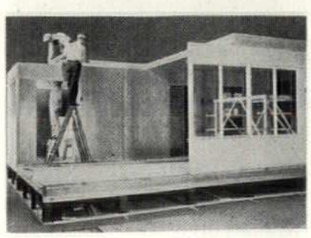




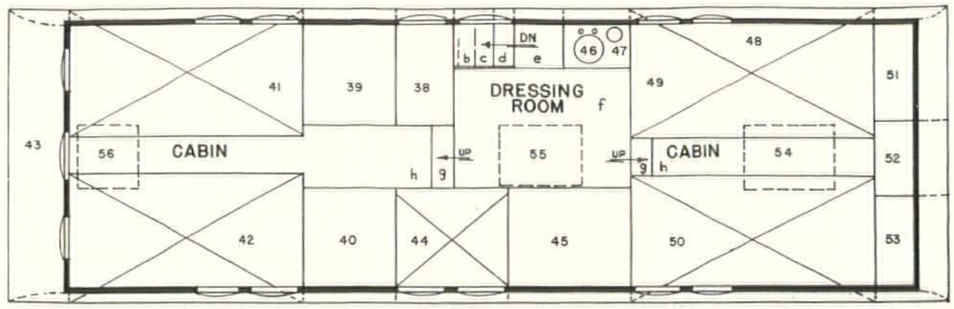




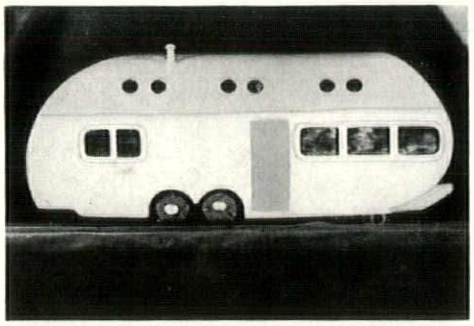




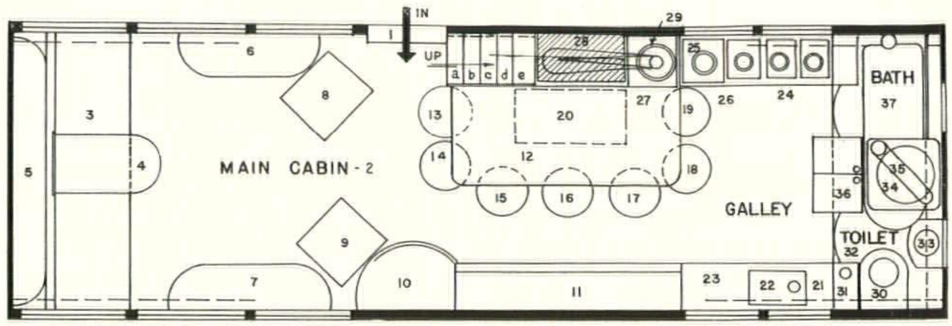
STRUCTURAL MOBILITY



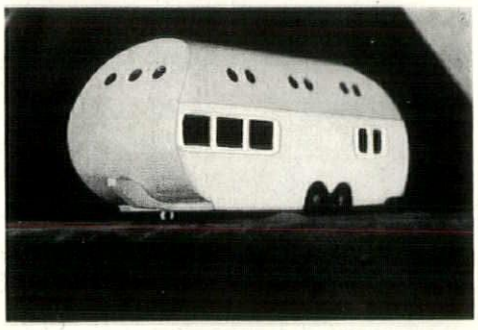
second floor plan



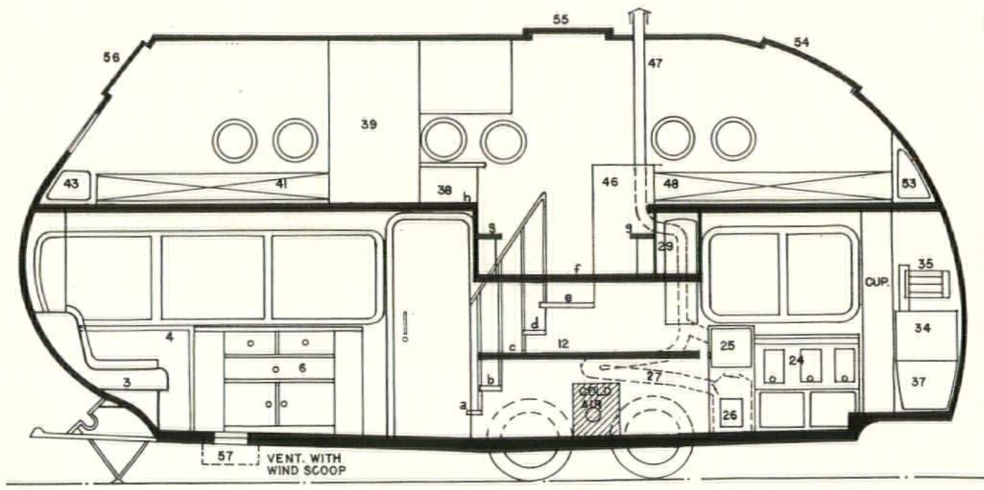
side



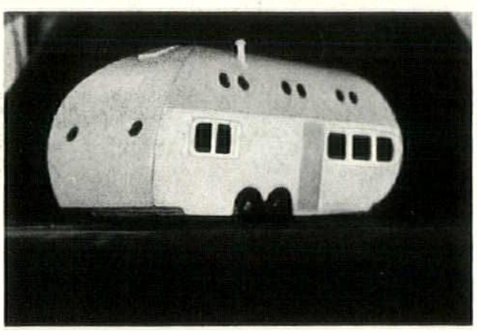
first floor plan



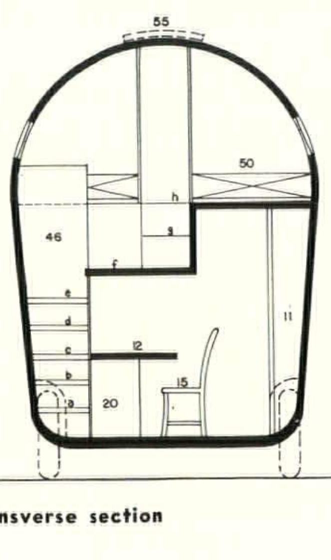
front



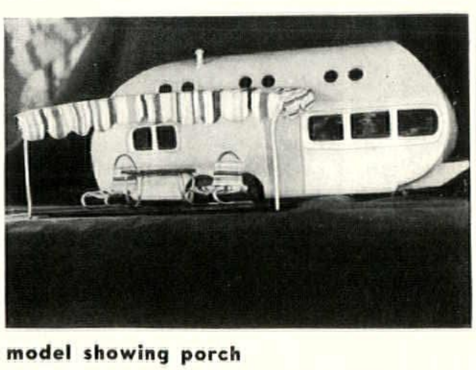
longitudinal section



rear



transverse section



model showing porch

Essentially an automobile trailer in principle, this mobile house by Corwin Willson supplies practically all the customary facilities of the average house. Space above the dining table, otherwise unneeded, is utilized to gain headroom in the dressing room on the second floor. (Patents applied for.)

TWO-STORY MOBILE HOUSE . . . . . FIVE ROOMS, BATH, LAUNDRY AND PORCH

This mobile house, designed by Corwin Willson of Flint, Mich., is capable of 100% prefabrication in the factory with delivery over the highway, completely furnished and ready for occupancy. Its calculated weight is approximately 3,500 pounds.

The unit shown in the accompanying drawings measures 25′ long, 7′ wide at wheelbase, and 8′ wide at bulge of sides. A height of 11′-9″ from ground to roof permits it to go under a 12″ bridge clearance. eadroom is 6′-4″ on first floor, 6′ in dressing room on second floor.

The house rides on a dolly of four individually sprung wheels. This dolly is easily detached and can be replaced by steel posts if the house is to be stood in one place for a considerable length of time. A porch, consisting of floor panels, roof awning and side netting, is carried inside the house in transit. Extra rooms, in the form of interlocking sectional panels, may be added to either side if the house remains on the same location during a season.

Construction: A hardwood-and-steel chassis with 1½″ insulation in floors supports curvilinear walls and roof by means of metal or laminar steam-bentwood ribs running from sill over roof to opposite sill. Second floor is partly suspended from ribs. Exterior is plywood with a bonded wrinkle facing (the designer's own product) capable of expansion and construction.

(A lightweight plastic material is also being developed by the designer which will permit the house to be molded in six large sections and weatherfaced with a glass-fiber textile; these sections could be nested for shipment to places where the parts may then be quickly assembled. A full stressed skin construction is likewise being experimented with.)

Every surface is a simple curve allowing use of flat stock bent to the ribs. This permits expansion and contraction without harm to the structure. Convex-curved front and rear ends intersect convex-curved sides at right angles, which makes unnecessary the use of compound curvilinear die-bent pieces.

Where plywood is used on exterior the walls have a double air space, the outer having an air circulation to carry away condensation moisture and the inner being filled with insulation. Interior surfaces are then either plywood or a special fabric-reinforced paper.

Road clearance of the wheel suspension unit is easily adjustable from 8″ to 16″. At rest, the spring action is locked out by a device operated by push buttons.

First floor design features: Annotations refer to numbers on accompanying plans.

1. Entrance door.
2. First floor is divided into a main cabin, 8′ x 17′-6″; a galley, 4′ x 8′; a bath, toilet and laundry, 2′-6″ x 8′.
3. Built-in seat, or bed. 4. Sliding shelf.
5. Space for books, radio, and so on.

6, 7. Smoking and magazine stands, cabinets, desks. The windows slide on a weather-strip tracking.

8, 9. Easy chairs of tubular lightweight alloy with sponge rubber cushions.

10. Wrap closet. (A door may be placed here for entrance into a sectional addition.)
11. Dresser and cupboards.
12. Drop-leaf dining table at which as many as seven may eat at one time. Floor in dressing room above gives full head height over the dining table area only. When the family is seated around the table the tallest may look across with vision unimpeded by this dropped ceiling.

13-19. Bentwood dining chairs.

20 (dotted lines). Engine may be installed here if it is desired to have the house self-propelled. This space may also be used for a small engine for generating power and pumping water, or it may be used for a locker.

21. Dresser. *22.* Sink.
23. Ice or mechanical refrigerator.
24. Three-burner cooking stove with constant level valves. 25. Oven.
26. Burner to heat oven. By manipulation of dampers, heat from this burner may be sent about the oven or deflected through—
27. U-tube, into cabinet having—
28. Hot-air grill. This is in the upper horizontal face of the cabinet. Air enters through a grill near the floor and is heated by the U-tube. Circulation is increased by a small electric fan on very cold days.
29. Hot-water storage tank, through which smoke and heat pass from U-tube and oven to the roof.
30. Toilet, entered by a door from galley.
31. Tank, into which waste water from galley sink passes by gravity.
32. Pump or valve to flush toilet with waste water. 33. Lavatory.
34. Electric washer. 35. Wringer.
36. Twin laundry trays.
37. A 5′ alloy sheet metal tub with shower head. Bath, separate from toilet, is also entered by a door from galley. Foot-end of tub extends under washing machine which has motor mounted on side or above. Top fits over the laundry trays, making them usable as a dresser; above are built-in cupboards.

Second floor design features: One goes up the steps (a, b, c, d, e) of the ship's ladder with hand rail, near the entrance, to a level (f) where there is full headroom. This room may be used as a lounge. The drawings show its use as a dressing room. The two sleeping cabins have 4′-4″ headroom, sufficient for getting into and out of beds. They are two steps (g and h) above the floor of the dressing room.

38. Dresser. 39, 40. Closets.

41, 42. Beds 42″ wide, each large enough for two persons, if necessary.

43. Tank for fuel oil, filled from outside.

44, 45. Space for child's bed and chest of drawers, made of boxboard, or for large bed.

46. Lavatory. 47. Smokestack.
48. Bed.

49 (dotted). Cupboard under bed, opening into the kitchen.

50. Bed.
51. Compressed air storage tank.
52. Space for pump for air and water.
53. Water storage tank which feeds by gravity or pressure.

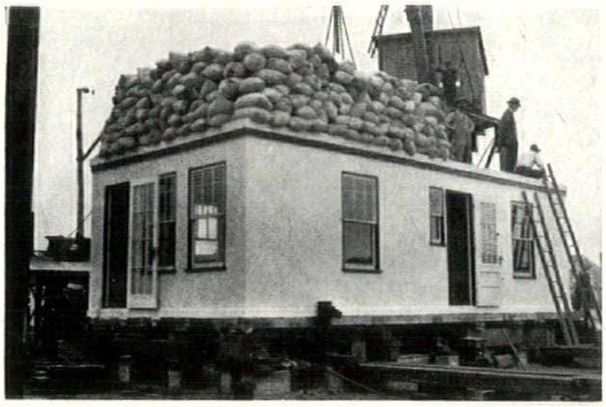
54-56. Roof ventilators. From 54, emergency exit from second story may be made easily by sliding down the back of the house.

Ventilation: Although the portholes are also designed to slide open, it is probably preferable to keep all windows closed and to control the ventilation summer and winter by means of floor and roof ventilators. Floor ventilators may be built with adjustable air-scoops which will deflect upward the cool air from beneath the structure. The hot air inside flows out through the roof ventilators.

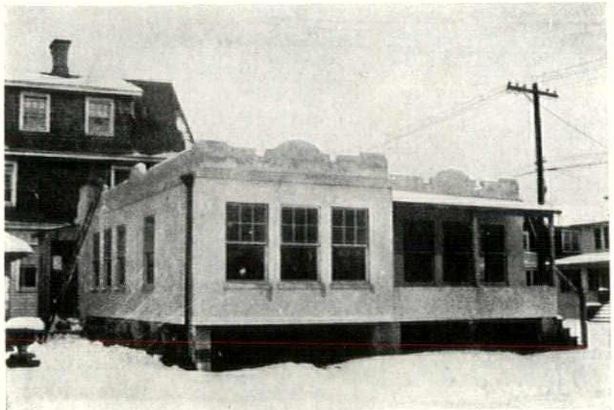
Utilities: A mixture of water and compressed air, chiefly the latter, is used for washing dishes, bathing, and the like. Less than a pint of flush-water is required by the toilet. All fixtures in the house are connected to a utilities coupling, the designer's own invention. Five utility services—electricity, water, telephone, gas, sewage disposal—are quickly and easily made available through this coupling.

Economic mobility: As Corwin Willson points out in an unpublished manuscript of his book, "Living on Wheels," conditions of industrial employment have brought about a seasonal migration of large numbers of people. Consequently, the problem of shelter comes to include adaptation to an increasing degree of enforced mobility. The mobile house, he believes, makes home ownership possible without incurring a loss in economic freedom.

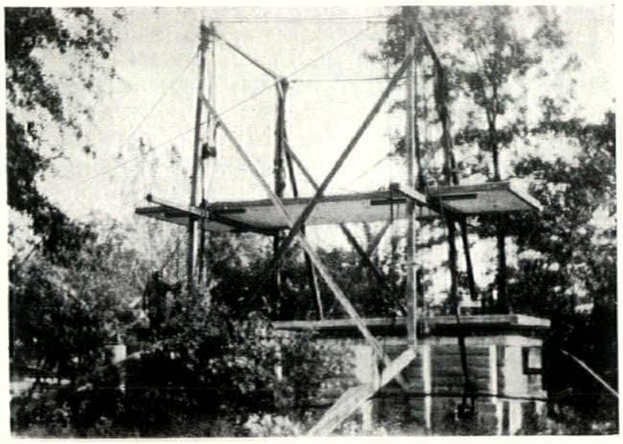
1920-22



Back in 1922 completely prefabricated concrete structures—measuring 12′-6′′ by 28′-6′′ in plan and including floor and roof as well as walls—were produced from designs by Robert C. Lafferty, architect. The photograph shows a strength test of 31,000 pounds on one of these early prefabricated house units.



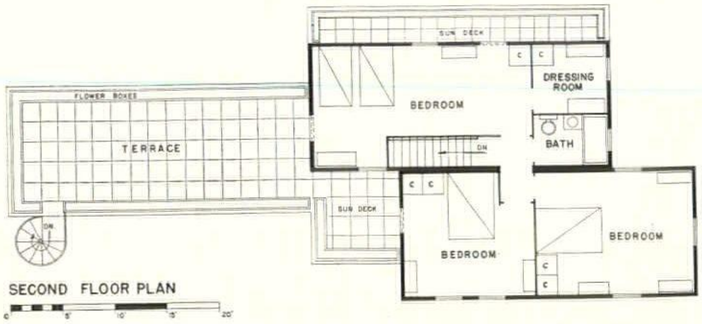
This dwelling was erected under the New York City Building Code in 1922. It consists of two structural units of the kind shown in the strength test photograph. The units were manufactured complete in the plant and transported more than 30 miles to the site.



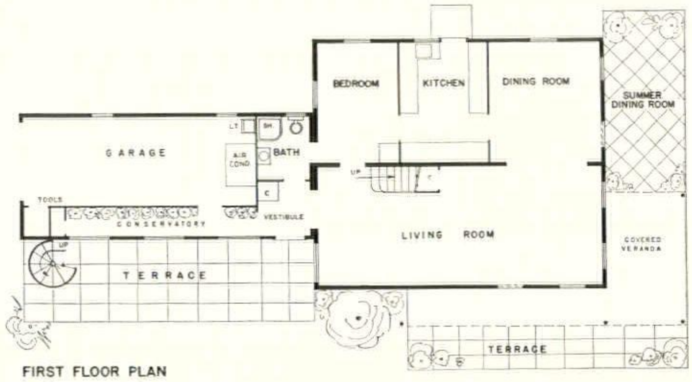
Another pioneer scheme by Robert C. Lafferty consisted of separate precast slabs for walls and floors erected in place on the site. Fourteen years ago adequate mobile cranes were not available, and a gallows frame with chain blocks had to be erected for the placing of the 3-ton slabs. Such slabs can now be easily placed with the new 8-ton automobile cranes. Where in 1922 it took 4 days to assemble a house, only 4 hours would now be required.

1936

FRONT ELEVATION

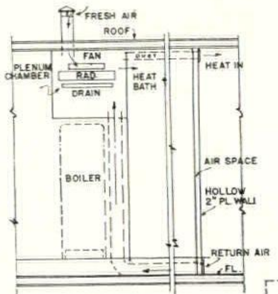


SECOND FLOOR PLAN

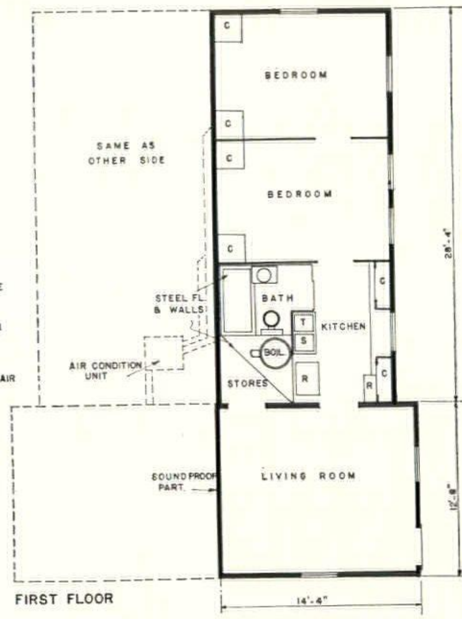


FIRST FLOOR PLAN

2-story 5-unit house
Robert C. Lafferty and Jack G. Stewart, architects



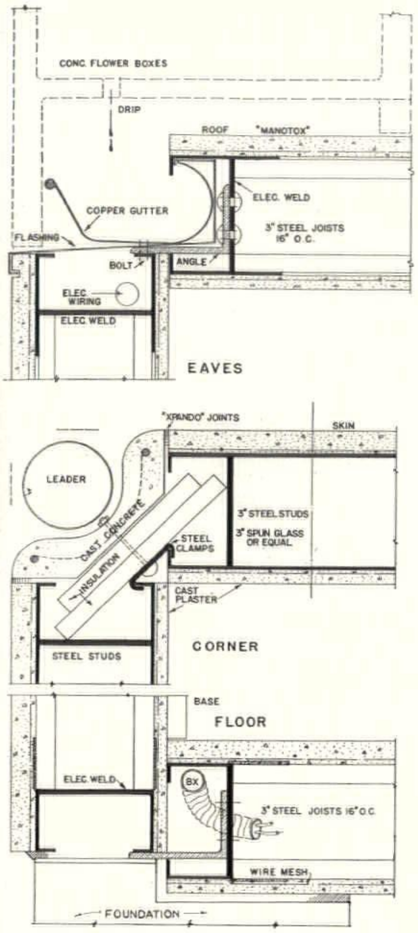
SECTION



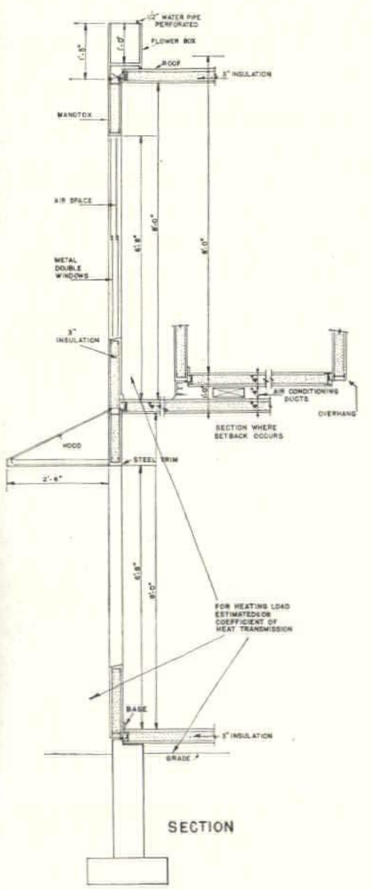
FIRST FLOOR

2-family 3-unit house
Robert C. Lafferty and Alan Wood Fraser, architects

NEW DESIGNS BY A PIONEER PREFABRICATOR



wall construction details



two-story set-back assembly

As long ago as 1920 designs were made by Robert C. Lafferty, architect, for the prefabrication of unit dwellings. A plant was set up and large concrete panels were manufactured. Complete dwelling units were assembled in the shop and transported as single pieces to the site, where they were placed on foundations. Seven houses representing this pioneer effort of prefabrication were erected, some in New York City.

During the last 12 years Mr. Lafferty, who has practiced architecture since 1899, has devoted his time largely to the development of an airway rail transport system of which he is also the originator. Recently, he has renewed his studies of prefabrication and has devised numerous improvements, on which he has applied for patents. Essentially a new structural system has been developed. Plans are now under way for quantity production of houses utilizing this construction within the near future.

Original prefabrication (1922): The early structural system consisted of a light reinforced wood frame to which concrete was cast over removable cores. The wall thus had an outside surface 5/8" thick and an inner surface 3/8" thick, with a weather-tight 3½" air space in between. The slabs measured 12'-6" x 28'-6". There were difficulties in making these concrete slabs and also in joining them to each other, but recent inspection of several dwellings after fourteen years of use shows that they may be confidently expected to last for many years to come. The heat transmission coefficient of the walls and roof of this early construction is approximately 0.497. New standards of efficiency stress the desirability of smaller heat loss and the use of less wood in connection with the concrete.

New fabrication: Steel is substituted for wood in the assembly, and the outer and inner concrete wall surfaces are cast and cured at different times. An interval of several hours between castings permits electric wiring, insulation, window units, and the like, to be placed conveniently. Slabs for floors, walls, and roofs are made to fit a standard unit floor area measuring 12' x 28'. In fabricating the slabs the first step is the preparation of a rustproofed steel grid, consisting of an electrically welded 3" steel I-beam frame with 3" steel joists 16" o.c. Wire reinforcing is then attached to the grid and the assembly is placed on a 5/8" casting of dense vibrated concrete which has been spread upon a large palette in the shop. This exterior casting is then cured. The next step is the placing of electric wiring and insulation between the joists and the attachment of reinforcing for the interior finish. The whole assembly is then inverted and placed on a 3/8" spread of concrete or plaster prepared in the same way as the exterior casting.

In addition to permanence the slabs offer waterproofness, fireproofness, and protection against vermin and termites. The insulated structural unit, with double windows, has a heat transmission coefficient of approximately 0.09 and requires only 23,000 B.t.u. an hour in zero weather.

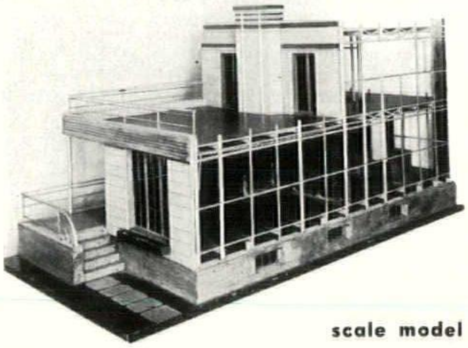
Structural assembly: The exposed steel frames at the ends of the concrete slab units permit slab connections to be made in a steel to steel assembly with dependable speed and certainty. There are no joints except those at the corners. A special cast concrete detail carries the exterior concrete finish around corners. Its design permits corner downspouts to be recessed within the building line; roof gutters are set back similarly, as shown in the accompanying detail drawing.

Plan combinations: Numerous designs have been made by Mr. Lafferty to show that his present 12'-8" x 28'-8" module unit is an aid in planning dwellings of from three to twelve rooms. The unit can be divided into separate rooms; for this purpose a 2" hollow interior partition is used to save space. Two or more module units can be joined or superimposed to form as large a structure as necessary with any desirable variation in exterior design. Set-backs and overhangs, which are otherwise difficult to construct, are easily obtained since each structural unit acts integrally. A 4" space for air conditioning ducts separates the second story floor slab and the first story ceiling slab (see detail).

Complete freedom is had in the size and placing of windows and doors. Stair wells can likewise be framed in the slabs without difficulty.

The accompanying plans of residences illustrate the flexibility of design which is inherent in this module system. Usable roof terraces, sun decks, covered verandas, are easily provided.

Cost: Experience, bids, and cost analyses indicate that a comparatively inexpensive fabrication shop can produce the parts for four dwelling units a day and that, with present available transport and placing equipment, it is possible to deliver and erect complete structures from $1,525 upwards. A specific 5-room house design, using a two-unit plan of this system, is estimated to cost $3,442.74; the identical plan and cubic content, in ordinary wood frame construction, is estimated by the contractor to cost $4,519.01.



scale model

This system was recently described by its inventor, Harry Cole, structural engineer, before the St. Louis chapter, A. I. A. It covers only the skeleton framework, exterior veneer walls, and the floor construction. The house design, interior finish and other features are determined by the individual architect. Patent rights are privately controlled by the inventor, but specifications and details are available without cost for the information of architects through Haco Construction, 100 *N. Broadway, St. Louis.*

The construction system is essentially a steel skeleton framework made up of structural elements, closely spaced, with all parts welded together. The exterior wall veneer is a part of the structure and acts as a composite unit with the steel angle ribs under flexure.

Haco stone slab: An architectural cement tile, inclosed within a steel channel frame and precast with all its reinforcing elements in one mold, is used for the outside wall veneer. A special mixture of cement and aggregate, color and integral waterproofing, is used to form the artificial stone. Reinforcing wires are part of the channel frame, only 2″ deep, and serve further to reinforce the slabs, which are 1¼″ thick; in all, the slab element is 3″ deep, including the steel encasement and concrete veneer. The slabs are impervious to moisture and are strong both in tension and compression.

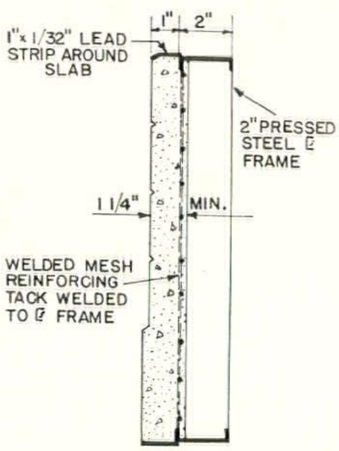
Wall units: The stone slabs are welded to wall units composed of vertical ribs made of structural steel angles. Window and door frames are also fastened to the units at the shop, after which they are ready for shipping to the job. The wall units are made of convenient sizes for shipping and handling. They are one story in height and about 10 or 12 feet wide. They weigh about 1,500 to 2,500 pounds each, and are erected in the field by the same contractor with proper hoisting apparatus.

Joints: The slabs are joined in the shop by means of a thin sheet lead binding wrapped around the edges of each individual slab. The vertical joints are made tight by lead caulking applied in the field.

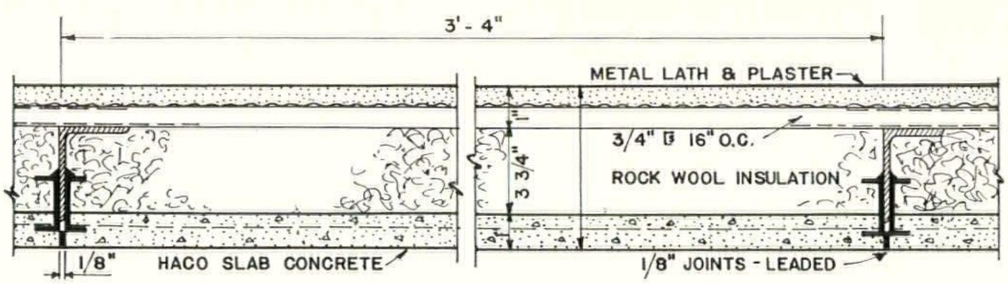
Floor construction: The vertical ribs of the wall units serve as studs to which the floor beams or joists are framed and welded. The floor joists are junior steel beams, also erected and placed by the same contractor. Each joist frames to a stud, making a framed bent construction of structural steel with an inclosing structural exterior wall slab, all acting together under all horizontal loads and all superimposed gravity loads.

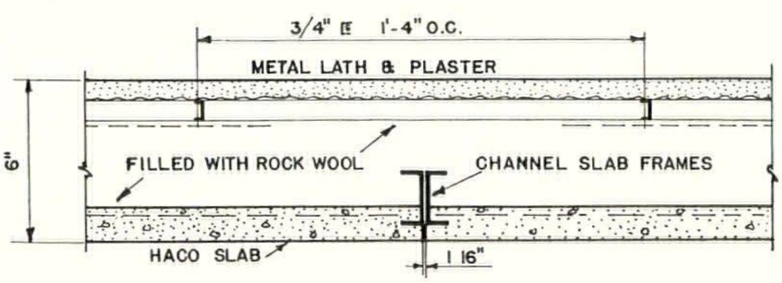
Wall insulation: Between the studs a blanket insulation, which must be fireproof, is placed by hand and clipped so that the air space is entirely filled. With a wall consisting of 1½″ precast concrete slabs, 3″ thick Rockwool bats, metal lath and plaster, the thermal transmittance is 0.071 B.t.u. This heat loss is roughly one-fourth that of a 12″ brick wall.

Cost: Actual quotation for a small house, including everything, runs $.65 a square foot for a wall complete in place.



section of Haco stone slab measuring 3′-4″ wide and 5′ high

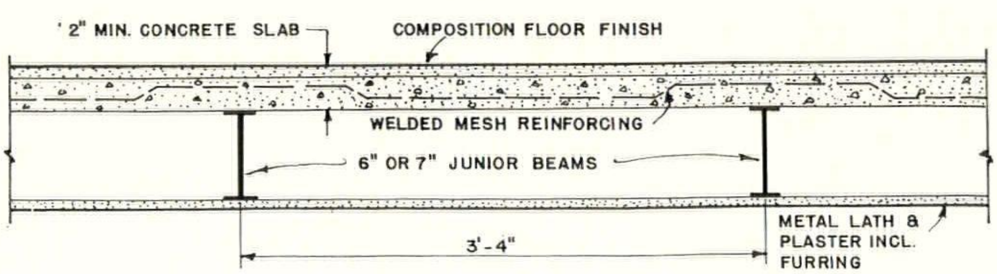


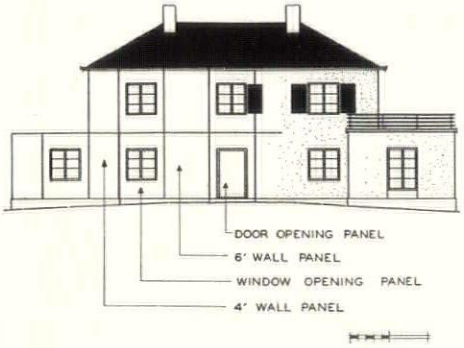


(above) horizontal wall section

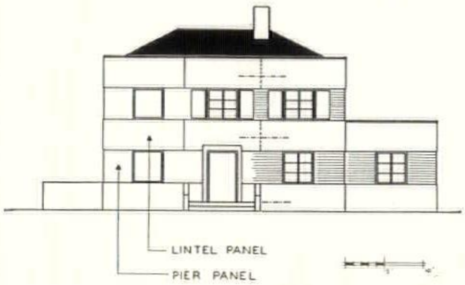
(left) vertical section

(below) floor details





full-story wall units



half-story wall units

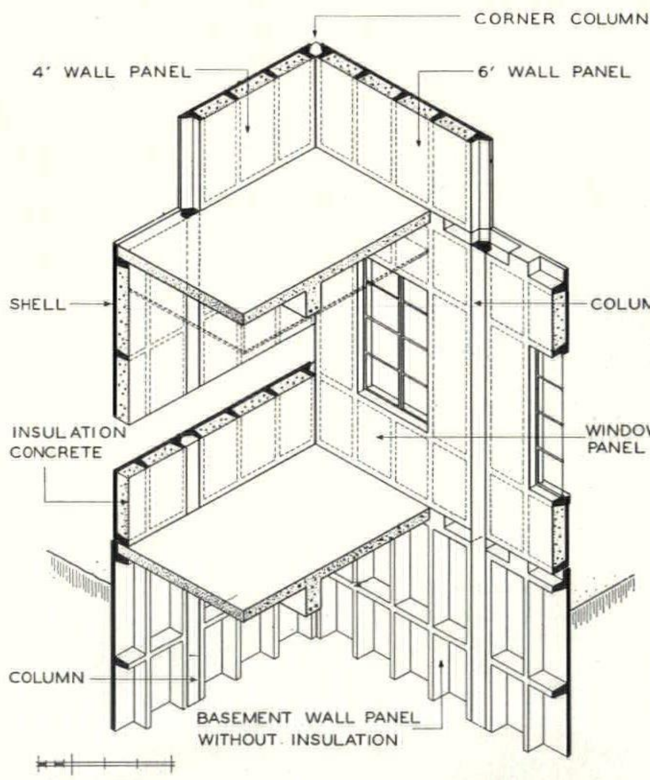
quarter-story wall units

A system of precast concrete units for floors and walls has been developed by Henry Luehrs Miller, architect and builder, Nashville, Tennessee. Manufacture and design are patented. Plans are now under way for the construction in September of a house employing this system.

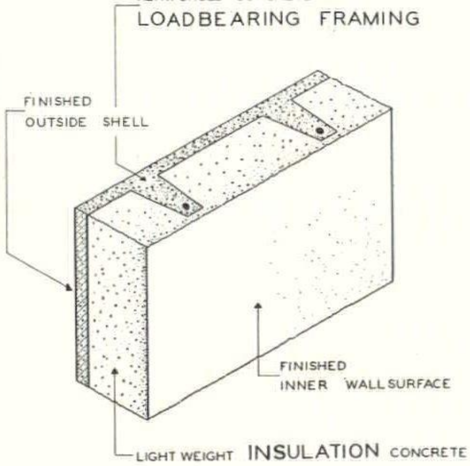
Two materials are used in construction of the Miller units. A high strength reinforced concrete (150 pounds per cubic foot) forms the structural load-bearing frame and provides a finished exterior wall surface for protection against weather. A lightweight porous concrete (45 pounds per cubic foot) serves as insulation against heat, cold and sound, and provides an acceptable interior wall surface. The wall in place weighs 42-66 pounds a square foot.

Wall units: Three types have been designed for the construction of single houses and large-scale housing projects. (1) Quarter-story units measure 2'-4" in height and 4' in width, and are erected in horizontal courses. (2) Half-story units measure 4'-6" in height and run in 16" multiples in width; they are erected in pier and lintel courses. (3) Full-story units measure 9' in height and 4' or 6' in width, and are erected in vertical courses. Wall thicknesses are 6" and 8".

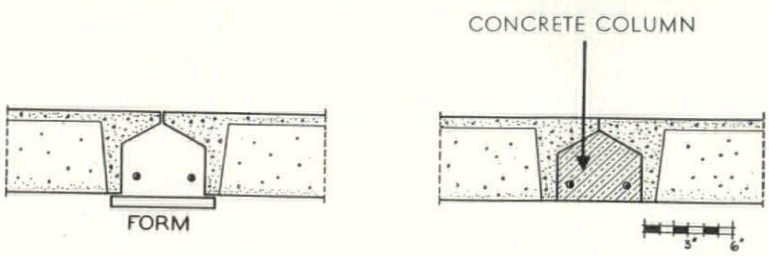
Wall assembly: Units are precast complete with all frames at the casting plant or at the building site. They are handled and erected on the job with light standard construction equipment and with a minimum of high-priced labor. Vertical joints between wall units are closed with field-cast reinforced concrete columns. Together with the floor slabs or unit floor panels these columns form a monolithic structural frame.



isometric drawing of full-story wall units



material combination



columns are cast in place at juncture of wall units

steel sections being joined in place

SECTIONAL HOUSE DEVELOPED IN GERMANY

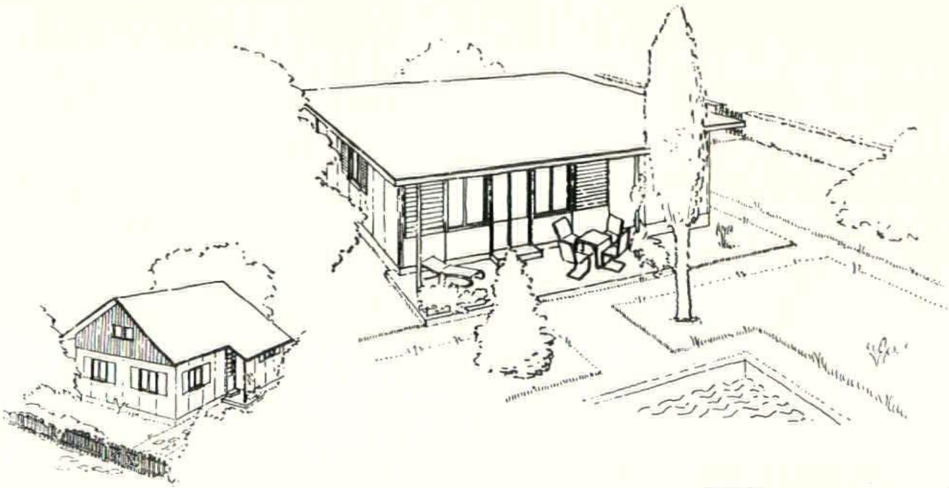
A new type of structure made of sections of insulated steel sheets has been developed by Dr. Ludwig Kletzin (Berlin-Frohnau, Speestrasse 33), a member of the Stahlwerks-Verband. Houses employing this system have already been constructed in Germany. A 3-room structure was completed within two days with the help of a few unskilled laborers and a fitter. The cost was 15% cheaper than a comparable construction in brick. Introduction of the product into the United States is desired by the inventor, according to a report by the Berlin office of the U. S. Department of Commerce.

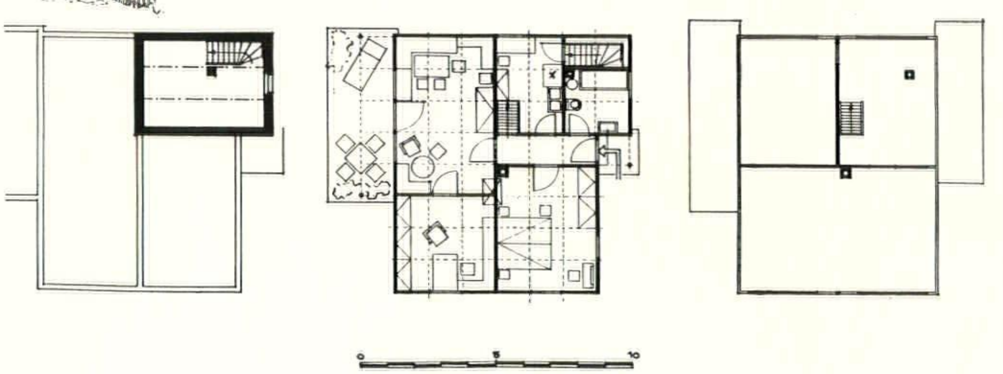
Unlike other steel panel systems, which require separate operations for erecting the steel frame, attaching the sections on panels, applying insulation, finishing the interior surfaces, and installing windows and doors, the Kletzin system employs panels which are completely prefabricated and ready for immediate assembly. These sections which form the house measure 1.22 by 2.75 meters (4 feet wide, 9 feet high) and weigh 80 kilograms (17.6 pounds) each. Windows and doors are built into some of the sections.

Panel construction: On a steel sheet, 1/16" thick and reinforced with steel angles, are placed three layers of corrugated pasteboard which are stretched and kept apart by means of wood lath. Over this insulation is placed another steel sheet, likewise 1/16" thick, which is then covered by a 15 mm. (0.59 inch) plate of insulite. The whole panel is sealed together hermetically. The exterior metal surface is painted; the interior surface of insulite can be painted or papered.

Structural system: All panels fit together in a tongue and groove arrangement, and are sealed by felt strips. The outer grooves are puttied. Partitions and ceilings are similarly formed with interlocking panels. According to the inventor, the walls are termite-proof, soundproof, and have the same insulating value as three layers of brick.

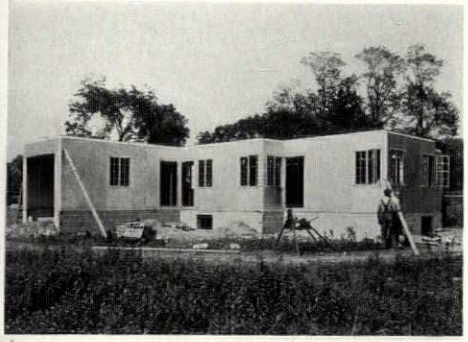
windows are built into the panels

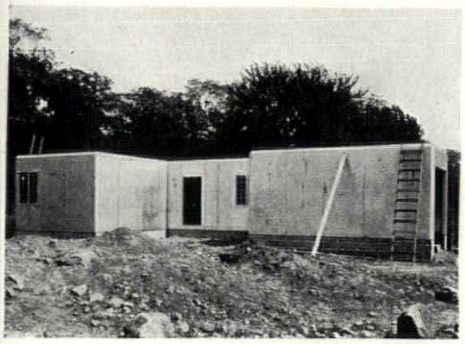




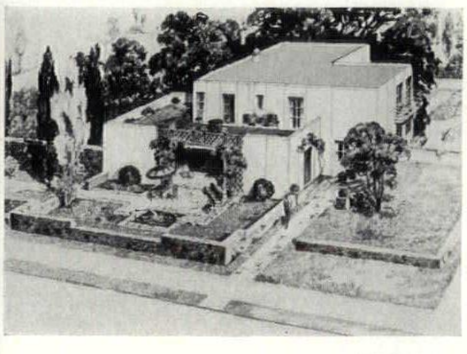
3-room house completed within 2 days

model house sponsored by the Joseph Horne Co., Pittsburgh department store





demonstration house under construction at Old Greenwich, Connecticut



2-story house, sponsored by Modern Age Furniture Company, on display at 39 Street and Park Avenue, New York

NATIONAL HOUSES, INC., BEGINS PRODUCTION

Active production of houses made of prefabricated steel panels has been started by National Houses, Inc., New York. The structural system has been developed by William Van Alen, architect of such well-known structures as the 77-story Chrysler Building. Manufacturing plants have been established in Long Island City, Brooklyn, Cleveland, Pittsburgh, and Chicago, and the program of distribution calls for an immediate setting up of a hundred or more dealer agencies throughout the entire country. Some 20 agencies have already been established in key cities, and model houses are now being erected by these dealers, generally in collaboration with local department stores.

National houses are assembled from standard panels 2′ or 4′ in width and 9′ in height. These panels, which include door, window, corner and plain units, form the frame and outer face of the building. They are formed so that when fastened with structural clamps no other frame is needed.

Construction drawings are not obtainable, but the following paragraphs give an over-all description of the structural system.

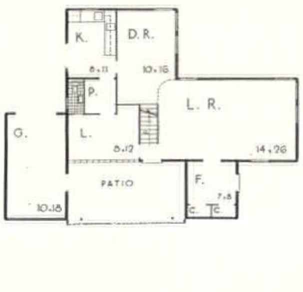
Foundations and floors: Anchor bolts for panels are set in the foundation walls, which are generally waterproofed poured concrete extending below the frost line, though other types of foundations may be used optionally. The first floor ordinarily consists of 6″ of insulating and waterproofed concrete on tamped earth, with 2″ of insulating nailing concrete which can be used as a finished floor or to which other finishes may be applied by using mastic or nails. The second floor is composed of combination floor and ceiling units; the floor surface may be finished in any material as desired and the under surface of the unit, which forms the ceiling of the story below, is ordinarily painted or papered, without plastering.

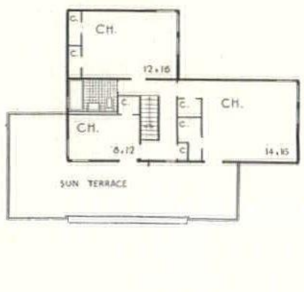
Walls and finishes: Exterior walls are 4″ thick with the sheet steel panels forming the outer face and with steel sheetrock or other wallboards forming the inner surface. A space of 3½″ between the two wall surfaces is filled with a patented mineral insulation equivalent to approximately 52″ of brick wall, according to tests made by the U. S. Bureau of Standards. All steel parts are treated with two coats of rust-inhibitive primer and all concealed surfaces with National rustproofing compound. The exteriors of National houses are covered with a special finish applied with a paint gun, which gives the appearance of a fine-grained stucco.

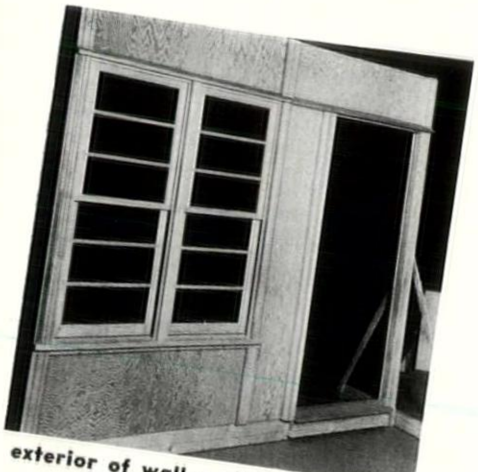
Roofs: Sloping roofs, if desired, may be included in the assembly: these consist of 2′ wide sections running vertically to the ridge and are insulated. Flat roofs are composed of a combination roof and ceiling unit joined together with structural clamps and covered with 4½″ of National insulating roofing. Flat roofs may be finished, if desired, as sun decks with a cement surface.

House designs: The floor plans are not standardized. Houses are individually designed to fit the special requirements of each purchaser. Floor plans can be prepared by a local architect, if desired, and then turned over to a local National dealer for fabrication. Any size house with any number of rooms may be assembled, provided dimensions are in multiples of 2 feet. Partition walls may be spaced as desired. Houses up to four stories in height may be built. The assembly work is done by crews of local workmen specially trained. The time required for assembly and delivery of a National house is said to be one-fourth that of traditional house types.

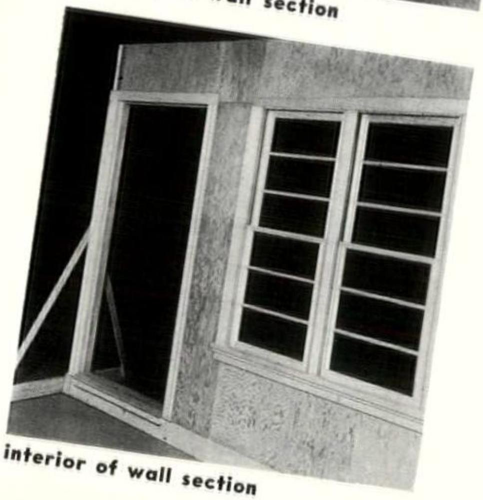
Costs: The prices of National houses vary because of local conditions, distance from points of fabrication, variations in utilities, and other factors. No fixed price is quoted. Company officials, however, state that the National house can be sold at a price lower than an ordinary well-built wooden houses of the same size, containing the same equipment. National houses have been approved by the Federal Housing Administration.







exterior of wall section



interior of wall section

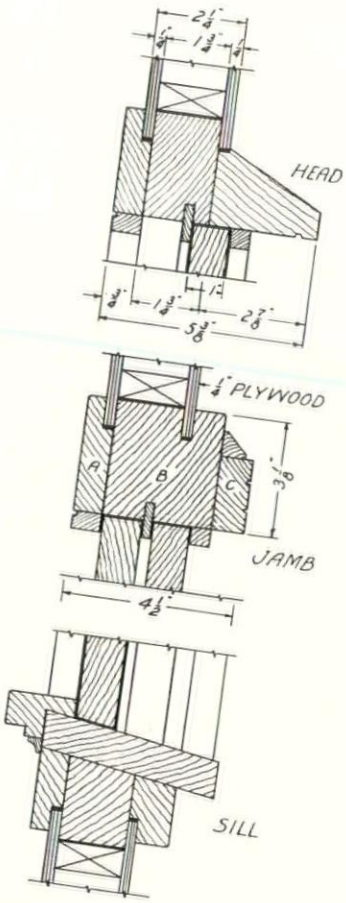


figure 1—window details

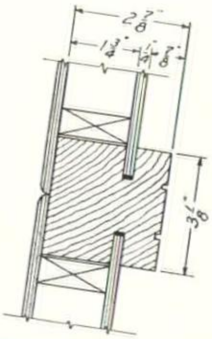
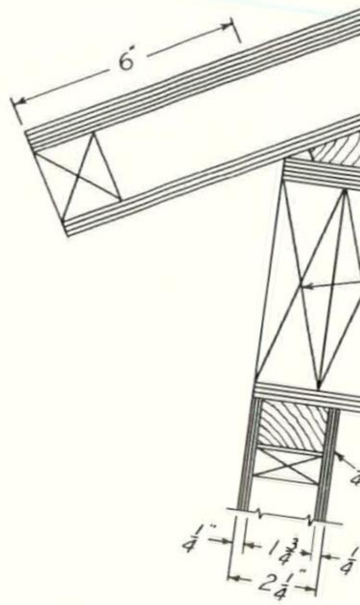


figure 2
connection of two wall panels and mullion



ALL-WOOD PANEL SYSTEM OF PREFABRICATION

As a part of its research program, the Forest Products Laboratory (maintained at Madison, Wis., by the U. S. Department of Agriculture in cooperation with the University of Wisconsin) designed and built last year an experimental prefabricated house in which plywood was the principal material of construction. This house was a one-story type with flat roof and casement windows. (See "Prefabrication with Wood," The Architectural Record, *August 1935, pages 102-106.) Like most prefabricated structures, the house had as its basic structural unit a panel. This panel system can easily be altered to permit many types of construction. As an illustration of its flexibility of design a new wall section including double-hung windows was recently constructed and is described here for the first time by R. F. Luxford, engineer, and August Smerda, Jr., junior forest products technologist. Details of design whereby panel construction can be used for two stories and pitched roofs are also shown.*

With this system of wood prefabrication, each panel consists of two plywood faces glued to both sides of an inner structural framework to form what is virtually a box girder. The load is immediately distributed through the framework to the plywood faces so that the joists or studs actually support only about one-quarter of the bending load. This action is possible because of the complete and continuous rigid joint formed by the glue between the plywood faces and the framework.

New wall section: The over-all thickness of the wall panel is 2¼". The window sash are only one inch in thickness whereas the minimum thickness in usual commercial windows is 1⅜". For relatively small windows, however, they should prove satisfactory with reasonable care in manufacture. Details of these windows are shown in figure 1. The weight pockets were eliminated by the use of one of the new types of window balances.

Each vertical mullion forming part of a door or window frame has two parallel grooves into which the edges of the plywood panels are fitted as shown in the sketch of the side jamb. The part marked "B" is 2⅞" by 3⅛" in cross-section. This part is continuous the full height of the wall panel, and carries the load from the floor above to the foundation. The parts marked "A" and "C" are necessary to give the required thickness of frame to accommodate double-hung windows and storm sash or screen. Hardwood rather than the usual soft pine is used for the center parting strip, thereby permitting a thinner piece which reduces the required over-all thickness of the window frame. The door frame has the same over-all thickness as the window frame and is sufficient to accommodate a 1¾" inside door. There is also space for a 1" screen door provided the inside door is equipped with a special short knob.

The mullion at the junction of the two panels extends from the unexposed face of the interior plywood to ⅞" beyond the outer face as shown in figure 2. Consequently no part of the mullion extends into the room and hence the edges of the plywood sheets are adjacent to each other. This arrangement eliminates the batten-strip effect and the edges of the panels can be rounded.

Since the mullions do not project into the room it was necessary to extend them ⅞" beyond the outer surface of the building in order to obtain mullions of

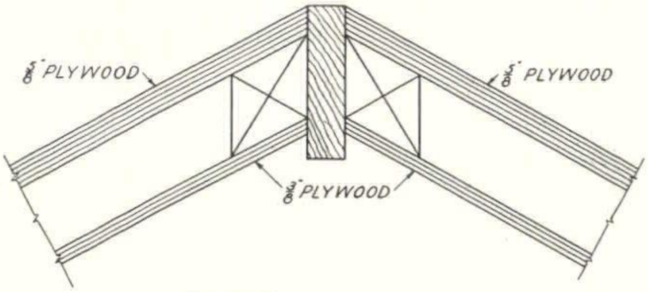


figure 4
connections of roof panels at ridge board

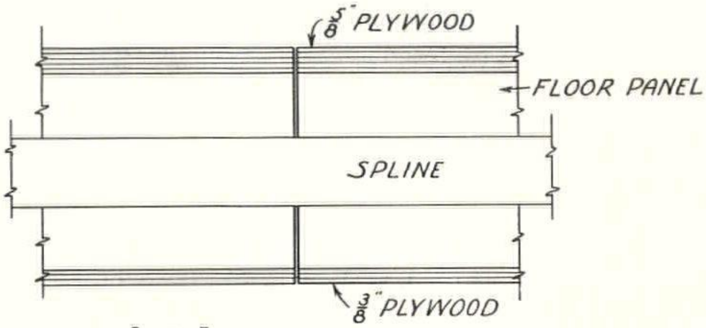
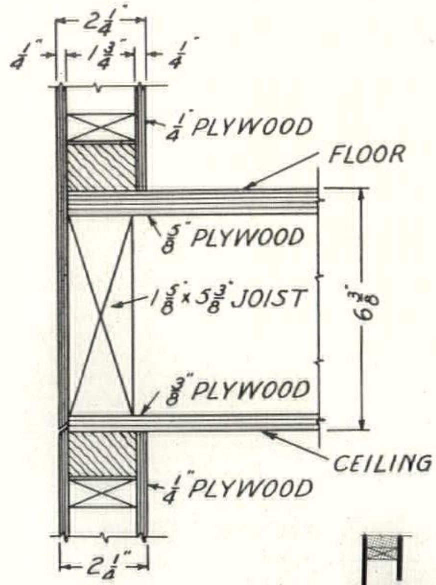


figure 5
tie between two floor panels by means of a spline securely nailed to resist horizontal thrust



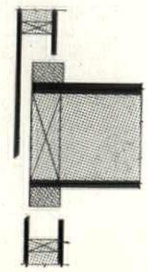


figure 6
detail of joint between first and second floors, consisting of three separate assemblies

. . . . DOUBLE-HUNG WINDOWS, PITCHED ROOFS, 2-STORY HOUSES

sufficient size to support the floor loads. (This gives the appearance of greater structural strength.) By filling the wall opening, which is 1¾" wide, with a loose insulating material a wall very resistant to the transfer of heat or cold is obtained. In fact, it is somewhat better than the conventional type of construction consisting of wood siding, wood sheathing, paper, lath and plaster, plus ½" of blanket insulation. A house constructed of plywood panels is also more resistant to air infiltration than the conventional construction because there are no cracks through which the wind can pass.

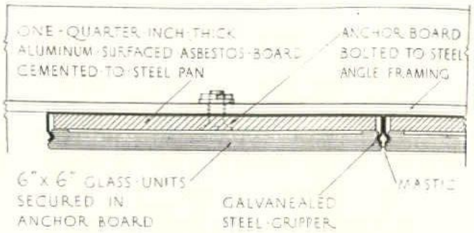
Pitched roofs: Houses with pitched roofs can be easily constructed with the type of panels employed by the Forest Products Laboratory. Figure 3 illustrates a suggested joint between the roof and attic floor panels. This joint consists essentially of a triangular strip "A" approximately 2" by 3" by 3½" in cross-section securely nailed to the top story ceiling panel, and a triangular strip "B" approximately 2" by 2" by 2¾" in cross-section securely nailed to the roof panel. After the roof panels are assembled strip "B" bearing against strip "A" keeps them firmly in place. When the erection is completed strip "B" is nailed to strip "A" to prevent the roof from being lifted by heavy winds. The connection at the roof board is the conventional type, as illustrated in figure 4.

The thrust exerted by the roof loads must be resisted through the floor panels. Since the panels are not continuous from roof line to roof line but extend only from one roof line to a bearing partition, it is necessary to have a tie between the panels. Splines are used between all panels to cause them to deflect together under load. Through adequate nailing these same splines are utilized to obtain the proper tie in the direction of the thrust. The placement of the splines is shown in figure 5. The splines extend ½" into the floor panel joists and are 1⅞" high.

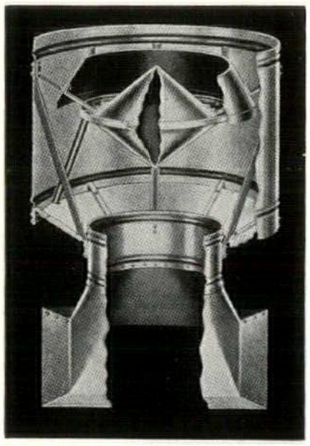
Two-story houses: It is both practical and feasible to erect two-story houses with prefabricated panels as constructed by the Forest Products Laboratory. A connection between the first and second stories at the outside wall is shown in figure 6. This figure includes portions of the wall of the first floor, the floor panel between the first and second stories, and a portion of the second-floor wall.

Essentially the construction resembles the platform type of conventional frame construction in that the second-story floor panel rests upon the first-story wall panels and the second-story wall panels are placed directly on top of the floor panels. The wall panels are grooved by extending the plywood faces beyond the edges of the framework 1¼" forming a groove 1¼" by 1¾". A strip which will exactly fit this groove is nailed to the top and the bottom of the floor panel along its outer end, and the wall panels are fitted over these strips. The second-story wall panels differ from the first-story panels in that the outside plywood face is extended sufficiently beyond the framework of the wall panel to cover the exposed end of the floor panel. After erection this extended portion of the outer plywood face is nailed to the floor panel to tie the two units securely together. The tie between the first-story wall panel and the floor panel is accomplished by nailing together the plywood faces and the strip fitted into the groove of the wall panel.

The joint between the outside plywood of the first and second stories is cut at an angle to shed the water.



glass tiles anchored to steel framing



roof ventilator without moving parts

standard units for flexible kitchens

gripper frame for glass tiles

Introduced by Sealed Joint Products Co., 30 Rockefeller Plaza, New York. Used for first time in Schenley Tower Building, Times Square. In the new Mid-Town Tunnel, under the Hudson River, the Port of New York Authority, as a licensee, is now installing 800,000 glass units which will form the largest glass ceiling in the world.

The gripper, a non-corrosive metal frame that snaps over the edges of glass tiles, makes it possible to build with glass under trying conditions of stress, vibration, heat, cold, and moisture.

On the Schenley job, the grippers differ somewhat from those to be used in the tunnel. They consist of No. 22-gauge bronze channels with spring clip edges which grip the tile. Masonite *Quartrboard,* painted with aluminum bakelite varnish to increase the reflectivity of the glass, is laid in the channels. The *Quartrboard* is bolted to the frame or wall, and the glass tile is then set in the gripper and the joints painted with mastic.

Ceiling units of the tunnel are to be cast on the underside of a concrete slab. Metal forms carry a layer of wallboard or plywood covered with gummed paper on which the units are set face down. The gummed paper, when moistened, holds the tile in place while reinforcing is being set and concrete is poured over the backs of the grippers. After the forms are removed, the gummed paper is washed off the face of the tile.

year round air conditioner

Manufactured and marketed by The Trane Company, La Crosse, Wis.

The "Airite," a conditioner of the direct-fired oil-burning type, is intended for residential installations. In the winter, automatically controlled heat is provided. In summer, cooling is accomplished by standard Trane cooling coils using either cold water or direct expansion refrigerants. The air is cleaned and humidified.

square water heaters

Five new models are announced by the Westinghouse Electric and Manufacturing Company, Mansfield, Ohio (Sweet's Catalog File 24/47). Capacities are 30, 52, 66, 80, and 120 gallons. These water heaters, with the 40-gallon already in the line, have been styled as the Empire line.

The square type exterior casing allows the heater to set flush with walls and cabinets of modern all-electric kitchens. Finished with high-temperature white Dulux, the new models harmonize with any color combination in the kitchen, or with the white refrigerator, range, or dishwasher. A fluted vertical panel on the front of the heater serves as a cover plate for the heating element openings. All wiring and plumbing connections are made at the bottom of the heater. A special recessed front base panel provides toe space.

free-flow gravity ventilator

Developed by The Burt Manufacturing Company, Akron, Ohio. (Sweet's Catalog File 9/12)

Traditional design has been disregarded in this stationary unit. The entire discharge is vertically upward. There is no discharge under the windband. Internal louvers which would tend to impede the flow of air have been eliminated. An oversize drain trough and tube carry away all rain, snow and refuse which fall on the ventilator top. The construction is free of moving parts.

copper coating

Introduced by American Coppercote, Inc., 480 Lexington Avenue, New York.

"Coppercote" is pure metallic copper which can be applied with a brush to iron, steel, wood, concrete and other surfaces, including metals already rusted. It is not a paint, but a liquid composition of fine particles of copper which are held in suspension in the vehicle until used, when they immediately combine and adhere not only to the base surface but also to each other, thus forming a continuous protective sheathing of copper. Simultaneously the liquid vehicle rises to the surface and forms a protective film over the copper, permitting a limited range of colors. The product is quick-drying and quick-hardening. The sheathing is said to be corrosion-proof, water-proof and fire-resistant.

unit kitchen equipment

Announced by appliance and merchandise department of General Electric Company, Nela Park, Cleveland.

The individual units, which include the electric refrigerator, electric range, electric dishwasher and kitchen cabinets, can be arranged in any manner desired. They can be set side by side along a flat wall or in an L-shape. The units are based on a 2-foot module system and are interchangeable.

A new type electric dishwasher is used; it has a front-loading design, and a capacity sufficient to take care of a 50-piece service. Lighting equipment is built-in. Work surfaces are of black porcelain on steel and they are resilient. Shelves in the cabinets are adjustable. The construction is all steel.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PENBERTHY PRODUCTS
PENBERTHY AUTOMATIC CELLAR DRAINER
(Water or Steam operated)
Made in 6 sizes
PENBERTHY AUTOMATIC ELECTRIC SUMP PUMP
Made in 6 sizes
Copper and Bronze Throughout
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THE sales record established by these Penberthy Products is probably the best evidence of their outstanding quality.
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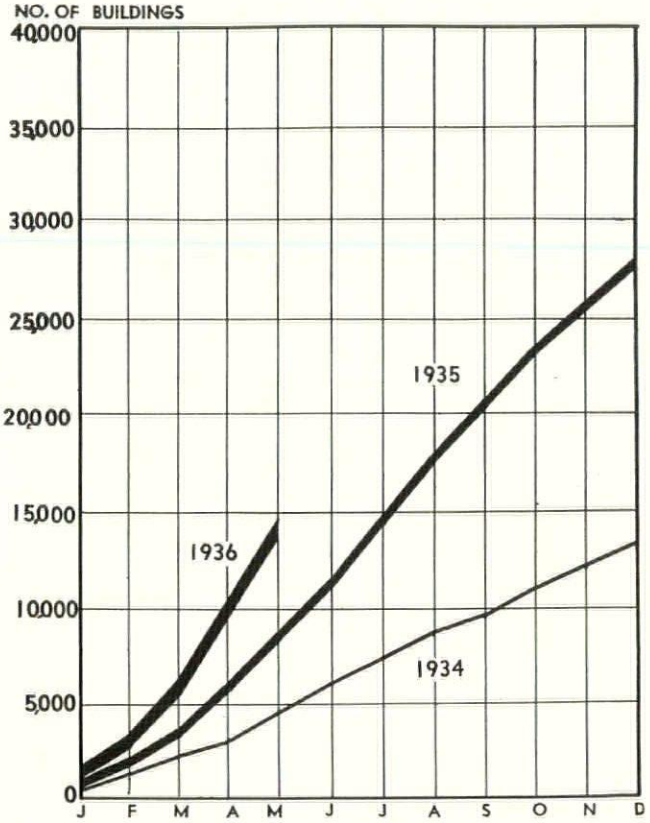
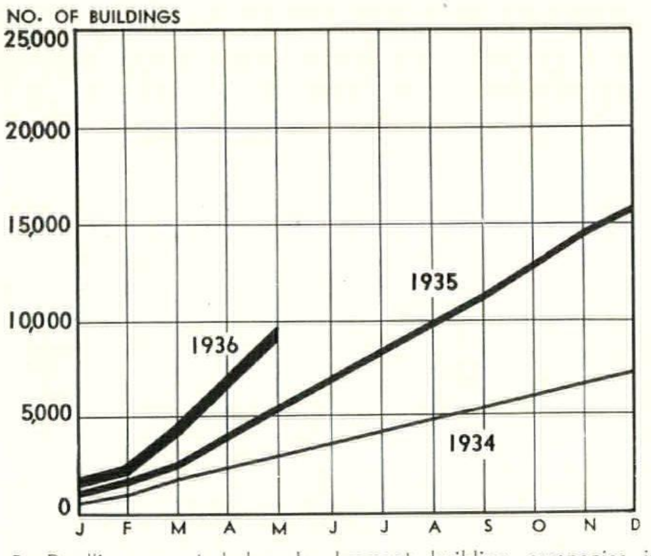
THE RISE OF THE ONE-FAMILY HOUSE

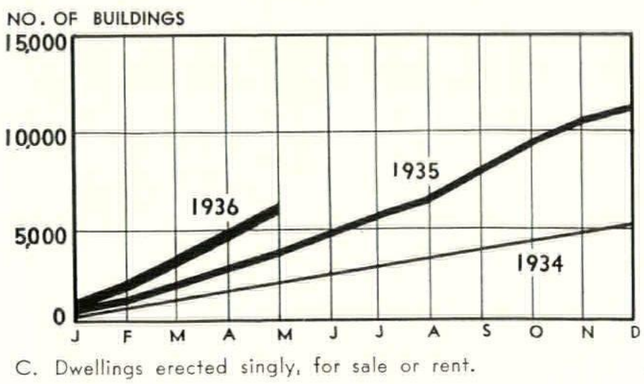
Contracts let for new dwellings in 37 eastern states



A. Dwellings erected by individuals for their own occupancy.



B. Dwellings erected by development building companies in quantities of two or more, for speculative sale.



C. Dwellings erected singly, for sale or rent.

PROGRESS OF THE ONE-FAMILY HOUSE

By L. SETH SCHNITMAN, Chief Statistician,

F. W. Dodge Corporation

The one-family house has characterized the American housing mode for generations. Inroads on this habit have been made by multiple-family types but even now the single-family dwelling, taking the nation as a whole, continues as by far the more important classification.

Last year the single-family house accounted for about 76 per cent of the total expenditures for the erection of new housing units. The ratio for 1935 becomes the more important when considered from the standpoint that it represents a total of some 55,000 new houses in the amount of almost $320,000,000 for the 37 states east of the Rocky Mountains.

Current records on new residential building indicate that last year's proportion for the one-family house has been slightly bettered during the first five months of 1936; nor is there now any reason to believe that for the full year 1936 any material lowering in the ratio under current levels will be registered.

Single-family house construction falls into three rather distinct categories, as shown in the accompanying charts:

A. Those dwellings erected by individuals for their own occupancy.

B. Those constructed by the so-called speculative home-building companies who erect two or more dwellings at one time.

C. Those which are erected by individuals, usually small mason or carpenter builders, who build one house at a time for speculative sale or rent.

Just about half the number of new single-family houses started in 1935 was for owner occupancy while, on a valuation basis, this class of operation accounted for 55 per cent of all one-family house expenditures. During the initial five months of 1936 owner occupancy single-family houses accounted for only 46 per cent of the total number of all one-family dwellings and about 53 per cent of the total valuation.

Almost 29 per cent of all one-family dwellings erected during 1935 were built by operative home-builders, but these accounted for only about 22 per cent of the total valuation of all single-family house construction during the year. For the first five months of 1936 the development type dwelling classification represented about 31 per cent of the total number of new one-family houses and about 24 per cent of the total on the basis of valuation.

The remaining major class of one-family house building operations, i.e., houses erected chiefly by small mason or carpenter builders for speculative sale or rent, in 1935

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Meets AIR-CONDITIONING Needs
Andersen WOOD *Casement*

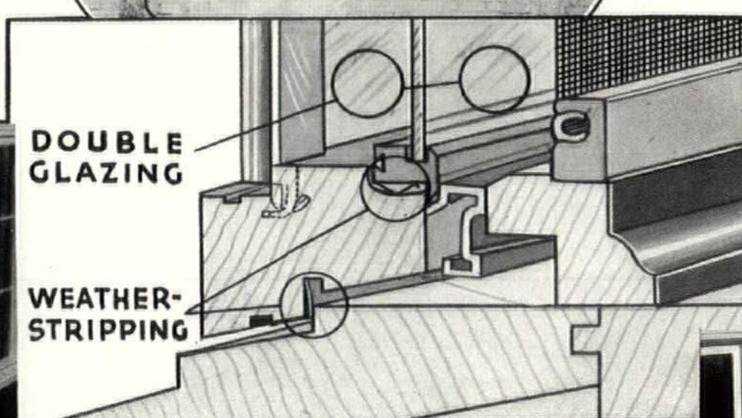
ANDERSEN Casements are designed to meet the exacting requirements of modern, air conditioned homes . . . minimum air leakage and heat radiation, freedom from condensation or frosting.

Removable double glazing reduces heat loss through glass 60% and controls condensation. Air leakage is stopped by spring bronze weatherstrips of exceptional efficiency and special leakproof frame construction.

ANDERSEN Units overcome objections heretofore found with both wood and metal casements.

All wood parts are protected against decay, termites and moisture with Andersen-Bruce Preservative Treatment.

Infiltration tests at the University of Wisconsin show an air leakage of *only* 4.6 cu. ft. per hour per foot of sash perimeter with a wind velocity of 15 m.p.h., as compared with 15.5 cu. ft. for the average weatherstripped double-hung window.

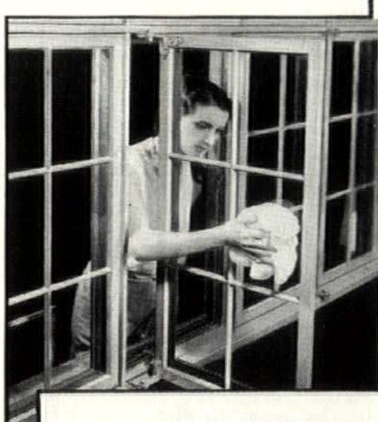


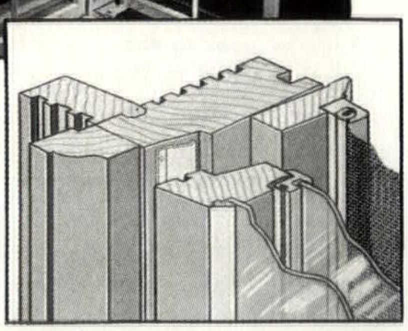
See the Andersen Catalogue of Complete Window Units in SWEETS Section 11-14

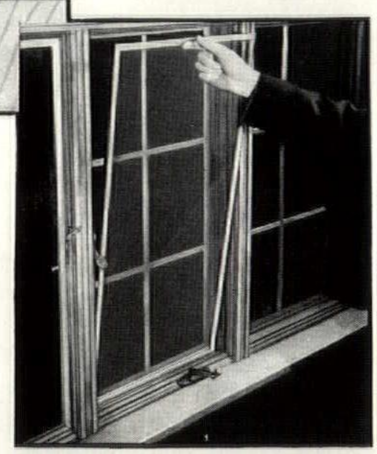
Andersen Casement Unit

Narroline Double-Hung Unit

Andersen Basement Unit







These illustrations highlight the superior Andersen construction and greater conveniences offered by Andersen Casements. Removable Double Glazing. Efficient weather-stripping. Inside aluminum screen. Under-screen operator. Extension hinges for easy washing.

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Leakproof locked sill joint. Steep sill slope with blind stop chamfer for complete drainage. Weathertight, wide blind stop and insulated mullion. Noiseless pulleys. Factory primed joints. Save time and money by specifying Master Frames.

NARROLINE WINDOW

A Double-Hung Unit with modern mullions and trim, completely weatherstripped and ideal for air conditioned homes. Time tested counterbalancing method of sash operation. Andersen-Bruce treated against decay, termites and moisture.

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accounted for about 21 per cent of the total number of new single-family dwellings and about 23 per cent of the total, on a valuation basis. For the initial five months of the current year this type of building operation represented about 23 per cent of all new one-family houses in both number and valuation.

On a total volume of one-family house building operations that is now substantially larger than it was a year earlier, the houses built for speculative sale or rent, taking both development and mason or carpenter-builder classes together, have become somewhat more important in number than the owner-occupancy classification. On a valuation basis, however, this latter category still accounts for more than half the total expenditures.

The average value of the owner-occupancy house is considerably higher than the average value of either the development type or of the remaining class built for sale or rental purposes. The average value of the development type is much lower than the value for any other class of one-family house.

Stiffening rental scales and improving incomes are operating to awaken renewed interest in home-ownership. As general business improvement expands, further gains in the construction of one-family houses will be recorded. Numerical increases will probably be greater on the speculative side than in the owner-built classification. Because of recent selling successes many additional speculative building operations are now being projected by operative builders. The whole process is one largely of contagion, purely localized improvement gradually giving way to the general.

Multiple-family housing types, now only showing symptoms, should rather soon take on all of the characteristics evident in the small-house field, if the much heralded current recovery in the residential world is really genuinely founded.

RESIDENTIAL BUILDING OPERATIONS: 1925-1935

37 eastern states

YEAR	TOTAL RESIDENTIAL BUILDING	ONE- AND TWO-FAMILY HOUSES		APARTMENTS AND HOTELS	
	Millions	Millions	% to total	Millions	% to total
1925	$2,748	$1,295	47.1	$1,453	52.9
1926	2,671	1,199	44.9	1,472	55.1
1927	2,573	1,226	47.7	1,347	52.3
1928	2,788	1,409	50.5	1,379	49.5
1929	1,916	1,081	56.4	835	43.6
1930	1,101	708	64.3	393	35.7
1931	811	574	70.8	237	29.2
1932	280	233	83.2	47	16.8
1933	249	185	75.4	64	24.6
1934	249	185	75.4	64	24.6
1935	479	361	75.4	118	24.6
1936*	261	205	78.5	56	21.5

Note: All data above include both rew and alteration projects. *Data cover first five months only.

It is of interest to note the following facts from the above table:

1. Expenditures for one- and two-family houses in the 37 eastern states in the years 1925 through 1927 were less than half of the total for all residential building expenditures, the remaining being in apartments and hotels.
2. Except for 1926 the proportion of expenditures for one- and two-family houses rose continuously from 1925 through 1932 and vice versa expenditures for apartments and hotels during the same period showed a declining proportion to the total residental volume.
3. For the three-year period 1933-1935, inclusive, the distribution between the small house and the multiple-family type was stationary at a ratio of about 75 to 25 in favor of the one- and two-family dwelling.
4. In the initial five months of 1936 the small house ratio rose at the expense of the multiple-family type.
5. The quantitative peak in the small house field occurred in 1928 while the peak in the apartment and hotel classification was reached in 1926.

On this array it is probably safe to conclude that if there is any timidity in the current residential building situation it centers largely in the investment types such as apartment houses and hotels.

New money has been very slow to flow into these channels even though eight years of a virtually continuous decline in construction has occurred in the interim since the peak of 1926. Whether a broad reversal nears is difficult to determine, but the fact that a quantitative gain in volume occurred in 1935 over the previous year affords a basis for believing that better times are ahead for investment housing types. This is the case if due regard is given to the mounting pressure from accumulating moneys in the hands of life insurance companies and savings banks which, in the past, were important factors on the financial side of investment building operations.

THE ARCHITECTURAL RECORD

VOLUME 80 • NUMBER 2 • AUGUST 1936

• NEXT • MONTH •

A factual survey of the conditions and trends of architectural practice and of the programs adopted by architectural schools to enable graduating students to meet the new demands of the profession. The survey is based upon documentary evidence partly including questionnaires by the American Institute of Architects and The Architectural Record. By R. L. Duffus.

An illustrated report describing the "greenbelt towns" now being constructed by the Suburban Resettlement Division of the Resettlement Administration. These first major examples of integrated community planning in America differ widely although all are based on the same design procedure. One project is at Berwyn, Maryland; one is near Cincinnati; another is outside Milwaukee; a fourth—held up by court injunction—is intended for an area near New Brunswick, New Jersey.

NEWS OF THE MONTH

ALL NOT QUIET ON THE WESTERN FRONT

Capitol Competition shakes Oregon landscape

At four o'clock in the afternoon on May 26 the jury of award, after less than two days' deliberation, announced the winners of the Oregon State Capitol Competition. "Beautiful without being ornate; useful without being extravagant," said the *Oregon Daily Journal* the next day. "Competent critics who have seen the plans for the Capitol declare that it will fit in perfectly."

It developed almost immediately that there were critics who disagreed; controversy over the competition, the jury, and the prize winners has been raging ever since. Oregon dailies have discussed the pros and cons of the competition and even weekly journals of opinion have jumped into the arena with charges of politics, bungling, haste, and inefficiency. The criticism falls largely into two classes: those who feel that the state capitol commission bungled the entire competition; and those who feel that the jury's selections were poor.

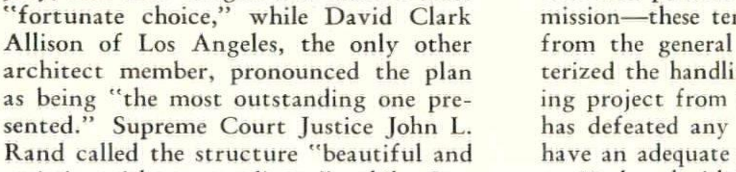
Of the prize-winning Keally-Livingston design, Walter H. Thompson, Philadelphia architect and member of the jury, said that Oregon had made a most "fortunate choice," while David Clark Allison of Los Angeles, the only other architect member, pronounced the plan as being "the most outstanding one presented." Supreme Court Justice John L. Rand called the structure "beautiful and artistic without gaudiness," while Justice Henry Beam contented himself with "grand." Complaining that he could not get used to a capitol without a dome, Board of Control Secretary Dan Fry said "I believe I will like this much better. It grows on you."

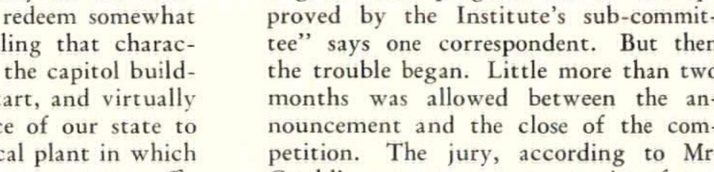
State Senator Alan A. Byron thought differently, however, and doubted that the problem of housing the lawmakers had been solved efficiently. "It is not my intent to find fault merely to criticize," Senator Bynon insisted; nevertheless, he "was amazed to find the committee rooms so scattered throughout the building that the public, as well as the legislators, will have difficulty in finding them." Senator Bynon found the winning design reminiscent of the Rhode Island State Capitol, completed in 1902, and felt that, since the Assembly only meets once every two years for a period of 40 to 60 days, the legislative chamber should have been isloated from the main building as in the North Dakota Capitol of 1934.

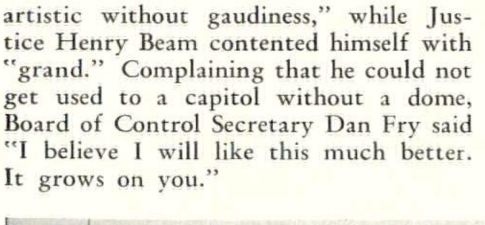
The competition has led to a wide discussion of the competition system in general. Says the weekly *Oregon Voter*, "an exterior of singular beauty and dignity, the selection of an excellent firm of Portland architects as local associates, and the guarantees of alert watchfulness in the public interest by a competent non-poitical minority on the commission—these tend to redeem somewhat from the general bungling that characterized the handling of the capitol building project from the start, and virtually has defeated any chance of our state to have an adequate physical plant in which a 40-day legislature can operate efficiently. . . . We are doomed to have just one more bungled building whose dignity and stately appearance cover the utter inadequacy of its interior planning. The dear public will never know the difference."

And the *Spectator*, another weekly, feels that Oregon should be thankful "that our new capitol is merely a two and a half million project. From the inception of the plan for rebuilding the burned state house," says the *Spectator*, "politics have been rampant. Legislative sessions have exhausted their energies; local committees have become brainsick trying to find a suitable site; a university has been mixed in the imbroglio; feuds and personal disagreements engendered—all to get site and plans for an inadequate replacement of the 70-year-old structure that was." The element of haste threads the capitol competition from start to finish, according to the *Spectator*, which feels that the A.I.A.-approved competition was not successful in obtaining its objective. "Some means of avoiding the prize contest could have been devised. It and a politically appointed commission are basic in the trouble, not the personnel of the present commission but its manner of selection and rigid requirements of procedure are its handicaps."

Carl F. Gould of Seattle was selected as Architectural Adviser for the capitol competition, from a list submitted by the Oregon chapter A.I.A. "He wrote a good clean program and it was approved by the Institute's sub-committee" says one correspondent. But then the trouble began. Little more than two months was allowed between the announcement and the close of the competition. The jury, according to Mr. Gould's program, was to consist of two unnamed members of the capitol commission, one outsider, and two unnamed architects. This led to a majority of laymen who had no intimate knowledge of the technical problems involved in the project. Mr. Gould acted as tech-



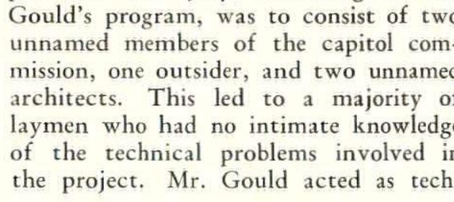




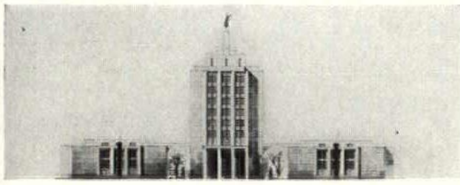
MAIN FLOOR PLAN

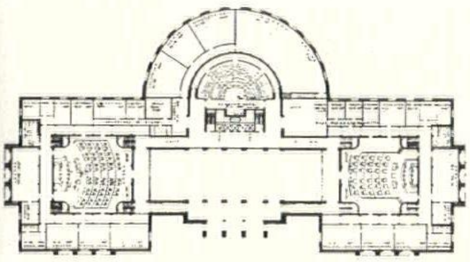
"No complaint whatsoever . . . the only feeling I have is one of amazed surprise that the report of the jury should be no more than 17 lines long . . ."
William Lescaze, New York

"We are looking forward with interest to seeing the drawings of other competitors."
Harrison & Fouilhoux, New York City



MAIN FLOOR PLAN





MAIN FLOOR PLAN

"The dice have been cast and a certain antique type won. It is far from what the plan should have been in light of present-day standards." **Hays & Simpson, Cleveland**

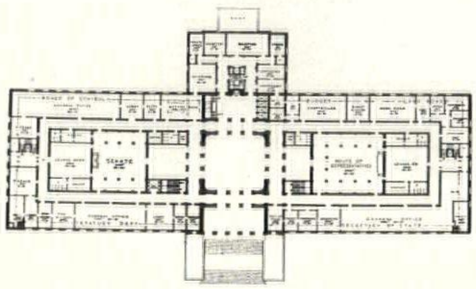
nical adviser to the jury but was allowed no vote. No chance for consultation between the competing architects and the commission was allowed for.

We quote the *Spectator*. "In the selection of a winning plan the commission had slight information as to the technical details of the interior arrangements or articulation. There was no provision for future expansion in the chosen entry. No axial basis was specified for later additions. The site was restricted even with the inclusion of the park to the west. Accommodations for various state departments were not included in the accepted design."

Yet the jury, faced with 126 entries or some 700 drawings, reached a decision in less than two full working days. The decision was unanimous. Here again the commission has come in for scathing comment in only allotting $250 each for all expenses of the two architects who were to serve.

The program was "on the whole very clearly worded, fair, and well-written, but it was certainly a mistake to designate that the building had to cost 80c per cubic foot, as this so limited the total cubage as to dwarf considerably the monumental aspects of the building." Oregon's most expensive public building cost only 55c; North Dakota's Capitol only 40c; and Goodhue's elaborate Capitol for Nebraska only $1.

The *Voter* questions the competence of such a jury to pass on a building of this type. It "will be interested to know whether among these was even one . . . author who either by his own legislative experience or by research among people who had legislative experience had any



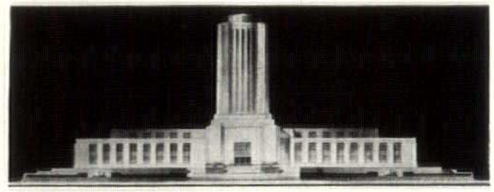
MAIN FLOOR PLAN

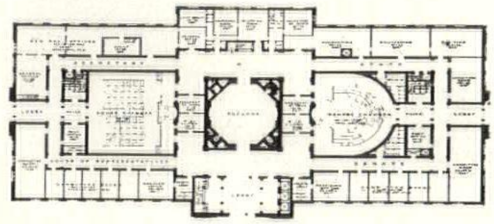
"Glad we entered . . . think the program well written and the requirements reasonable." **Marston & Maybury, Pasadena**

practical realization of what is needed in a legislative plant for Oregon."

Senator Bynon doubts that any one without legislative experience could have anticipated legislative requirements, while the *Voter* feels that "radical revision is needed as the interior arrangements of the adopted plan were made with little knowledge of requirements," And further; "we have had the opportunity to examine the entries of several of our Portland architects. There is evidence that two or three of them had matured understanding of the needs of the building and had laid out floor arrangements that were incomparably superior to those of the chosen design insofar as the arrangement of that design appeared in the published floor plan." The *Voter* cannot understand the omission of working space for legislators when not in session. "The session chamber seating space should be compact so members can be close together and can hear each other easily, but their working desks should be separated in spacious office rooms such as those used by banks and commercial houses. This would require about 30,000 square feet of office space."

"These major matters of design policy should have been considered long ago, but the commission did not consider them and its consulting architect did not give them adequate consideration or he would not have set up the general plan which the commission adopted. The winning firm was restricted by the pamphlet issued by the commission with its lay-out and conditions; we do not criticise the winning architect, but may we hope that now he will go at this great task with a mind yet open for consider-





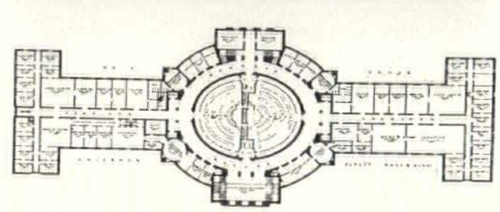
MAIN FLOOR PLAN

"Believe the means are at hand to so organize competitions . . . that only a minimum amount of draftsmanship will be required to display a competitor's grasp of the problem . . ." **Ralph C. Flewelling, Los Angeles**

ing change, and may we hope that the commission will consider change even at this late date?"

And Senator Bynon feels "that there are many glaring points that must be changed before construction can be started. A study of the few entries now on public exhibition in Portland reveals that most of them show no more than four unassigned rooms, while the accepted design has the astounding number of 17."

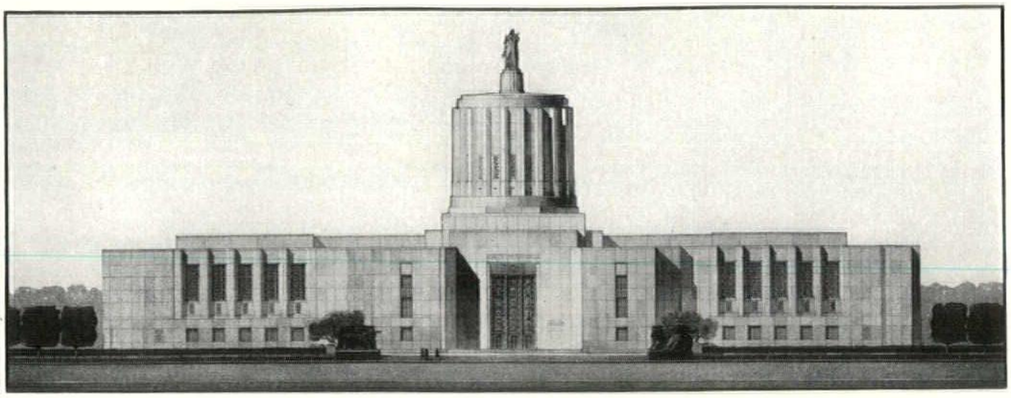
"(1) There is a deficiency in clean, direct and frugal circulation. (2) The plans fail to isolate the legislature and simplify the arrangement of committee rooms, which are scattered on various floors. (3) The plans fail to provide light, airy and cheerful work spaces for employees working in full-time departments. (4) There is an extravagance of elevators—nine, and of stairs—24 different locations."



MAIN FLOOR PLAN

Sulton' Whitney & Aandahl, Jamieson Parker, Herman Brookman, associated, Portland

NEWS OF THE MONTH



OREGON'S CAPITOL COMPETITION: Roi L. Morin AIA

"In this . . I touch on high matters, and delicate to handle . . . . to have treated what is pious with impiety would have been to lack the sense of harmony . . ."
ANATOLE FRANCE,
from 'The Bride of Corinth.'

A new record has been established within the borders of the old Oregon Territory which bids fair to stand for decades to come; for five distinguished citizens in solemn session at Salem, Oregon, on May 25th and 26th, succeeded in passing on one hundred and twenty-three entries—some 700 drawings—in what appears to be less than eighteen hours of actual working time. No more need to waste public time and money in judging competition drawings as in the past. Consider the eleven jurymen who spent twenty-nine days reviewing some 250 entries in the Chicago Tribune Competition! Establishing this new record was very nearly jeopardized by the Technical Advisor's attempt to obtain the services of such practitioners as Dr. Paul Cret and Mr. Ralph Walker on the jury. These men, overzealous in examining plans, might have delayed proceedings considerably; but this attempt was happily frustrated by the Commission's reported setting of only $250 as the remuneration for each architect juror's services.

Some two hundred and sixty firms are said to have signified their intentions of submitting drawings and 123 actually finished, so at least 1000 architects and draftsmen throughout the land must have, at one time or another, been looking for a 'parti,' *pochéing* walls or rendering *entourage*. The cost of production of all drawings submitted is variously estimated at from $75,000 to $100,000. Such industry and wistful wishing as was exhibited by architects should bear fruit against future experience. The lessons gleaned from this competition may well serve as models for the conduct of future ones.

It has ever been the bane of competitors' lives to be kept in ignorance of the identity of jurors. The Institute Code specifically states that the names of jurymen shall be kept secret, though many competitors of long experience feel otherwise. In this competition it proved unnecessary to name the jurors in advance as the winning design was a masterpiece of discernment and could not have gauged the psychology of the jury any closer had its identity been made public.

The selection is said to have been unanimous and the jury stated that the people of Oregon were fortunate in obtaining a design soundly based on classic precedent. Certain curious Oregon architects, after searching diligently through their dust-laden volumes of D'Espouy and Letarouilly to find a 'parti' resembling the basement and first floor plans of the accepted design, are at a loss to know what classic precedent is alluded to, unless it be the catacombs of ancient Rome. Another school of thought feels that the winning 'parti' has a more modern flair because, although the poché is a trifle heavy, since some twenty odd rooms are variously disposed throughout the building without natural light or ventilation, it might have been subconsciously influenced by the layout of the Times Square-Grand Central shuttle. The former suggestion, however, finds more adherents as the shuttle has several major entrances while the accepted design has but one. Those competitors who noticed McKim, Mead & White's 1902 Rhode Island Capitol while searching for a 'parti' might erroneously be led to believe that there exists a similarity between it and the second floor plan of the accepted design, but this is a mere coincidence as one of the winners has assured the Oregon public, through the press, that their Capitol was not copied out of books but was inspired by reading Oregon history.

First-rate designers know that a good 'parti' is as clearly and concretely a subject that bears analysis as a problem in mathematics, and that the very heart of the 'parti' of a monumental building is the circulation. The first matter that a jury should examine (and that the Oregon jury must have examined) is the disposition of entrances, corridors, stairs, elevators, etc. Study these plans to see how splendidly the circulation is handled in the accepted design! None of the malignant influence of the Beaux Arts School with its insistence on axial circulation is evident in this plan, and none of the old-fashioned and outmoded attempt to keep the circulation lighted by natural means. It is assumed that this portion of the design was inspired by reading a history of Oregon, for the circulation in the two lower floors might have been influenced by the strange tale of the perilous journey of Astor's Overlanders in 1811 in attempting to reach the Oregon Country through the Snake River Gorge. Notice also the freedom with which the poché is disposed, hampered neither by the classic school of 'balanced grays' or by the modern school of lightness and airiness. How the masterly handling of unbalanced poché in the Governor's Suite on the second floor must have appealed to the trained members of the jury! Many U. S. architects have seen Carlu's accepted design for the new Trocadero and other French architects' plans, selected in competition, for the buildings for the 1937 Paris Fair. In France these plans are much admired, the poché is so light it appears to be only a series of dots, the circulation is said to be clean, direct and thorough, the work and display spaces are shallow and well-lighted, and the loads are carried wherever possible directly down to bearing soil. The ideas advanced are mostly of the modern school, in direct contradiction of the tastes of the Oregon jury, insofar as reflected in their choice. Which only goes to prove that fifty million Frenchmen *can be wrong*.

It was stated by one of the authors that in his opinion it was the simplicity of the accepted design that won, a statement most disconcerting to many architects who foolishly believed that a plan like Paul Cret's new Federal Reserve Board building in Washington was simple. This goes to prove that the ambiguous word 'simple' is used altogether too loosely in the architectural profession.

In matters of circulation another lesson to be derived from the Oregon competition judgment is in the matter of 'mosaic.' On page 24 the program stated that "no elaboration of corridors or hall floors would be permitted," but at least one competitor elaborately 'mosaiced' both his first and second floor circulation and was still awarded a $1500 prize. The winning design carefully regarded this admonition, but indicated nine elevators and twenty-four different stair locations on the several floor plans. Provincial architects are now wondering if this isn't some new and subtle metropolitan fashion of expressing *mosaic* on competition drawings.

In a series of articles which appeared in the Morning Oregonian purporting to constitute a critical analysis of the accepted Capitol plans, State Senator Allan A. Bynon showed much concern over the arrangement of the Legislative facilities. He pointed out that the Oregon Legislature nominally met only from 40 to 60 days biennially. Thus the North Dakota plan, in which the Legislature is confined to a separate wing where it can be closed off when not in use, might have been a better solution for the Oregon problem. He pointed out that there are at times seventy committees functioning at once with one legislator often on several committees, so the Committee Rooms should be on a minimum of floors all close to the chambers instead of distributed over four floors, from one end to the other of the building. He questioned the wisdom of locating the main —large—Committee Rooms up on the fourth floor, in what appears to be an attic story lighted by skylights. He suggested that the Press Room should be on the same level as and near the legislative chambers, instead of down in the basement wedged in behind the Barber Shop. He showed concern over the disposition of the Engrossing and Stenographers' Rooms as indicated on the third floor plan, saying that the Senate and House Engrossing Rooms should adjoin one another as they had much work to do in common, and that the Stenographers' Rooms should be on the same level as, and adjoining their respective chambers. Such at least has been the *modus operandi* of the Oregon Legislature these many years. The unique features in the accepted design must have appealed to the jury. It may be the Commission's hope to break the legislature of its curious practices, but because of the natural stubbornness of legislators in general, grave doubts are entertained as to whether they will succeed.

After Senator Bynon's criticisms were concluded another Oregon newspaper, presumably speaking for the Commission, hastened to assure the public that the plans were being revised as the competition was held "primarily to facilitate the selection of an architect," a most curious explanation and one which seemed to contradict the statement on page 23 of the program, to wit, that "an outstanding solution is desired and one that will be looked upon now and hereafter, with an ever awakening interest by the people of Oregon." We can only assume from this that (1) either a misstatement was inadvertently allowed to creep into the program, or (2) that no outstanding solution was presented or (3) that the accepted design is the outstanding solution with minor revisions.

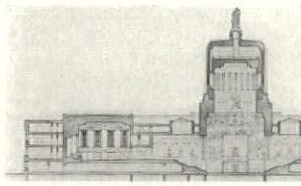
Another feature which must have appealed to the jury is the fresh and entirely original manner in which the roof loads are carried down to bearing from over the Legislative Chambers. Compare the spread of the clerestory on the side elevation with the truss space shown on the longitudinal section, the columns under the clerestory on the third floor plan, and the column spacing on down through to the basement.

The manner in which the cylindrically-shaped upper portion of the rotunda is set down over the square-shaped lower portion without pendentives is another structural feature which should command the admiration of engineers the country over.

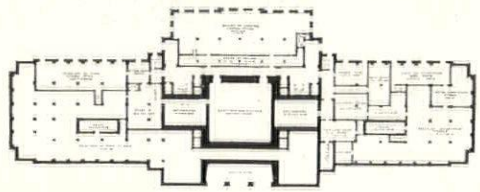
Referring to the structural frame: Oregon, as many people know, is noted for its vast timber resources. Structural lumber in Oregon is very economical as compared with many other sections of the country. Consequently, in fireproof construction reinforced concrete framing is more economical than structural steel, due primarily to the low average cost of form lumber and its intendent labor. Steel-framed buildings in Oregon are rare and it would have seemed desirable to select a design whose spans, loadings, bearings, etc., could have been more economically expressed in reinforced concrete. However, the program made no mention of this fact and the jury was apparently unaware of it, so no one can be blamed if the structural frame is of steel, even if the lumbermen are disconcerted.

One of the lav jurors was heard to remark afterwards that when the final selection was made the outside perimeter of several different entries was measured,

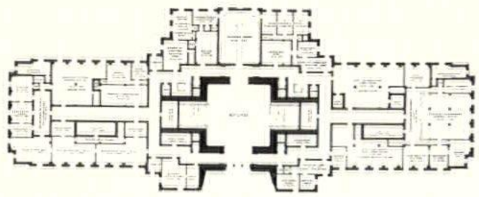
(Turn to page 80)



LONGITUDINAL SECTION: "Shows the large Committee Rooms in the Attic story and the circular upper rotunda setting down on the square lower portion."



BASEMENT PLAN: "The Press Room referred to is here indicated. Some of the departmental offices are broken up between this and the floor above, necessitating extra stairways."



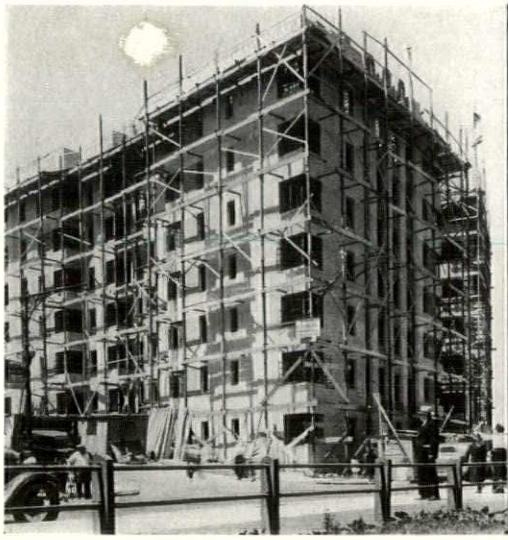
FIRST FLOOR PLAN: "State Secretary's and State Treasurer's Offices located at opposite ends of the building although program stated they should be near one another. Comptroller's Office one of many without natural light or ventilation. Circulation speaks for itself."

SECOND FLOOR PLAN: "The nine elevators and twelve of the twenty-four stair locations indicated on this level. Notice poché in Governor's Wing."

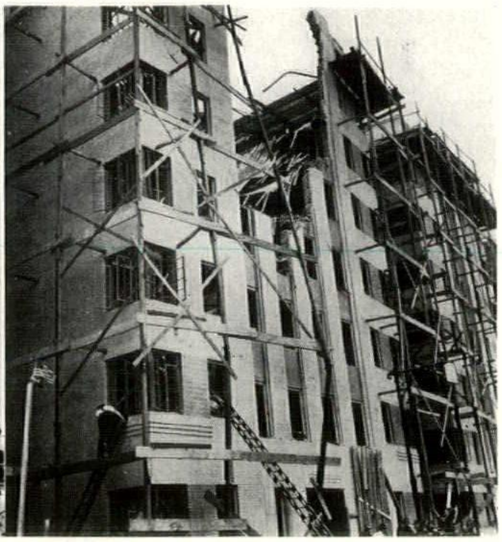
THIRD FLOOR PLAN: "Notice disposition of Engrossing and Stenographers' Rooms. The poché around rotunda and monumental stairs seems a trifle heavy."

NEWS OF THE MONTH

New York Edison Co. Photo



Wide World Photo



17 MEN DIED WHEN THIS "MODERN" STRUCTURE COLLAPSED

An ornamental masonry tower atop an unfinished apartment building cost the lives of 17 workers in New York on June 19. The building—widely hailed as the Bronx's first completely electrified structure—had been the scene of an elaborate "topping off" ceremony three days previously, at which city officials and business men had praised its advanced design. The collapse came while masons were finishing the tower; without warning the structure gave way, crashing through to the third floor and tearing a V-shaped portion out of the exterior wall—burying many of the workmen in the débris.

A Grand Jury investigation "to find whether there had been any criminal negligence" has so far failed to fix the responsibility. Faulty structural design (the structure had load-bearing masonry wall with wood floor construction), improper bonding between face and common brick, inadequate steel have all been mentioned as a cause of the disaster. Two inspectors of the Bronx Building Department have been suspended but action against owners and architect awaits the outcome of the Grand Jury investigation. Workmen, questioned on the scene, blamed skimping of materials and the "speed-up" under which the building was put up.

It is significant, in the connection, that the proposed City charter, which will be voted on next year, proposes the consolidation of the Building Departments of the five boroughs into one centralized body. Proponents of the new charter point out that such consolidation would greatly increase the effective control of construction and prevent such mishaps in the future.

● ●

OREGON CAPITOL (cont'd)

as the outside walls of buildings are expensive and it was his desire to select a design with the shortest perimeter encompassing the most interior arrangement.

Another detail for which this competition will be long remembered and which must have cheered the many competitors was the dispatch with which the drawings were returned to their authors. None of this waiting for six months to a year for the return of competition drawings. None of these verbose reports of the jury explaining to the losers why the winners were chosen. The drawings were due in Salem on Friday, May 22, and many of them were already on the return journey less than a week later. The alacrity with which the drawings were repacked made it impossible for a group from the University of Oregon's architectural department to see any but the six prize-winners, although they journeyed to Salem just two days after the judgment. Some long-faced people say that the Commission wished to avoid public controversy, but we have no proof of this.—**Roi L. Morin, A.I.A.**

28 SCHOOLS SHARE A.I.A. AWARDS

For "general excellence in architecture," thirty graduates of American architectural schools have been awarded the A.I.A. School Medal. Made by the Institutes Committee on Education, the honors were shared by 28 architectural schools throughout the nation.

SEVEN ARCHITECTS ARRESTED: ONE SUICIDE

Seven architects have been arrested following the collapse of a grandstand at Bukarest, when some twenty-five people were killed and over four hundred injured. An eighth architect committed suicide before the police arrived. "Apparently," says *Architect and Building News*, "there is no safety in numbers."

WORLD'S SMALLEST LOT AT AUCTION

Private ownership of land reached a point of all-time absurdity last month when the City of New York auctioned a plot measuring 5.37′ x 3.98′ x 4.18′. It was one of eight parcels of excess land, acquired in recent subway work.

This, however, is not Manhattan's smallest tract. In Greenwich Village, a triangle of land approximately 2′ x 2′ x 2′, is held in private ownership. The owner pays $100 tax each year for the distinction of holding theworld's smallest piece of real estate.

FERRO-CONCRETE DIVING TOWERS

The recently opened Astoria Pool in New York is equipped with concrete diving towers of novel design. The central tower has boards at three levels, while springboards are provided at smaller towers on either side. The pool, which is one of the largest in the country, is in reality three pools—one each for wading, swimming and diving. Seen in the background is the recently opened Tri-Borough Bridge.

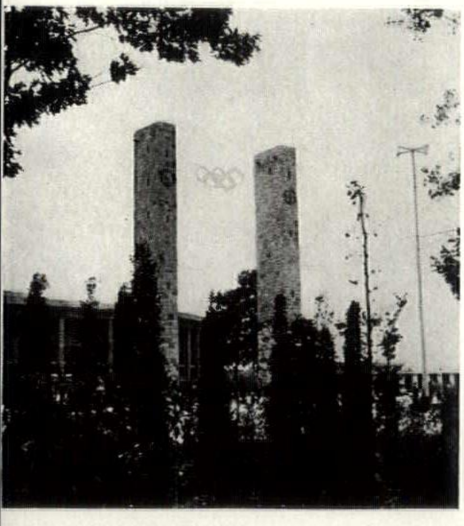
Photo by Johnson & Peterson

WITH COLUMNS FROM A BANK THAT FAILED

A hundred-year-old residence, recently donated to Wesleyan University at Middletown, Conn., boasts a portico of Corinthian columns from a bank which failed in 1824. The columns are still sound.

FHA INSURES, RFC FINANCES, 2 HOUSING PROJECTS

Two large-scale housing projects involving an estimated cost of $2,702,340 have recently been insured by FHA. One project, Chester Crest Apartments, is located in Westchester County, New York; Sibley & Featherstone, architects, New York. It involves a cost of $1,602,340. The other is "Hillside Gardens," located in the metropolitan area of Washington, D. C., with an estimated cost of $1,110,000; Louis Justement, architect, Washington. Both



THEY PAWNED THEIR RINGS TO SEE IT

Entrance pylons at the new Olympic Stadium in the Reich Sport Field, outside Berlin. Due to lack of funds, some members of the American Olympic team had to pay their own way and pawned watches, rings, etc., in a desperate effort to make the last boat. The opening week of the Olympics has been proclaimed "a week of laughter" by the Nazis: all Germans are ordered to smile.

NEW YORK ARCHITECTS IN FIRST "SIT-DOWN STRIKE"

Ten architects are now picketing the Park Department in New York City as a result of a "sit-down" protest called in late June by the architectural and engineering employees of the Parks Department. The strike, in which members of the Federation of Architects, Engineers, Chemists and Technicians, and the Architectural Guild of America participated, was protesting the threat of dismissals on July 1, the abolition of vacations and sick leave with pay, the enforcement of the six-day week.

As a result of this protest ten architects, including the most active Guild and Federation members, were fired. They created a mild sensation the following day by barricading themselves in their offices, whence they were removed with aid of policemen. The case has been carried to the WPA Board of Appeals where Arthur Garfield Hays, famous liberal attorney, will present their case, charging that they were dismissed, not for incompetency but for organizational activity. Recent rulings by Administrator Hopkins guarantee the full right of all WPA employees to organize.

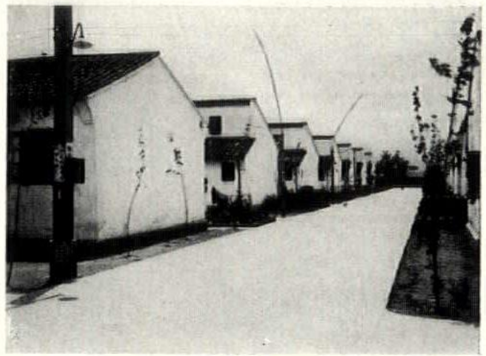
NEWSPAPERS TO EXHIBIT AT GOLDEN GATE

Staged by the National Editorial Association, an exposition of the American newspaper from the birth of journalism in New England in the 17th Century to its present indispensable place in national life will be presented at the Golden Gate International Exposition in 1939. Clayton Rand, NEA president, declared that the exhibit will show the world the place the modern newspaper occupies "as a protector of democracy and an invaluable servant of organized society."

EDWARD'S CORONATION BREAK FOR ARCHITECTS

A coronation is always a good business proposition in England; and Edward's next year is to be no exception. Even the students of the Architectural Association will share in the prosperity, according to recent reports, when they will provide London's famous Bond Street with "good" decorations. The competition, which will be held by the Bond Street Association, is part of a national campaign "to raise the standards of street decorations."

1—Millions of Chinese dodge rents and taxes



2—250 Shanghai families pay .81c per house

Photo by Wide World

3—And do their own laundry outdoors.

HOUSING CONTRASTS IN SHANGHAI

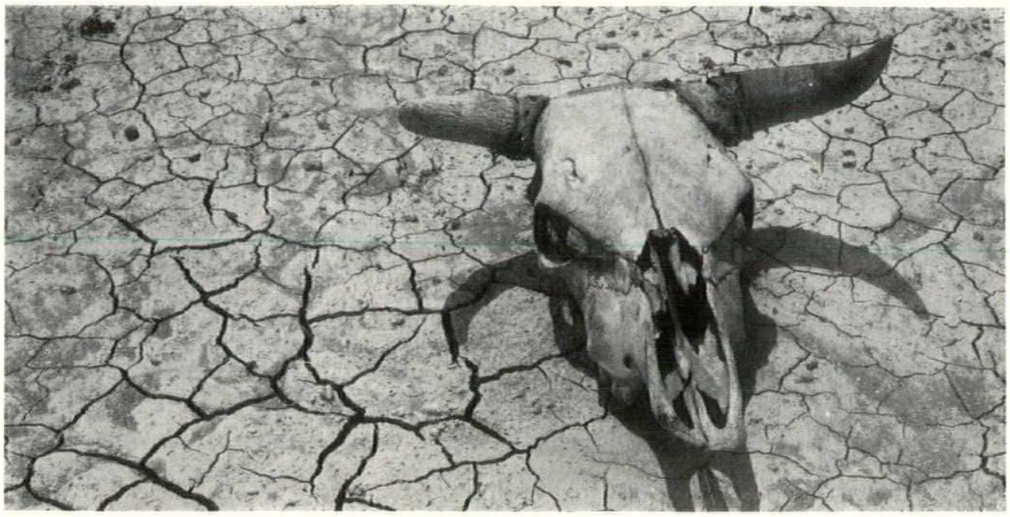
Shanghai's new Model Village is a demonstration project for working class families. While the construction cost was incredibly low (approx.) $80 per house, and the rents accordingly small, it should be remembered that the average income of these families is $6 per month. The Model Village, which has its own Major and administrative staff, boasts bathhouses, cooperative store, school, kindergarten, amusement hall and infirmary.

ARCHITECTS TO ADVISE CLEVELAND'S PLAN COMMISSION

Parks Director Hugo Varga last month announced the appointment of a committee of 15 Cleveland architects to serve as advisers to the city plan commission.

NEWS OF THE MONTH

Wide World Photo



NO CONSTRUCTION HERE

4,200 dead, 1,000,000 thrown on relief, crop and property damage of $500,000,000—this is the bill for the current drought which covers two-thirds of the Nation. Not wholly an Act of God, this. The recurrent droughts and dust-storms in the West are the result of improper land use. The Government's policy of limiting each home-steader to 160 acres of land forced farmers to plow up the grasslands (since the tracts were too small for grazing): the World War, with its vast and short-lived demands for wheat, hastened "the breaking of the Great Plains;" and now, with the collapse of the world wheat market, individual farmers find it impossible to shift back to a cattle-raising economy.

New Deal agencies, stepping rather belatedly into the picture, announce that relief will be available. RA's Tugwell will move thousands of families out of the drought area. WPA Administrator Hopkins has aready instituted a water-conservation program in which thousands of ruined farmers will be empoyed. Millions of acres must be returned to grass; reforestation and erosion control work must be started on a larger scale (President Roosevelt's much heralded "Shelter Belt" was quietly killed by the last Congress); flood control must be undertaken on a national scale and in relation to a national plan.

PROFESSIONALS FIND NEW HOUSING BILL "CONSTITUTIONAL"

Introduced into the last Congress was the little known Housing Bill of Rep. Byron Scott (Dem., Cal.). Although it attracted scant publicity in the pre-convention atmosphere, the Scott Bill has received wide support from professional, tenant and labor groups. Formulated by the Inter-Professional Association, national organization of professionals, and the FAECT, the Scott Bill will be re-introduced in the next Congress. *News-Bulletin,* IPA organ, analyzes the Bill in a recent issue. Pointing out that the Wagner Housing Bill has several fundamental weaknesses—the funds to be made available are "grossly inadequate," no definite maximum on rentals is established, and too much discretionary power is placed in the hands of the Authority which it creates.—*News-Bulletin* says:

"The Scott Housing Bill today represents the only realistic and adequate solution of the housing problem of the low income groups. The following are the basic concepts and provisions of this bill:

(1) Private enterprise in establishing rental charges of necessity includes the items of (a) the repayment of the land and construction cost together with interest or profit thereon, (b) the cost of maintenance and (c) taxes. Experience has demonstrated that the rental charge for new, adequate housing which is based on all of these items is beyond the means of the majority of American families. Three-quarters of the families of the United States have annual incomes of less than $1,500 and can safely pay for rent not more than about $5 per room per month. Because of this the Scott Bill is founded on the concept that low-rental housing can be achieved only where there is an outright grant of the total land and construction cost and where the rental charge is based only upon the cost of maintenance and the payment of local taxes. Under present conditions such a charge would not exceed $5 per room per month in large cities like New York, Chicago and Philadelphia, and would be less elsewhere.

(2) The creation of a Housing Fund out of the United States Treasury. Outright grants to Public Housing Agencies of 85 per cent of the land and construction cost will be made out of this Fund for the purpose of providing modern housing for families of low income at a rental charge not exceeding $5 per room per month.

(3) The creation of a Housing Authority to disburse the Housing Fund. Federal grants will be made only to Public Housing Agencies who agree to certain conditions under which the housing will be constructed and operated. These conditions are:
- (a) That the Public Housing Agency contribute the balance of 15 per cent of the land and construction cost in the form of a local outright grant.
- (b) That the rental charge shall not be more than $5 per room per month and less where possible.
- (c) That no family shall be eligible for this housing whose income exceeds $1,000 plus $250 for each dependent in excess of two. This means that the maximum annual income for the average family of four would be $1,500.
- (d) That priority of application shall determine the right of occupancy.
- (e) That union wages be paid to all employees in any way connected with the construction and operation of the housing.
- (f) That the tenants shall have adequate tenure rights and that there shall be no discrimination by reason of religion, political opinion, etc.
- (g) That construction standards of the Research and Planning Division created under the Act be followed.

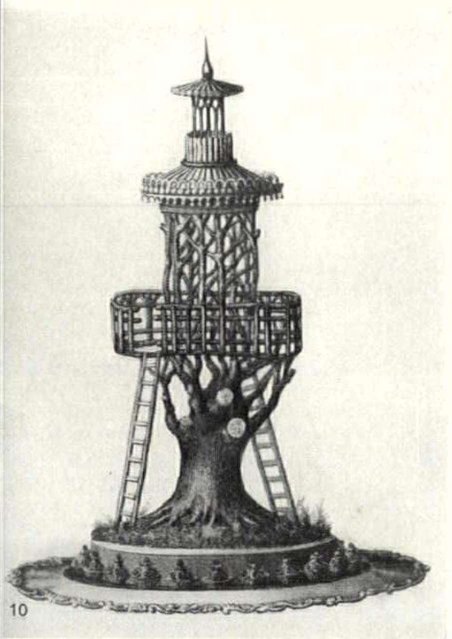
(4) The establishing of a schedule of annual construction under which the Housing Authority will be required to make outright grants to qualified local agencies for the construction of a total of 10,000,000 dwelling units within a period of 10 years."

News-Bulletin points out that, although no compromise has been made with the basic concepts of "an adequate, low-rental housing program," the Scott Bill is constitutional. Under this Bill, the U. S. Housing Authority does not construct, own or operate housing: this is delegated to local Public Housing Agencies. Nor does it "delegate unwarranted powers" to the Authority—the feature which the Supreme Court has found most distasteful in New Deal legislation.

The Scott Bill is of utmost importance to all architects and engineers, and *News-Bulletin* urges all professional groups to familiarize themselves with it.

CALENDAR OF EXHIBITIONS AND EVENTS

- **August 24–29** — "Environment and Its Effect on Man: Symposium," Harvard School of Public Health, Boston
- **August 31 to September 3** — 30th Annual Convention, Illuminating Engineering Society, Buffalo, N. Y.
- **September 7–12** — Third World Power Conference and Second Congress on Large Dams, Washington, D. C.
- **September 14** — Opening: Fall term, Pennsylvania Academy of Fine Arts—Philadelphia, Pennsylvania.
- **September 15** — Preliminary Examination for Assistant Civil Engineer: U. S. Navy Department, Bureau of Docks and Yards, Washington, D. C.
- **September 25** — Community Planning and Housing Courses: School of Architecture and Allied Arts, New York University, New York City
- **September 28** — Public Housing Courses: New School for Social Research, 66 W. 12th St., New York City
- **October 19–23** — Seventeenth Annual Meeting, American Welding Society, Cleveland, Ohio
- **November 30** — Twelfth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City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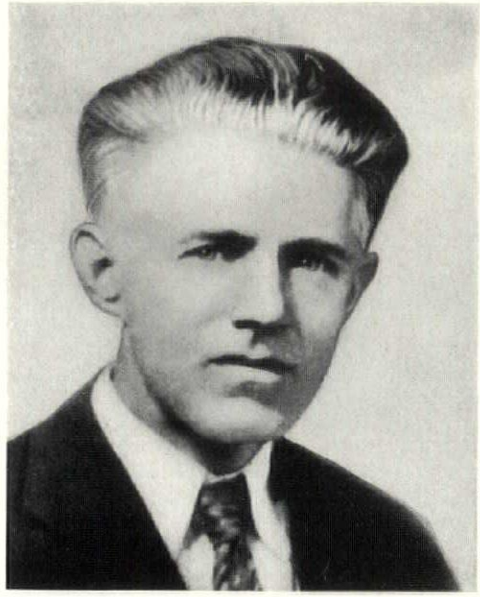
Courtesy "Architectural Review"

ARCHITECTURE: ALMOND PASTE, NOT CAST IRON

This rustic garden house by Urbain Dubois, chef-du-cuisine to the Emperor of Prussia, is one of the many "architectural" works with which the great French chef fed his Imperial employers. Using almond paste, icing sugar, puree of game, truffles—in fact, food of all sorts—Dubois created castles, lighthouses, minarets, churches. His approach was a professional one. Architectural cookery, said he, was subject to "true principles of science"; nonobservance of fundamentals of structure could never be redeemed by elegance of shape.

HENRY WRIGHT, TOWN-PLANNER, DIES SUDDENLY



Wide World Photo

Dead last month was Henry Wright, the nation's No.-1 town- and site-planner, after a short illness, at the age of 58 years. Born in Kansas, of Quaker parentage, he attended the University of Pennsylvania from which he graduated in Architecture in 1901. However, his chief interest and most active work lay always in the field of planning rather than architecture. As early as 1903 in Kansas City he was engaged in park development. He was one of the planners of the St. Louis Fair: and moving to St. Louis in 1907, he became active in the early city planning movement in the Middle West. It was during this period that he designed the St. Louis Country Club subdivision, laying out the new club grounds and converting the old ones into a high-class subdivision. He was one of the earliest exponents of large-block (peripheral) planning and his subdivisions of this period reveal the first trends away from the gridiron plotting.

In 1918-1919 he came East to become Town-Planning Assistant for the housing development of the U. S. Shipping Board: these shipping board towns of Newburg, Bridgeport, and Camden reveal his increasing interest in town- as opposed to city-planning. In 1920 he returned to St. Louis where he became architectural adviser to the City Planning Commision; but in 1923 he returned to New York to become Town Planning Consultant to the City Housing Corporation. It was at this time, associating with Architect Clarence Stein, that the famous Sunnyside Housing Development in New York City was designed and executed. This project was soon followed by Radburn, the "Town for the Motor Age."

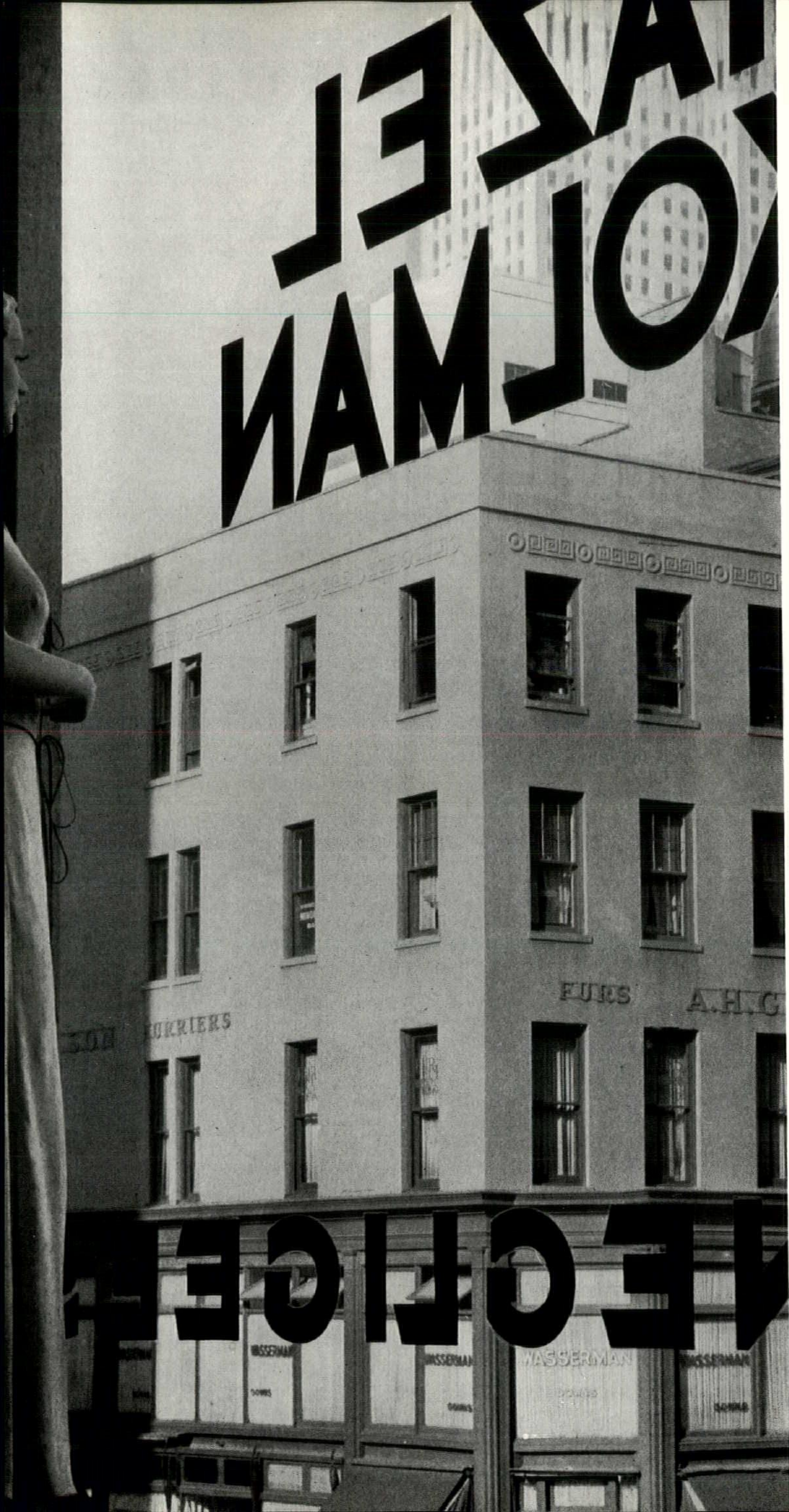
Mr. Wright was consultant to the Rosenwald Foundation on its model tenement project in Chicago. With Clarence Stein, he planned the first section of Chatham Village, limited-dividend project of Pittsburgh's Buhl Foundation. He did the site-planning on the second section of the Chatham Village, completed last year, alone.

In 1926 he supervised the preparation of a plan with the New York State Planning Commission, one of the earliest of its sort in the country. From 1930 until 1933 he lectured on housing at various universities, completing in this year the last of four European housing tours.

He was a member of Robert Kohn's ill-fated PWA Housing Division in 1933 and in 1934 was one of two American representatives selected to accompany Sir Raymond Unwin and Miss A. J. Samuel of England, and Dr. Ernest Kahn of Germany, on a housing tour of fourteen American cities. In 1935 he returned to Washington where he was Town Planning Consultant for the Rural Resettlement Administration. Last year he became Associate in Town-Planning to the faculty, Columbia School of Architecture: and at this time his book "Re-Housing Urban America" was published by the Columbia University Press.

HARVARD TO STUDY EFFECT OF ENVIRONMENT ON MAN

As part of its Tercentenary Celebration, Harvard's School of Public Health will this month hold a 6-day symposium on "The Environment and its Effect on Man." Covering a very wide range of subjects-matter, the papers will be presented by a distinguished group of specialists from all parts of the country. Air conditioning, industrial hygiene, fatigue, physiological effects of high pressures, toxicology of gases are among the subjects to be treated. The Symposium opens August 24 at the School of Public Health in Boston.



PHOTOGRAPH BY
BEN SCHNALL

RETAIL OUTLETS PER 1,000 FAMILIES

BY HOWARD WHIPPLE GREEN
Director, Real Property Inventory of Metropolitan Cleveland

EDITOR'S NOTE

The Real Property Inventory, created in Cleveland in 1932—one section of which was expanded in one direction by the Bureau of Foreign and Domestic Commerce as their Real Property Inventory of 64 cities, the forms and instructions for which were used in a large number of other cities such as New York, Philadelphia, Boston, Buffalo, and Pittsburgh as CWA projects, and modified in another direction by the Federal Housing Administration and used as WPA projects in another large number of cities—has been carried out in the entire Cleveland Metropolitan District for four consecutive years, tabulated, analyzed, and published in a series of eight bound volumes containing 2,264 pages.

One section of the Cleveland Real Property Inventory was concerned with a detailed study of the use of 130 miles of street frontage on 17 principal thoroughfares. This section includes tabulations by type of use—retail, service, wholesale, manufacturing, residential, vacant land, and so forth, by units, and by feet of street frontage. Published for three consecutive years, this section makes possible a better understanding of the changes constantly taking place in type of use and in ownership or operation of each store unit and other location along this entire frontage.

Another section of the Cleveland Real Property Inventory includes a tabulation of retail outlets by type, occupied and vacant, each October for four consecutive Octobers.

These two series of data, carefully collected, tabulated and analyzed, make possible the presentation of the factors discussed in this article. The article is designed to promote community planning, which is generally accepted by leading institutions and by city planners as the key both to suburban development and to slum remodeling.

WHAT is the population? How many people live in this city? How many inhabitants are there in that neighborhood in which it is planned to establish the store?

Always population—when, as a matter of fact, families are more significant than people. Families occupy dwellings, either renting or owning. Families subscribe to telephone service, pay water and gas bills, and use electricity. Families buy pianos, radios, and other furniture and furnishings. They buy automobiles, subscribe to newspapers and magazines, patronize bakers, butchers, and grocers. And from architects' standpoints, families once in a while retain them to design new homes.

Thus it is seen that the 1,200,000 and some inhabitants of the Cleveland Metropolitan District become more vital when considered as 304,455 families.

Number of Retail Outlets

These families are served by 20,649 retail outlets. Nearly one-third of these stores are food stores, 6,352 of the 20,649. As many as 1,379 are groceries, 922 meat markets, 1,400 have both groceries and meats, 734 are fruit and vegetable stores, 430 delicatessens, 979 candy and confectionery stores, and 508 bakeries. Restaurants, although not strictly retail outlets, number 1,937 alone. Thus 8,289 or 40 per cent of all retail outlets are devoted to the sale of foodstuffs, cooked and served, partially cooked and raw.

Gasoline stations number 1,587, drug stores 597, hardware stores 460, and so forth, as shown in Table 1.

Some of the 23,566 stores and store units are vacant. The vacant units represented 12 per cent of all last October, a slightly smaller per cent than in 1932 or in 1933, there being 15 per cent vacant in October of each of these years.

20 Per Cent of the Retail Outlet Food Stores in Rock River; 44 Per Cent in Garfield Heights

The Cleveland Metropolitan District includes 12 cities and 31 villages and townships. It extends from Lorain County on the west into Lake County on the east. It stretches along Lake Erie for some 36 miles.

Nearly one-third, 31 per cent, of all occupied stores in Metropolitan Cleveland are food stores exclusive of restaurants and eating places. Food stores also represent 31 per cent of Cleveland's stores, 30 per cent of Lakewood's, 32 per cent of Cleveland Heights', 27 per cent of East Cleveland's, and 30 per cent of Shaker Heights'.

Forty-four per cent of Garfield Heights' stores are food stores, 37 per cent of Parma's, 26 per cent of Euclid's, 29 per cent of Bedford's, 36 per cent of Maple Heights', 23 per cent of Berea's, and 20 per cent of Rocky River's. In the rest of the metropolitan district 20 per cent of all stores are food stores. Thus while 20 per cent of all stores are food stores in Rocky River and the villages and townships in the metropolitan district, 44 per cent of all stores in Garfield Heights are food stores.

The proportion of stores used as restaurants and eating places amounts to 9 per cent in the metropolitan district and varies from 4, 5, 6, and 7 per cent in Cleveland Heights, Lakewood, East Cleveland and Shaker Heights respectively, to 15 per cent in Rocky River, 16 per cent in Maple Heights, and 19 per cent in the villages and townships of the metropolitan district.

Gasoline Sold in More Places Than Food

In some of Cleveland's suburbs more retail outlets are gasoline filling stations than food stores, exclusive of restaurants and eating places. There are 29 gasoline filling stations in Rocky River as compared with 21 food outlets; and in the metropolitan district outside of the 12 cities there are 175 gasoline stations as compared with 133 food outlets. Thus 28 per cent of the retail outlets are gasoline filling stations in Rocky River as compared with 20 per cent which are food stores, and 26 per cent in the villages and townships in the county as compared with 20 per cent which are food stores.

68 Stores Per 1,000 Families

As many as 77 stores and vacant store units per 1,000 families are provided in the entire community; 68 per 1,000 families were occupied last October and 9 per 1,000 families were vacant. The occupied stores were of various and sundry types. Food was sold in some, clothing in others, and furniture, hardware, jewelry and other articles purchased by families and individuals in others.

Different numbers of each type of retail outlet are required to serve the average group of 1,000 families. There are 12.2 grocery stores and meat markets, 2.4 fruit and vegetable stores, 1.4 delicatessens, 3.2 confectionery stores, and 1.7 stores selling baked goods, per 1,000 families. There are 6.4 restaurants per 1,000 families. Thus 27.3 retail outlets provide food for the average unit of 1,000 families. Expressed another way, there are nearly 3 such retail outlets per 100 families, one to each 37 families.

The average group of 1,000 families has 2 drug stores, 1 shoe store, 1 men's wear store and 2 women's wear and dry goods stores, 1 radio or electrical goods shop, and 2 hardware stores. Gasoline stations are more liberally supplied, there being more than 5 per 1,000 families.

The number of retail outlets per 1,000 families in Cleveland, 89, is naturally larger than in the smaller places. Cleveland is the large trading center for northeastern Ohio. Not only are the families of Cleveland served by its stores but those living in the other cities and villages throughout the metropolitan district are also served, and those living in numbers of other counties in northeastern Ohio make their major purchases in Cleveland's stores. Nevertheless, each of the other 11 cities has its own retail outlets and the villages have theirs.

Only 20 Stores Per 1,000 Families in Shaker Heights

Lakewood, a city of over 70,000 inhabitants in 1930, has 45 stores and vacant store units per 1,000 families, as contrasted with 89 in Cleveland. Cleveland has 11 vacant store units per 1,000 families, while Lakewood has but 3 per 1,000 families. Cleveland Heights, a city of over 50,000 inhabitants in 1930, has 38 stores and vacant store units per 1,000 families. Cleveland Heights has fewer than 3 vacant stores per 1,000 families. East Cleveland, a city of nearly 40,000 inhabitants in 1930, has 50 stores and vacant store units per 1,000 families.

Shaker Heights, a city of nearly 18,000 inhabitants in 1930, and with over 22,000 inhabitants in 1936, has only 22 retail outlets and vacant stores per 1,000 families. This number is small because of the strict zoning maintained in this newest of

TABLE 1

NUMBER AND PER CENT OF SELECTED TYPES OF RETAIL OUTLETS

CLEVELAND METROPOLITAN DISTRICT — OCTOBER, 1935

Type of Retail Outlet	Number	Per cent	Per cent
FOOD GROUP			
Bakery	508	2.2	2.5
Candy and Confectionery	979	4.2	4.7
Delicatessen	430	1.8	2.1
Fruit and Vegetable	734	3.1	3.6
Grocery	1,379	5.9	6.7
Grocery and Meat	1,400	5.9	6.8
Meat	922	3.9	4.5
AUTOMOTIVE			
Accessories	344	1.5	1.7
Gasoline Stations	1,587	6.7	7.7
APPAREL			
Men's Wear	317	1.3	1.5
Women's Wear and Dry Goods	567	2.4	2.7
Shoes	313	1.3	1.5
FURNITURE AND HOUSEHOLD			
Furniture	271	1.1	1.3
Radio	134	.6	.6
RESTAURANTS	1,937	8.2	9.4
LUMBER AND BUILDING			
Electrical Goods	159	.7	.8
OTHER			
Hardware	460	2.0	2.2
Cigar	155	.7	.7
Drug	597	2.5	2.9
ALL OTHER	7,456	31.6	36.1
TOTAL	**23,566**	**100.0**	
VACANT	2,917	12.4	
OCCUPIED	20,649	87.6	100.0

Cleveland's larger suburbs. The small number of vacant store units, less than 2 per 1,000 families, is doubtless a result of the strict zoning regulations.

As Many as 81 Stores Per 1,000 Families In Berea

The number of stores and vacant units per 1,000 families varies in the other suburban cities: Garfield Heights has 39, 4 vacant and 35 occupied; Parma 37, 2 vacant and 35 occupied; Euclid 49, 6 vacant and 43 occupied; Maple Heights 53, 6 vacant and 47 occupied; and Rocky River has 69, 11 vacant and 58 occupied. The more self-contained cities of Bedford and Berea have 79 and 90 occupied stores and vacant store units per 1,000 families respectively. The vacant store units are numerous, 7 and 9 per 1,000 families respectively. The other cities and villages in the metropolitan district have 56 stores and vacant store units per 1,000 families, 7 vacant and 49 occupied.

Width of Store-Frontage

Some of the stores are narrow and others wide. Some take a few feet of the busy thoroughfare's frontage, others many feet. The average width used by all stores and vacant store units is nearly 30 feet, 29.8, to be exact. The food group takes an average of 21.5 feet per outlet. Meat markets, candy and confectionery stores, fruit and vegetable stores and bakeries average from 19 to 20 feet of street frontage. Delicatessens take 20 feet on the average. Grocery stores without meat departments take 21 feet, while the combined grocery and meat stores take nearly 27 feet. Dairy products stores take nearly 28 feet of the street frontage, and other types of food stores require over 32 feet on the average.

The general merchandise group uses more street frontage per unit, a total of over 36 feet. Department stores, while few in number, seem to require over 107 feet, dry goods and general merchandise stores 26 feet, and variety stores, that is, 5-and-10-cent stores, nearly 31 feet on an average.

The average apparel shop requires less space than either of these two groups, only 20 feet. The women's ready-to-wear shops seem to require an average of 19 feet, while the men's and boys' clothing stores take 27 feet. Shoe stores take just under 20 feet and other apparel and furnishings outlets 18 feet.

The furniture and household group takes nearly 30 feet on an average, the furniture store nearly

46 feet, the floor covering store 24 feet, the household appliance shop more than 29 feet, the radio and music store nearly 20 feet, and other outlets included within this group use nearly 26 feet.

More street frontage is consumed by the automotive group per retail outlet, nearly 31 feet per automobile accessory shop and 46 feet per garage. More than 69 feet are used by the average automobile dealer's showrooms and 89 feet by the filling stations.

The miscellaneous group uses an average of nearly 26 feet. Jewelry stores take the least street frontage, less than 19 feet. Gift shops, music stores, and luggage and leather goods stores, use less than 20 feet. Next come the news store, the book store, and the cigar store, using slightly more than 20 feet. The hardware stores and the stationers and printers shops use 24 feet, the florist shops 28 feet, the office supplies and equipment places 32 feet, coal and ice dealers 67 feet, and drug stores 25 feet.

The vacant store unit has an average frontage of slightly less than 21 feet.

Retail Outlets for 1,000 Families Valuable in Planning

Thus a village of 4,000 inhabitants, a resettlement project of this size, or a self-contained housing project with 1,000 family units may be designed for the proper number of store units. Table 2 presents data illustrating the maximum provisions which should be made.

Miles of Street Frontage Used by Retail Outlets

A total of 130 miles of street frontage along the entire length of 17 principal thoroughfares in Greater Cleveland has been measured by the number of feet used for each type of retail outlet each March for three consecutive years, 1934, 1935 and 1936.

All retail outlets in the Cleveland Metropolitan District have been recorded each October for four consecutive years, 1932, 1933, 1934 and 1935. The number of each type of outlet is thus determined.

It is thus possible to estimate the total number of feet of street frontage occupied by retail outlets and the amount occupied by vacant store units. Actual measurements of all such street frontage in the Cleveland Metropolitan District have been made and the tabulations are in process of preparation. Prior to the publication of such definite data and based upon the two series of measurements carried out for four and three consecutive years respectively, estimates have been prepared. These estimates indicate 126 miles of occupied stores and vacant store units, 115 miles of occupied stores and 11 miles of vacant store units, in the metropolitan district. They indicate a total of 16 miles of grocery stores and meat markets, 3 miles of drug stores, 2 miles of hardware stores, and 27 miles of gasoline filling stations. Thus, 219 feet of occupied stores and vacant store units, 199 feet of occupied stores, and 20 feet of vacant store units per 100 families, are indicated from the data already analyzed. This amounts to 2 feet of frontage per family.

Location and Management Affect Volume of Sales

Fewer stores should be operated in order that all might make fair profits. Profits and losses are a story in themselves. Stability in business is closely related to success of operation. Success of operation depends upon location and management. In the most fortunate locations management may ruin the investment and the store may have to close. With the best of management the poorly-located store may meet a similar fate.

Changes in the Use of Street Frontage by Retail Outlets

A total of 7,053 retail outlets was in operation on 17 of the principal thoroughfares of Greater Cleveland in 1934, and 7,041 in 1936.

During this two-year period the total number of retail outlets remained practically the same. The total decreased but the decrease was only eight, hardly one-tenth of one per cent. Many of the occupants at the earlier date had been replaced by others. The type of business in many instances had changed. Occupied stores become vacant and vacant stores become occupied. While there were practically the same number of stores located on these thoroughfares in 1936 as in 1934, 1,368 had moved or gone out of business and 1,520 had come into the picture. The ownership had changed between 1934 and 1936 in the case of 566 of these retail outlets.

During the two years 19 per cent of the retail outlets moved or went out of business and 8 per cent changed ownership. Thus a radical change came about during the two-year period in one out of every four retail outlets on 17 principal thoroughfares.

Retail outlets, service establishments, and other

TABLE 2

SELECTED RETAIL OUTLETS PER 1,000 FAMILIES AND STREET FRONTAGE USED

ESTIMATE FOR ENTIRE CLEVELAND METROPOLITAN DISTRICT IN 1936

Type of Retail Outlet	Number per 1,000 Families	Average Street Frontage in Feet	Number of Feet of Street Frontage per 1,000 Families
FOOD GROUP			
Bakery	1.7	19.9	33
Candy and Confectionery	3.2	19.5	63
Delicatessen	1.4	20.0	28
Fruit and Vegetable	2.4	19.6	48
Grocery	4.6	20.9	94
Grocery and Meat	4.6	26.7	123
Meat	3.0	19.2	58
AUTOMOTIVE			
Accessories	1.1	30.8	35
Gasoline Stations	5.2	89.0	464
APPAREL			
Men's Wear	1.0	27.1	28
Women's Wear and Dry Goods	1.9	22.3	42
Shoe	1.0	19.7	20
FURNITURE AND HOUSEHOLD			
Furniture	.9	45.6	41
Radio	.4	19.5	9
RESTAURANT	6.4	23.9	152
LUMBER AND BUILDING			
Electrical Goods	.5	19.5	10
OTHER			
Hardware	1.5	24.0	36
Cigar	.5	20.8	11
Drug	2.0	25.1	49
ALL OTHER	24.5	26.6	650
TOTAL	**77.4**	**28.3**	**2,194**
VACANT	9.6	20.8	200
OCCUPIED	67.8	29.4	1,994

places of commercial activities change in two ways. They change in use, that is, an occupied store becomes vacant or a vacant store becomes occupied, or a grocery store becomes a drug store, or a beauty parlor becomes a hardware store. They change in occupancy, that is, Joe's Restaurant becomes Smith's Restaurant, or Brown's Hardware Store becomes Jones' Hardware Store.

Changes in Occupancy of Units by Food Stores

Three hundred and thirty-three of the 1,857 store units occupied by food outlets in 1934 had changed their occupancy during the two-year period between 1934 and 1936. Sixty-eight were still used by the food group two years later, 55 by restaurants and eating places, 6 by the general merchandise group, 6 by the automotive group, 11 by the apparel group, 8 by the furniture and household furnishings group, 4 by the lumber and building materials group, 22 by other retail stores, 41 by service establishments and so forth, and 112 had become vacant.

While this was happening 326 store units occupied by other outlets or vacant units became food outlets. As many as 68 had been used by the food group, 18 by restaurants and eating places, 5 by the general merchandise group, 11 by the automotive group, 20 by the apparel group, 9 by the furniture and household appliance group, 1 by the lumber and building materials group, 22 had been used by other retail stores, 38 had been used by the services and other groups and 134 had been vacant.

Thus 18 per cent of the food outlets of 1934 had disappeared by 1936 and practically an equal number of store units had become occupied by retail outlets included in the food group.

Changes in Occupancy of Units by Restaurants and Eating Places

One hundred and eighty-eight of the 949 stores occupied by restaurants and eating places changed their occupancy between 1934 and 1936. None continued as restaurants, 18 became occupied by the food group, 2 by the general merchandise group, 5 by the automotive group, 8 by the apparel group, 8 by the furniture and household furnishings group, 4 by the lumber and building materials group, 14 by other retail outlets, 42 by service establishments and so forth, and 87 became vacant.

While this was happening 332 store units which had been occupied by other retail outlets or had been vacant became restaurants and eating places.

Fifty-five had been occupied by food stores, 4 by the general merchandise group, 7 by the automotive group, 18 by the apparel group, 13 by the furniture and household furnishings group, 3 by the lumber and building materials group, 30 by other retail stores, 55 by service establishments and so forth, and 147 had been vacant.

Thus 20 per cent of the restaurants and eating places in 1934 had disappeared by 1936 and a somewhat larger number of store units had become occupied by retail outlets included in the restaurant and eating-place group.

Changes in Occupancy by the General Merchandise Stores

Forty-one of the 214 store units occupied by the general merchandise group changed their occupancy during the two-year period between 1934 and 1936. None was used by the general merchandise group. Two years later, 5 were used by the food group, 4 by restaurants and eating places, 3 by the apparel group, 4 by the furniture and household group, 7 by other retail stores, 9 by service establishments and so forth, and 9 had become vacant.

While this was happening, 47 store units occupied for other purposes and 16 vacant store units became general merchandise outlets. As many as 6 had been used by the food group, 4 by the furniture and household group, 1 by the automotive group, 4 by the apparel group, 2 by restaurants, 1 by the lumber and building group, 4 by other retail stores, 9 by service establishments and so forth.

Thus 19 per cent of the store units occupied by general merchandise stores in 1934 had disappeared by 1936 and practically an equal number of store units had become occupied by retail outlets included in this group.

Vacant Units Occupied and Other Vacated

Store units are constantly becoming vacated by one business and occupied by another. During the two years the smallest turnover, a turnover of only 13 per cent, occurred in retail outlets operated in connection with motor vehicles. This small change is probably accounted for by the large number of gasoline filling stations that are operated year after year. The largest turnover, 29 per cent, occurred in the store units occupied by furniture and household furnishing stores.

Over half, 55 per cent, of the vacant store units of 1934 on the 17 principal thoroughfares became occupied, and a smaller number became vacant.

Hardware Stores Disappear

Twenty-two of the 178 store units occupied on the principal thoroughfares by hardware stores in 1934 changed type of use within two years. Nine became vacant by 1936. The others became grocery stores, meat markets, variety stores, automobile salesrooms, restaurants, florist shops, shoe repair shops, poolrooms, and so forth.

Thus 9 store units rented as hardware stores in 1934 became vacant during the intervening two-year period, and 13 were rented for other types of business.

During the two years while these changes were taking place 17 store units were occupied by hardware stores. Two years previously 9 had been vacant. The others had been fruit and vegetable stores, groceries with meat departments, variety stores, tire shops, women's ready-to-wear shops, household appliance stores, and so forth.

Candy and Confectionery Stores Go Out of Business

The locations occupied by 78 of the 380 candy and confectionery stores in 1934, showed in 1936 one dairy products store, 2 delicatessen stores, 4 grocery stores (without meats), 3 grocery and meat outlets, 1 dry goods store, 2 auto accessory shops, 1 men's and boys' clothing store, 1 other apparel shop, 27 restaurants and eating places, 2 drug stores, 1 news dealer, and 1 other store. This accounts for 46 of the 78 changes of business. Four others became beauty parlors, 1 a cleaning and pressing establishment, and 3 others service establishments. Twenty-one had become vacant, 1 a part of a hotel, 1 a special school, and 1 a vacant lot. Thus 21 per cent of the 380 candy and confectionery stores within two years had disappeared.

These changes in the type of use are only part of the changes. An additional 12 of the 380 candy and confectionery stores changed hands while still operating as the same type of retail outlet.

"This should be a good place for a grocery store." "There is a good corner for a drug store." "There certainly must be sufficient families in that neighborhood to support a hardware store." All such expressions are used with little realization of the true significance of the words. If this is not a good place for a grocery store, the grocer's own investment is lost, if not his creditors' merchandise, as well. Suppose this is not a good corner for a drug store, what then? Perhaps the neighborhood will support a hardware store.

STORES

AND OTHER

COMMERCIAL BUILDINGS

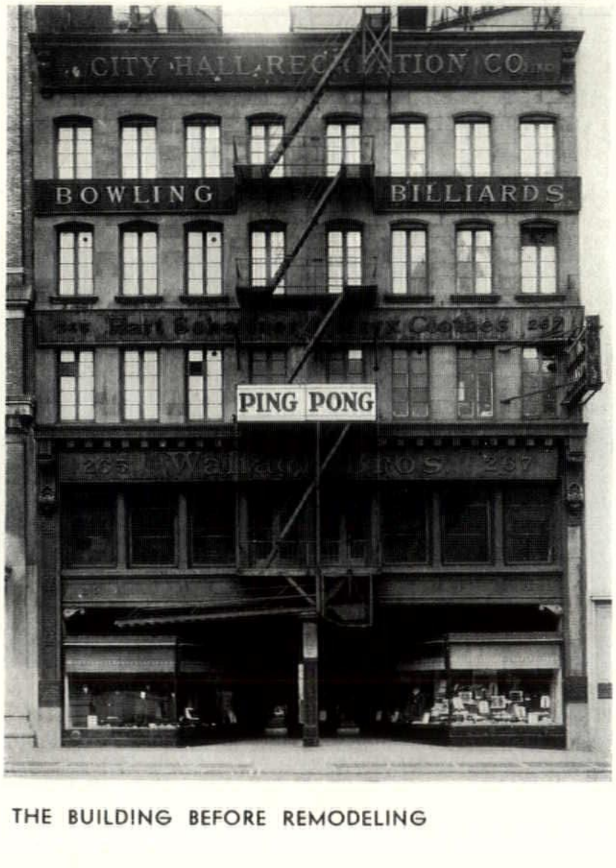
Photograph by George Van Anda

FELLHEIMER AND WAGNER
ARCHITECTS

Photograph by George Van Anda

CORN EXCHANGE BANK TRUST CO.
WASHINGTON BRANCH NEW YORK CITY

Photograph by Louis Dreyer



THE BUILDING BEFORE REMODELING

Modernization of this building (right) into quarters suitable for the branch needs of a metropolitan bank presented a number of problems. Only two months were available for the conversion; costs had to be held to a minimum; and the structure itself imposed definite limitations on replanning. The building was originally divided by a load-bearing masonry wall. This wall had at different times been removed — first on the ground floor, then on the second and finally altogether. At each stage the wall was replaced by a steel pier-and-lintel construction; but at each stage, the steel construction merely *rested on* the steel of the floor below. Thus the architects were unable to touch the steel work without complete reconstruction. The three limitations were met: The building was finished within the required time limit; the cost was held within estimates, and the replanning achieved without major structural changes.

Photographs by George Van Anda

The trust company desired that the front portion of the public banking space be two stories high. Since it was impossible to change the structural skeleton of the building, the architects frankly left it, removing the floor and refinishing the gutted portion. Glass brick, carried in aluminum muntins, fills the front wall above door-height. A light, airy and simple interior results.

WASHINGTON BRANCH CORN EXCHANGE

FELLHEIMER
AND WAGNER
ARCHITECTS

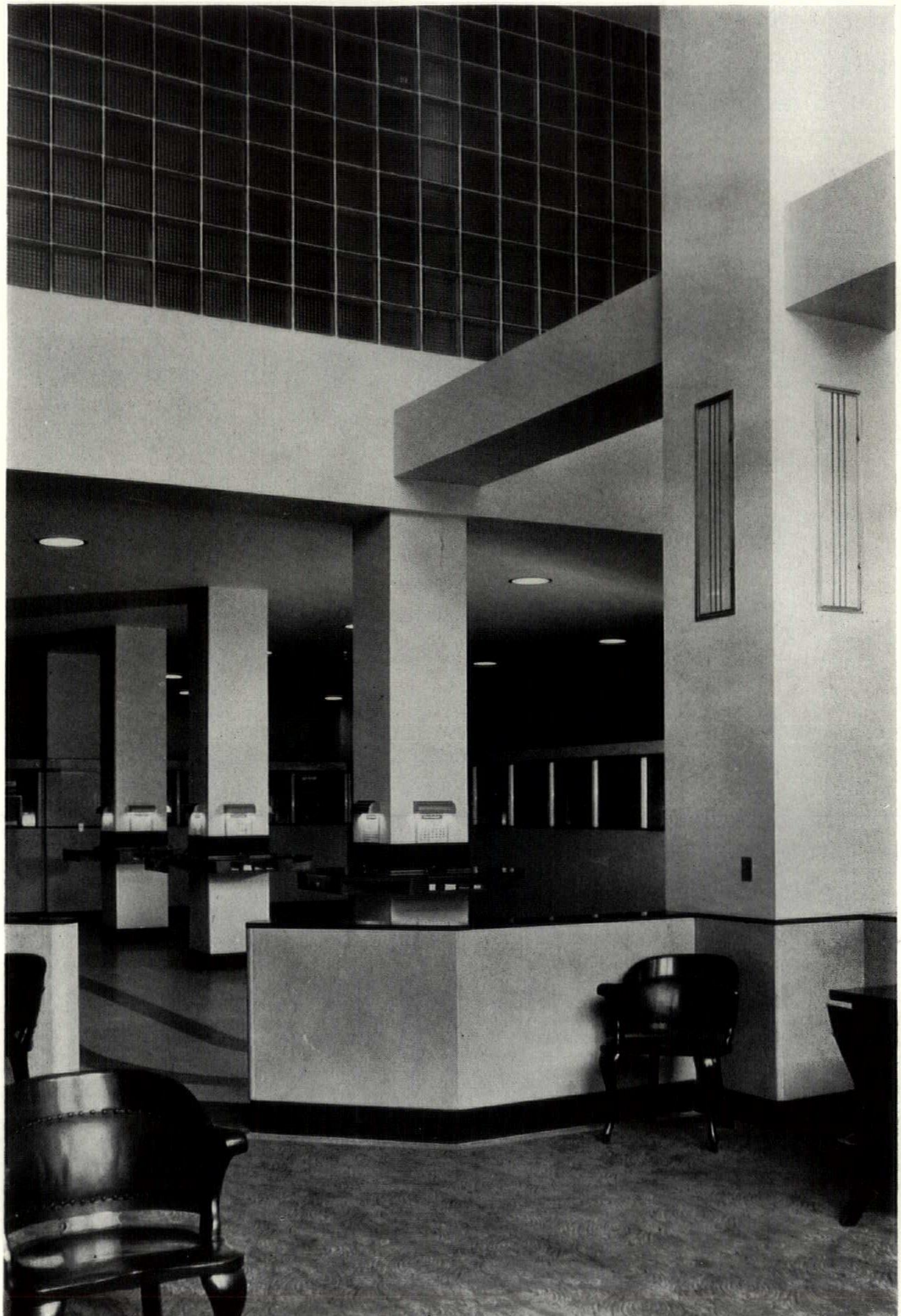
BANK TRUST CO. **NEW YORK CITY**

Photographs by George Van Anda

WASHINGTON BRANCH

CORN EXCHANGE

FELLHEIMER
AND WAGNER
ARCHITECTS



BANK TRUST CO. NEW YORK CITY

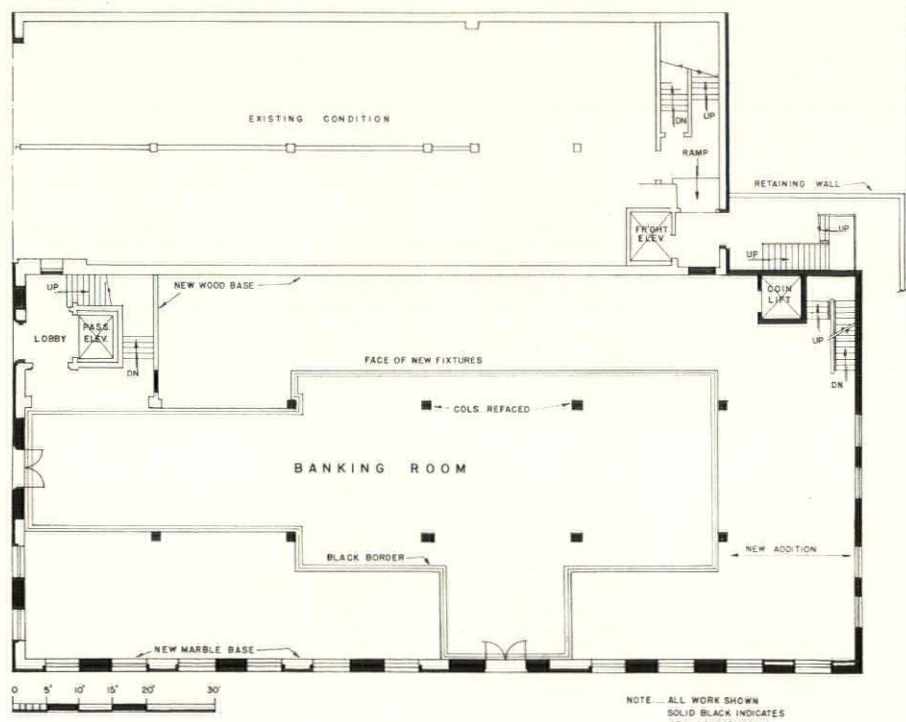
JOHN AND DONALD
B. PARKINSON
ARCHITECTS

Photograph by Mott Studio

SECURITY-FIRST NATIONAL BANK LOS ANGELES, CALIFORNIA

The original building, 100' x 105', was built approximately thirty-five years ago. Exterior walls: brick, plaster finish; interior construction: wood, including the wood truss roof. The twenty-foot addition on the rear follows the construction of the old building very closely, except for the earthquake bracing which is a code requirement.

The plaster was removed and the new terra cotta and the exterior facing were applied. The terra cotta facing blocks are 15" square and approximately 1½" thick. The spandrels are 6" x 6" tile, matching the terra cotta in color. Black glass was used for the base and steel sash used throughout. The exterior doors and frames are hollow metal. The basement, first and second floors are used for banking purposes.



FIRST FLOOR PLAN

Photograph by Stadler

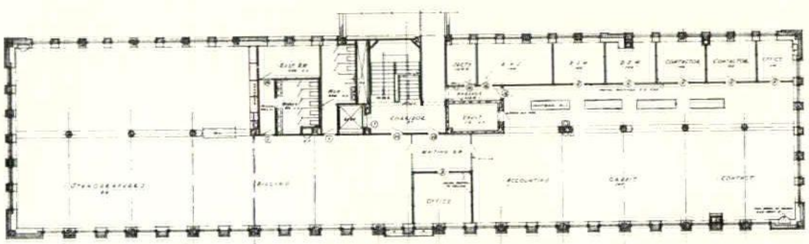
ALBERT KAHN, Inc.
ARCHITECTS AND
ENGINEERS

OFFICE BUILDING FOR THE UPJOHN COMPANY
KALAMAZOO, MICHIGAN

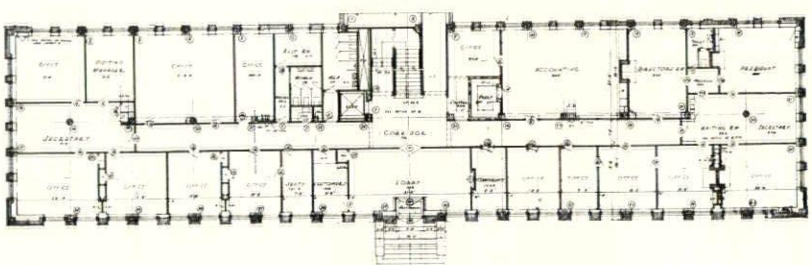
Photograph by Slocum Brothers

ALBERT KAHN, INC.
ARCHITECTS AND
ENGINEERS

OFFICE BUILDING FOR THE UPJOHN CHEMICAL COMPANY KALAMAZOO, MICHIGAN



SECOND FLOOR PLAN

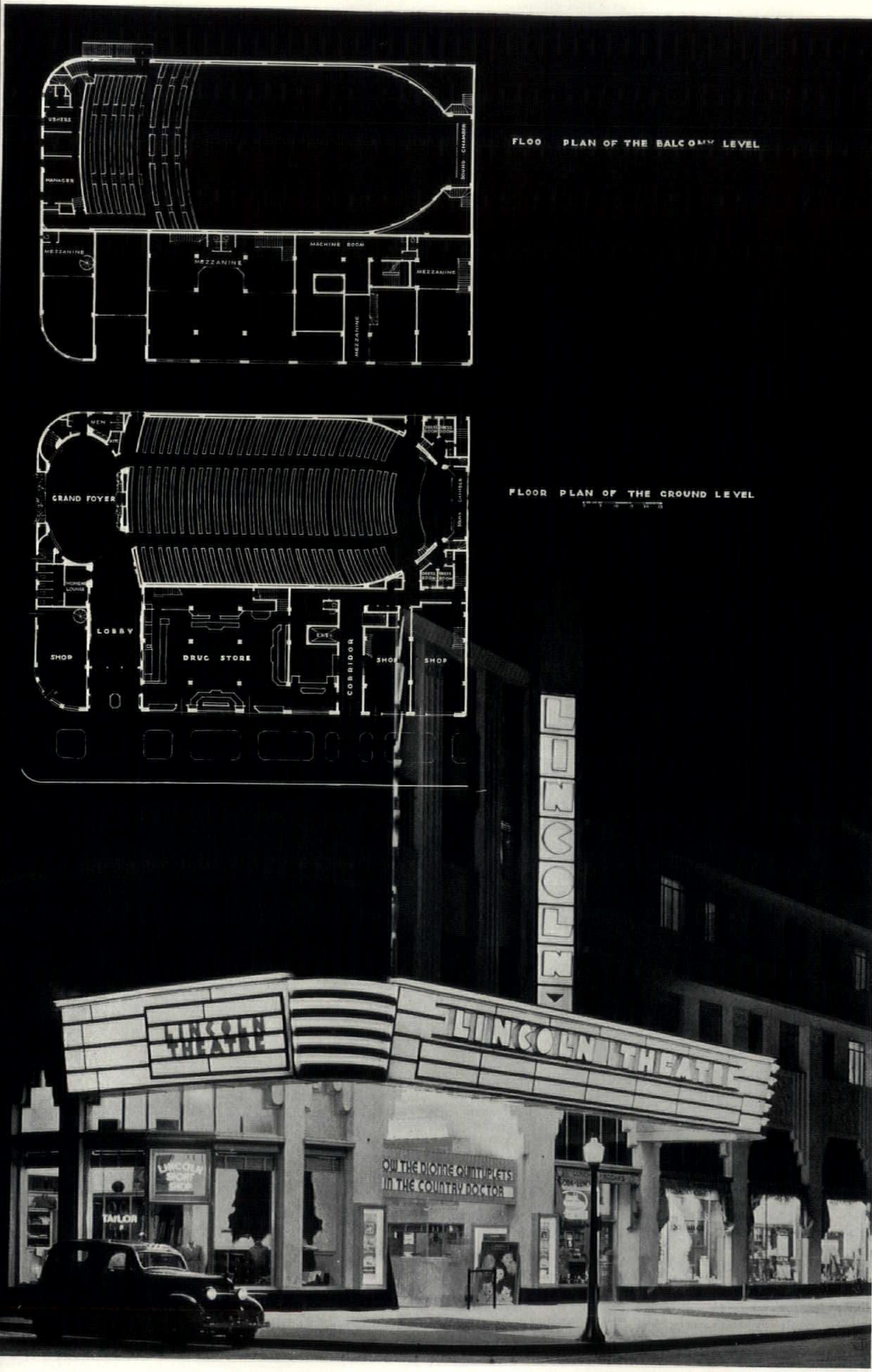


FIRST FLOOR PLAN

This office building is the first completed unit of the rebuilding program of the Upjohn Company, manufacturer of pharmaceutical supplies. A portion of the six-story manufacturing building directly back of the office is practically complete; as soon as this is occupied, the balance of the plant is to be rebuilt.

The building, which is 208 ft. by 54 ft. and three stories high above basement, is of reinforced concrete construction with limestone facing. Artificial granite is used for main entrance and window spandrels. The window frames and trim around entrance are of aluminum. Limestone work has a carborundum rubbed surface treated with "Porseal," a colorless filler which has proven efficient in keeping the stonework free from weather stains.

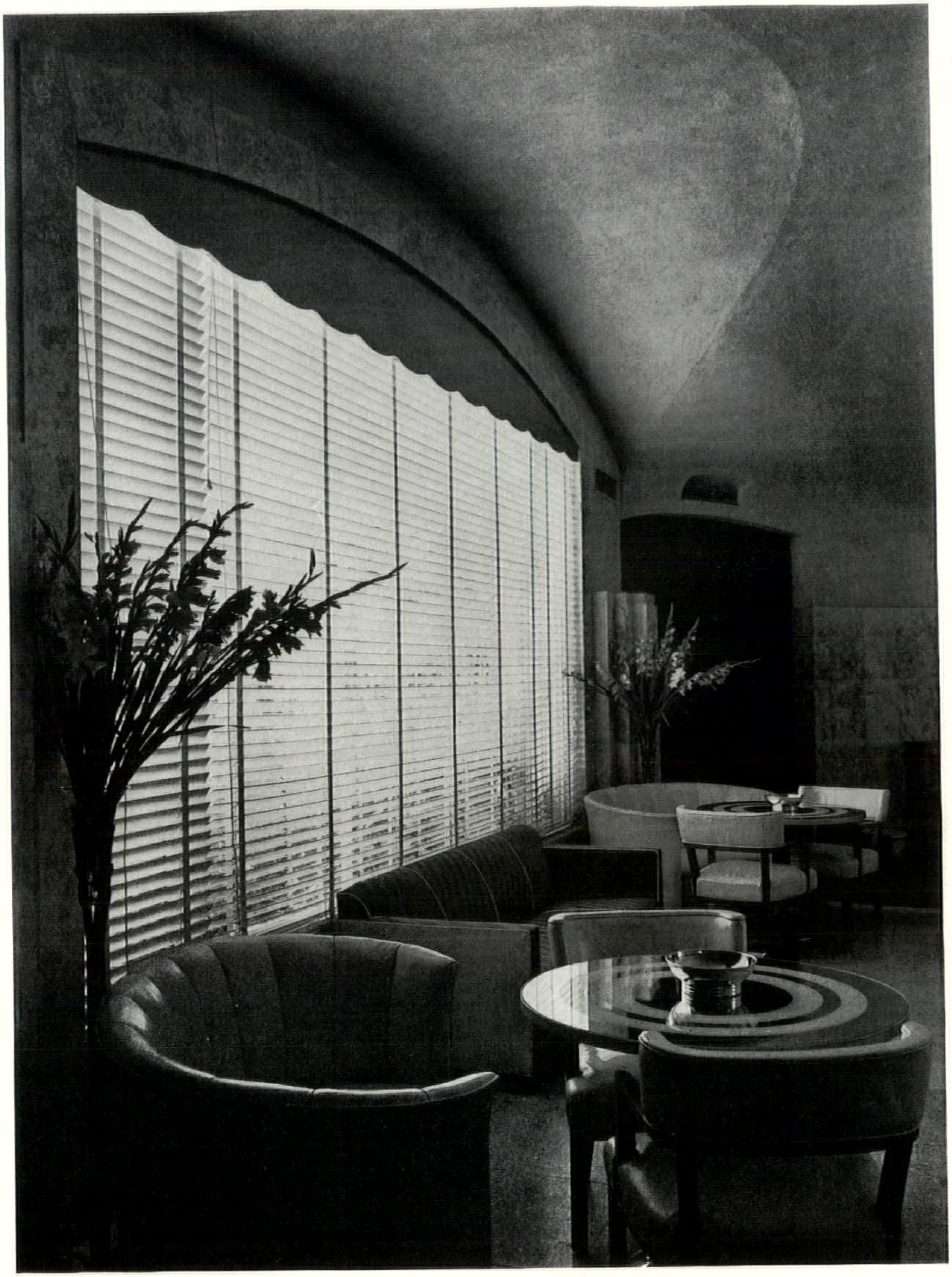
In the interior, rubber tile floors and acoustically treated ceilings throughout make for quiet. A mechanical ventilating and air-conditioning system has been provided for the entire building. Office partitions in general are of metal and glass.



Photograph by Gottscho

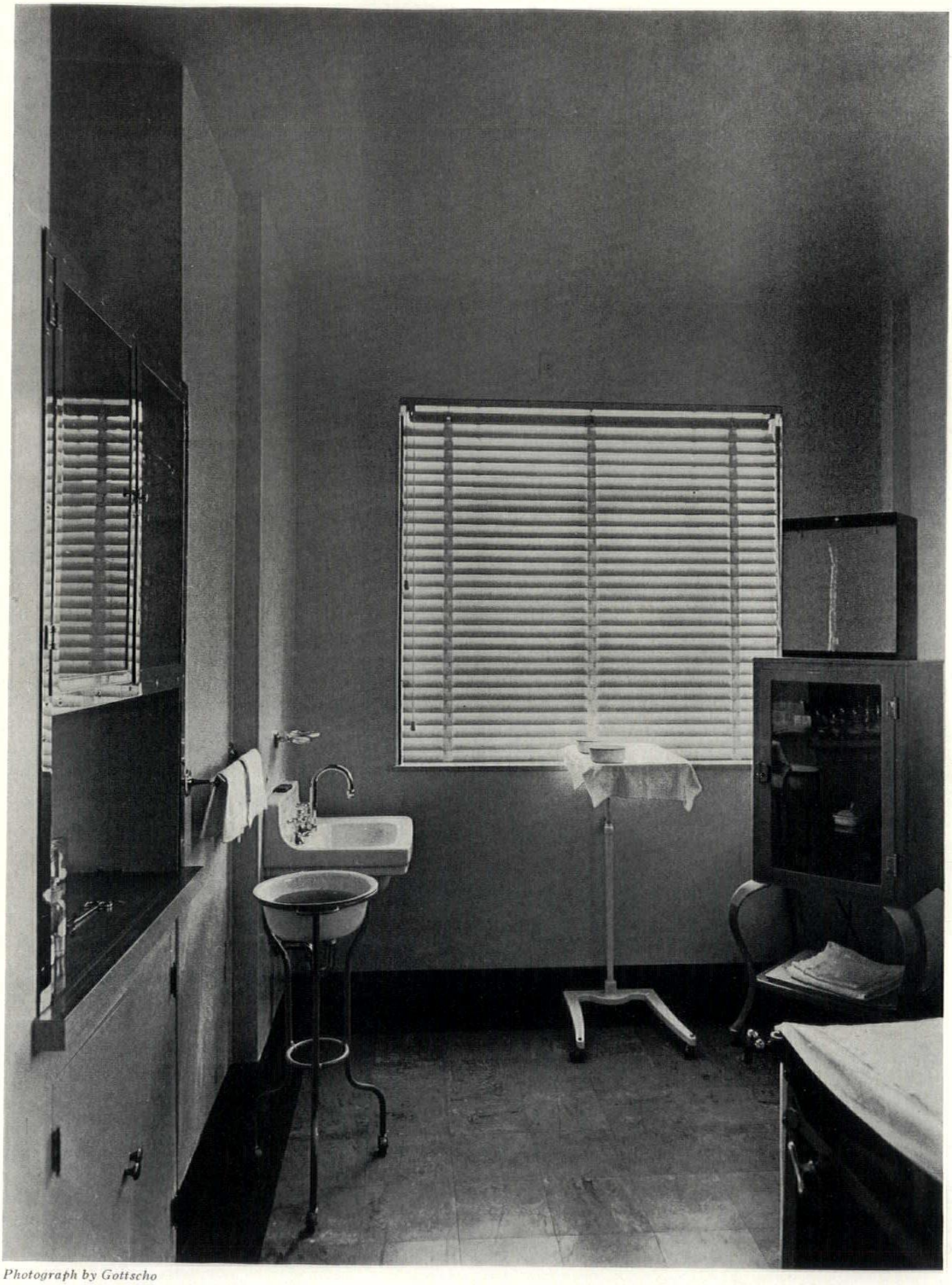
HERBERT E. COLLINS
ARCHITECT
THOMAS W. LAMB
CONSULTING
ARCHITECT

INCOLN THEATRE BUILDING **MIAMI BEACH, FLORIDA**



LINCOLN THEATRE BUILDING

ERBERT E. COLLINS
ARCHITECT
HOMAS W. LAMB
ONSULTING
ARCHITECT



Photograph by Gottscho

MIAMI BEACH, FLORIDA

Photograph by Gottscho

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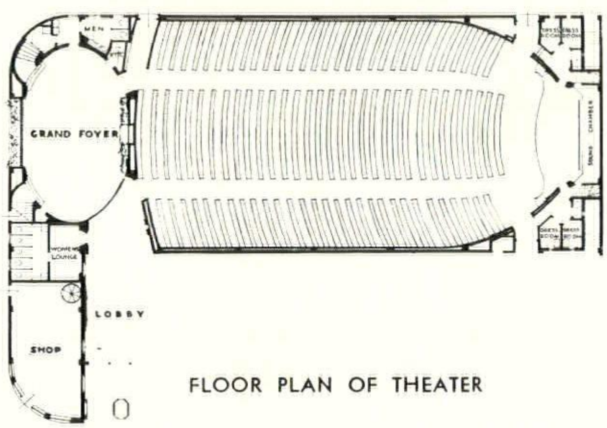
LINCOLN THEATRE BUILDING MIAMI BEACH, FLORIDA



FLOOR PLAN OF THEATER

THEATER
AND STORE
BUILDINGS

Photograph by Hedrich-Blessing

B. LEO STEIF
AND COMPANY
ARCHITECTS

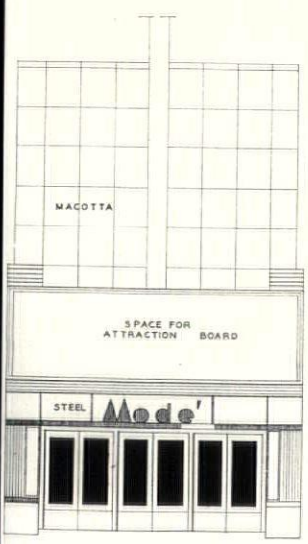
MODÉ THEATER BUILDING

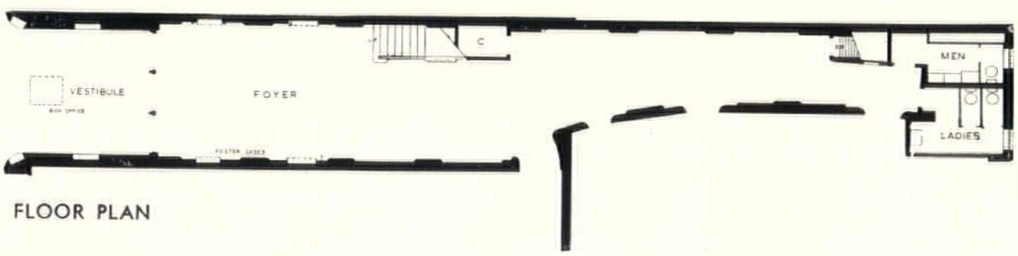
CHICAGO, ILLINOIS

This 25-year-old theater-and-store group in suburban Chicago was converted into a commercially successful project by a remodeling job. The work, largely consisting of "face-lifting" the exterior, was executed at a total cost of $30,000. This included the redecoration of the theater lobby and auditorium and the installation of new lighting throughout.

The theater exterior, foyer, base of store fronts, and side wall of the store building, were laid up in maroon Macotta trimmed in black with stainless steel edging around blocks and a black mastic used for joints.

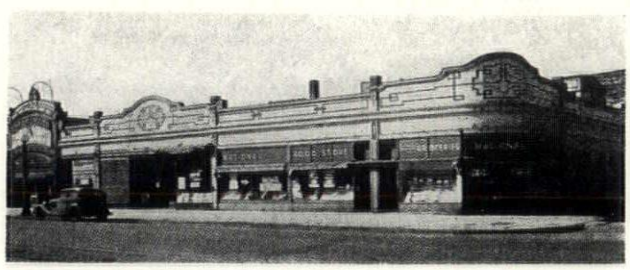
The rest of the exterior of the store building with the exception of the coping, which was stainless steel Macotta, was laid up in black Carrara. The tower of the theater is laid up in cream colored Macotta with cream colored joints, which, contrasted with the black vertical sign of the theater, makes a very effective display. At night the tower is floodlighted and, as contrasted with the red Neon tubing of the sign, gives a transparent effect similar to glass.





FLOOR PLAN

FRONT ELEVATION: An interesting solution of sign and marquee results from a Chicago ordinance prohibiting any sign or marquee from overhanging the sidewalk. In this instance the sign was recessed and supported by an ornamental tower, while the doors to the lobby were moved back 12 feet.



AS IT WAS: A view of the block before remodeling, showing the 1910 baroque of the original building.

SCOTT AND PRESCOTT
ARCHITECTS

Photograph by Van Anda

STORE AND APARTMENT GROUP NEW YORK CITY

Another of the new "taxpayer" type of project so increasingly popular in the larger cities, this combination store and apartment group is purposely low in height for maximum light and air, designed to produce the maximum income with the minimum initial capital investment and lowest maintenance cost.

The stores run the entire depth of the structure, windows being kept high in back to protect the privacy of the court. The show windows, entrances, etc., were designed for the tenants' different requirements.

Occupying a tract 308 feet long in the interior of the block, the layout is such that the dwelling section is isolated from the stores. This separation is achieved by means of an apartment entrance through the center arcade, which extends back to a garden. All stairs open off the arcade. The apartments—from 1 to 3½ rooms—thus enjoy cross ventilation; half of them overlook the interior court and are away from the street.

The construction is semi-fireproof with brown brick and yellow stone trim. Fire escapes are counterbalanced and cleverly concealed in the cantilevered balconies over the shop fronts.

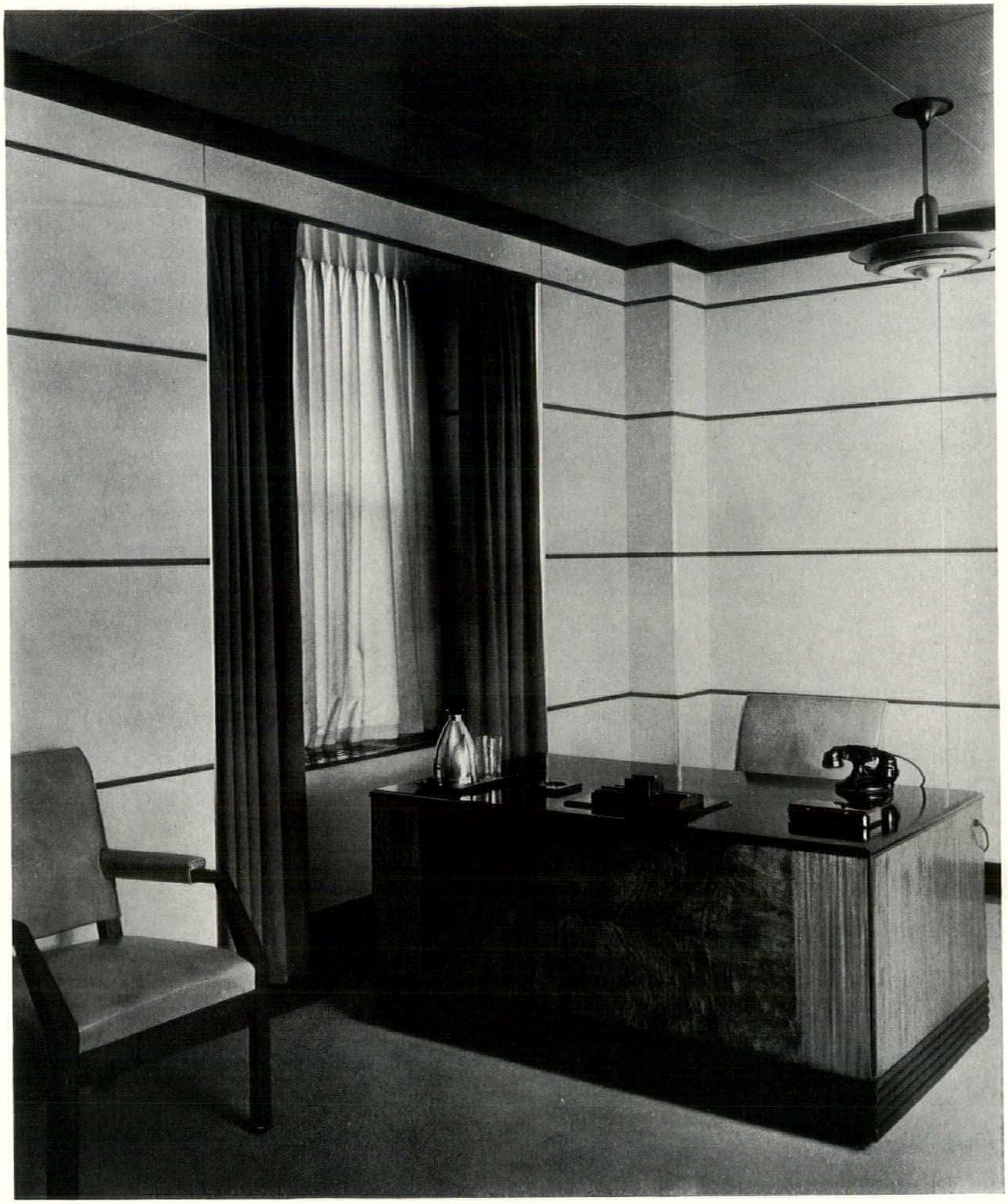
DESIGNED BY
LOUIS C. SIGLOCH
ARCHITECT

Photograph by George Van Anda

EXECUTIVE OFFICES, JOHNS-MANVILLE CORPORATION NEW YORK CITY

FFICE NO. 1

e walls are composed of 7/16" Transite hung on embossed steel studs with concealed fastenings. e finish of the walls is Vinylite lacquer, put on after Transite in the walls had been oil-impregnated. this particular office, the walls are of a dark brown with chrome beads separating the panels, d white Venetian blinds. The cornice mouldings are of walnut and the ceiling is a Sanacoustic e, glazed to harmonize with the walls. The radiator enclosure, the grilles in the base and top, e made of 3/4" Transite. The furniture is walnut with Maccar-Ebony tops on the table and the sk. There is fabric upholstering on the chairs.



OFFICE NO.

EXECUTIVE OFFICES, JOHNS-MANVILLE CORPORATION

These walls are finished in a light green Vinylite lacquer, with chrome vertical beads and walnut beads horizontally. The cornice is walnut and the ceiling is an acoustical Perforated Transite. At the window reveals, a wood mould has been formed as a pocket for the drapes, and this mould has been silvered. The casement curtains are an ecru shade and the drapes are blue. The rug is a grey toufe rug with black border, and the furniture is of walnut. Here, again, the radiator enclosure is made of Transite, and the upholstering of the chairs is a very light cream leather.

DESIGNED BY
LOUIS C. SIGLOCH
ARCHITECT

OFFICE NO. 3

Photographs by George Van Anda

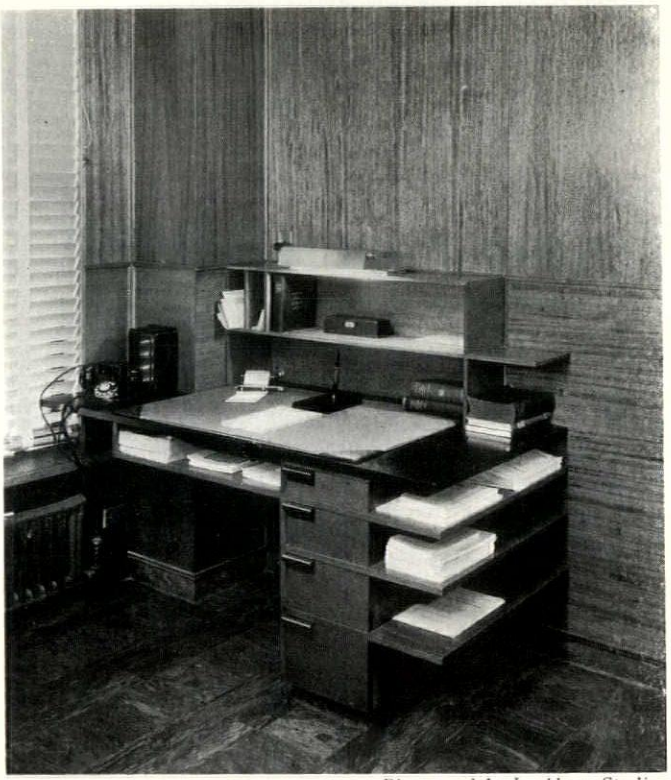
NEW YORK CITY

This office is finished in a Vinylite lacquer, with the exception that the dado has been colored a dark amber, and the upper walls are a buff putty color finish. The air conditioning grille at the top has been cut out of the Transite wall material. The beads in this room are of brass. The cornice is walnut; ceiling, Sanacoustic Tile glazed to harmonize with the walls. The furniture has been covered with dark brown leather, and the top of the table is bird's-eye maple. The door is a flush wood veneer door walnut. The carpet is a light grey with a darker shade for the border.

DESIGNED BY
LOEBL AND SCHLOSSMAN
ARCHITECTS

Photograph by Hedrich-Blessing

OFFICE OF DR. GREENHILL CHICAGO, ILLINOIS



Photograph by Luckhaus Studio

DESIGNED BY
J. R. DAVIDSON

DESK IN A DOCTOR'S CONSULTATION ROOM

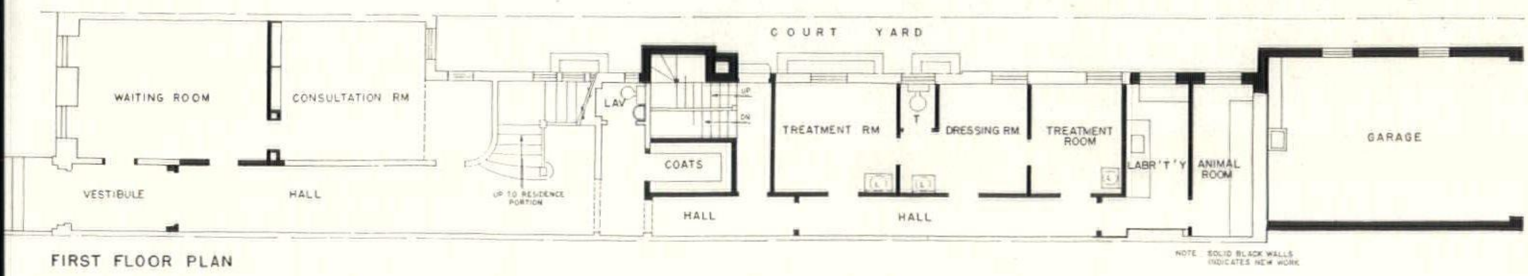
DOCTOR'S OFFICES

DESIGNED BY
NORMAN N. RICE

OFFICE OF DR. S. LEON ISRAEL — PHILADELPHIA, PENNA.

An old 3½-story row-house has here been converted into a modern office and residence. The original building, while structurally sound, was obsolete as to equipment. In reconstruction, the entire interior was renovated; new plumbing and heating systems were installed, while a new garage was added at the rear.

The plan indicates the designer's clean approach to a difficult problem. Waiting and consultation rooms occupy what was formerly the front parlor. Since it was necessary to leave the main stairs to the upper floors, the treatment and dressing rooms are placed beyond the stairs. Laboratory and animal room (for experimental work) are placed at the extreme rear.



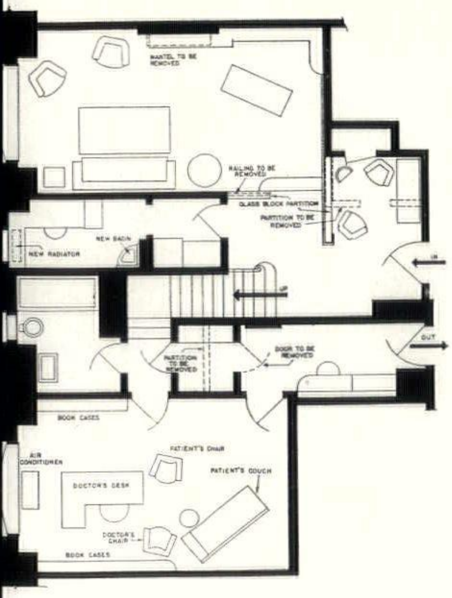
FIRST FLOOR PLAN

DESIGNED BY
NORMAN N. RICE

OFFICE OF DR. S. LEON ISRAEL PHILADELPHIA, PENNA.

The interiors of the forward portion of the office are simply but handsomely equipped. All furnishings are modern. The walls are partly sheathed in wood veneer panels, partly canvas-covered plaster with stippled finish. Walls and ceiling of consultation room (above) are in buff; carpeting in dark maroon; furniture in walnut with yellow leather upholstery.

OFFICE OF DR. PHILIP R. LEHRMAN NEW YORK CITY



The problem here was that of converting a suite of offices into one suitable for the practice of psychiatrist; both plan and equipment were determined by this requirement. The doctor's office is so designed that the patient, whose examination takes place while lying in a perfectly relaxed position on the couch, faces bare walls on which there is nothing to distract his attention from the conversation. During the examination the doctor sits behind the patient so that he can watch the facial expression without being seen. The couch, shown in the plan (lower left), does not appear in the photographs.

OFFICE OF DR. PHILIP R. LEHRMAN — NEW YORK CITY

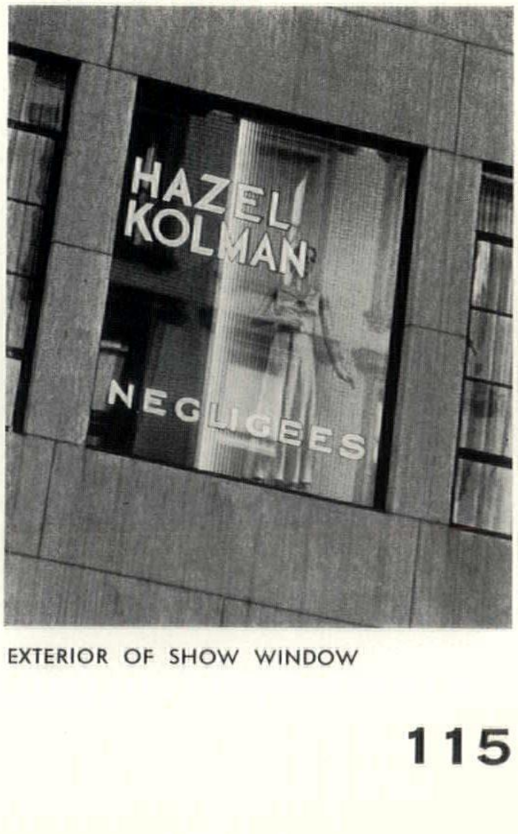
Simple equipment, absence of distracting pattern and use of quiet colors characterize this suite. The waiting room (above) has a chocolate carpet, beige and coral draperies, soft yellow walls; the fabric covered chairs are in a soft gray-green and coral. The tables are of mahogany and copper. In the doctor's office, the color scheme is as follows: Desk and cabinets—mahogany and walnut. Acoustical cork has been applied in parts of the walls for sound deadening. This cork is left in its natural chocolate color. The carpet matches the cork. The curtains and upholstery are of harmonizing tones of brown with a small amount of green.

ELY JACQUES KAHN
ARCHITECT

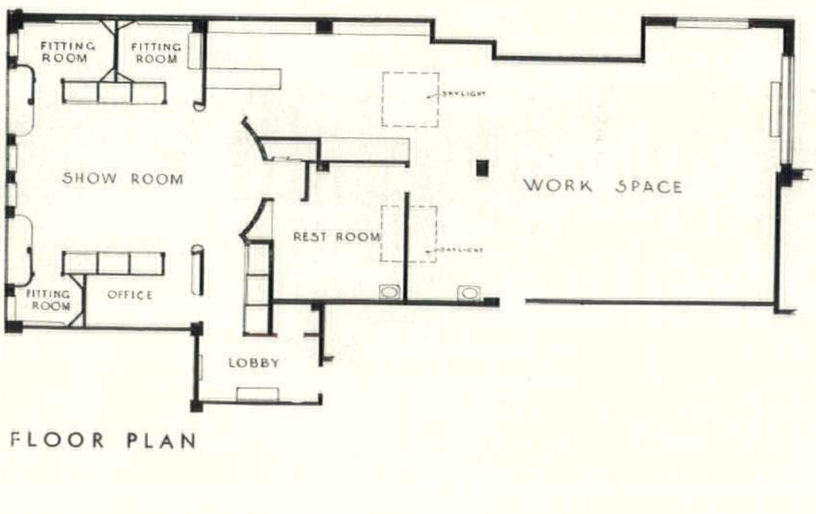
SHOWROOM FOR HAZEL KOLMAN — NEW YORK CITY

A specialty shop on a mezzanine floor, combining sales, fitting and work space. The showroom has a black carpet and black curtains, with rose walls and ceiling. Furniture is of walnut and chromium, with darker rose fabrics on the chairs. Lighting is indirect.

Photographs by Ben Schnall



EXTERIOR OF SHOW WINDOW



FLOOR PLAN

Photograph by Underwood & Underwood

STARRETT AND VAN VLECK
ARCHITECTS
EDWARD & ASHLEY
CONSULTING ENGINEERS
CHARLES SWANSON
FIXTURE DESIGNER

BUILDING FOR J. N. ADAM & CO. — BUFFALO, NEW YORK

For forty-five years the Adam Company has occupied this site; during that period the four buildings which have been reconstructed into one were acquired. This reconstruction involved modernization of part of the structure, complete rebuilding of another part, while some of it was left unchanged except for façade. The remodeling involved a complete replanning of floor arrangements, based on careful traffic analyses. The location of the elevator was shifted from the rear to the center of the structure. New lighting was installed throughout, together with a new sprinkling system and provisions for complete air-conditioning. The exterior of the building is notable for its simplicity and use of color—a black granite base, yellow Kasota stone to the third story windows, buff and tan brick above. The show windows are faced with blue pearl granite; all windows are bright aluminum.

BEFORE RECONSTRUCTION

Photograph by George Van Anda

KENNETH C. WELCH
ARCHITECT

JOHN WANAMAKER MEN'S STORE NEW YORK CITY

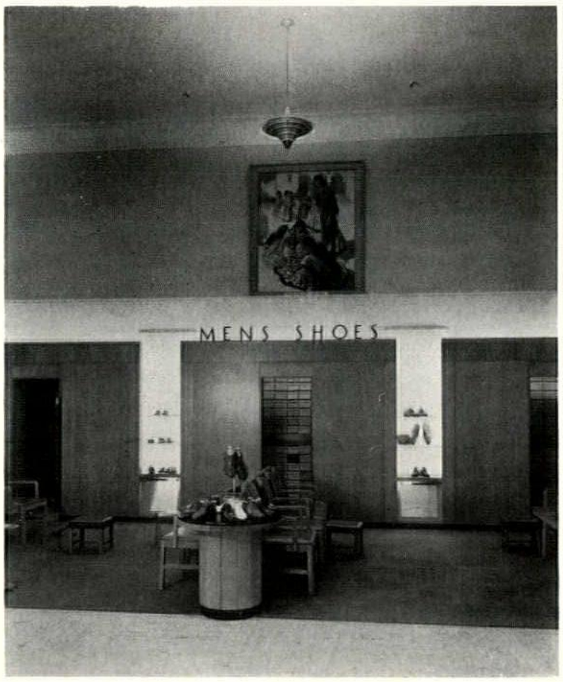
The remodeled Men's Store is part of an extensive program now going on in the New York department store.

The Men's Clothing, Made-to-Measure and London Shop section occupy practically the same general locations as before but the layout and general arrangement is entirely different. Heretofore the men's clothing, due to the lack of sufficient and unbroken wall space, was carried entirely in floor revolving cases, and with increasing volume the great majority of the overcoat stock was carried on open racks. This arrangement created badly congested aisles, making adequate control difficult. The new arrangement provides some 1,900 lineal feet of hangrod space; but only 38% of it on the open floor, largely in low single deck revolving cases. The remaining 62% is located in four "customers" stock rooms, one for the London Shop, one for Formal Wear, one large unit for regular clothing and one for chauffeurs' uniforms. These stockrooms successfully used in the John Wanamaker Men's Store in Philadelphia have generous aisles, are unusually well lighted and ventilated, and in the larger units are even equipped with triplicate mirrors. An interesting fact is that these stockrooms, carrying as they do the majority of the stock when it is at a peak, occupy only 17% of the net available area in these sections. This makes possible generous aisle spaces with furniture groupings which add greatly to the impressiveness of the floor. There are thirty indirectly lighted triplicate mirrors in addition to many straight mirrors throughout these sections.

The men's furnishings, hats, shoes, and the clothing portion of the sporting goods department occupy approximately the same locations as they did heretofore, with the exception of the shoe department, which was moved from the extreme southwest corner adjacent to the best entrance in this building, to a space along the south wall. This permitted utilization of the good traffic space for the sale of pajamas and underwear, neckwear, gloves. By far the greater number of customers using this entrance are women on their way to the North Building, and it was felt desirable to route them through this department, rather than by way of the

JOHN WANAMAKER MEN'S STORE

Photographs by George Van Anda



men's shoe department. It was necessary to considerably reduce the area devoted to men's furnishings, in order to add the sporting goods on this floor. This was accomplished by the use of modern equipment for stock carrying and selling and also the use of forward stock rooms adjacent to the various sections, and as easily accessible to the sales space as though the merchandise had been carried in the usual manner.

In the men's furnishings and hats approximately 800 sq. ft. of area are devoted to these stock rooms in four groups. In the men's furnishings, including the furnishings in the London Shop, there are over 1,000 ft. of showcases, practically all one length with comparatively shallow displays (except at the corners), and space for stock below. This not only eliminates waste space, and gives the merchandise a neat and orderly appearance, but creates a flexible floor for seasonal shifts of merchandise. The same holds true of the center and wall stock carrying equipment. The great majority of the cases are the same length, and are easily interchanged if different equipment is required.

KENNETH C. WELCH
ARCHITECT

NEW YORK CITY

The shoe department in its location has the advantage of four important cross vistas leading up to it, and while it contacts the main flow of traffic only at one end, it is easily visible from the greater portion of this end of the floor. The illuminated decorative treatment which has been used, and which will be discussed later, is a great advantage from this standpoint.

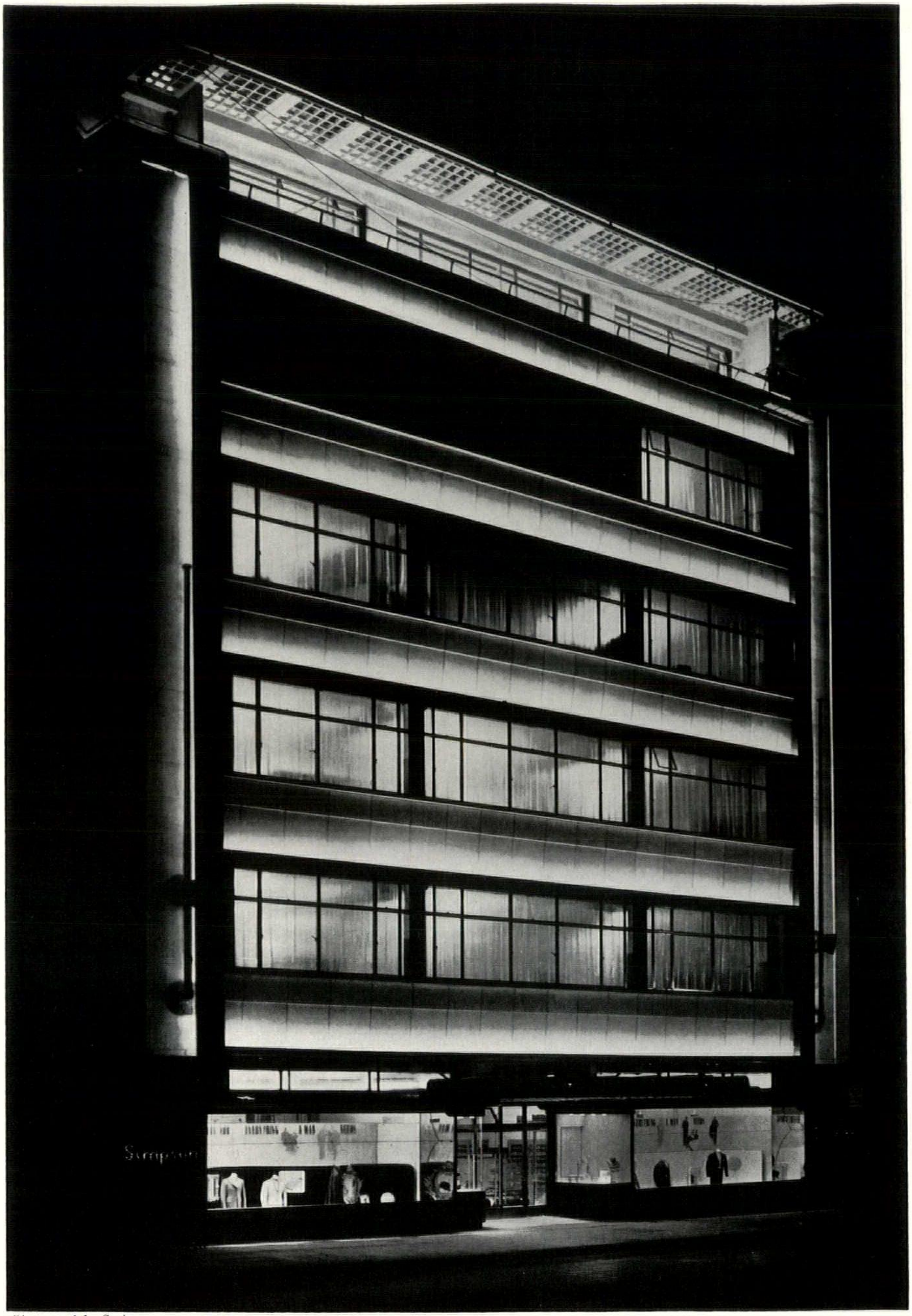
Another interesting note is the concentration at one point of all the formal furnishings, including shirts, collars, neckwear, and jewelry, with a convenient forward stockroom behind it.

The rotunda itself, in the center of the floor, is devoted to sporting goods, fishing tackle, guns, tennis, golf, and athletic equipment of all kinds. The old grand staircase, which led to the mezzanine, and which was largely blocked off when the center elevators were installed several years ago, has been changed, and brought down into the center of the rotunda. The stairways previously leading to the basement at this point have been eliminated, so that this narrow area, formerly a passage, could be devoted to stockroom space.

DECORATIVE TREATMENT

The color selected for the general scheme was a soft brown, starting with the selected pin grain oak, but light in tone, on the exterior of the fixtures, carrying through a continually lighter range of tone basically the same color up the columns and over to the walls, which are the lightest tone, with the exception of the illuminated superstructure and ceiling, which are white. The interior of the cases and most displays are a pin grain oak finished with a white filler, making them very light in contrast to the exterior of the fixtures.

Where it does not interfere with the merchandise, other colors have been introduced to add interest. The bases of all the equipment are done in terra cotta color, which makes an interesting junction with the travertine marble floor. This same color has been recalled on the edges of the silhouetted signs and in the upholstering leather on some of the furniture. A soft blue green has been introduced in the furniture in the shoe department and to emphasize the elevator fronts and entrance doors.



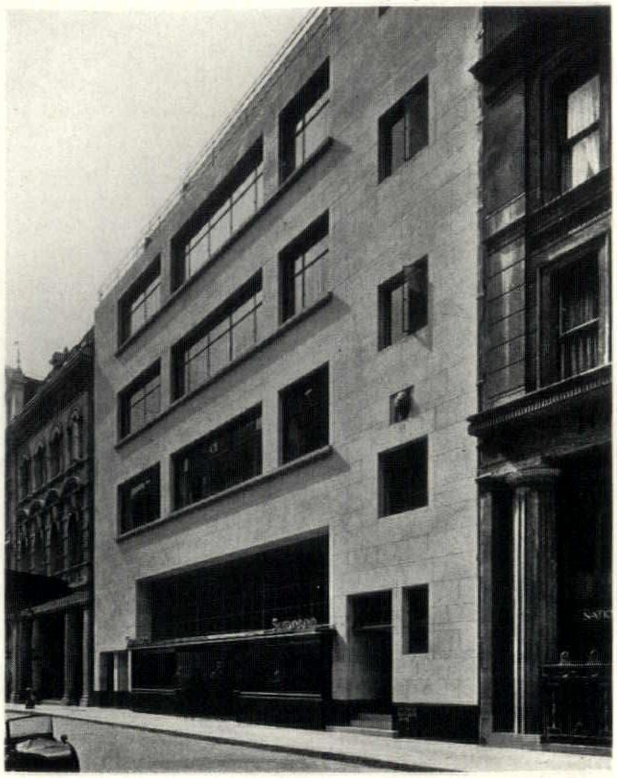
Photograph by Sasha

Photographs by Herbert Fenton

DEPARTMENT STORES

ELEVATION ON PICCADILLY

JOSEPH EMBERTON
F.R.I.B.A.



ELEVATION ON JERMYN STREET

STORE FOR MESSRS. SIMPSON PICCADILLY, LONDON

(*Extracted from* THE ARCHITECT AND BUILDING NEWS, *London, May* 8, 1936)

Piccadilly has grown from a street of private palaces, through a phase of hotels and museums to its present condition as a great shopping thoroughfare. Its architecture up to now has always hankered after the palace period, and latterly the palaces themselves have been outdone, not merely in size but in grandiosity, by the commercial buildings. The Wolseley Building, Devonshire House and the new block at the corner of Sackville Street are all richly academic, and Simpson's is the first building to state in modern terms the modern purpose of the street. It sets a high standard.

Compared with Mr. Emberton's earlier buildings, Simpson's is definitely more mature and shows a surer handling of materials. The façade towards Piccadilly, for all its simplicity, is packed with ingenuity. The management of the floodlighting troughs argues a recognition of lighting as an essential component of modern architectural style, while the Portland stone facing (the material was prescribed by the landlords) is applied in a way which leaves no doubt as to its purpose; it is merely a veneer, and suggests no association with solid walling. With the aid of black marble and metal, the shop windows are given the sharp refinement which makes for successful display, while internally the open planning and the varied and original, but always strictly appropriate, design of the fittings places Simpson's among the most interesting buildings of its type.

THE SITE.—The building occupies the full depth of the site between Piccadilly and Jermyn Street, having a shop front to each street.

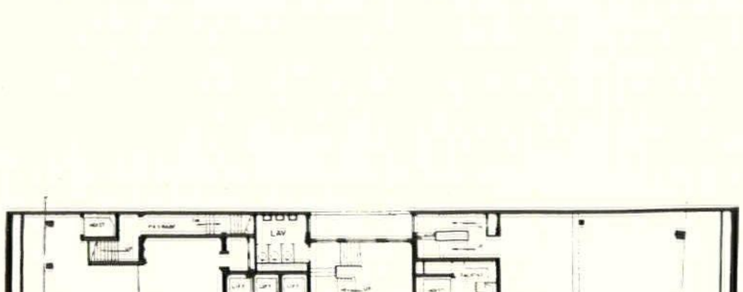
Considerable difficulty was experienced in designing the foundations owing to those of the adjoining buildings on each side projecting. In one case a raft foundation to the new building transmits a load of about 3,500 tons to the soil—a load which is not surprising considering that the overall height of the building, including the basement and the mechanical equipment rooms on the roof, is about 130 feet.

PLAN.—For the purposes of fire regulations the rectangular site has been divided into three blocks vertically from the ground floor up. The Piccadilly and Jermyn Street blocks are about 42 feet deep each, with a separate fire escape staircase; the central block has the main staircase as its means of escape. These blocks

Photographs by Larkin Brothers

GENERAL VIEW OF THE GROUND FLOOR

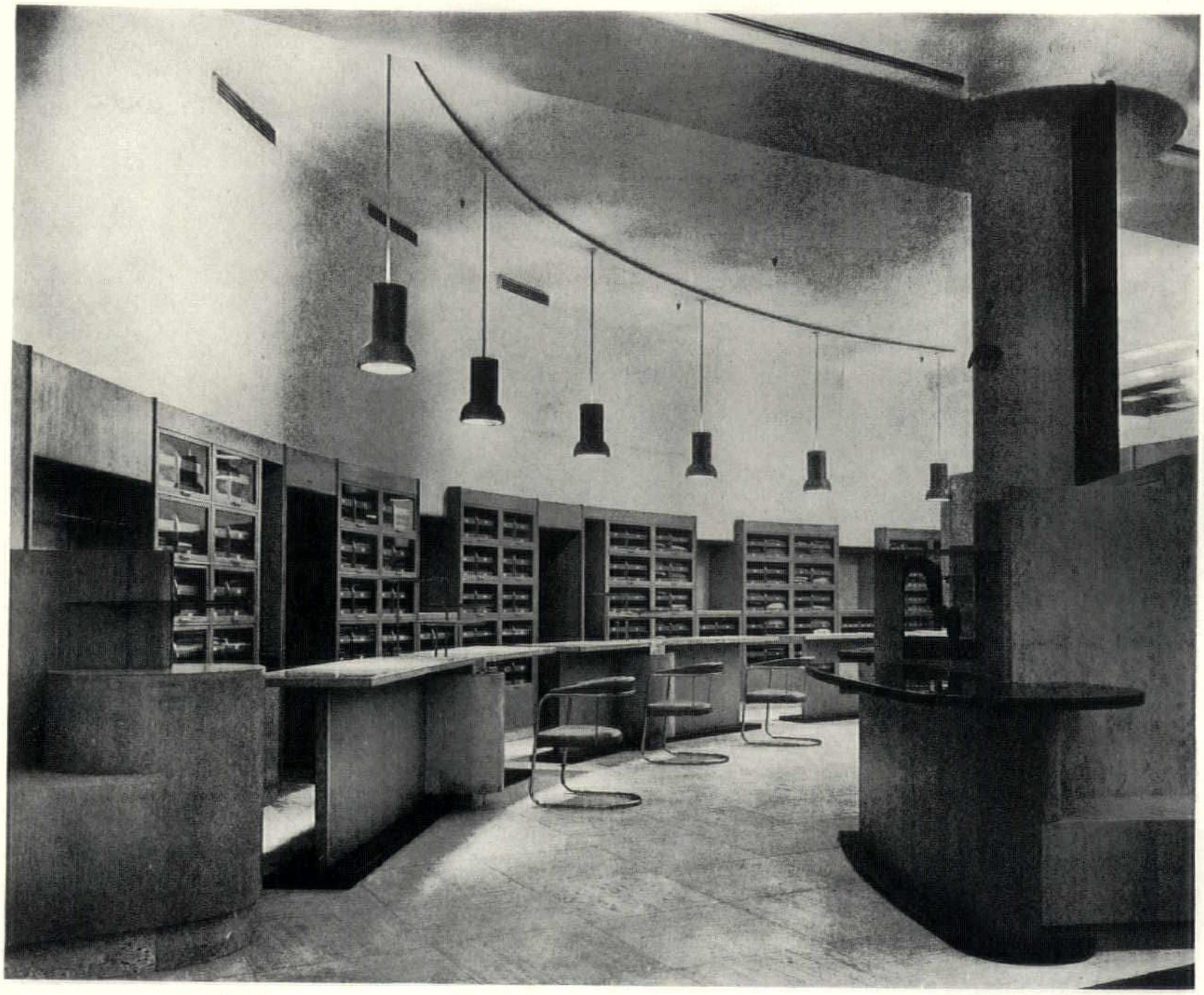
STORE FOR MESSRS. SIMPSON



LOWER GROUND PLAN

are divided by 13½-inch brick walls and double fire shutters to the openings from one block to the other, the opening consisting of a 10-foot one on the main axis of the building and a 24-foot opening, one either side of the central space.

This arrangement, while allowing complete and free access from one block to the other, readily permits the allocation of different departments in a convenient manner. Below ground floor level the lower ground and basement levels are each considered as a horizontal fire unit, so that the staircases down to these floors are cut off by glazed fireproof doors. The basement escape provisions include a special corridor of minimum width,



JOSEPH EMBERTON
ARCHITECT

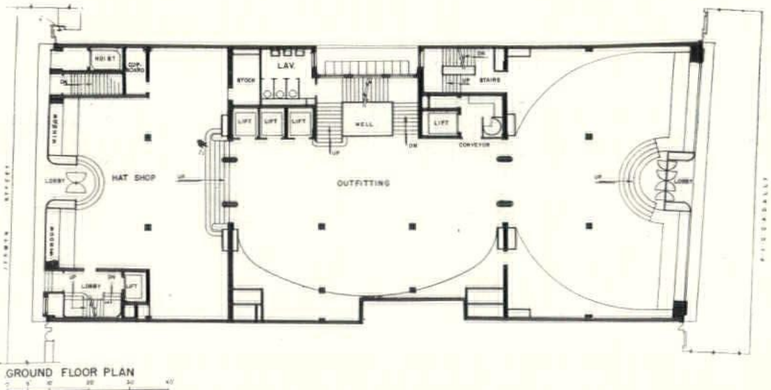
OUTFITTING DEPARTMENT ON GROUND FLOOR

PICCADILLY, LONDON

4 feet 6 inches, leading through to Jermyn Street. As is usual in shops of this size, the lift enclosures are also protected at each floor level with fire shutters, which roll down over the entrance gates in event of a fire.

CONSTRUCTION (GENERAL). — The general construction consists of brickwork panels, supported by a steel frame, with all complicated portions of the steelwork electrically welded, this being one of the first buildings in London where electric welding has been used so extensively for the main structure.

FLOORS. — Hollow tile floors are used throughout

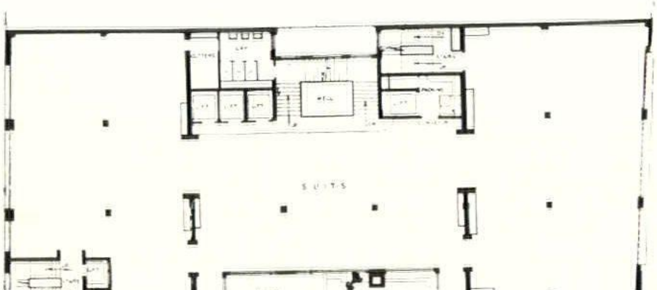


GROUND FLOOR PLAN

Photograph by Larkin Brother

EVENING DRESS WEAR DEPARTMENT

STORE FOR MESSRS. SIMPSON



TYPICAL FLOOR PLAN

with a pumice screed, 3 to 4 inches deep above to mak up the levels and allow pipe ducts to be formed. Th ceilings were plastered on suspended metal lathing the space between the structural slab and the lathin permitting easy allocation of sprinkler pipes and points In most cases the depth of the floor from finished leve to underside of plaster work is about 1 foot 9¼ inches On the ground floor, travertine slabs 2 feet by 2 fee by 1 inch thick have been used throughout as a pav ing, and white polished travertine slabs 7 feet in heigh have been used as a wall facing near the lifts and othe side walls.

Elsewhere in the building within the shopping area

JOSEPH EMBERTON
ARCHITECT

Photograph by Studio Sun, Ltd.

DRESS WEAR DEPARTMENT

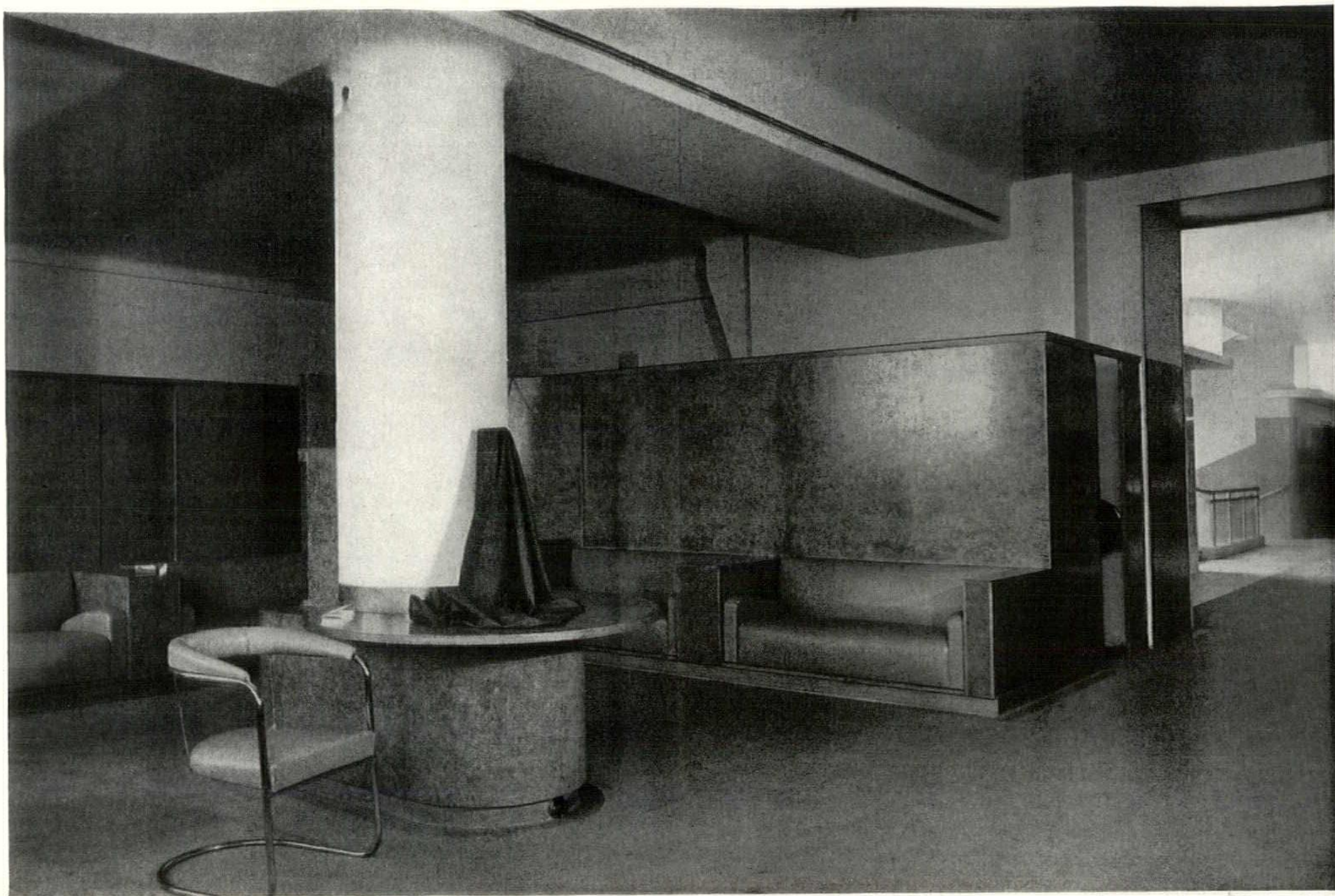
PICCADILLY, LONDON

2 feet square cork tiles have been used as a floor covering.

STAIRCASE. — The main staircase is most attractively designed. Travertine facings have been used for the treads and risers, which are 13 inches and 5½ inches, respectively, thus making for extreme ease in use. Plate-glass balustrading, secured by anodized aluminum balusters at intervals, and surmounted by an orange vermilion circular handrail, make a most inviting appeal to the eye. Again, the artificial lighting is effected by a single aluminum-faced rod suspended down the center of the staircase well, with globular lamps spaced to suit the various floor levels. This pen-

Photograph by Herbert Fenton

THE GIFT SHOP

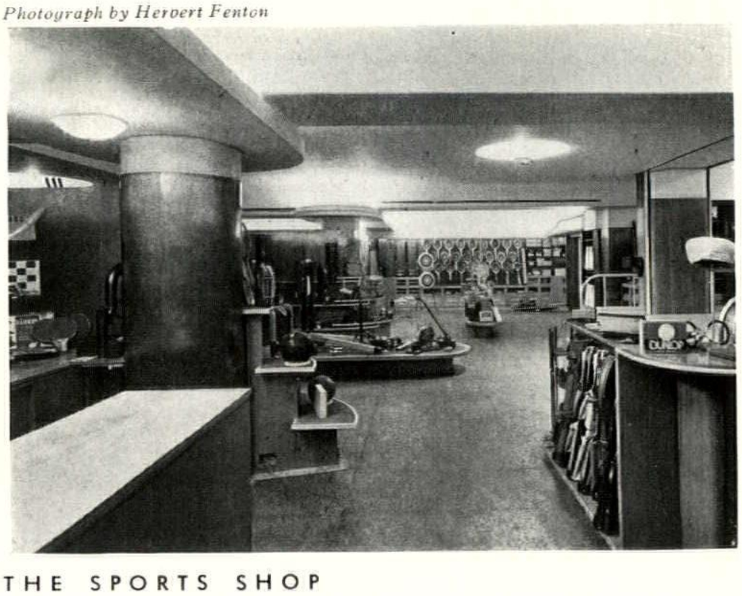


Photograph by Studio Sun, Ltd.

TAILORING DEPARTMENT

STORE FOR MESSRS. SIMPSON

Photograph by Hervert Fenton



THE SPORTS SHOP

dant fitting slides on a track at the top, so that the whole fitting can be brought in against the balustrading at floor level, to enable lamps to be cleaned or renewed. Perhaps much of the attraction in the staircase comes from the excellent daytime lighting afforded by the main external wall which is entirely of glascrete tiles.

LIGHTING. — A transformer room is provided in the basement in connection with the lighting and power of this building. Small switch-rooms occur at each floor level for local control, while a main switch-room is situated in the basement.

The general scheme is one of concealed lighting in the

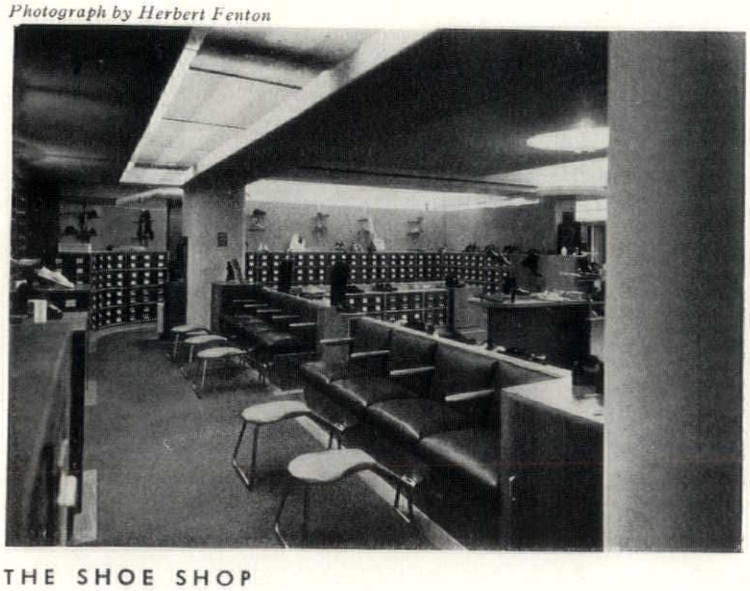
JOSEPH EMBERTON
ARCHITECT

Photograph by Larkin Brothers

OVERCOAT AND RAINCOAT DEPARTMENT

PICCADILLY, LONDON

Photograph by Herbert Fenton



THE SHOE SHOP

cornices, with large circular indirect lighting fittings where more light is required.

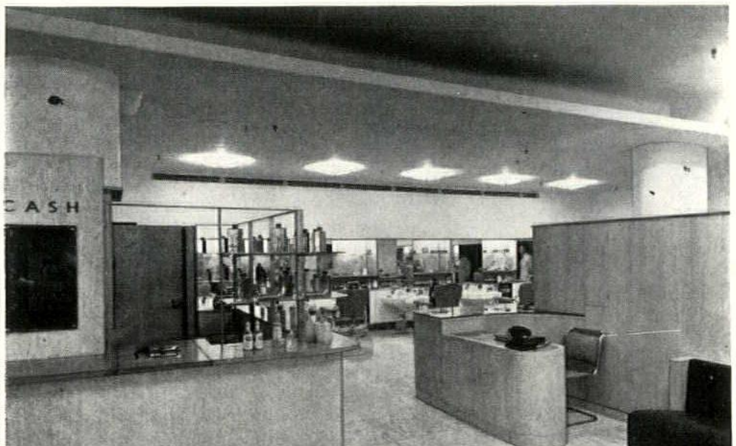
Specially insulated junction boxes in the floors permitted the inclusion of telephone service wires, with the lighting circuits in the same ducts—an arrangement not possible when the usual method of designing these services is employed.

Externally, neon lighting forms an important feature of the façade. Here, continuous bronze reflector troughs carry across the building above the head of each line of windows. These troughs, which are drained to the sides, house three neon tubes of different colors.

Photographs by Herbert Fenton

THE CLUB ROOM

STORE FOR MESSRS. SIMPSON



THE BARBER SHOP

This trough system continues up each side of the façade to form a frame. In this way striking lighting effects of various colors can be obtained, lending great charm to the building by night.

VENTILATION.—The general scheme of ventilation consists of conditioned air forced into the different floors through continuous gratings just below the soffit of the outer main beams.

HEATING AND HOT WATER.—Heating panels in the ceilings provide for the main warming of the building, although this is augmented by heating the air in the ventilating system before its introduction to the building through the duct gratings.

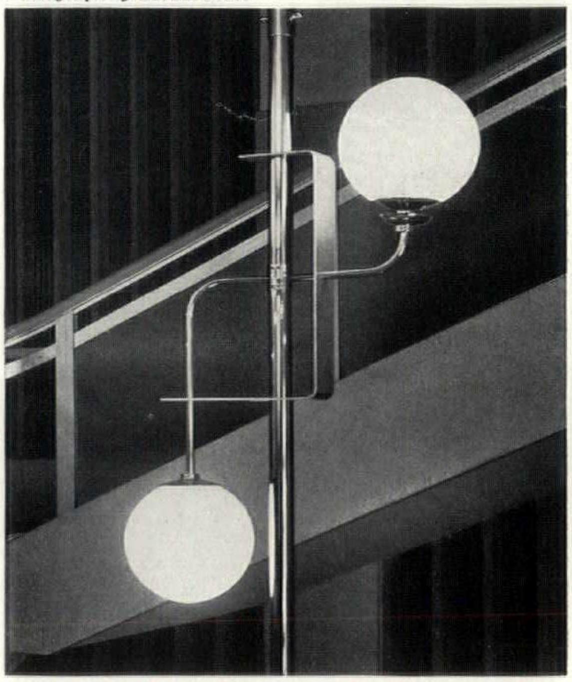
JOSEPH EMBERTON
ARCHITECT

Photograph by Studio Sun, Ltd.

THE MAIN STAIRCASE

PICCADILLY, LONDON

Photograph by Larkin Bros.



DETAIL: Lighting Fixture at Main Stair

Although storage space for the main bulk of the goods has been allocated in the basement, the architect has contrived to provide small rooms immediately behind the counter for the storing of spare stock, though the provision is not apparent to the casual observer.

DISPLAY FITTINGS.—There is much that is novel and ingenious in the design of the many display fittings, while the genius of Prof. Moholy-Nagy presides over the disposition of the merchandise itself. The fittings are mainly built up from veneered plywood, and full advantage has been taken of the range of color and texture effects possible in this material.

JOHN AND DONALD B. PARKINSON
ARCHITECTS

Photograph by Don Milton

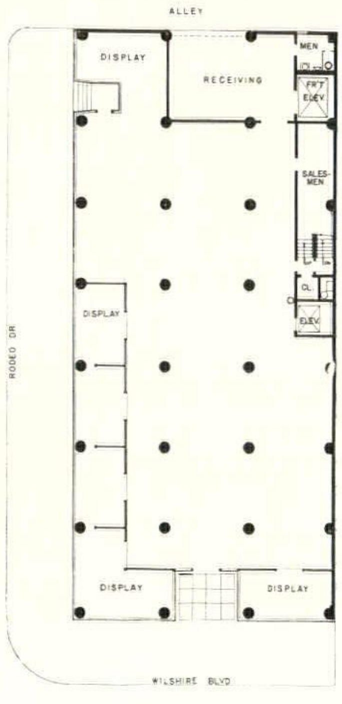
W. & J. SLOANE BEVERLY HILLS, CALIFORNIA

Especially designed for the requirements of the tenants, this new building is noteworthy for its general simplicity of design and its frank treatment of the first-floor columns and show windows.

The building is 65′ x 130′, with basement containing the heating and other mechanical equipment. The first floor is used for display, with a small shipping room at the rear. The second, third, fourth and fifth floors are used for display, with the bookkeeping and private offices on the fifth floor.

The building is of fireproof construction, consisting of concrete columns and flat slab floors. The required earthquake stresses were applied laterally at each floor. Foundations consist of 36″ bell-bottom caissons which extend thirty feet below the sidewalk level. The exterior walls are concrete with plaster finish on the street fronts. The base on the exterior is black glass and the metalwork aluminum. Steel sash throughout.

The interior partitions are pressed metal channels, metal lath and plaster. The floors are all cement, except the second, which is oak laid on wood sleepers.



GROUND FLOOR PLAN

DESIGNED BY
SOLOMON KAPLAN

Photograph by Lincoln

WINKELMAN SHOE STORE NEW YORK CITY

A shop front designed around merchandise requirements; notice that by throwing the entrance door off center, space for window inspection is afforded without hindering in-and-out traffic. CONSTRUCTION: base and pilasters, red Verona marble; frieze, honed travertine; vestibule floor, terrazzo in red, green, black, tan and yellow; all metalwork (including sign), polished bronze; show window floors, walnut parquet; entrance doors, walnut.

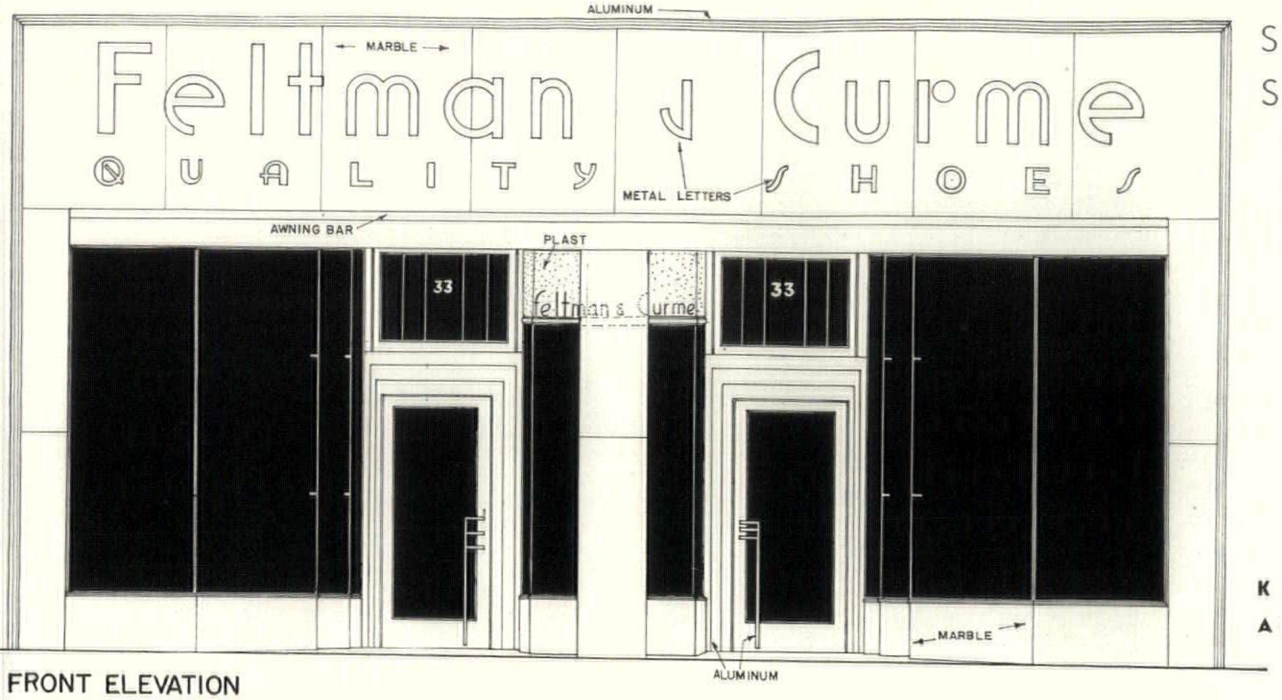
Photograph by Lincol

PIOSO, PETERSON AND ASSOCIATES
ARCHITECTS

HAHN SHOE STORE

WASHINGTON, D. C

A dramatic handling of a three-floor shop. Due to local ordinances, the show windows project 3' beyond main building line; this projection is utilized for indirect lighting. The entire lower portion is in black Carrara glass, with bronze trim, doors, signs, etc.; the upper portion is sheathed in large blocks of Indiana limestone. The central window lights both upper floors of the store.



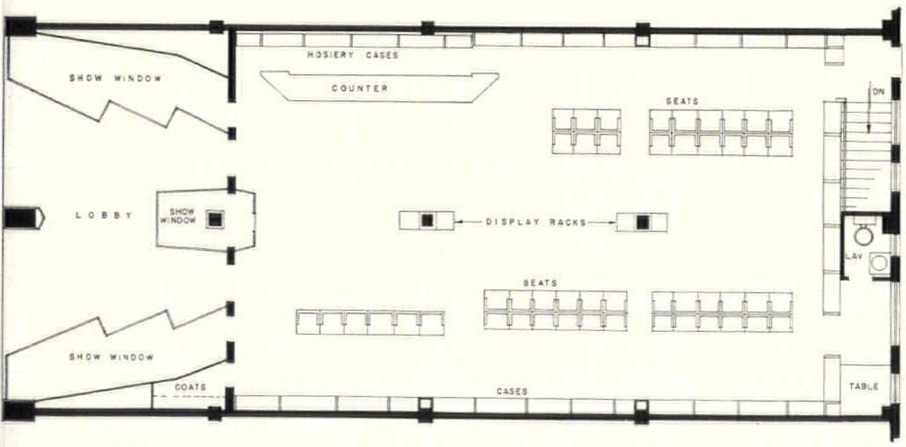
FRONT ELEVATION

KOENIGSBERG AND WEISFELD
ARCHITECTS

FELTMAN & CURME SHOE STORE

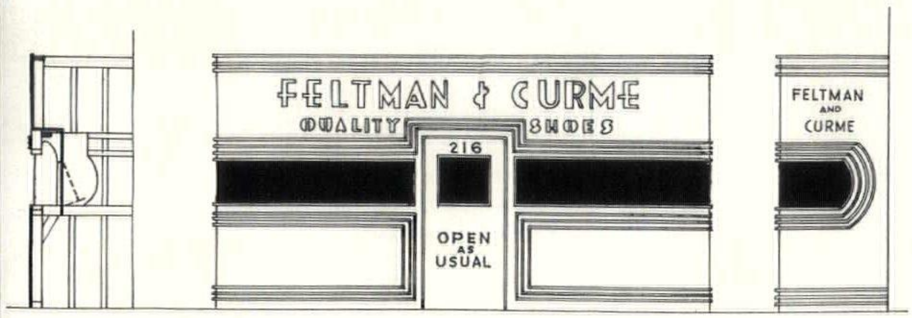
PHOENIX, ARIZONA

EXTERIOR: Faced with black structural glass and alumilite finished aluminum mouldings. Vestibule floor is three-color Terrazzo with white metal dividers.



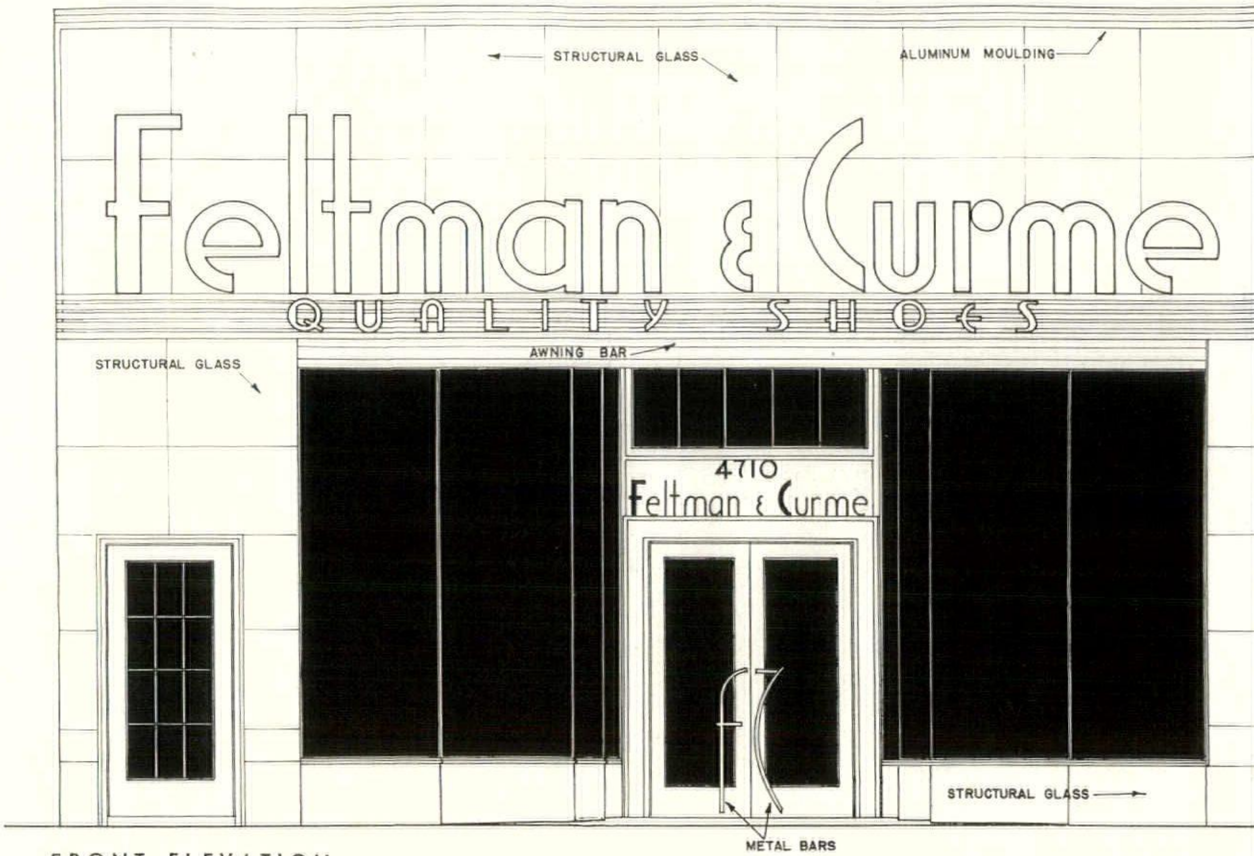
FLOOR PLAN

INTERIOR: Plaster walls and ceilings. Cornice mouldings, aluminum leaf. Fronts and cases trimmed with calamine aluminum mouldings. Counter, walnut face with linoleum top. Floors covered with linoleum. Chairs, tubular steel.



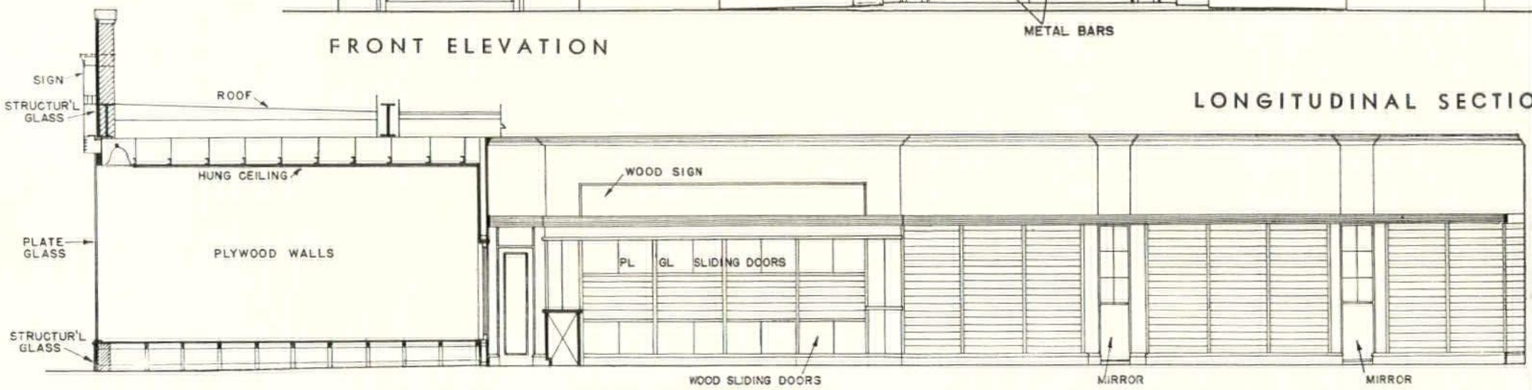
TEMPORARY FRONT DURING CONSTRUCTION

INTERIOR OF SHOP



KOENIGSBERG AND WEISFELD, INC.
ARCHITECTS

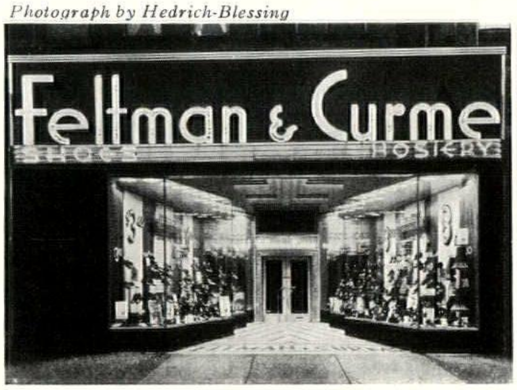
FRONT ELEVATION



LONGITUDINAL SECTIO

FELTMAN AND CURME SHOE STORE — CHICAGO, ILLINOIS

Photograph by Hedrich-Blessing



FRONT ELEVATION LIGHTED

EXTERIOR: Black structural glass, stainless steel and neon tube sign, alumilite aluminum moldings and trim. Terrazzo floor.

INTERIOR: Walls and ceilings painted Brewster green. Linoleum floor, chairs tubular steel. Walnut-faced counter with linoleum top and snap-on steel moldings.

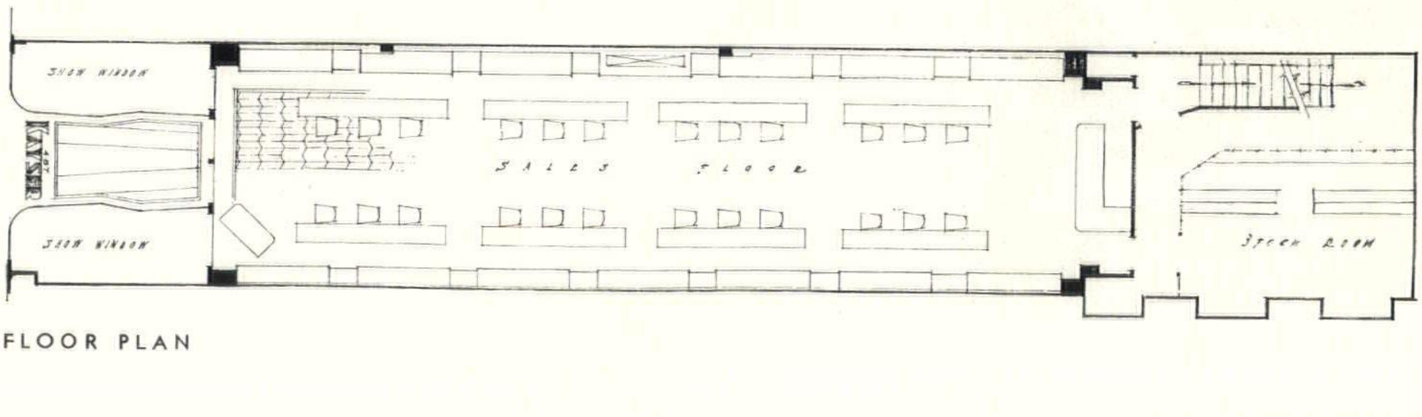
EDWARD I. SHIRE
ARCHITECT

Photograph by Joseph Molitor

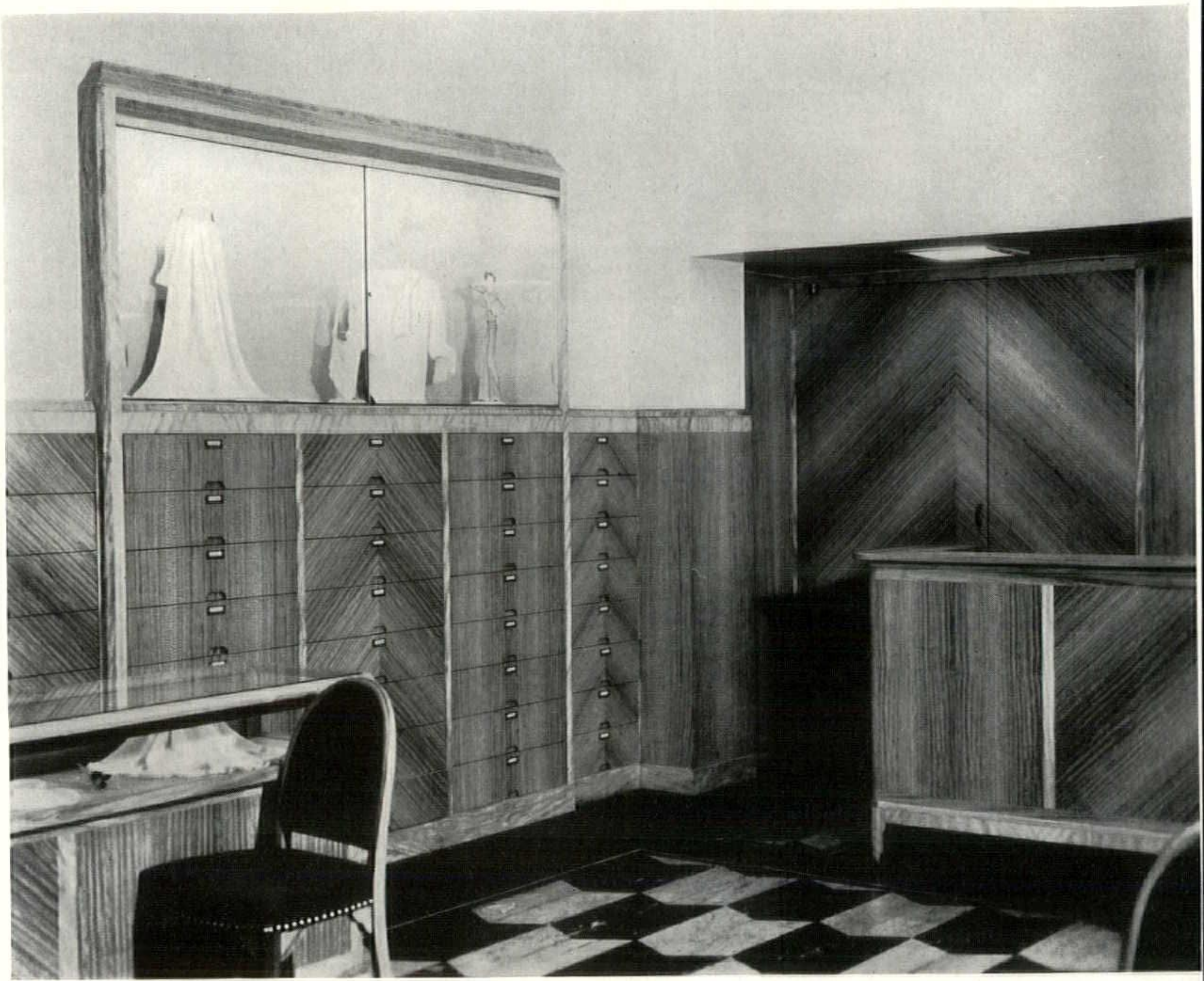
JULIUS KAYSER STORE NEW YORK CITY

Front of blue Belge marble with white marble and cast bronze trim; vestibule floor, black and white terrazzo with bronze inlays; vestibule ceiling, black and white marble; entrance doors, bronze, Austral type; marble base and glass in one piece at curves. Lettering and grilles of hammered copper, gold-plated where exposed, inlaid with vitreous enamel. Awning entirely concealed when closed.

Sales space on main floor only, with executive offices on mezzanine. Storeroom and rest rooms in basement. Entire premises air conditioned. Indirect lighting for main part of store. Walls stippled and tinted coral pink. Ceiling off white with light stipple. Woodwork, satinwood with white mahogany trimming. Rubber floor, walnut and light tan. Chairs match woodwork and have light blue upholstery.



FLOOR PLAN

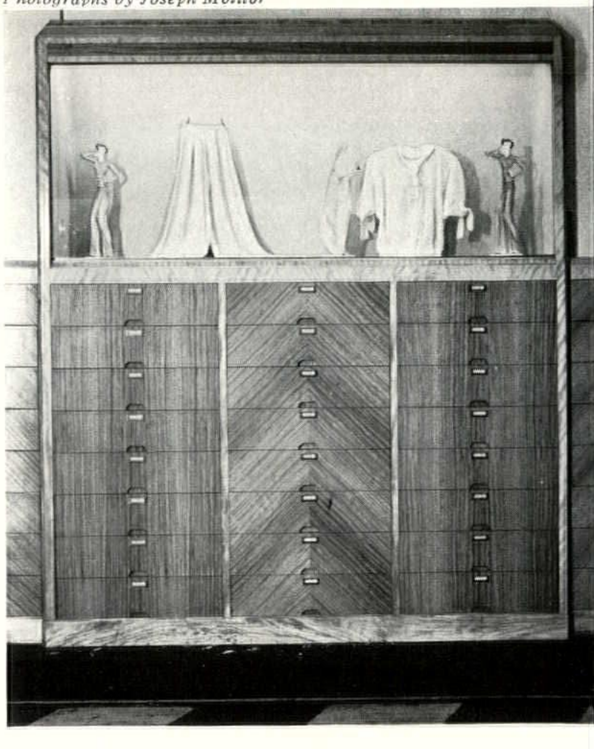


EDWARD I. SHIRE
ARCHITECT

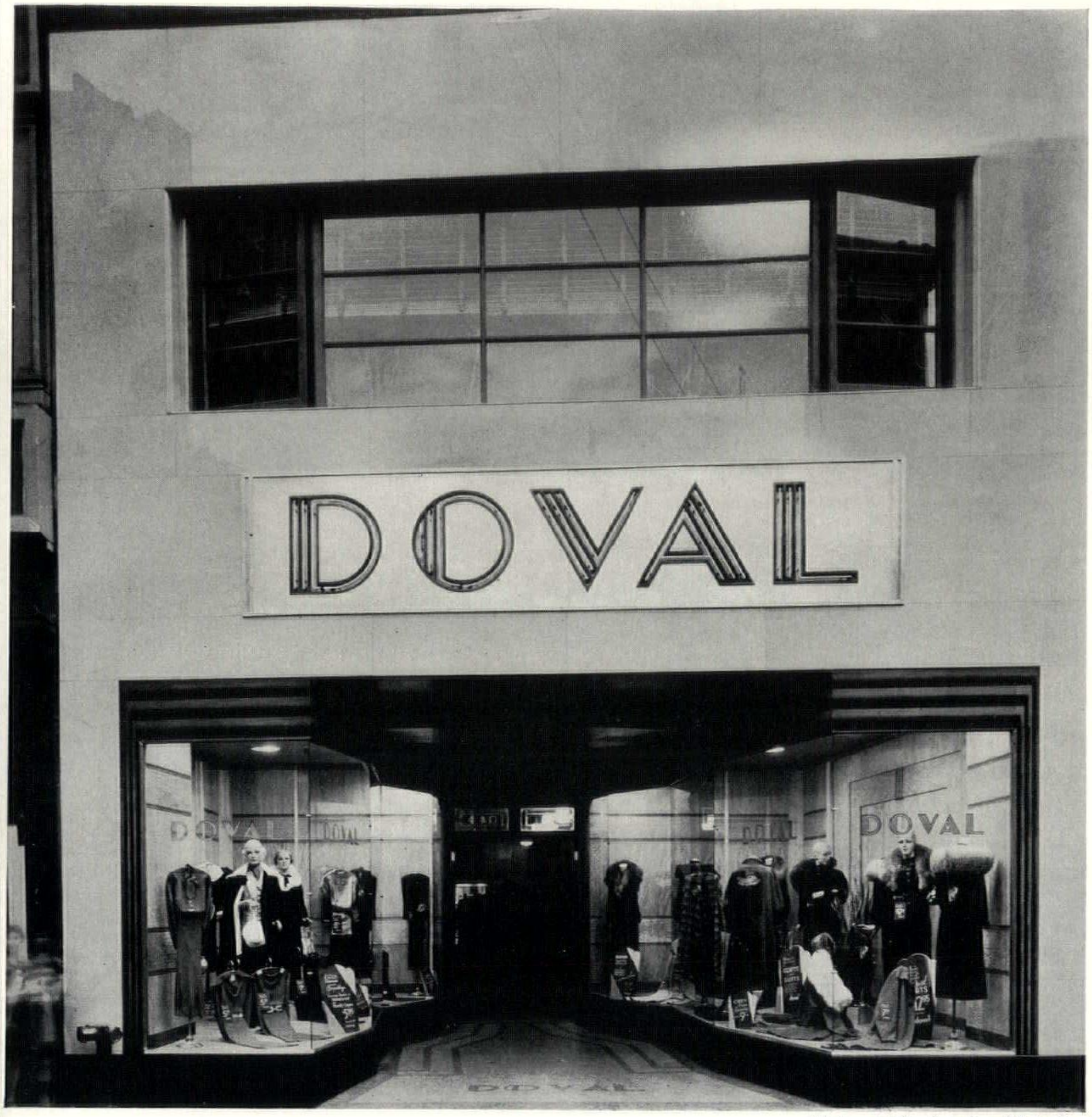
JULIUS KAYSER STORE

NEW YORK CITY

Photographs by Joseph Molitor



GENERAL INTERIOR

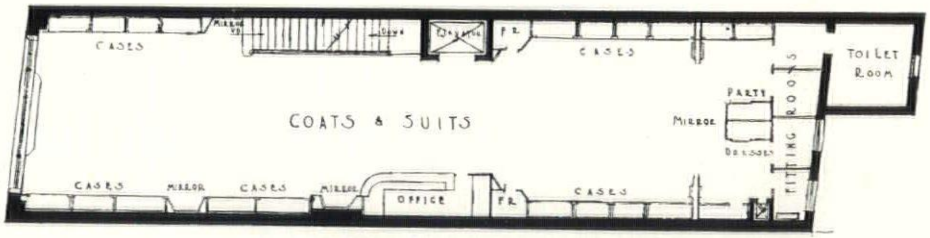


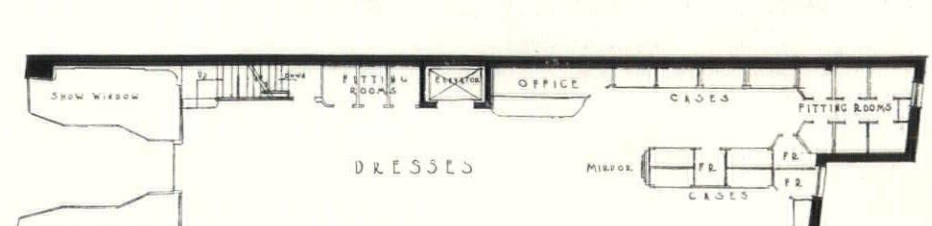
SAMUEL L. MALKIND
ARCHITECT

Photograph by American Photo Service

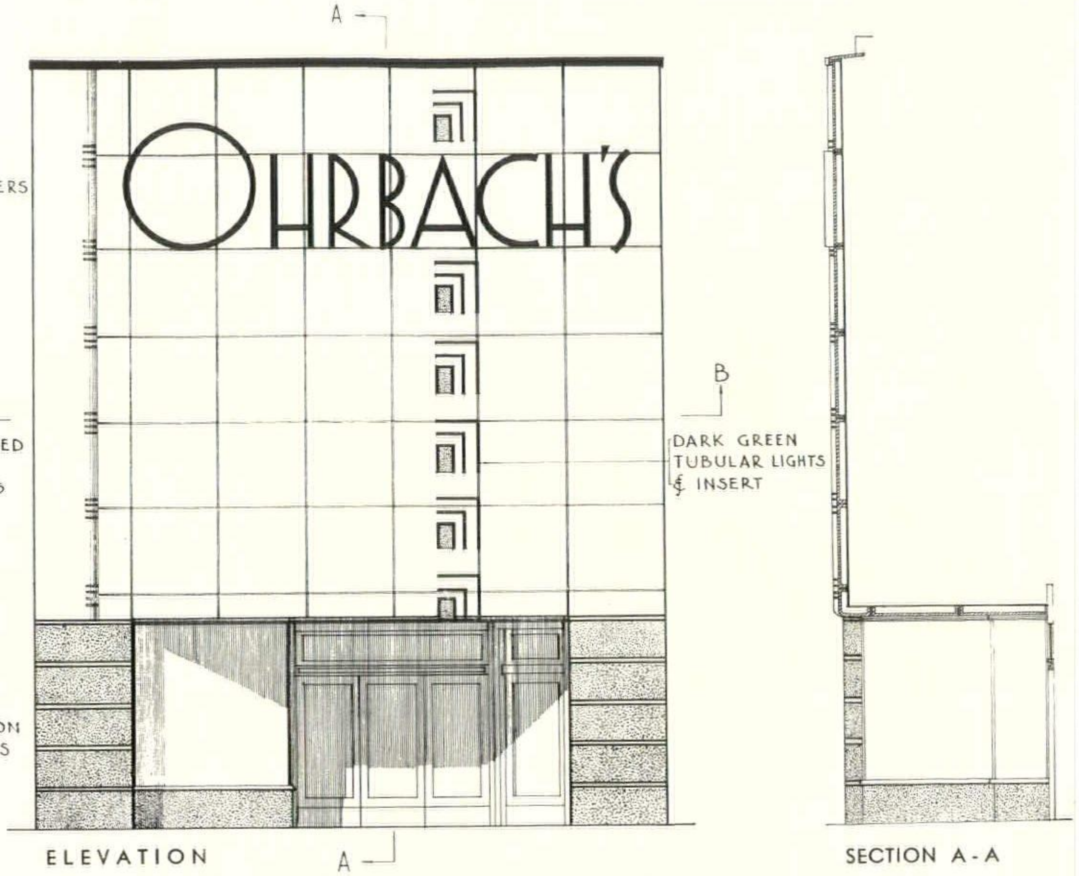
DOVAL DRESS SHOP

BROOKLYN, NEW YORK





A remodeling job in which the face of the shop was sheathed in structural glass—black around the windows, gray elsewhere. The sign has countersunk Neon lettering in an aluminum field. The interior is entirely finished in avedive wood, with mahogany and maple finish. The entire store has indirect illumination.



J. M. BERLINGER
ARCHITECT

ELEVATION

SECTION A-A

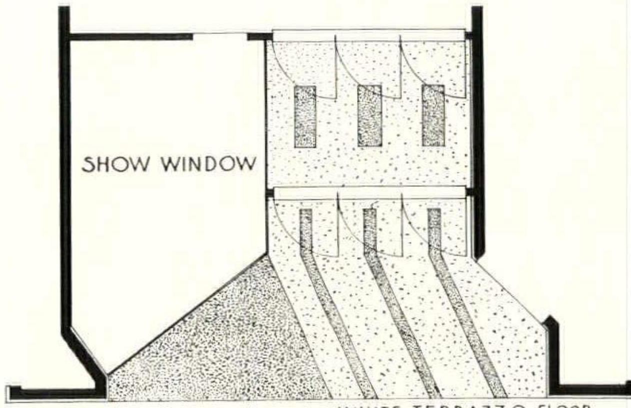
OHRBACH'S STORE NEW YORK CITY

SECTION B-B

A remodeled entrance façade to the dress shop which in turn connects with the main building. The front is composed of porcelain enamel blocks in ivory and green. All the blocks are dovetail-jointed, concealing all screw fastenings. The lettering and the vertical pattern are neon-lighted. The tubing letters are of stainless steel.

Photograph by George Van Anda

FROM THE STREET



PLAN

WHITE TERRAZZO FLOOR
DARK GREEN INSERTS

TVA ARCHITECTURAL SECTION AND ROLAND A. WANK
ARCHITECTS

TOWN STORES AND OFFICE BUILDING NORRIS, TENNESSEE

Text by E. S. Draper, Director of Land Planning and Housing Division, Tennessee Valley Authority.

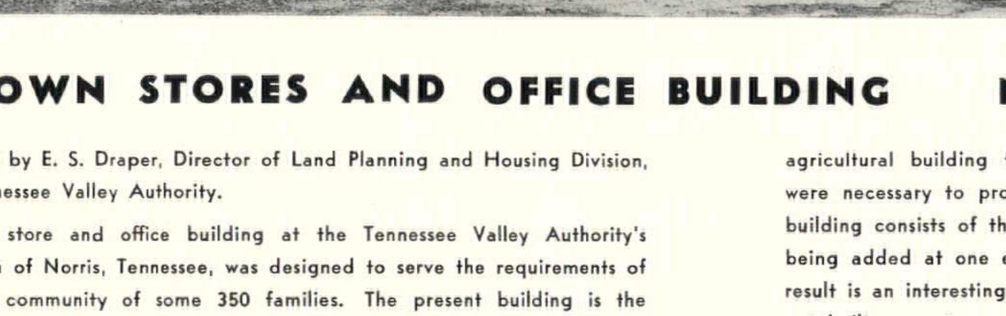
The store and office building at the Tennessee Valley Authority's town of Norris, Tennessee, was designed to serve the requirements of this community of some 350 families. The present building is the outgrowth of a smaller structure originally designed as a so-called agricultural building where local farm products were to be marketed.

Adjacent to this building a site was reserved for an inn, a hospital, a building for shops and offices, and a school. The school and the agricultural building were built; the construction of the others remaining in abeyance, however, until such time as the town's final status might be fully determined, so that the need for additional buildings could be more accurately measured.

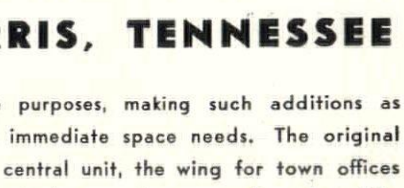
Pending this development, however, the need for shopping facilities and a town office became so urgent that it was decided to utilize the agricultural building for these purposes, making such additions as were necessary to provide for immediate space needs. The original building consists of the larger central unit, the wing for town offices being added at one end, the telephone exchange at the other. The result is an interesting building with little if any evidence that it was not built as one operation.

The exterior design is an interesting adaptation of the same domestic style that is found in the town's dwellings, which, in turn, were influenced somewhat by local architectural characteristics. For instance, the open passageway between the office wing and the store building is very suggestive of the "breeze-way" type of plan so commonly found in the older rural sections of the South.

The wall construction is of brick, but with the gable bays of frame construction and finished with hand-split oak shingles above the sill course. The roof is of rigid-type asbestos shingles, sage green in



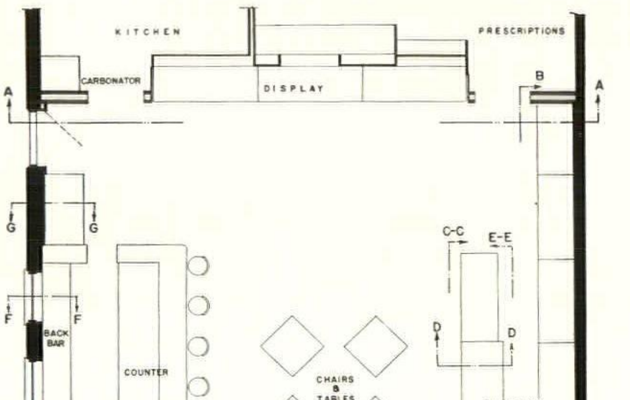
FIRST FLOOR PLAN



SECOND FLOOR PLAN

SODA FOUNTAIN OF DRUG STORE

TOWN STORES AND OFFICE BUILDING



FLOOR PLAN OF DRUG STORE

color to contrast with the red brickwork of the walls. The canopies above the display windows are of sheet metal, with scalloped edges to overcome any "boxy" effect.

The office wing provides space for the Norris Town Manager and his staff of assistants, as well as the police headquarters. Upstairs is a drafting room and work space for the auditing department. In this wing the first story floor construction is of precast concrete slab and joist construction with a smooth tile-like integral surface, colored red. The second story floors are of oak. The walls and ceilings, throughout, are of V-jointed plywood; the walls finished natural, and the ceilings painted.

The floor construction throughout the main building is of reinforced concrete with the slab resting on tamped earth. In the drug store, the food shop, and the public space in the post office, the floor surface is finished with asphalt tile, red in color. Elsewhere the surface of the concrete floor slab is left exposed.

In the drug store the lower portion of the exposed wall surfaces is of natural finish, maple veneered plywood. The upper walls and the ceiling are of plywood, painted yellow, with the ceiling joints grooved. The refreshment booths and the shelving are of maple to match the walls. The soda fountain counter is of Tennessee marble, and the fixture trimmings are of stainless steel. Seat cushions are of Fabrikoid.

The food shop is conducted as a cooperative enterprise, with the members of the community owning the shares, controlling the policy, and participating in any profits. Here the lower walls are of dark leather-colored wallboard, with the surface scored tile-fashion and finished in the natural color of the material. The upper wall and the ceiling treatment is similar to that in the drug store.

The post office is now being installed in a portion of the commercial building orig-

TVA ARCHITECTURAL
SECTION AND
ROLAND A. WANK
ARCHITECTS

BOOTHS IN DRUG STORE

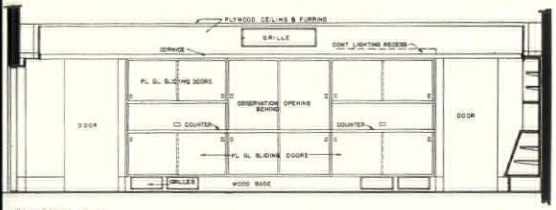
NORRIS, TENNESSEE

inally used for the storage of surplus merchandise. During the height of Norris Dam's construction period, it was considered that the post office was most conveniently located in the construction camp where the bulk of the employees were concentrated. Since that undertaking is now practically completed, however, there is greater need for the post office to be incorporated within the town's shopping center.

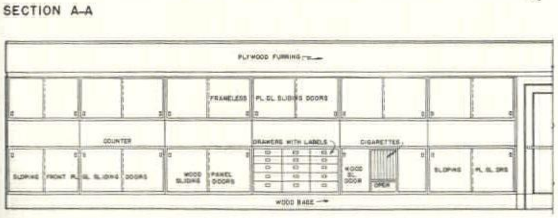
All ceilings throughout the building are insulated with fill type insulation, and the roof spaces may be ventilated through gravity type, ridge ventilators in warm weather. The toilets have Keene's cement wainscots and cement floors.

This building, in common with most of the others at Norris, is electrically heated throughout. The grocery store and the drug store are heated by means of forced systems of electrically warmed air supplied through ducts and ceiling registers, but with the system arranged so that it may be used for ventilating in warm weather. The remainder of the building is heated by convector type electric space heaters.

This building was designed by the Architectural Section of the Authority's Land Planning and Housing Division, Roland A. Wank being the architect in charge of the alterations and additions.

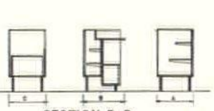


SECTION A-A



SECTION B-B

ELEVATION C-C

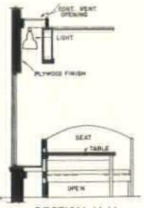


SECTION D-D

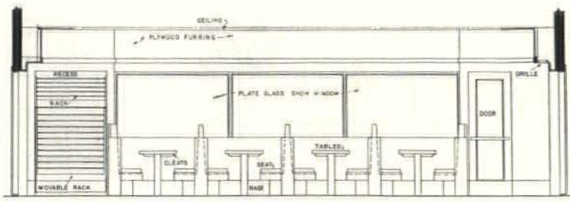
ELEVATION E-E

F-F

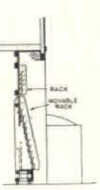
G-G



SECTION H-H



SECTION J-J

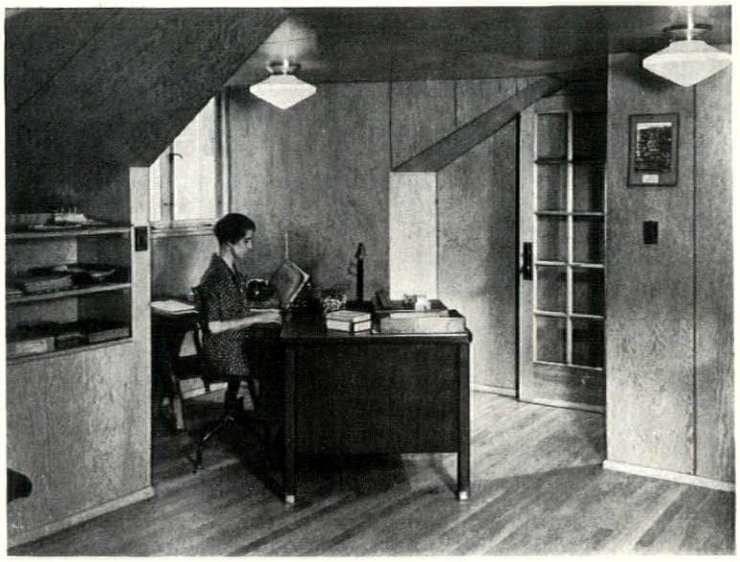


SECTION K-K

TVA ARCHITECTURAL SECTION AND ROLAND A. WANK, ARCHITECTS

TOWN STORES AND OFFICE BUILDING NORRIS, TENNESSEE

The cooperative grocery store is a model of clean plannin and intelligent construction. Notice arrangement of me chandise and absence of display cards.



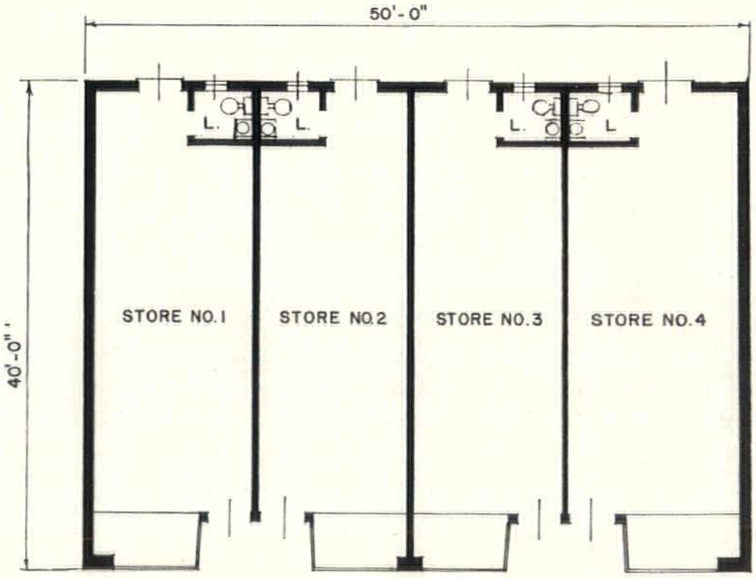
One of the offices in the section devoted to the town's government. They are insulated against sound transmission and heat loss and electrically heated.

WALTER D. SPELMAN
ARCHITECT

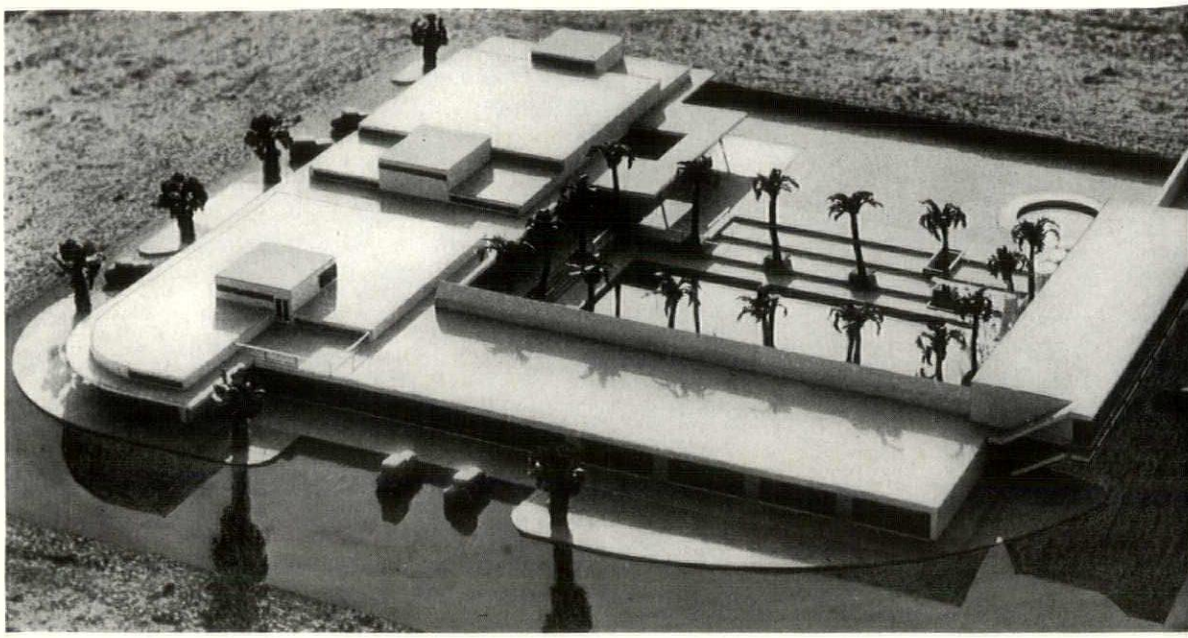
Photograph by Murray Peters

TORE GROUP ROCKVILLE CENTRE, LONG ISLAND

A group of small stores built as "taxpayers" at a cost of $5,000. Walls are of concrete block, stuccoed on sides and rear, sheathed with black Vitrolite in front. Roof is built-up roofing on wood construction. The building has no basement. All trim on shop fronts is in chromium. Floors are Armstrong's accotile. Walls and ceilings are plastered.



FLOOR PLAN



DESIGNED BY
JOHN P. CLARK
ARCHITECT
AND ALBERT FREY

PROPOSED RECREATIONAL PROJECT PALM SPRINGS, CALIFORNIA

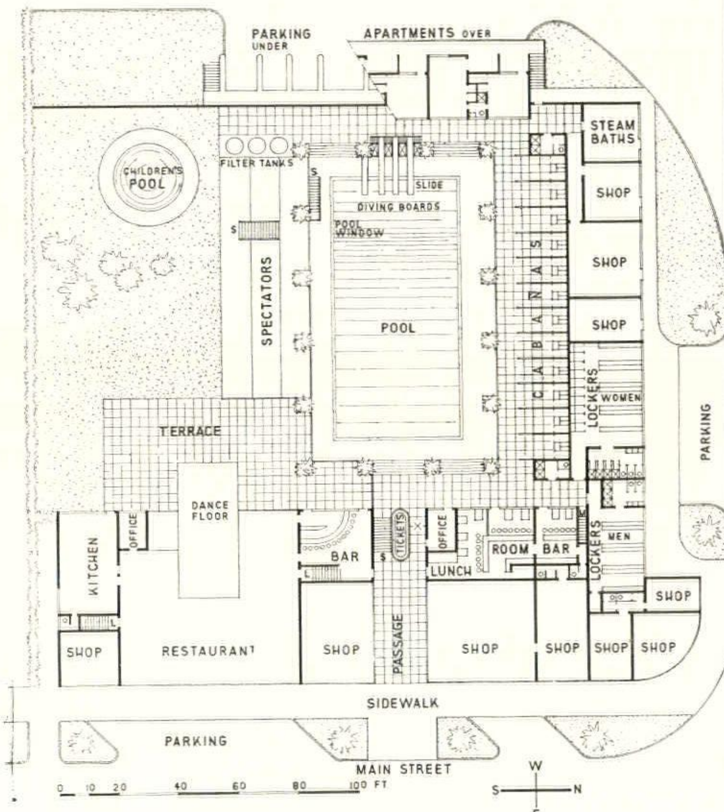
The establishment is planned for a site about 250 feet square, at walking distance from the center of town, located along the main drive and surrounded by streets on three sides. Shops along the main street are intended for men's and women's sportwear, beauty and barber shops, stores for delicatessen and health foods. Facing the side street are dancing and bridge instructors, massage, etc.

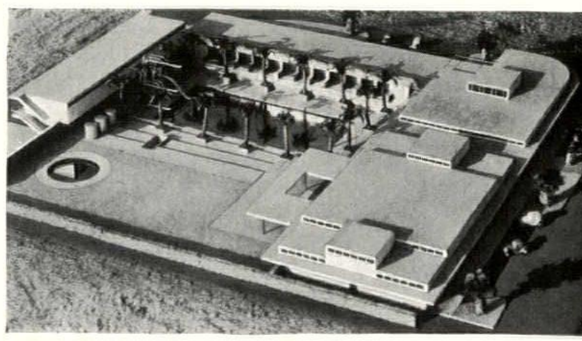
A restaurant with in-and-outdoor areas, bar and dance floor is centrally located. Lunchrooms are provided for bathers as well as for spectators. The center of the establishment and its focal point is a regulation pool 42 by 90 feet which may serve for championship games. Divers can be watched and photographed from an underwater window in the side wall of the pool. Swimmers may rent lockers or private cabanas intended for families or groups. Cabanas located on the north side may be rented by the month or season. Each has two individual dressing rooms and private showers. These are placed on a level above the pool for privacy.

Spectators who do not wish to bathe will approach the spectators' terrace through an underground passage reached by a stair at the ticket booth. Spectators, visitors to the restaurant and swimmers are strictly separated.

The apartments to the west are to be leased to shopkeepers or outsiders. The buildings are planned in such manner as to protect the pool area from streets and from cool breezes. The pool is further protected by being terraced below the ground level. A children's pool and playlawn are located on the south side of the plot to keep noises away from adults' recreation.

This arrangement leaves open the magnificent views which are to the south and also permit the low rays of the winter sun to reach the pool area. Three steel tanks required for the continuous filtering of the pool water are exposed with the purpose of displaying the efficiency and cleanliness of the establishment.

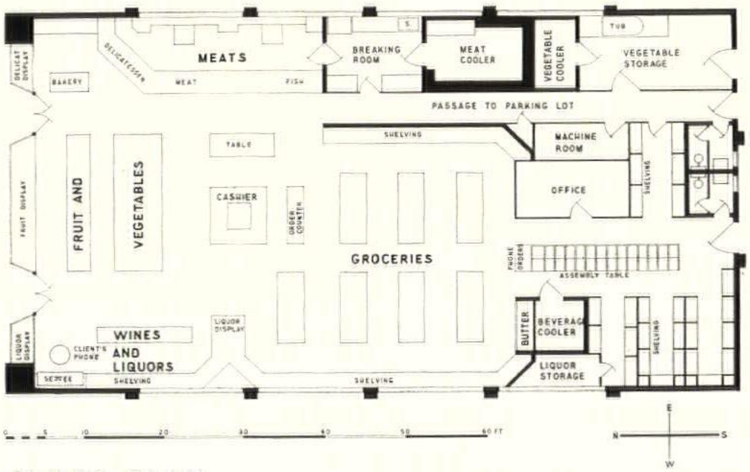




Photographs by George Haight

VAN PELT AND LIND
ARCHITECTS

JURGENSEN'S MARKET
PASADENA, CALIFORNIA



FLOOR PLAN

This new covered market for a California suburb is a simple and honest solution of a much neglected problem. Easy circulation, maximum visibility and free planning have been achieved by the trussed roof construction. The market, which is located next to a motor service building, has a parking lot for patrons in the rear.

SIDE ELEVATION

STREET FRONT AT NIGHT

CONSTRUCTION OUTLINE:

Reinforced concrete, wood roof trusses — "Arch-Rib"; roofing, "Carey" 10-year roof, aluminum painted. Show window front, aluminum covered (sheet and sections); sash, steel.

Lighting: Display windows lighted by combination incandescent and gas tube lighting, to produce natural daylight effect, resulting in most favorable appearance of fruits and vegetables. Interior lighting, semi-indirect "Holophane" fixtures.

Color scheme: concrete walls, warm white; metal and roof, aluminum.

Signs: "Jurgensen's", blue-green (gas tube on metal letters); "Fine Foods", yellow-gold (gas tube on metal letters).

Cost: Building, exclusive of fixtures and architect's fee, $13,500.

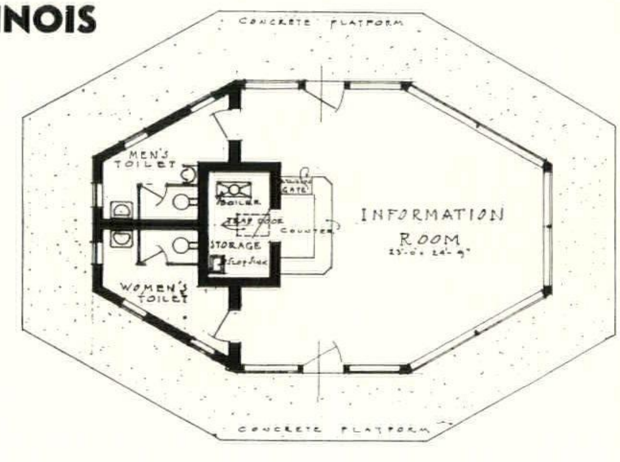
PAUL GERHARDT, JR.
CITY ARCHITECT

Photograph by Hedrich-Blessing

CHICAGO HOST HOUSE CHICAGO, ILLINOIS

The Chicago Host House was erected during the year 1935 on a triangular plot of ground at the southeast entrance to Chicago created by the extension of a diagonal thoroughfare. The purpose of the House is to serve incoming visiting motorists as a public information and comfort building. The building contains a general waiting or lounging room in which, in addition to comfortable furniture, will be found a counter where a clerk is in attendance to reply to the inquiries of those desiring information concerning Chicago. In addition to the toilet facilities there is a small storage room which contains a gas fired heating plant.

The building has a steel frame on a reinforced concrete foundation, faced and enclosed with anodized aluminum sheets and extruded sections to maintain the original lustrous satin finish, with large plate glass windows. The base course is of black terra cotta. Lettering on two elevations is of 12" high cast aluminum, alumilite finish, with black enamel wood backing.

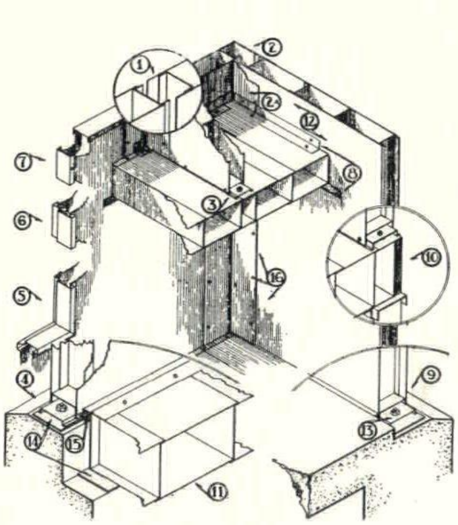


DEVELOPED BY
INSULATED STEEL CONSTRUCTION CO.

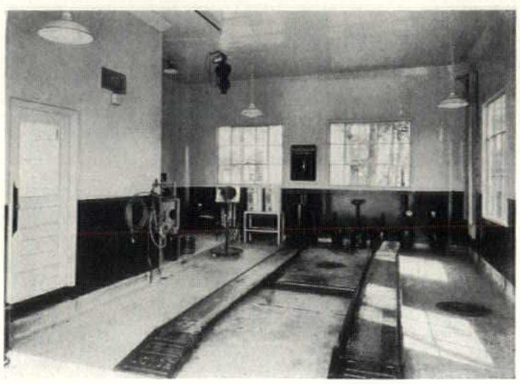
HELL OIL STATION — TOLEDO, OHIO

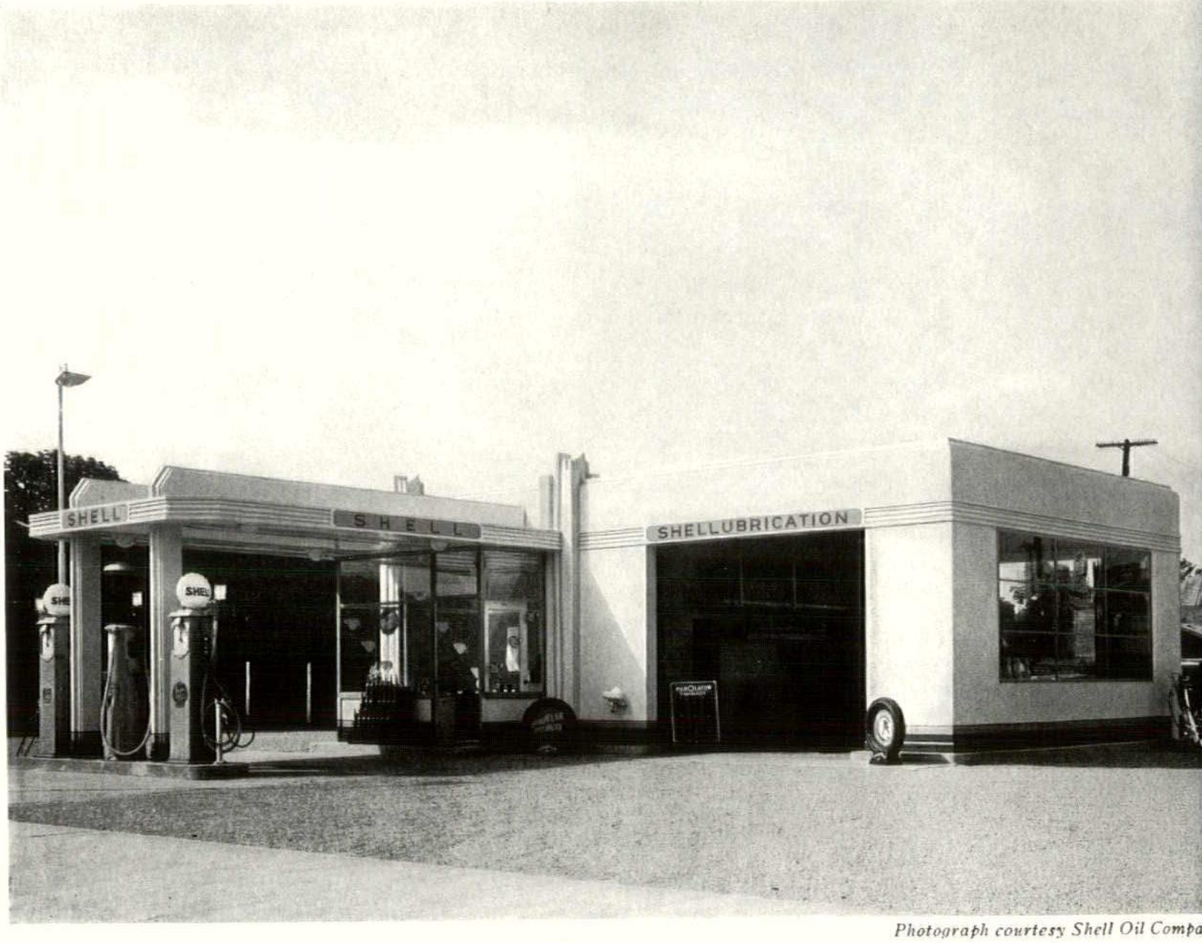
This station, designed and built by the manufacturer of a new structural system, was erected in 2½ weeks (excluding concrete, plumbing and electrical system). The system is interesting in that no skeleton construction is required, wall and roof sections carrying themselves without additional framing.

The walls are 3" thick, the roof sections 5½" thick; walls are filled solid in the shop with 3" Zonolite insulation, 1" of insulation is applied to the roof. The roof deck furnishes a subceiling which can be painted as shown in the photograph, also a subroof to which the Celotex and waterproof roofing is moped. Spans of up to 28' are possible with these roof sections without any structural iron support, the roof simply resting from wall to wall.



Standard union between wall panels.
. Exterior corner section.
A. Interior corner section.
Partition attachment to steel floor.
Foundation detail for frameless-steel first floor and exterior wall.
Window detail "A" for steel sash for painted exterior-interior finish.
Window detail "B" for steel sash for use with veneered exterior-interior finish.
Detail "C" for wood window and door frames.
8. Bearing angles for supporting second floors and roofs within parapet.
9. Foundation detail for frameless-steel wall and concrete floor slab.
10. Detail platform construction.
11. Detail of floor assembly.
12. Detail of wall assembly.
13. Detail of foundation channel.
14. Foundation asphalt strips.
15. Waterproof calking.
16. Sheet metal screws.





Photograph courtesy Shell Oil Compan

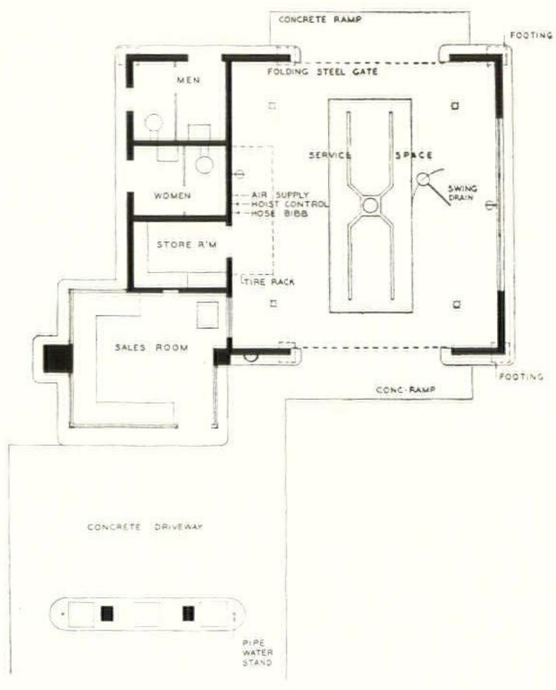
L. RAYMOND WHITE
ARCHITECT

TYPICAL STATION FOR SHELL OIL COMPANY

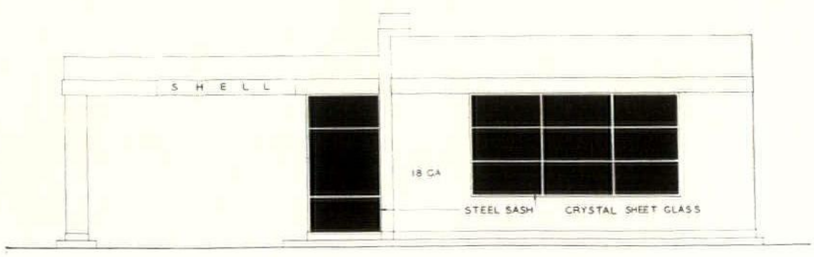
Using a typical plan, this small service station is popular on the Pacific Coast in locations where only one group of pumps is required in addition to a single hoist for lubrication service.

The plan is compact, combining salesroom, service space and rest room facilities. Salesroom is offset in plan, giving operator maximum visibility. Canopy over driveway, which is typical of service stations in the West, affords protection during inclement weather and shade in hot sunny territories.

Units of this type have been constructed of wood frame and stucco, concrete with stucco finish, and steel. In the steel structures, 16-gauge galvanized steel sheets with welded and ground joints have been used for plain surfaces, and 20-gauge for molded surfaces.



FLOOR PLAN

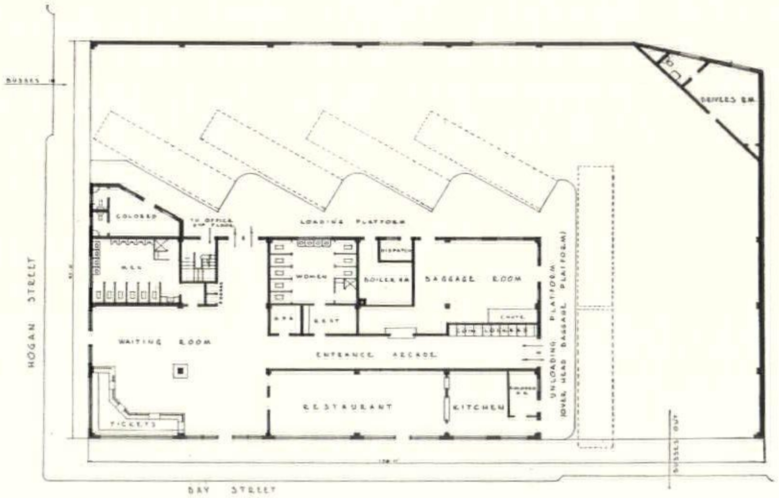


SIDE ELEVATION

BUS STATIONS

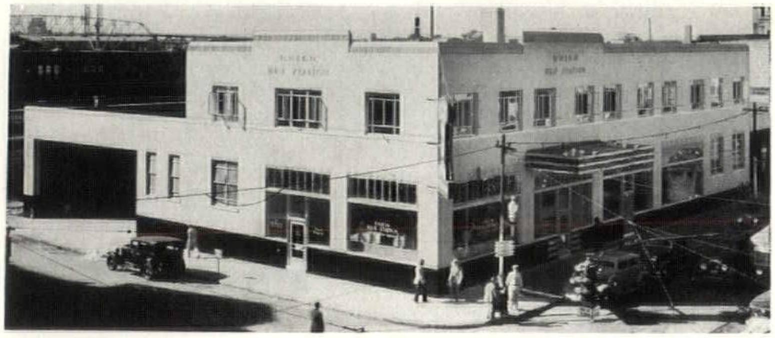
W. KENYON DRAKE
ARCHITECT

UNION BUS STATION — JACKSONVILLE, FLORIDA



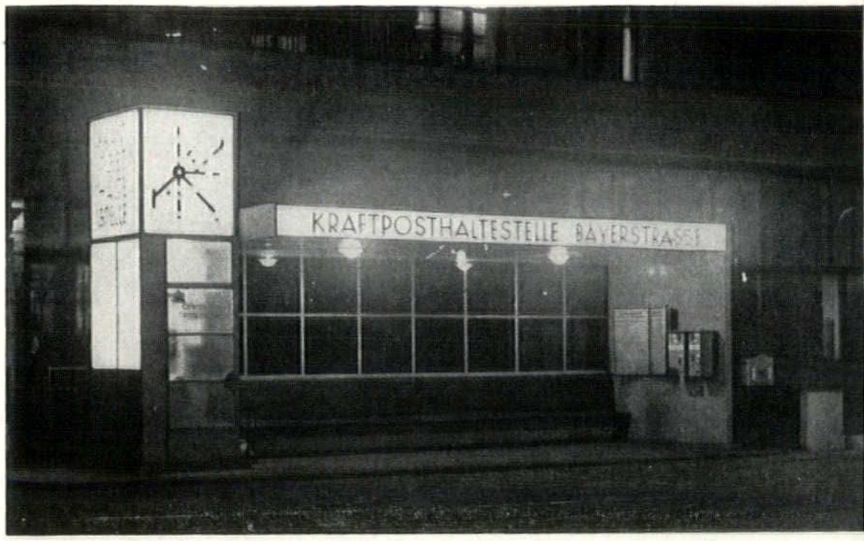
Built at a cost of $100,000, this new fireproof bus terminal has several notable features — complete shower bath and toileting facilities for tourists, baggage conveyors and chutes. The second floor is occupied by company offices.

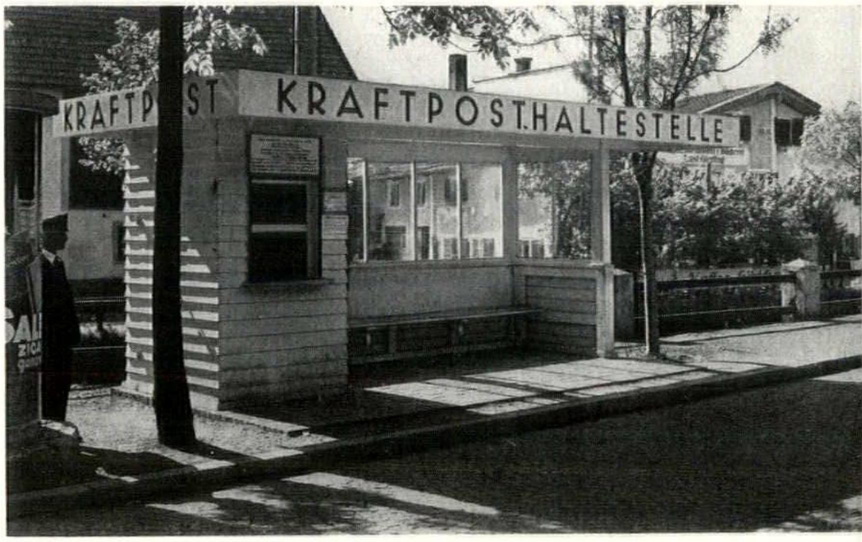
The structure is of steel, concrete and brick construction, with stucco finish on street walls. The exterior dado is of black Carrara glass, while all sash and trim are aluminum.



GENERAL EXTERIOR

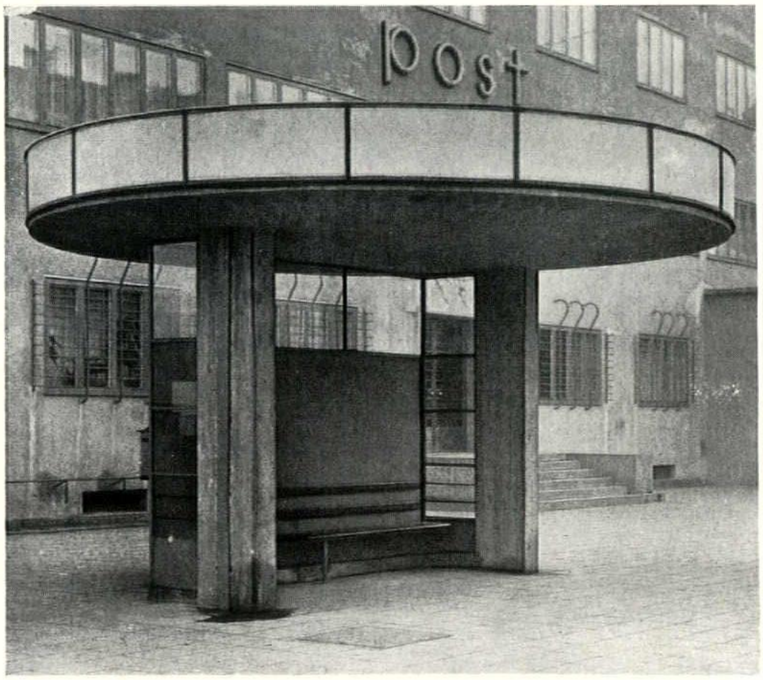
BUS SHELTERS





The bus shelter can be built of light weight but durable sections, suitable for replacement or addition. Provision should be made for:

- Seating
- Telephone of pay station type
- Shelter against wind, rain and snow
- Clear vision, preferably in all directions
- Paved platform
- Sign as station designation
- Map of bus route
- Timetable rack or chart



PLAN FUNDAMENTALS FOR THE MEN'S SHOP

By KENNETH C. WELCH

While every job has its own problem in regard to distribution of areas and arrangement of stock, the same general principles of design apply to the individual men's shop and to the men's shop of a department store. Mr. Welch, vice-president of Grand Rapids Store Equipment Co., is an architect with a wide practical experience as a store designer.

The plan is the dominating factor in designing a men's shop. The success of any shop depends first of all on its operation, which includes basically merchandising and service. The cost of doing business, outside the cost of the merchandise, is divided into several headings, in order of their importance, as follows: administrative, selling salaries, publicity, fixed plant and equipment costs, general selling expense, occupancy (exclusive of fixed plant and equipment costs), and delivery expense. The sum total of these expenses represents twenty per cent of the net sales. Anything that can be done in the way of planning the store to help reduce these expenses means that much more profit; many stores today operate on a margin of profit which is only a small percentage of their sales.

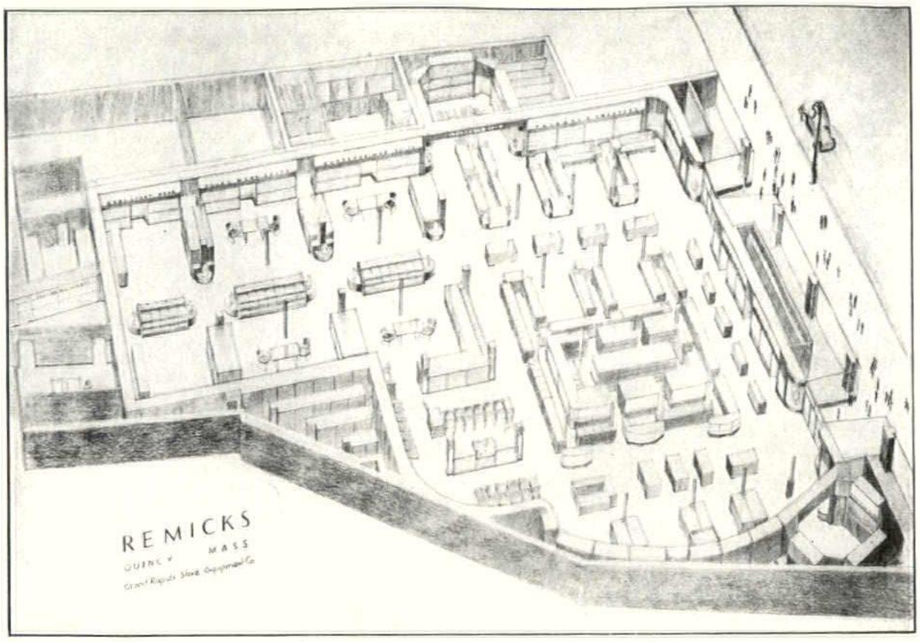
Little can be done in planning to help administration expense, except to give the management comfortable quarters with the possibility of some easy method of supervising. With selling salaries, however, an efficient plan can be of great assistance. It has been estimated that from 15% to 25% (and sometimes more) of a clerk's time is spent in getting stock to show and in servicing a sale. It is obvious that if stock and servicing units can be so planned and located that the clerk has a greater amount of time to spend in actual selling this major expense can be materially lowered and a better service rendered to the customer.

The elevation or environment provided has some bearing on publicity expense. While newspaper and other forms of advertising amount to well over half of the total publicity expense, exterior and interior displays, when properly designed, have a decided bearing on the effectiveness of advertising.

Fixed plant and equipment costs have to do with rental, interest on investment, insurance and taxes. It is obvious that economy of space and building costs affect this expense. The other items are comparatively minor but, of cource, occupancy, as represented by maintenance and general housekeeping, can be affected by the materials as well as by the design of certain equipment. Light, heat, and ventilation all fall under this bracket and are important as a matter of expense. So much for expense.

Many people think of a shop selling merchandise for men as appealing only to men. This is far from true. In the men's furnishing section in the average department store probably eighty per cent of the merchandise is sold to women. This ratio of course does not hold in a strictly men's store but, nevertheless, the appeal to the woman shopper is important. This is one basic reason for so many men's shops having added women's lines on upper floors. Many men's shops also carry boys' clothing and furnishings, which again appeal to women shoppers. There are many so-called specialty stores which have started out as men's stores and added the other lines. As a rule, when this has happened, the ratio of men's wear volume to women's wear is relatively greater than in the specialty shop or department store, where this type of development has not taken place.

Furthermore, men are becoming more style conscious due, in a great measure, to the development of magazines for men which, by the way, are read by women as well as men. Smarter merchandise calls for smarter interiors styled in conformity with the merchandise. Only a few years ago the average retailer of men's wear would not consider anything that approached modern design. It was assumed that the average man did not want to be appealed to in any manner but a conservative, staid, good old-fashioned way. Some adaptation of a typical English period (due probably to the thought that



REMICKS, QUINCY, MASSACHUSETTS. KENNETH C. WELCH, ARCHITECT. This store, carrying men's furnishing, hats, clothing, boys' furnishings and clothing and shoes, before modernization, had the typical layout consisting of showcase bays running from front to back. This created five aisles from front to back, which, with the two entrances at the front and the one at the back, made three of these aisles without any natural traffic, and the merchandise placed on these "dead" aisles consequently suffered. The new plan eliminates this difficulty by having only two aisles opposite the entrances and permits a convenient stock room, interchangeable between boys' and men's furnishings, in the center of the floor. There is also a stairway here leading to the reserve stock space in the basement. The rear entrance leads to a large municipal parking space, ample for any amount of possible day or evening parking, which extends the length o the shopping district.

men's styles originate in London) was the most favored. This has all changed now and the great majority of the newer shops are in the modern mode.

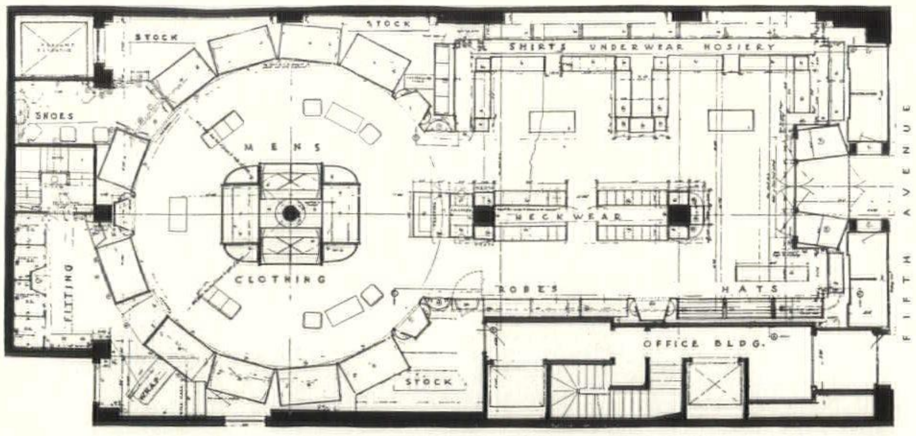
Modern lends itself successfully in many ways to store design, entirely aside from the fact that it is difficult, if not impossible, to adapt most dated styles to store fixtures. The main asset is its possible simplicity, letting the merchandise play the part that ornament has played in many dated styles. The more the merchandise can be made to stand out, in its proper environment, the better for the sales. Too much decoration—and even too much color—when it detracts from the merchandise is not desirable from a sales standpoint. A great many atrocities have been perpetrated under the name of "snap" and "dramatization."

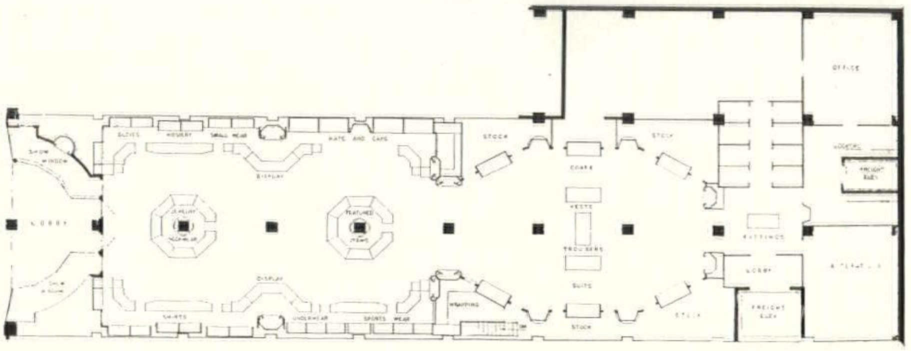
Another thing that makes modern an ideal style for stores: many times it is desirable to do unusual things in plan for the purpose of creating a logical and desirable flow of traffic. These tricks, if you want to call them that, would be difficult to clothe in any dated style. The increasing importance of modern lighting because of its effect on sales is still another reason for a modern treatment.

Men's apparel is a necessity, but many items are sold in a men's store which are luxuries, and more and more of this type of merchandise is being promoted. This type as well as many of the so-called necessities are what are called "impulse buying types." For example, men's neckwear. Few men ever enter a men's store with the express purpose of buying a necktie. They go to buy a suit, an overcoat, or perhaps some shirts, but in the process of making these purchases they see or are shown some neckwear and make a purchase. There are also a great many items sold in a men's store of a gift nature. This is proved by the unusually high relative sales in December. The fact that so much of the merchandise sold is of these impulse buying types makes it most important in planning a men's store to pay particular attention to location of merchandise in relation to a planned flow of traffic. It is a universally accepted fact that many of these items are dependent for their successful sale upon being seen by the greatest possible number of customers.

In the interest of utilizing the best locations for impulse type merchandise and of getting the maximum amount of merchandise and display in these preferred locations, it is important to consider the monthly fluctuation of volume in different lines and to make provision for increasing and decreasing the size of departments according to the seasons. Almost without exception the really successful stores are the ones producing the greatest sales volume per square foot of space occupied.

Men's stores do from three to four times as much volume in December as in the average month and of course, a much greater proportion when compared with the off-season months. However, there are certain sections in the store that have a much greater fluctuation. For example, realizing that if every month's business were exactly the same each



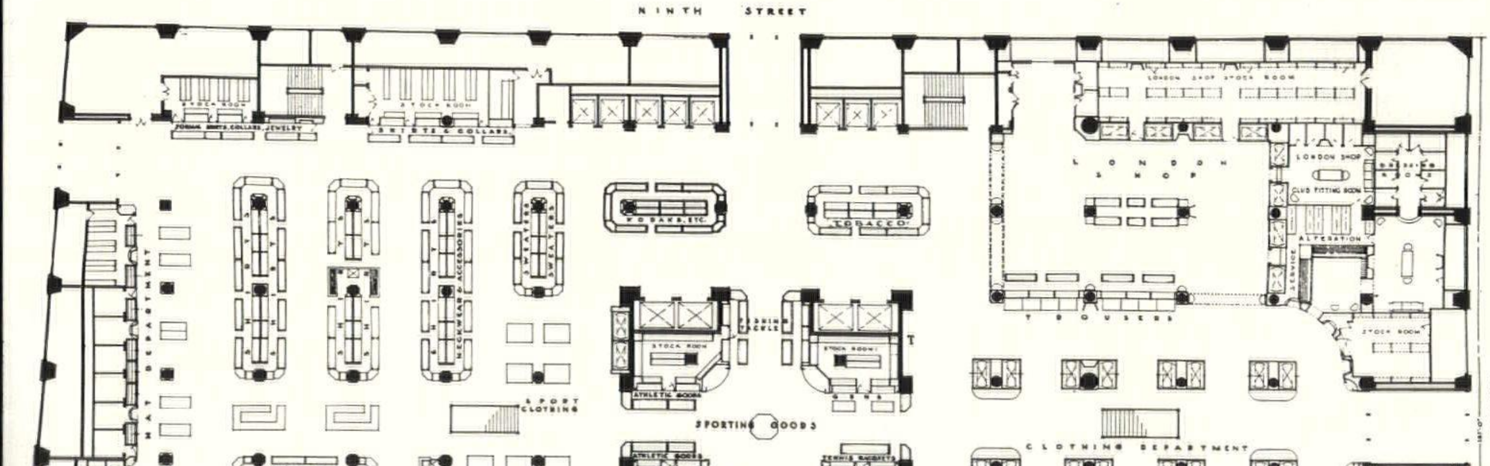


ight: PLAN OF WEBER & HEILBRONER, NEW ORK. KENNETH C. WELCH, ARCHITECT. The oor is off center of the furnishings section so that ustomers going to the clothing section pass the mpulse buying type" merchandise. The sawtooth pe counters in shirts, etc., increases the perimeter f selling space in a given area and is as easy to rvice as the same type of plan applied to a nch counter.

enter: PLAN OF GEORGE H. CAPPER, CHICAGO.

low: PLAN OF THE MAIN FLOOR, SOUTH BUILD- IG, JOHN WANAMAKER, NEW YORK. One of e largest complete men's floors in the country, rrying men's furnishings, hats, shoes, clothing, sport- g goods and the London Shop, a complete fur- hings and clothing shop in itself. The best entrance at the southwest corner of Eighth Street and Broad- y. Many women use this entrance, crossing over the center entrance on Ninth Street to enter the rth Building. Accordingly, men's furnishings items, ich appeal mostly to women, have been placed jacent to this line of travel.

ior to the modernization of this floor there were o entrances near the corners on Fourth Avenue. ese were eliminated and a center entrance substi- ted to simplify the traffic and consequently improve e supervision in the men's clothing as well as gain interrupted wall space combined with the neces- ry floor area for the stockrooms and service areas quired. The clothing stockrooms, which the customers may enter carry over sixty per cent of the stock on the floor but occupy only seventeen per cent of the available net area. Note the forward stockrooms adjacent to the selling space in men's furnishings.



CHECK LIST OF POSSIB

SELLING SECTIONS

- Shirts
- Collars
- Neckwear
- Scarfs
- Handkerchiefs
- Hosiery
- Gloves
- Underwear
- Pajamas
- Jewelry
- Garters, Belts, etc.
- Sweaters
- Bathing Suits
- Robes
- Smoking Accessories
- Men's Gifts—Toilet Articles
- Canes and Umbrellas
- Luggage
- Hats and Caps
- Suits
- Overcoats and Top Coats
- Formal Clothes

Above: **SECTION OF BOYS CLOTHING DEPARTMENT NATIONAL CLOTHING CO., ROCHESTER, N. Y.** Her the equipment is designed to take double hangrods, a shown, or can easily be converted into shelving section when desirable.

Left: **FURNISHINGS SECTION IN YOUTHS DEPARTMENT NATIONAL CLOTHING CO., ROCHESTER, N. Y.** Illus trates the use of a stockroom adjacent to furnishing Some merchandise is better sold from tables. Grand Rapid Designing Service.

Photograph by Grignon

GEORGE H. CAPPER, CHICAGO—HAT SECTION. No type of showcase with small display and space for sto below. Necessary in most men's stores today to accomm date stock, and another method used to reduce selling spa in relation to stock space.

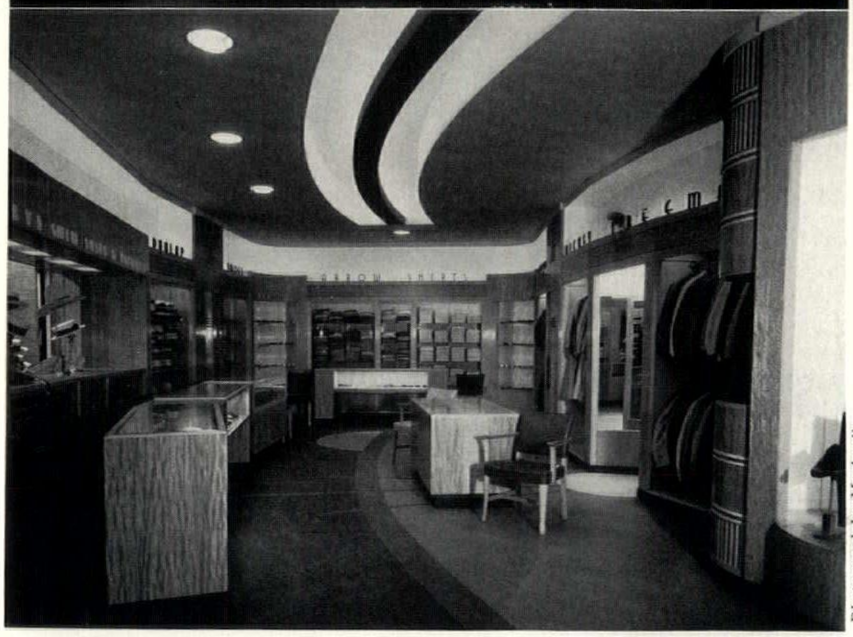
ECTIONS IN A MEN'S STORE

Sport Clothes
Odd Trousers
Chauffeur's Apparel
Made to Measure Clothing
Shoes and Slippers

RVICE SECTIONS

Fitting Rooms
Busheling Room and Pressing
Wrapping Service Will Call
Cashier
General Office
Executive Offices
Cash and Charge System
Receiving and Marking
Reserve Stock Room
Delivery
Display and Sign Writing
Customer's Rest Room
Employees' Lockers and Toilets

Photograph by McAnally



Photograph by McAnally

Above: **MEN'S CLOTHING SECTION—DREYFUSS & SON. TEXAS CENTENNIAL, HOUSTON, TEXAS. Suits carried two high. Indirectly lighted triplicate mirrors, silhouetted, signs and introduction of ventilating grilles, as a basic part of the design. Geo. Dahl, Architect.**

Right: **PART OF FURNISHING SECTION, DREYFUSS & SON, HOUSTON. George Dahl, Architect. Grand Rapids Designing Service.**

WEBER & HEILBRONER, 5th AVENUE, NEW YORK CITY. Grand Rapids Designing Service. Kenneth C. Welch, Architect. Clothing department circular in plan, the space in the corners being utilized for stock and service. Materially advertised brands featured in signs. The same light that illuminates the merchandise also silhouettes the signs and adds to the general illumination.

month would represent 8.3% of the yearly volume, it is interesting to note that men's gloves will do 60% to 70% of their volume in December, and items like robes, neckwear, and other accessories will do as much as 40% in December. On the other hand, men's underwear, even with its increase in style appeal in recent years, being still more or less of a necessity, will do 12% to 13% of its volume in December. The men's clothing peaks come in the spring and fall. This all shows that some provision must be made for a decided give and take in space requirements for the different sections.

A men's shop is comparatively easy to plan equipment for, due to the fact that there is not a great diversity in the size of merchandise; most folds and packages have been fairly well standardized. When compared with a department store with its great variety of lines, from hairpins to fourteen cubic foot ice boxes, the men's store is relatively simple. There are a certain few small items, such as jewelry, hosiery, gloves, garters, etc., which, if they are to be carried in drawers, can be accommodated in one size of drawer. Neckwear is best carried on glass shelves or racks, and does not present any stock problem, but rather a display problem. The bulk of the furnishings, such as shirts, underwear, pajamas, sweaters, etc., all fit nicely into the same size units, so that any interchange of space they may have is merely a question of moving stock. Men's clothing has only two major divisions as far as size is concerned, short garments, such as suits and jackets, and long garments, such as overcoats, topcoats, robes, etc. As a rule, fluctuation between these groups is easily accommodated, if wall space is available, by carrying suits two high and overcoats, in season, one high.

Another important factor in planning a store is the proper relationship between the stock-carrying facilities and the selling facilities. For example, the present departmentized store is an outgrowth of the old dry goods store with its rows of counters and shelving. The plan was quite well standardized; enough shelving was provided to house the stock and the counter space surrounding the shelving just happened, regardless of whether it was a great deal more than was required to show the merchandise. This shelf space represents the stock-carrying facilities and the counter the selling facilities. In a modern store, we try properly to proportion the two. The amount of stock to be carried is more or less fixed by the volume of business. A certain amount of forward stock space has to be provided, but the selling space—represented by counter or showcase space in small wares or furnishings, or open floor space, fitting mirrors and dressing rooms in clothing—varies not with the amount of stock required, but with the volume of any one section in any particular season. In small wares, for example, enough counter space should be provided in any one section, at any peak, to allow the maximum number of customers ample standing room in front of the counter. To provide enough space to handle the December peak, the year 'round, always results in an excessiv space the year 'round and in an excessive selling cost.

As a result, in the average men's shop, in furnishings it works out to advantage to have some forward stockroom space directly adjacent to the selling space. A greater amount of actual stock pe square foot can be housed in this manner, and withi a given area provides a greater proportionat amount of stock to selling space. This is desirable providing some method can be devised for increasing the selling space, such as expanding into th clothing section when necessary.

There is a considerable amount of men's furnishing stock which is more or less standardized an which is better carried in the original stock boxes This can just as well be carried in a concealed stock room thereby salvaging all the visible perimeter o the store for the display of forward stock, the actua display of which is a decided aid in promoting it sale. This concealed stockroom, which can carr such stock as dress shirts, collars, certain types o underwear, some stock duplicating that on displa when necessary, must have provision made for for displays so that it is evident to the customers tha such merchandise is carried. For example, an interesting display in a glass case showing all the col lars carried in stock is not only very convenient bu more valuable from a sales standpoint than takin up a considerable amount of wall space for the dis play of stock boxes. If it is desirable to feature th name of a national brand, such as possibly the dis play of the boxes would do, it can be done wit proper signs.

As a matter of fact, illuminated signs of a uni form character serve not only a very useful purpos but add considerably to the decorative effect in functional way. If they are properly handled the are a decided help to the shopper, especially in th larger store.

DESIGN FOR ENVIRONMENTAL CONTROL

by K. Lönberg-Holm and C. Theodore Larson

LIMITATIONS IN FABRICATION

New possibilities in structural design are opened up by modern industrial production. The full economic advantages of such production can be gained, however, only through complete integration of a characteristic cycle of performance: (1) research, (2) design, (3) fabrication, (4) distribution, (5) use, (6) liquidation. Every structural design is conditioned by the limitations imposed by each phase of production, for all are interrelated and interacting: the production of a structure does not end until its final demolition. An integrated control of production is necessary for the development of structural designs which will represent the most advanced technical standards.

Industrial progress is characterized by an increasing emphasis on precision control. Refinements in measurement are made possible by the development of testing and inspecting instruments which go beyond the ordinary limitations of hand and eye. Examples: microscopy; photometry; photomicrography in visible light and in ultraviolet light; spectrography; high-speed movies; industrial radiography, utilizing X-rays and gamma rays to reveal the internal structure of metals and other crystalline materials; applied photoelasticity, utilizing the wave-length of monochromatic light to make minute observations of surface irregularities or to determine internal stresses.

The transfer of precision control to the machine is reflected in increasing *simplification* (elimination of unnecessary time, labor, materials and equipment) and in increasing *continuity* of production (synchronization of operations). Technically, the problem is the development of specific materials and specific machinery for the reproduction of specific designs (products) within specific time limits.

Precision criteria for the development of materials:

1. *Increasing constancy*—uniformity of product for specific performance; durability of substances and surfaces; resistance to deterioration or destruction by external forces.

2. *Increasing plasticity*—ability to machine.

3. *Increasing strength and lightness*—control of structural contacts or atomic slip planes; elimination of deadload.

Examples: metallography (heat-treated alloy steels; high-speed steels, cemented carbides; low melting point alloys) and industrial chemistry (processed materials, plastics).

Precision criteria for the development of machinery:

1. *Increasing specialization*—segregation of functions and motions, accuracy of parts, increasing range of variable feeds and speeds. Examples: hydraulic drive; high-speed precision boring machines; continuous lubrication; close commercial tolerances; gages.

2. *Increasing standardization*—interchangeability of units, flexibility of performance. Examples: extrusion presses; automatic die-casters; milling machines.

3. *Increasing integration*—centralized process control, synchronization of operations. Examples: electric and photronic controls; automatic temperature controls; electrical timing; automatic straight-line production (continuous strip-sheet steel mills).

With increasing efficiency of materials and machinery, the limitations of fabrication are removed and there is a corresponding increase of freedom in structural design. This is manifested by an increasing range of industrially reproducible shapes and sizes. Examples: variety of products obtained by change of dies or patterns in extrusion presses and die-casters; continuous production of sheets (steel, glass).

NEW DESIGN STANDARDS

Standards of design advance continuously as industry provides nev means of fabrication—new materials, new machinery, new controls Standards of fabrication in turn are advanced as new means of distribution—highways, railways, airways—promote the transportability of products. With full exploitation of new industrial techniques, i becomes increasingly possible to produce structures designed for precision control in use.

The limitations in fabrication are removed progressively, but th development of new structural designs is uneven. Forms originall produced as a result of limitations in fabrication tend to remain behind as traditional design patterns, while for reasons of industria productivity the required standards of performance tend to advance In general, structures with well-defined technical purposes set relatively the highest standards of design: they show the greatest precision in performance capacities and the greatest variety in forms Examples: industrial plants, wind tunnels, transport units.

Traditional design forms are characterized by a lack of precisio in fabrication and by a lack of uniformity in the product, necessitatin large factors of safety and excessive structural mass. Wide tolerance in measurement and performance are accepted. In order to eliminat waste in fabrication, attempts have been made to simplify these traditional forms by reducing them to the simplest possible single shap and size. Such "standard minimum" designs are obtained, however at a sacrifice in the specific character of use requirements. With increasing complexity in requirements, the inevitable result is an increasing confusion in their use.

Traditional forms represent an integration of plan and structur based on the use of natural materials and hand labor. The introduction of industrial techniques makes possible a new design integratio which is needed for a more precise control of environmental forces Example: it is not economical to air-condition forms which hav evolved out of the requirements of natural ventilation.

The problem goes beyond a more efficient reproduction of traditional forms. The implied change in design standards is qualitativ rather than quantitative. The design objective becomes the extensio of scope of the means of control. Example: electrical sound-recordin machinery, originally designed to reproduce existing sounds, can nov be used as the means for designing new and unheard-of sound combinations impossible with traditional instruments.

The advance of science and technology is reflected in a shift i emphasis from standards of minimum subsistence to standards o maximum performance. The conception of shelter as a means of protection against nature or society thus changes to a conception of structural design as a means of controlling environmental forces to th advantage of the human organism. New and unthought-of form impossible with traditional means of production, are implied.

Technically, the objective is environmental control for the purpos of increasing productivity. Since every productive function or motio has a corresponding structural form, the technical problem becomes th design of a specific structure ("the best possible form") for each specific use in accord with desired standards of productivity.

ENVIRONMENTAL CONTROL

Increasing productivity implies an increasing degree of interaction (motion and contact) between people, between things, between people and things. Such environmental forces can be analyzed relative to two classifications of motion (energy):

(1) *Human activities*—biologic and social forces.

(2) *Matter*—solids, liquids, gases, electro-magnetic radiation.

These varying and changeable forms of energy constitute the materials of design. Technically, the problem is control of their motions and contacts to achieve their most effective transformation and arrangement into flow patterns for productive use.

The flow patterns are represented by varying conditions of density, pressure, velocity (stability). Their interactions are represented by varying degrees of change—friction, distortion, reflection, emission, dispersion, adhesion, absorption, metamorphosis.

The purpose of environmental control is the increase of life for the human organism—the elimination of waste in metabolism. This is expressed in an increasing surplus of human energy which is released from drudgery and the destructive forces of an uncontrolled environment and becomes available for the promotion of human culture.

The human organism is itself a specific but changing quantity of matter and radiation. As such it functions as an environmental force. Because of physiological limitations, it is in turn affected—harmfully or beneficially—by the action of other environmental forces.

The balance between the human organism and its environment is variable and changeable. Through instruments of environmental control, undesirable forces can be removed, desirable forces can be promoted. Such instruments may be individually or socially controlled.

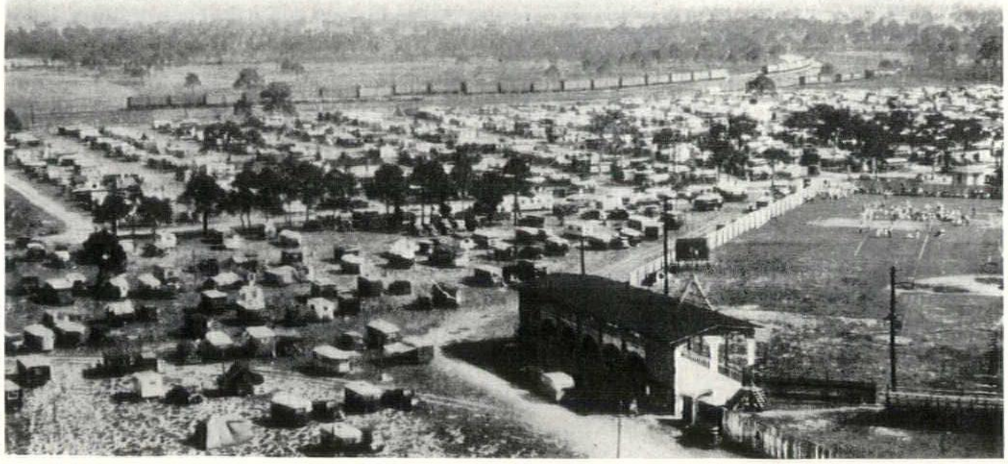
Individual means of control are conditioned by the limited capacities of the human organism. This force increases, however, with the development of social means of control. The measure of social power is the degree of integration in each field of human activity.

The field of industrial activity is defined by the development of production networks—the distribution of the productive plant as determined by physical and social resources, power generation and transmission, and means of communication and transportation.

These networks are transitional in character; they are conditioned by the rate of technological obsolescence. Flexibility in productive activities involves mobility of the production networks. This in turn involves mobility of structural designs to meet the conditions set by varying rates of obsolescence.

Different aspects of this trend appear in the development of (1) structures which are themselves mobile, like trailers; (2) structural parts which are interchangeable and can be assembled or disassembled and moved about as required by varying conditions of use; (3) structural designs which promote the mobility (traffic) of people and things.

The criterion of structural design becomes the integration of motion —the control of productive flow patterns and their interactions. With increasing simplification and increasing continuity of systems of motion there is an increase in mechanical and social productivity. Advance is measured by an expanding range of human activity and by the acceleration of events.


Wide World Photo

the largest town on wheels in the world: 1,200 trailers in Sarasota Tourist Park, Florida

TRAILER COMMUNITIES

Resort cities in Florida have taken the lead in providing motor trailerites with necessary community services. Camp grounds offer electricity, water, sewage disposal, lavatories, showers. Some even have game courts and community recreational centers. Largest is the municipally owned and operated tourist camp near Payne Park (spring training grounds of the Boston Red Sox) at Sarasota. Opened 5 years ago, it now has 31 acres subdivided into 1,000 rectangular lots, each 30 feet in depth and 25 feet in frontage. It is policed, has a huge recreation hall and a community laundry. The second annual trailer show, exhibiting 50 models, was held here last February in a large circus tent. Some 1,200 trailers housing over 3,000 visitors, were gathered here for the 16th annual convention of the Tin Can Tourists of the World (official organization of motor campers with 35,000 registered members).

California, New York, Michigan, Ohio Indiana are also popular with the trailerites. Likewise the national parks. With a network of trailer communities developing throughout the country, a new field of architectural design opens up. Here is an opportunity for the creative designer, as Ernestine Evans, journalist and a member of the Resettlement Administration staff, points out in the accompanying article.

TRAILERS AND THE WORLD'S FAIR . . . Ernestine Evans

If the 1939 Fair is really to dramatize future customs and experiments in living of a civilization that now has 36,000,000 automobiles, at least a dozen Long Island towns ought to make bids at once for a share of the tourist traffic. There will be, in all likelihood, at least a half million trailer-owners by 1939, and a dozen municipally-owned trailer community parks might easily turn out to be high spots of the Fair Year.

Each one should show six or seven distinguishing features—not bizarre differences, but different solutions of community problems. The American imagination has not begun to work yet on the functional community. Designing a trailer city should be ideal to the modern architect: no restraining chateaux or ghettos need hold him back.

At Sarasota, the trailer camp dance hall, with its municipally paid orchestra, is not very beautiful, but in it hundreds of retired firemen, postmen, and other citizens, a good many of them past fifty, have learned to dance for the first time, and shaken off the years. A good many of these trailer couples, who go south for the winter and north to Mackinack for the summer, would come east to the Fair, if they could park on Long Island, at a reasonable rental for a lot (it is $4 a month at Sarasota) and have dependable light, telephone, and sewers hitched to their Covered Wagons, Vagabonds, Palaces, Aladdins, or whatever.

One trailer community ought to experiment by building a small motion picture theater as a model for rural counties where visual education is the next step for the schools and the Grange; a theater not built for the big Boy-and-Girl, Earthquake, War and Murder pictures, but the small musicals, the news reels, and the new documentaries on the arts, sciences, and politics. By 1939, no doubt, there will be travelogues dramatizing script from the Great American Guide Book which the federal government has just spent six million dollars in compiling. The Parent Teachers Association in some Long Island town should leap to this as a way to get a theater built for the local children. Another camp could advertise not only its base utilities, its view, its three fine sycamore trees, and popovers on Tuesday, but a Listening Post, a small arena for a crackerjack short wave radio and evenings spent listening to the radio programs from Budapest, London, Paris and Rio de Janeiro.

When the Russians have trailer villages, and they will, there will be gazebos for chess, small planetariums, sunbathing sheds, places to check the children, and round table pavilions. A dash of chautauqua and three tablespoons of convention will be something for the architect to take into consideration.

To keep up with the Joneses in the trailer in the lot next door is a game of simplification, not one of elaboration. Trailer villages breed a common drive for universal minimum services. The utilities couplings have to be uniform to be cheap. Gadgets take up room. Service, not servants, is the criterion among the sons and daughters of 4-, 6-, and 8-cylinder living.

The site of the trailer camp should be part of the town plan. A farm woman's market, like the successful market at Bethesda, outside Washington, belongs near it. Community houses, theaters, baths, community kitchens, laundries, and infirmaries, on a small scale, are all soon to be tried. Long Island misses a bet if it does not use trailer tourists to help pay for some experimental demonstrations in these new community services.

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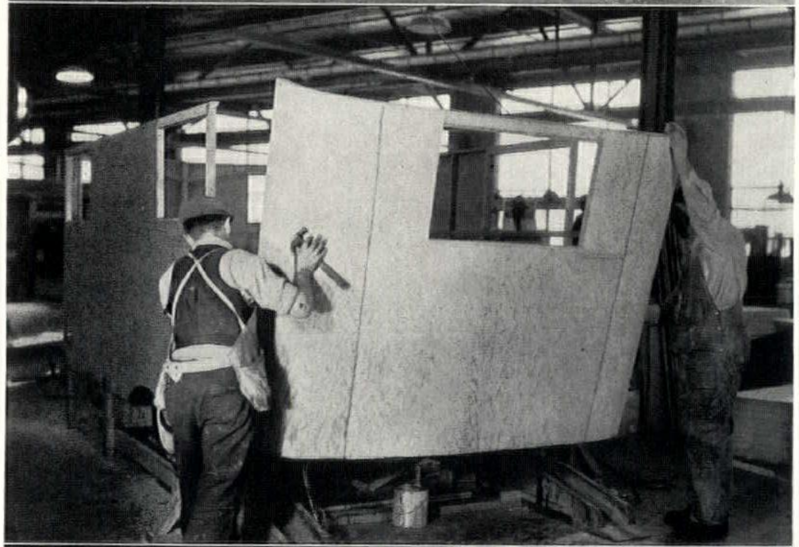

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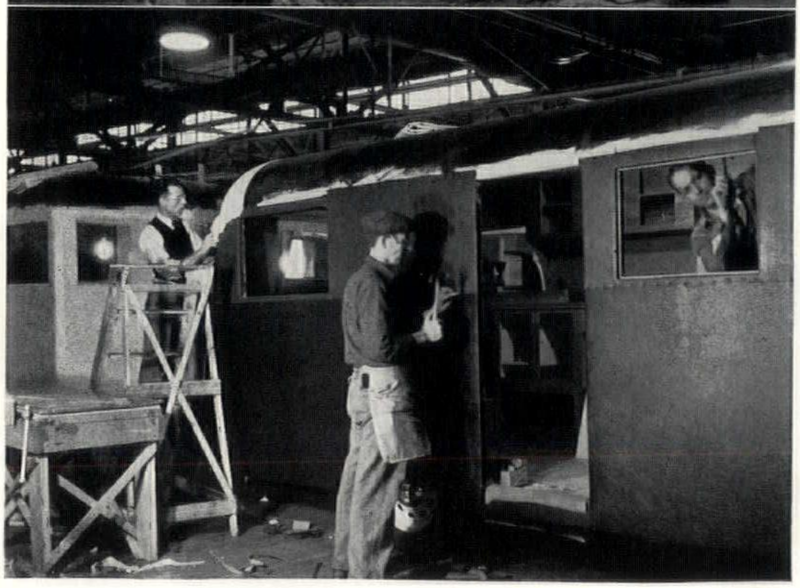

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TRAILER INDUSTRY

The house trailer is hardly a dozen years old. Five years ago it was still a novelty. Last year the industry had grown so phenomenally that it is estimated some 250,000 trailers were on the highways. According to the American Automobile Association, nearly a million persons are expected to use trailers for touring this year. William B. Stout, famous airplane designer and transportation engineer, predicts that within 30 years half the houses in this country will be mobile. Roger W. Babson, the statistician, thinks this will occur within two decades instead of three.

Estimates as to the number of manufacturers range from 300 to 2,000. Precise figures are not available in this industry, but it seems generally agreed that the likely number is 400 at the present time. The largest manufacturer is Covered Wagon Co., Mt. Clemens, Michigan, with 160,000 square feet of floor space, 1,000 men, a 24-hour day, a 6-day week, and a quota of 10,000 trailers ($4,000,000) for 1936. The second largest manufacturer—Silver Dome, Inc., Detroit—has 300 men going full blast on a monthly 400-unit output. Each trailer requires 4 days for assembly. According to Norman C. Wolfe, president, the new plant (72,000 square feet occupied May 12) is already too small and plans are under way for additional facilities.

PREFABRICATION in the Covered Wagon plant: (1) Completed units roll off the assembly line daily. (2) Sidewalls, ends and top are constructed in sections on jigs, and body assembly is rapid. (3) Sidewalls and ends are assembled on chassis. (4) Walls are insulated against heat and cold, and a leatherette finish is applied to the exterior.

TRAILERS FOR HOMES

Trailers designed as residences vary as much in structural form as they do in price and in type of tenancy. In fact, fine shades of distinction are made between house trailers and trailer houses, and the industry's new magazine (Trailer Travel, 180 North Michigan Avenue, Chicago) has already raised the question whether mobile housing may not be a solution of the mass-production housing problem.

The house trailer is pulled from place to place—it differs from the house car which is an automobile chassis supporting a house. Likewise pulled about is the shelter-on-wheels—the Stout Mobile House (reported in the April issue, Technical News and Research, page 332) and the Willson Mobile House (July issue, pages 64, 65).

The land yachts represent another type. These offer "sociable transportation"—they are designed and constructed to be lived in while in motion as well as while standing still. Two companies (Aerocar Company of Detroit and Curtiss Aerocar Company of Coral Gables, Florida) are producing such trailers on the basis of patents originally obtained by Glen H. Curtiss, pioneer aircraft designer and manufacturer. Regular airplane construction is utilized.

Trailers cost roughly the same as automobiles. Good standard models run between $400 and $1,000, de luxe models from $1,000 to $5,000 or more. Some trailerites build and roll their own for as low as $150.

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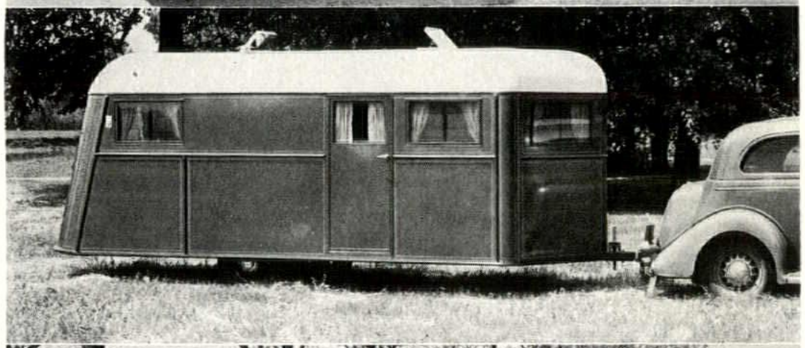

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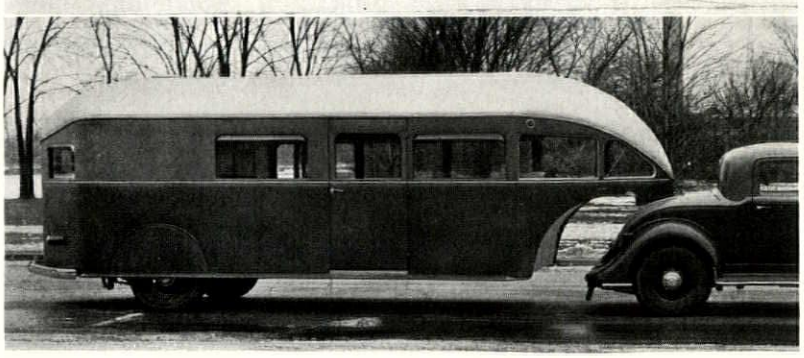

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NEW structural forms: (1) A small trailer designed to serve Gloria Stuart's requirements as a writer and 20th Century-Fox movie actess—Acme photo. (2) "Sunchaser" model produced by York-Hoover Body Corporation. (3) Kozy-Coach model. (4) Covered Wagon tandem-wheel suspension model. (5) Land yacht produced by Aerocar Company of Detroit.

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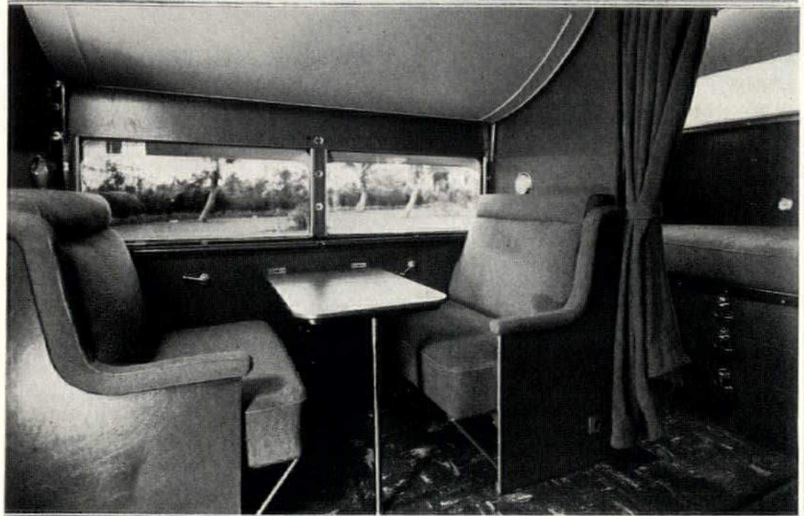

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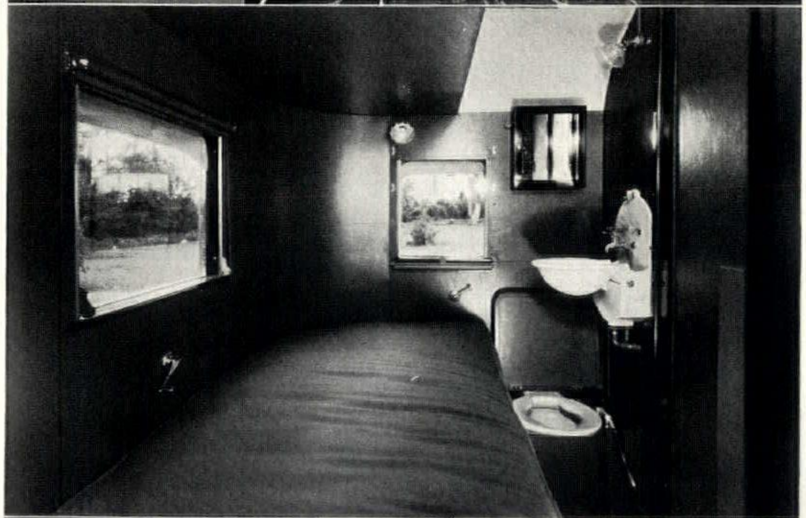

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TRAILER OCCUPANCY

Conditions of industrial employment have brought about an enforced mobility for large sections of the population who cannot as yet afford the conveniences of mobility. In California there are some 150,000 migratory workers living in sheepherder wagons and other miserable makeshifts. The migratory fruit and berry pickers in the South likewise are a large potential, though currently ineffective, market.

At present trailer users are chiefly vacationers, retired middle-class couples who wander about the country in season, and straightforward nomads—estimated at 100,000—who live in trailers the year round. All social strata are represented. The names of many millionaires appear in the lists of trailer owners.

Even servant's quarters have been introduced in de luxe models, as can be observed in the accompanying views of a land yacht (custom-built for C. F. Munn of Palm Beach) which is being shipped abroad for a tour of continental Europe. The front entrance door opens into a forward compartment and a main compartment; directly behind these are a commodious wardrobe, a shower bath compartment, a gallery and, at the rear, the chauffeur-butler quarters. The rear side entrance door gives access to the service section without disturbing the owner or guests. A communication system connects each of the three living compartments and the power car.

DE LUXE trailer built by Curtiss Aerocar Company: (1) Metal window canopies, four adjustable roof ventilators and louvers in front door permit air circulation even in heavy rain. (2) Adjustable-back Pullman type seats are convertible into beds. (3) Quarters for chauffeur-butler. (4) Shower bath. (5) Galley with storage for utensils and supplies.

TRAILERS IN BUSINESS

According to the U. S. Census of Distribution, 39% of all sales at retail are made in towns of 10,000 population or less. Trailers provide a low-cost means of reaching this scattered market with an adequate display of merchandise. Instead of waiting for individual customers to become interested in a product through indirect sales promotion and advertising, and then to come to the display room, it is better business—so goes the logic advanced by one trailer manufacturer—to carry the display room to selected areas, invite inspection by dealers or by the general public, and record interest shown so that salesmen may then follow through directly where desirable. A wide range of products are already being sold in this way—furniture, kitchen equipment, refrigerators, builders' supplies, hardware, jewelry, sewing machines.

Mobility has also been applied to other structural types. A company in Indiana (H. A. Thrush & Co.) uses a trailer for regional sales conferences. There are "healthmobiles," portable diners, libraries on wheels, traveling schools, theaters, even a church. A public accountant in Los Angeles maintains a mobile office. The police department of Nassau County, New York, has a portable detective office—a trailer hooks onto a police car and takes "headquarters" to the scene of the crime while clues are still hot.

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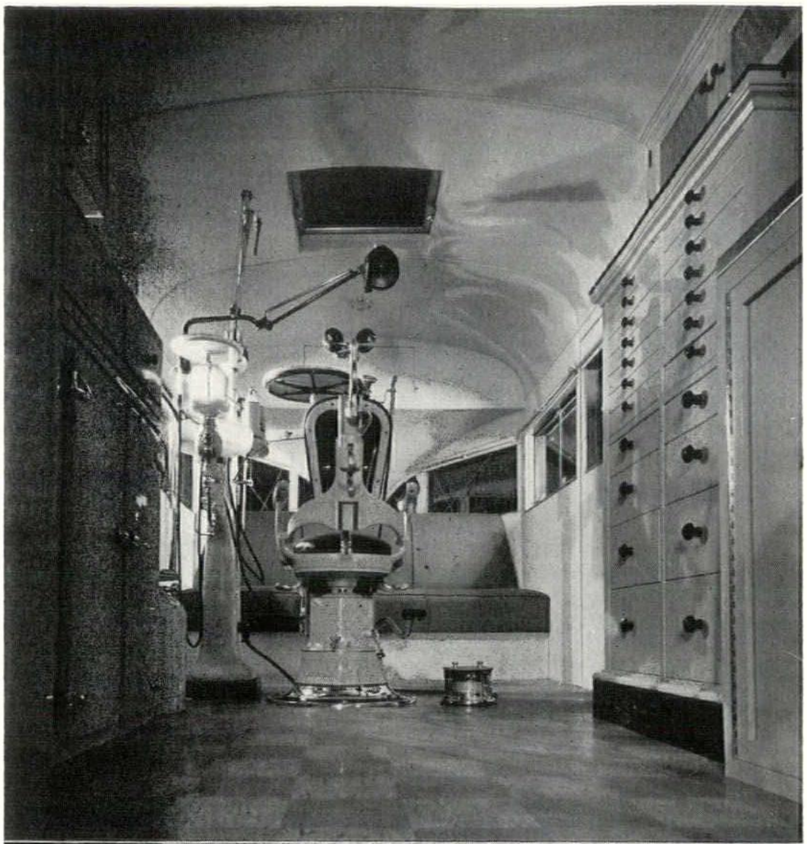

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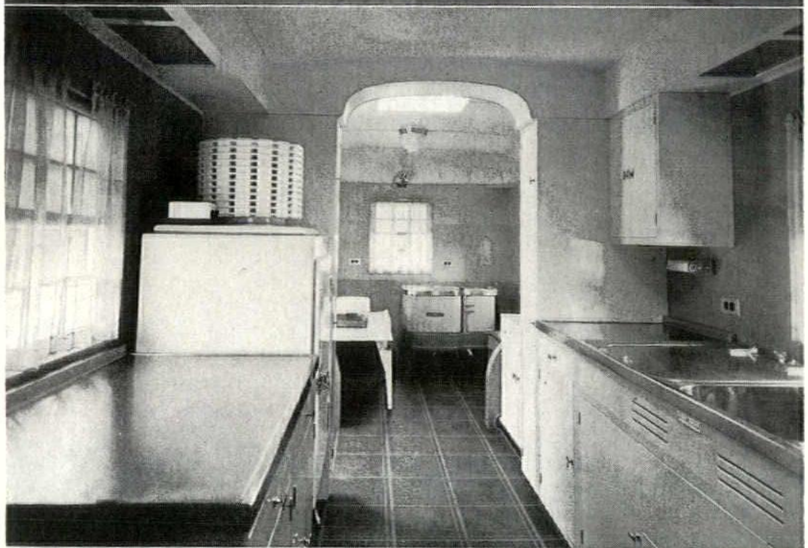

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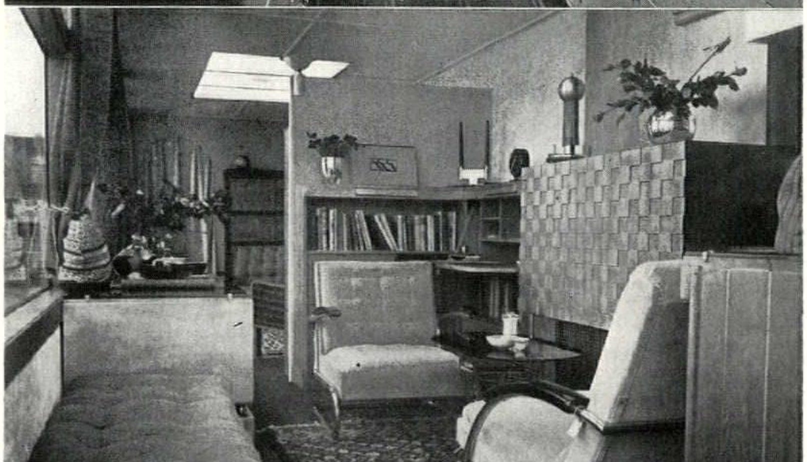
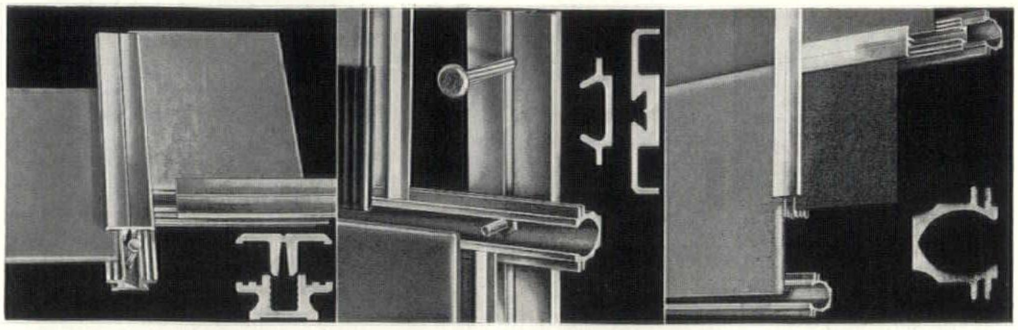


MOBILITY for profession and business: (1) Mobile dental clinic, produced by Aerocar Company of Detroit, for use on Indian reservations and in coast-guard and lighthouse service. (2) Aerocar used for display of kitchen equipment. Photos 1 and 2 courtesy of W. J. Parrish, Jr. (3) Reens furniture display room now cruising through Holland. Photo courtesy of Koen Limperg, editor of "De 8 en Opbouw."



typical assemblies: (1) gripping cap joint, (2) pointed joint, (3) combination joint

NEW JOINTS FOR NEW MATERIALS . . . Revecon System

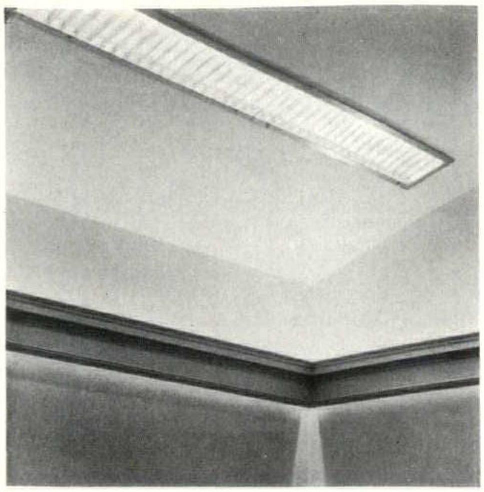
Designed by Russell L. Hohl, architect. Produced by Revere Copper and Brass Incorporated, 230 Park Avenue, New York, and marketed through authorized distributors according to architects' specifications.

The Revecon system coordinates the use of many materials formerly offered as isolated products. Essentially it consists of a framework of extruded aluminum sections which hold in place any type of rigid sheet finishing material. Exterior or interior finishes on plane, curved, or angular surfaces may be obtained over either solid or skeleton construction. All elements form an integral structural unit, but each is free to expand or contract without distortion. The finish is rigid, lightweight, waterproof, and airtight. No painting or other other maintenance is required for the structural members. Alterations, if required, can be made easily. With the use of a large variety of flat sheet materials, wide variations of color and texture can be had with an increased freedom in design.

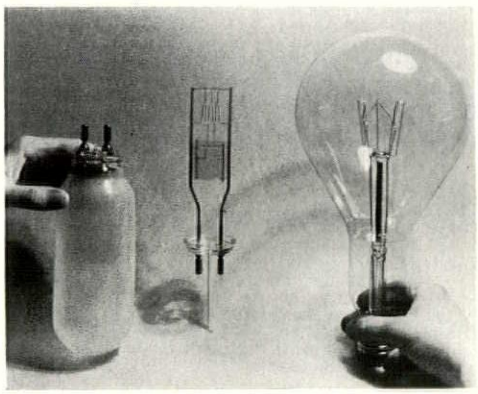
Component parts: The main elements in Revecon construction are (1) finishing materials, (2) Revecon members, and (3) Revecon metallic mastic. Any sheet material of standard size, not over ½" thick and rigid enough to support itself on edge, can be used. Included in this category are such examples as plain copper, lead-coated copper, chromium-plated copper, porcelain-enameled copper, bronze, aluminum, stainless steel, porcelain-enameled iron or steel; also glass, translucent marble, plastics, ceramics, asbestos cement, and other insulation or acoustical materials in sheet form. The holding, gripping and cap members are extruded sections made of a strong aluminum alloy, which may be alumilited in various colors on order. The metallic mastic seals the assembly against weather and also permits expansion and contraction within panel areas; the mastic has a non-mineral base with a binder of asbestos fiber and contains aluminum powder which "leafs out" on exposure, forming a surface that keeps the underlying ingredients plastic and immune against oxidation and any destructive action of light rays.

Types of assembly: A large variety of Revecon members are available for use with different panel materials. The many combinations which are possible resolve themselves into three typical assemblies, as shown in the accompanying illustrations. These consist of two basic designs—the capped-joint and the pointed-joint—and a combination of the two which may be used in one installation when desired. The capped-joint construction consists of panels of flat sheet material framed horizontally and vertically by metal caps which are inserted in the gripping members which, in turn, may be attached directly to supporting surfaces (furred-out when required). The pointed-joint construction consists of metal sheets with formed edges which interlock with the horizontal holding members and vertical holding channels; the panels are held in tension instead of compression, and the joints are filled and pointed with metallic mastic. With the typical combination construction, the gripping members which hold the flat sheets ride in the same horizontal holding member to which the curved edge of the formed edge sheets is locked. No special tools are required for the installations. Nails, screws and bolts are used to attach members to supporting areas.

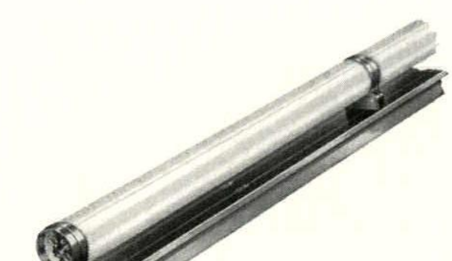
Uses: The ease with which holding sections may be attached to any existing masonry or other surface makes the system particularly suitable to the covering of old buildings. A new front can be put over an old building with only a total additional thickness of 1" if formed edge decorative metal and ⅜" if flat sheet panels are used. All work can be done to the exterior without damage to the interior wall surfaces, and panels may be individually removed or replaced, if necessary, without damaging any surrounding wall panel. Store fronts, complete or combined with products of other manufacturers, represent another important application; likewise garages, service stations and buildings with light supporting framework. Partitions, boiler and radiator casings, cabinets, signs, spandrels, and the like, may also be constructed.



bank lighting is both direct and indirect



new mazda lamp . . . old lamp model



lumiline plug-ins

new lighting system for bank

Designed for Nela Park branch of Cleveland Trust Company by General Electric engineers under supervision of Alston Rodgers and with cooperation of A. G. Hall, the bank's architect. Lighting troughs and projectors furnished by the Day-Brite Reflector Company (Sweet's Catalog File 28/15), St. Louis, after fundamental plans by the Nela Park Engineering Department.

The lighting equipment is built into the walls and ceilings, as an integral part of the room structure and design. Most of the light is projected downward, through carefully shielded ceiling ports, directly upon the tellers' counters, check desks, tables and other work areas. A separate system of indirect lighting gives well-diffused general illumination over the ceiling and walls. All light sources are carefully concealed and shielded from direct view so that there is no uncomfortable overhead brightness and glare.

Banking room: The arched white ceiling is softly lighted from lamps concealed behind the wide molding which runs around the walls at a height of about 8 feet above the floor. Wiring channels are embedded in the walls behind the molding and a continuous band of 60-watt lumiline lamps is attached to the channels. The wood molding is set a short distance out from the wall to allow some of the light to filter downward and illuminate the wall areas. Directly above the tellers' windows and over the check desks two long slots, about 9 inches wide and 28 feet long, are cut in the arched ceiling. Long "alzak" aluminum reflecting troughs direct light downward through the narrow openings and concentrate the illumination on the working surfaces. The openings are covered by panels of pebbled glass.

Lighting provisions: Not less than 25 to 30 foot-candles are provided at all times. This is an average of about 10 watts per square foot in contrast to the usual 2 or 3 watts. Total connected lighting load is 19.5 kilowatts.

new 1,000-watt mazda lamp

T-24, inside frosted Pyrex bulb announced by Westinghouse Lamp Company (Sweet's Catalog File 28/9), Bloomfield, N. J.

Tubular in shape and about half the size of the 1,000-watt PS-52 bulb Mazda lamp now used for the general illumination of large industrial and commercial installations, the new lamp will permit the use of smaller reflectors and accessories. The Pyrex bulb will better withstand breakage from snow and rain in outdoor installations, thus foregoing the need of costly waterproof equipment. For the first time a specific structural member has been incorporated within the bulb of a Mazda lamp to collect and localize the tungsten blackening. Two wire meshes, each about 1½" square, are attached to the lead-in wires just above the filament when the lamp is in its correct burning position of base-up. As the filament sublimates during burning, the tungsten metal vapor rises with the heat and condenses on the surface of the wire mesh which is located at a point where little of the light is intercepted. This minimizes the gradual depreciation of the light output through life, which is a serious problem in the conventional high-wattage lamps. The new bi-post lamp is designed for 110, 115 and 120 volt service, and has a maximum over-all length of 9½".

plug-ins for lumiline lamps

Announced by National Electric Products Corporation, Fulton Building, Pittsburgh.

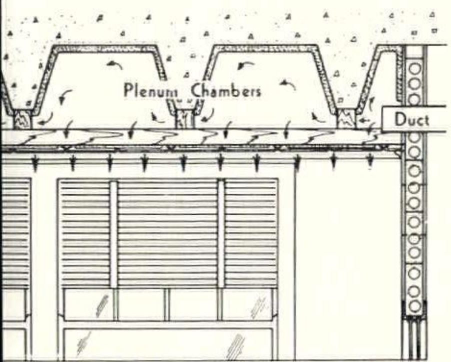
The "plug-in" strip fits into a space only 1" wide. With plug-ins spaced on 6 centers, either 12" or 18" lumiline lamps can be used. Special receptacles are not needed. For tandem lamp mounting two plug-ins are inserted back to back. The tension of the contacts is sufficient to permit the strip to be installed overhead without danger of the plug-ins pulling out. One type of plug-in has a narrow housing which is hardly noticeable when the lamps are exposed and used in continuous runs. Another type has a wide housing for single lamp installations.

midget mercury lamps

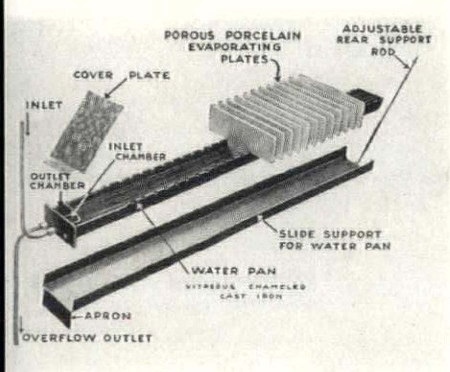
The same type of lamp has been introduced by both General Electric Vapor Lamp Company, Hoboken, N. J., and Westinghouse Lamp Company, Bloomfield, N. J. Taken from a fundamental design by the Philips Lamp Company of Holland, the new mercury light is a practical outcome of an experimental design which was demonstrated before a New York group of engineers and scientists last March. A report of this development appeared in the May issue of Technical News and Research, pages 40 and 409.

The new 85-watt mercury lamp operates at an efficiency of approximately 3 lumens per watt, producing approximately 3,000 lumens of light or the illumination practically equal to that of a conventional 200-watt incandescent lamp. It represents the latest step in broadening applications for bulb-type mercury lamps, which have already achieved wide use in the 400-watt and 250-watt sizes particularly in the illumination of factory interiors and filling stations. The small size and efficiency of the lamp, in comparison to its high light output, appear likely to result in the development of compact new fixtures and reflectors

ashjian ceiling with 900,000 air inlets



urgess perforated acousti-vent ceiling



ore plates provide more humidification

ventilating ceiling

System developed and patented by A. H. Tashjian of the firm of Walker and Weeks, architects. Installed in the Cleveland office of W. Bingham Co., wholesale hardware establishment. Consulting engineer: M. A. Boyd of Clark, MacMullen & Riley, Inc. Construction by Rivet Grip Steel Company.

The new ceiling is made up of special fiber board tiles, thick and rectangular in form, which form a free-paced plenum chamber over the entire room 6 inches below the existing ceiling. Two types of tiles are used—perforated and solid. The perforated tiles have 3/8″ diameter holes bored on 1″ centers over this entire area; all holes incline in the same direction at a 45° angle.

Ceiling arrangement: According to the calculated requirements of the room, the ceiling is divided into (1) air-conditioning area, (2) sound-absorbing area, and (3) light-reflecting area. From these data the tiles are arranged in geometric pattern. The drilled tiles follow the outer perimeter of the ceiling area. Because of the tile thickness the inclined holes constitute directional nozzles, sending the flow of air in a definite direction according to the orientation of the tile in place. The unperforated tiles are grouped about light fixtures and provide solid paintable surfaces for good light distribution.

Test findings: It has been found that with the number of drilled tiles required for a given volume of air ventilation, sufficient sound is absorbed to produce effective noise reduction in the room. The static pressure maintained in the ceiling plenum is sufficient to obtain uniform air flow through the perforated tiles 50 feet away from the supply duct without draft anywhere.

sound-absorbing ventilation

System devised by the C. F. Burgess Laboratories, Inc., of Chicago. The Acoustic Division of the Burgess Battery Company, Madison, Wisconsin, as a licensee, is marketing this new product under the name of Burgess Acousti-Vent.

This system combines air distribution and sound absorption. It comprises a perforated ceiling made of a suitable architectural surface installed slightly below the normal ceiling level of the room. Between the perforated sheet and the room ceiling is a sound-absorbing material installed with sufficient clearance so that a space is provided between this material and the ceiling. This space provides a plenum chamber into which air is introduced through ducts from the ventilating fan. A uniform, low static pressure is maintained in this plenum chamber and suitable means are provided to cause the air to pass to the underside of the sound-absorbing material without passing through it, and thence through the myriads of small openings in the perforated subceiling into the room.

Atmospheric control: Air flows imperceptibly and uniformly through the perforated ceiling into every part of the room affording accurate temperature control. Tests indicate that there is no appreciable temperature variation throughout the room. Due to the large ceiling area and the low air velocity at every point, the Burgess Acousti-Vent system makes possible a rapid change of heated or cooled air without drafts, a feat not possible when air is forced into a room at concentrated points through conventional duct systems.

Sound control: Room noises, upon reaching the perforated metal ceiling, seep through the small perforations and encounter the resilient sound-absorbing material placed behind the perforations. These sound waves are instantly absorbed causing a marked reduction in the noise level of the room. (See description of doorless telephone booth, reported in April issue of Technical News and Research, page 338.) In addition to room noises, the noises of the ventilating system are also absorbed.

adjustable humidification

Developed by The Monmouth Products Company, 207 East 131 Street, Cleveland.

This humidifying system, known as "Automatic June," is designed for warm air heating plants and air conditioning systems. A vitreous enameled cast iron water pan, 3″ wide, is supported level inside the furnace casing top in a slide support so that the water pan may be withdrawn like a drawer. Crosswise upon the pan a series of porous porcelain evaporating plates are placed in notches. The middle portion of these plates extends downward into the water in the pan. The plates have millions of fine pores which draw up water by capillary action. The warmed air which circulates through the furnace casing passes across the wet vertical surfaces of the evaporating plates, rapidly absorbing moisture from them. Nearly all the evaporating is done by the porcelain plates. The number of plates required is approximately calculated. If not correct, evaporating plates are added or removed until the results desired are secured.

automatic control for urinals

Produced by Fulton Sylphon Co. (Sweet's Catalog File 26/86), Knoxville, Tenn.

"Therm-O-flush" is a thermostatically operated device that automatically operates the flush valve to flush the urinal each time the urinal is used and only when used. It derives its action from the the heat of the urine passing over the thermostat installed in the waste outlet. The thermostatic action operates a valve placed in the relief pipe line to relieve the pressure in the dome of the flush valve, thus giving the same flushing action as would be accomplished by manual operation of the flush valve handle. No special urinal is required—the control may be used with any standard urinal except types which maintain water in the bowl.

uppermost signals for elevators

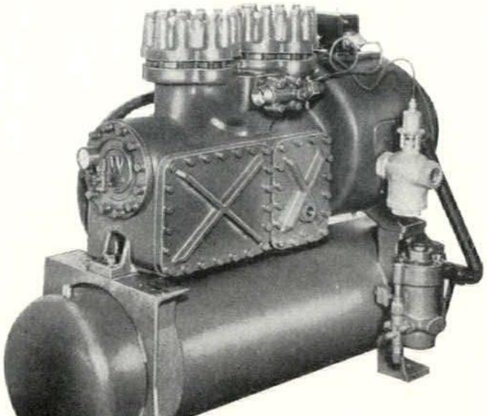
Annunciator developed by Richards-Wilcox Manufacturing Co. (Sweet's Catalog File 30/15), Aurora, Illinois. Installed for first time in the McNeill Building, 328 West Jackson Boulevard, Chicago.

The annunciator is used in elevator cars to show the operators at all times the highest floor at which a signal is registered. This electrical instrumetn incorporates an operator's flash and single stroke gong in conjunction with an indirectly illuminated dial calibrated to the number of floors served by the elevator in which it is installed. The signal is designed to increase the efficiency of elevator plants that are operated over the full range of their travel during busy periods, but whose traffic requirements are such that only intermittent service is necessary at certain times when the car or cars operate on call only.

new flux for soldering metals

Manufactured by Alumaweld Company of America, 2442 South Parkway, Chicago.

With Alumaweld older and flux repairs can be made on any metal or any two different metals can be joined if desired. The solder has a tensile strength of 12,000 pounds. The finished joint can be worked or machined. It also takes a polish over which chromium or any other plating can be applied.



new Westinghouse condenser

moisture-proofing material

Recently placed on the market by the Mitchell-Rand Manufacturing Corporation, 51 Murray Street, New York City.

"Rubberseal Copper" consists of Anaconda "Electro-Sheet" Copper, 2 to 7 oz., coated on both sides with a special acid and alkali-proof compound. The product is exceptionally flexible and remains so at freezing temperatures. It is unaffected by heat, moisture, or dryness. It is said to bond itself to any dry surface, thus eliminating the need of nailing or other method of attaching. Even when nails are driven through the material, the compound closes in and around the nail, effectively stopping the passage of air currents or water.

easily installed unit conditioner

Announced by General Electric Company (Sweet's Catalog File 26/9), Bloomfield, N. J.

The new equipment will cool, dehumidify, ventilate, and filter the air in an average-sized room. No special plumbing or electrical work is required. The only installation necessary is the placing of a telescopic duct connection in a partly opened window. This duct introduces fresh air for adequate ventilation as well as a supply of air for cooling the air-cooled condensers and removing heat and moisture which has been taken out of the room air by the three cooling units. These units, hermetically sealed, are started automatically one after the other so as to avoid an overload on the ordinary lighting circuit, which makes it possible to plug the machine in any light socket without special wiring of any sort.

air conditioning refrigerator

Manufactured by General Electric Company (Sweet's Catalog File 26/9), Bloomfield, N. J.

A V-type compressor of 8 cylinders, electric motor, and tube type of condenser are all mounted in one compact unit. High economy of water and electric power is obtained. The refrigeration capacity is equivalent to the melting of forty tons of ice in twenty-four hours.

hermetically sealed condensers

Announced by Westinghouse Electric & Manufacturing Company (Sweet's Catalog File 26/18), Mansfield, Ohio.

The new type "CLS" units have nominal ratings from 7 to 22 tons cooling capacity. The motor is completely inclosed with the compressor, preventing dust, dirt and moisture from reaching working parts. The rotor of the driving motor is overhung from the main rear compressor bearing on a short stubby extension of the compressor crankshaft. This gives an ultra compact direct drive, avoids ever having to oil the motor and eliminates use of belts and pulleys. The motor is water cooled making the unit suitable for installation in even unventilated locations. Small for its capacity, the unit saves valuable floor space. The reduced weight makes it easier to handle and usually avoids the necessity of special foundations.

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NEXT • MONTH •

/ESTACRES, a development of 150 homes built by Oakland Housing, ıc., nine miles west of Pontiac, Mich., from a fund of $850,000, consting of a gift of $550,000 by Senator James Couzens and a grant of 300,000 by the Federal Emergency Relief Administration. The homes re designed for sale to working-class families of average income, the verage accepted as typical being that earned by workers in the big dustrial plants of Pontiac. Each home comprises an acre of land with ouse, garage, orchard, vegetable garden and poultry run. Provision r each family to raise enough fruits, vegetables, poultry and eggs for s own consumption being assumed, the cost of the home was adapted a budget of $1,300, of which $100 is represented by home-grown roduce. The amount which could be spent for shelter under this budget as found to be $19.42 a month. Such monthly payment will amortize purchase price of $4,600 at 3 per cent in 30 years.

On August 1, 1936, one hundred homes were occupied by as many milies, the average income per family being $1,649.04 and the verage age of heads of family 31 years. The average cost of 150 ompleted homesteads was $4,439.44. This includes overhead (engieering and architectural services, original survey and general adminisation), $159.66; land and improvement (landscape and soil improveent, water mains, roads and streets, acreage, septic tanks and drains), 302.30; and house construction (material, labor and construction verhead), $3,477.48. The payments received from buyers go into a volving fund to improve undeveloped acreage. The corporation owns total of 874 acres, of which 295 are contained in the present homeead tract.

Architecturally as well as socially, Westacres is one of the most gnificant housing experiments undertaken in America. Homes serving security for 30-year amortized mortgages must, in order to achieve ability of investment value, represent advanced practice in comunity plan, plot plan, and house plan (floor plans, construction, quipment, appearance). Each of these features is therefore disssed, with cost accounting figures. Three house plans were developed hich have individuality in details but which are essentially similar in ganization, and each of these three plans were given four variations. ecifications and accounting items are in such detail as to show cost fferences attributable not only to plan variations but to weather nditions, some of the houses being closed in during the winter.

Project manager and supervising architect: Barton P. Jenks, Jr.
Site plan and architectural work: E. G. von Storch and R. O. Cuppy
Construction engineer: R. C. Perkins
Landscape architect: E. Genevieve Gillette
Heating engineer: Newell J. Hill

ODERN RESOURCES AVAILABLE IN DESIGNING ROOMS. apacities, dimensions, decorative qualities of built-in equipment, ortable equipment, finishing materials, furniture, lighting and the e. The livability of an apartment or of a private dwelling depends rgely upon treating each room and its major contents as a unit of esign.

ORTFOLIO OF APARTMENT HOUSES AND PRIVATE DWELLINGS. selection representative of work, chiefly moderate-cost projects, hich constitutes the bulk of the commissions currently received by chitects.

NEWS OF THE MONTH

SUNNYSIDE: HERE ENDETH THE LAST CHAPTER

Wide World Photo

Mrs. Maxwell, evicted, gives mortgagees their pound of flesh while neighbors picket. . . .

Hissed and booed by the neighbors, barraged with salt, pepper and flour, and hindered by a barricade of sand bags and barbed wire, the city marshal of Queens (N. Y.) last month succeeded in forcibly ousting Mrs. Toni Maxwell from her foreclosed Sunnyside home. Next day Mrs. Maxwell, surrounded by 200 sympathetic neighbors, appeared at the offices of the Equitable Life Assurance Society, holders of the mortgage, and presented the officials with their pound of flesh (hamburger).

Designed ten years ago by Clarence Stein and the late Henry Wright, Alexander Bing's Sunnyside has faced increasing difficulties since the depression. Four years of rising protest against interest and amortization charges culminated in 18 months of interest strikes, foreclosures and charges of fraud and misrepresentation. The Maxwell eviction, only one of the increasing number which is giving the City Housing Corporation's "model" development many aspects of an armed camp, is the outgrowth of a foreclosure by the Equitable last December. The owner, demanding that rent be applied to repurchase of the house, refused to pay it otherwise. The project, famous for its large block planning, playgrounds and open spaces, now discloses economic weaknesses which threaten to obscure whatever technical advance it represents over typical commercial housing.

Rassegna di Architettura

A MILANESE MOTOR SHELTER

Form follows function in this shelter for motorists outside Milan. Since steel is scarce and needed for the national war machine, Fascist architects of necessity make a wide use of reinforced concrete in public works of all sorts.

FIRST PWA TENANTS MOVE IN

The first national public housing project to go into operation in the United States opened its doors last month when tenants began moving into Techwood Homes, PWA slum-clearance development in Atlanta, Georgia. The first group of families of limited income was the vanguard of 604 families who will live in the development. Rents range from $16.40 for a modern, well-planned three-room apartment, to $27.85 for a six-room row house.

Of the first 24 families to sign leases, Howard A. Gray, new Director of Housing, reported that 16 have income of $20 a week, six have incomes o $22.88 weekly, while the other two earn $27.80 and $30 respectively. Only families from the low-income groups wil be eligible for the new Atlanta projec and only tenants selected through "careful investigation" will be admitted t the 604 units. Moreover, family siz will be an important factor since overcrowding is to be avoided at all costs Families eligible for the project mus come from substandard housing conditions. Lodgers or groups of mixe adults will not be eligible.

"Out of 1,916 families who have applied for occupancy, 1,158 have bee rejected to date after careful examination," Mr. Gray said. "Half of the rejections were due to the fact that thos applicants' annual incomes were suc that they could afford standard housin supplied by private enterprise.

"When private enterprise can hous those families under safe and wholesom conditions, we will have absolutely nothing to do with them. The Housin Division has never had any intention o competing with decent private housin or real estate interests who provide goo housing, and does not now intend to d so," Mr. Gray said. "Techwood is ope only to families of low income who cannot afford otherwise to live under decen conditions. No other persons will b considered and we will see to it that thi rule is not overstepped."

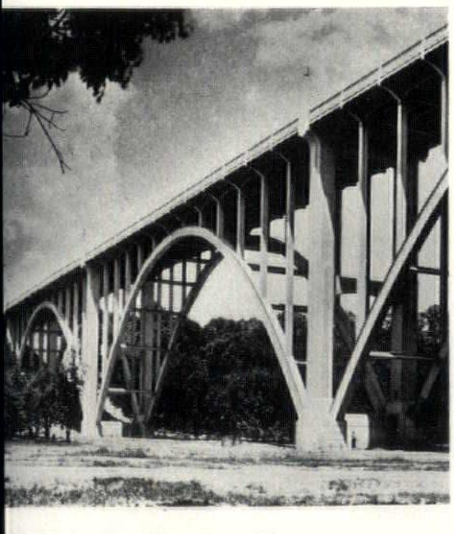
OIL BURNER VIA AIRMAIL TO HOLLAND

Leaving Lakehurst, N. J., Sunday August 9, the Nazi airship Hindenbur carried the largest commercial freigh shipment ever made to Europe by air— a complete oil-burning home-heatin unit. This consignment to Amsterdam weighing 1,162 pounds, was slung u through a hatchway about midships i the air liner's hull from which the oute fabric had been temporarily removed Having been securely lashed in place, i was left suspended on the tackle used i raising it, so that it could give with th movement of the ship in even the heaviest weather. Who needed the unit i such a hurry—does winter come earl in Amsterdam?—and who could affor the price of air mailing it to Europe wa not disclosed.

FAECT AND AGA WIN BIG NCREASE IN NEW YORK

7,000 architects and engineers on WPA in New York City will receive ncreases averaging $500 per annum as result of recent negotiations between ewly-appointed Administrator Somerville and the Federation of Architects, Engineers, Chemists and Technicians and he Architectural Guild of America. The agreement brings to a close a long campaign for prevailing wages, in which FAECT and AGA were later joined by he Conference for Prevailing Wages, a group which includes many unaffiliated echnical men.

The schedule, which went into effect August 16 to run for 6 months, represents a significant victory for the organizations involved, although the schedule emains 25% lower than that for Civil Service technical employees. Technical nen on WPA have been receiving from ne-half to one-third of what Civil Service men have been getting but have een performing substantially the same vork, such as construction and design n the Board of Education, Department f Hospitals, etc. Previous offers of VPA to grant prevailing wages by reucing hours had been rejected by AECT and AGA; the present agreeent recognizes the full principle of preailing wages and represents an increase n both hourly and net weekly earnings.



RIZE WINNER: CLASS B

ne of three prize winners in a recent competion for the nation's most beautiful bridges, the rain Road Bridge outside of Cleveland, Ohio, s received a stainless steel plaque for being e best in the $250,000-to-$1,000,000 class. e bridge was designed and erected by Ohio's ate Highway Department.

AERIAL SURVEY TO AID "DUST BOWL"

The largest single aerial survey ever attempted in the United States started early in June, in the "dust bowl" area of the Southwest. This project is part of the program of the Soil Conservation Service of the Department of Agriculture which needs rapid, adequate and accurate mapping for its expanded program. (The National Board of Survey and Maps reported last year that only one quarter of the United States, a country generally regarded as well advanced in such matters, is adequately mapped.)

At least one year of flying will be required to secure the necessary photographs. Three airplanes, specially designed and built to meet the conditions involved in aerial surveying, will be used. The area to be surveyed totals 68,000 square miles in the Panhandle of Texas, northeastern New Mexico, southwestern Kansas, southeastern Colorado and western Oklahoma.

280,000 HOUSES TO GO IN ENGLISH DRIVE

In a housing program launched to meet an acute post-war shortage of homes, England and Wales up to 1935 provided new housing for more than one fourth of their population. As a result of the first program, from November 1918 to September 1935, a total of 2,804,888 new dwellings were constructed.

The government is now engaged in the second phase of its housing problem, a slum-clearance drive which contemplates the removal of more than 280,000 insanitary dwellings, and construction of nearly 300,000 new homes as direct replacement.

This extensive program still leaves a shortage of suitable homes for the lower-wage groups, although provisions have been incorporated in the various housing acts to encourage private enterprise and local authorities alike to construct such dwellings. Of the houses built by unassisted private enterprise for the year 1935, approximately 37 per cent were within the price range of this class, and approximately one third were constructed for renting.

The British municipal authorities have been granted the widest powers. They may buy land, may determine when an area is overcrowded, as defined in the law, and may arbitrarily order the removal of overcrowded families into other quarters. If accommodations are not available from private sources local authorities have power to provide them. Local governments are permitted also to define slum areas for redevelopment along approved lines, and may proceed, with the central government's backing, to carry out such programs on a large scale.

American-Swedish News Exchange, Inc.

ORPHEUS AT SIX A.M.

An early morning recently saw the unveiling in Stockholm of this fountain by Carl Milles, Swedish-American sculptor. Placed before the city's Concert Hall, the fountain memorializes the power of music. Orpheus, disconsolate over the death of his bride, descended to Hell with his harp; he played so beautifully that Pluto allowed her to return to earth.

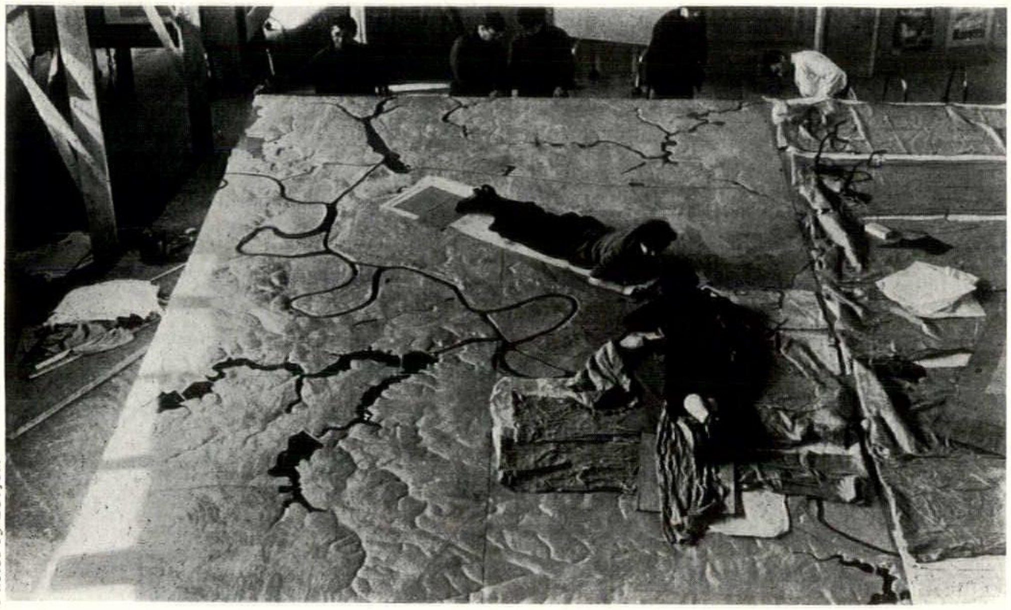
Goodyear Rubber Company

NAMED FOR THE NEWSPAPER GUILD

Recently opened in Cleveland's Hotel Olmstead was the Guild Bar, designed for and named after the organized newsmen of the city. A color scheme of cream, red and black is largely executed in "Wingfoot" sheet rubber, while murals by Ivor Johns depict the various departments of the metropolitan press—sports, society, foreign news.

NEWS OF THE MONTH

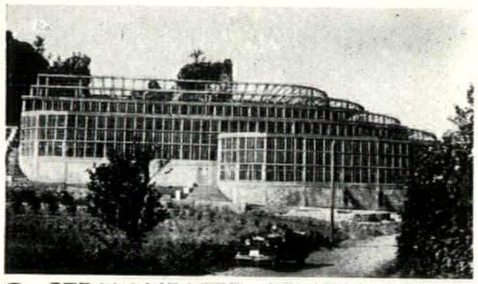
U. S. S. R. IN CONSTRUCTION



Photos by Sovfoto

1 AT WORK ON MOSCOW TEN YEARS HENCE

2 FOR OFFICE WORKERS



3 STEAM-HEATED LEMON GROVE

4 A STUDENTS' CITY

1. *As part of the All-Union Construction Exhibit, this model of Moscow is being prepared by the Planning Commission. On this topographic model the ten-year plan for the reconstruction of the capitol city will be built. Existing and planned structures at exact scale will be fabricated in celluloid and illuminated with 3,500 lights. The curving line to the left of the artists is the Moscow River, showing the new lakes created for the belt of parks which surrounds the city.*

2. *The Crimea, in southernmost Russia, is the favorite vacation land of the Soviet workers from the north. This new rest house, built by the Commissariat of Agriculture for its office workers, is one of many such projects springing up along the Black Sea. All rest and recreational facilities for 150 persons are provided.*

3. *One of the world's largest hothouses is this steel-and-glass structure in Soviet Ajaria. Large enough for an orchard of full-grown trees, the house is designed to produce lemons the year round.*

4. *Nearing completion on the outskirts of Moscow is a new town especially designed for students of Moscow's higher educational institutions. (All advanced students in the Soviet Union are in the pay of the state.) Besides living accommodations for 3,849 students and their families, the town has its own restaurants, clubhouses, parks, schools.*

BRONX COLLAPSE BRINGS CRIMINAL CHARGES

Six men—including an architect—were last month indicted by the Bronx County Court for second-degree manslaughter in connection with the collapse of an apartment house which took the lives of 18 workers. The charges grew out of a month-long grand jury investigation where testimony indicated that improper reinforcement of the ornamental tower nearing completion atop the center wing was the direct cause of the structural failure which tore a broad gap in the upper façade and plunged the tower through the floors below. However, the extent of the collapse was due to faulty materials.

"A chemical analysis," said District Attorney Samuel J. Foley, "showed that the mortar contained too much sand, lessening its binding power. We also learned that second-hand steel was used in the building. Many of the beams had holes in them which were made in preparation for some other job. Steel beams and columns were pitted from rust, and some used were lighter than the specifications called for."

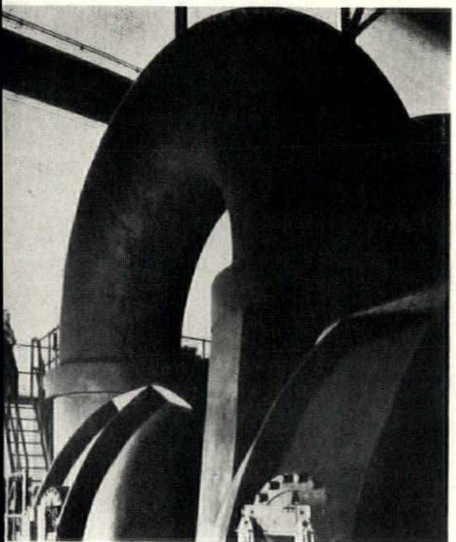
Several points were thus established: (1) the structure was improperly designed; (2) many of the materials were second-hand or faulty; (3) the severe "speed-up" resulted in faulty work, especially in the masonry. On the basis of these conclusions, it was possible for District Attorney Foley to indict the owner, architect, city plan examiner, contractors and city inspector of masonry and carpentry. Thus, at every stage of its development, from inception to completion, the project appears to have been handled with criminal negligence. It is difficult to see how the licensing of any or all of the men involved would have prevented the disaster. The ultimate collapse appears not as a personal responsibility, but as an indictment of high-pressure speculative building. It was the necessity for profit at each stage and by all parties which resulted in a building so weakened that it could not stand alone.

AIRPORT LEFT OVER

When the 1939 Golden Gate Exposition is a thing of history, San Francisco will still have its Yerba Buena Airport.

The 430-acre man - made island in the bay will later serve as a landing field while the Administration Building and hangars, for which ground was broken last month, will be used for administra-tion and expositions during the fair.

The $800,000 airport terminal will be of ferroconcrete, semicircular in shape, three stories high. The first floor will contain offices and research rooms, the second a dining room, offices and social rooms, while the third floor will have a modern weather staff and airport control offices. A 19-foot observation platform around the outside of the second floor will be open to the public while the base-ment will contain post office, garages, etc. Its huge airplane hangars will serve as exhibit palaces during the fair.



t takes no part in politics . . . "

VORLD POWER CONFERENCE ONVENES

Meeting this month in Washington is ne Third World Power Conference and econd Congress on Large Dams. Al-hough organized "to aid in the solution f some of the technical, economic and ocial problems involved in the con-rvation and use of natural resources" ne Conference "takes no part in inter-ational politics." First organized in ondon in 1924, the Conference met ubsequently in Berlin in 1930: it was strumental in organizing the First ongress on Large Dams in Scandinavia 1933.

Planned as a part of the Conference e a number of tours, organized to show visitors American developments in the various fields of organization of indus-try, conservation of national resources, national and regional planning. The Conference will particularly study "broad matters of policy with respect to the utilization, operation and ad-ministration of (electric) power" in such organizations as the Tennessee Valley Authority.

HALF OUR STORES NEED REMODELING

More than half of the stores in the United States need modernization in varying degrees, according to a recent study by the Department of Commerce. An analysis of the physical condition and appearance of approximately 8,000 small and medium-sized stores located in the western part of the United States dis-closed a striking need of architectural attention. The study revealed the gen-erally unsatisfactory appearance of store fronts, the need for improvement in store lighting and repair of walls and ceilings.

The report covers many features—such as electric or neon signs, entrance steps with the possibility of replacement by ramps, telephone booths, washrooms, modern fixtures, etc.—and indicates that all stores are deficient in one or another of these features; for example, mechani-cal refrigeration is employed in 75% of the grocery and drug stores, while only 51% of the restaurants have this equip-ment. A large majority lack good elec-tric signs while the number of establish-ments lacking washrooms was substan-tial. Apparel stores were revealed as in the best general condition of any class of retail establishments, while dry clean-ing, pressing and shoe repair shops rated lowest.

CHICAGO ASKS EXPANDED HOUSE PROGRAM

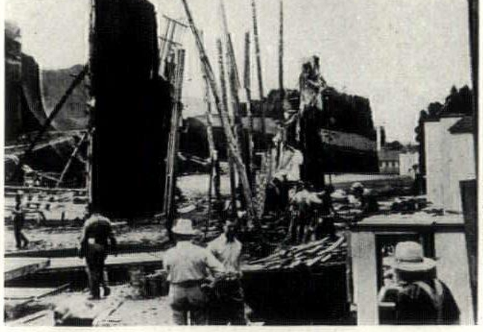
Indorsing slum clearance and low-rent housing, Chicago's General House Advisory Board recommended that gov-ernment aid be extended to a long-term decentralized house program. While ex-pressing the belief "that private capital must be depended upon to house most of the population," the committee admitted that some form of subsidy must be set up to aid in decently housing the lower income groups.

Wide World Photo

THE DAM THAT POLITICS HALTED
Col. P. B. Fleming, in charge of the now abandoned Passamaquoddy Tidal Power Project, shows how the 40-foot tides might have flowed through the filling gates (left) and then have been forced through the power house (right) as the tide went out. The project, on which $7,000,000 has already been spent, was sus-pended when Congress refused to appropriate the funds to complete it. Aside from the un-finished dam, another item remains: the model village which the government built for the construction workers.

American-Swedish News Exchange, Inc.

COOPERATIVES IN THE "LAND OF THE MIDDLE WAY"
A new cooperative housing development in the suburbs of Stockholm. While production of housing units in the Swedish city continued to drop (from 7,340 in 1935 to 6,011 in 1936) it remains much higher than in this country: all of greater New York last year only produced approximately 11,500 units.

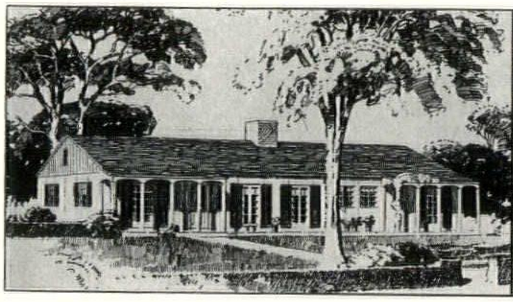


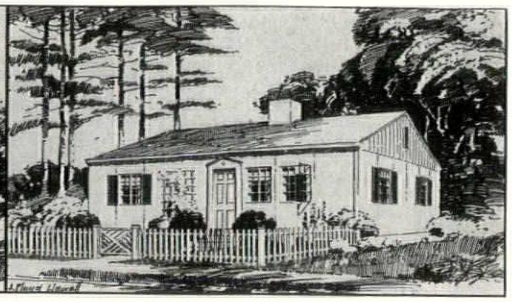
Wide World Photo

ACT OF GOD AT DALLAS
This is all that remained of the "Cavalcade of Texas" after a gale struck the Texas Centennial Exposition last month. Undismayed, the Ex-position cleaned up littered grounds, damaged buildings, wrecked shrubbery; Exposition goes right on.

NEWS OF THE MONTH

PREFABRICATION COMES TO LOUISVILLE





$2,250

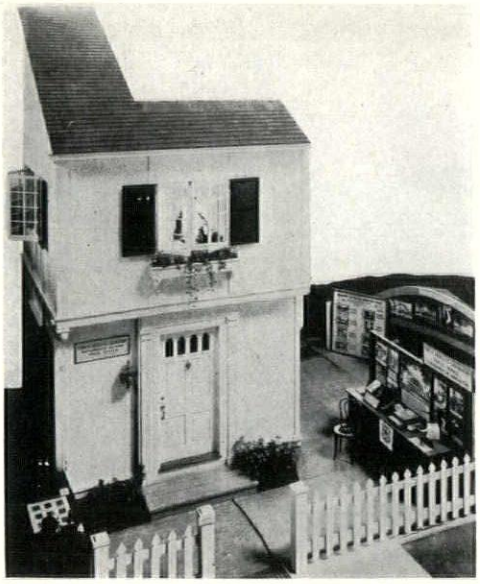
Living room, kitchen, bath
2 bedrooms, storage room

$4,750

Living room, dining room, kitchen,
2 baths, 4 bedrooms, storage room

Six suburban lots in Louisville which, on August 1, were quite vacant were, on August 15, occupied by 6 houses—completely equipped, furnished, landscaped and for sale. Those guests who that day drank mint juleps in the neatly prefabricated rooms had as their host Foster Gunnison, president of Magic Houses, Inc., whose venture in prefabrication the houses were. Beginning several years ago as a manufacturer of plywood seeking new outlets for his product, Mr. Gunnison last month arrived at a construction service which offers—in Louisville only—a completely equipped house at from $500 to $550 per room.

The "Gunnison Magic House" is based on a system of prefabricated plywood panels which are self-insulated, self-fitting and self-finished. The three types—floor, wall, roof—are of standard sizes, making possible the addition of rooms to the base unit; doors and windows are an integral part of wall units; because of the assembly, they may be taken down and rebuilt. The finished house includes bath, kitchen and heating equipment. Available on small monthly payments, the "Magic House" will soon be for sale in the Louisville region.



PREFABRICATION IN WOOD

Visitors at the Wisconsin Centennial saw this cutaway of a prefabricated wooden house. Behind a conventional exterior the Department of Agriculture's Forest Products Laboratory displayed its new all-wood construction method, using prefabricated plywood sections for floor, walls and roof. (See Technical News and Research, July 1936, for detailed description.)

R A PROJECTS NO BLIGHT TO COMMUNITIES

In spite of what the courts say, the low-rent suburban communities of the Resettlement Administration will improve the fiscal affairs of the counties in which they are located, according to a recent report. An analysis of taxation scheduled for Greenbelt, R A's project outside of Washington, discloses that property now assessed at $337,000 will revert to the community for taxation at a value of approximately $4,500,000. At the 1935 county rates this increased valuation will yield more than $52,000 per year in taxes, a sum "fully sufficient to cover all costs for schools and other county services which the new community will require." Moreover, improvements at Greenbelt are already reflected in a large appreciation in value of adjoining properties. Actual private sales of adjoining tracts have recently shown a 100% increase in price. According to the R A analysts who made the study, the county will have its per capita debt burden reduced.

SCHOLARSHIP AWARDS

The English-Speaking Union of the United States recently awarded a traveling scholarship to G. R. W. Watland, a graduate of the University of Iowa and a B. Arch. of the University of Michigan. This scholarship provides for a month of traveling in England under the auspices of the English-Speaking Union of the British Empire. Mr. Watland will study England's country homes and gardens.

Miss Mary Elizabeth Huff, Chicago, Illinois, has been recommended to the Board of Trustees as the Fifth Kate Neal Kinley Fellow and Mr. Theodore Davis Parmelee, Urbana, Illinois, nominated as alternate.

Miss Huff was graduated with honors from the University of Illinois in 1932. Later she specialized in Chinese Art at Radcliffe College (1934) and at Mills College, where she received her M.A. in June 1935. She held a fellowship from the American Council of Learned Societies during the summer of 1935. She expects to continue her studies in the field of Oriental Art. The Fellowship provides one thousand dollars for a year of advanced study in the arts.

The Stewardson Scholarship Committee announces the award of the John Stewardson Memorial Traveling Scholarship in Architecture for the year 1936 to S. Robert Anshen of Ambler, Pennsylvania. The subject of the winning thesis was "A National Center of Learning" located on Analutian Island in the Potomac, Washington, D.C.

Mr. Anshen, who received his Master's degree in June, spent one year in the College of the University of Pennsylvania, six months at Sorbonne and five years as an undergraduate and graduate student in the Department of Architecture at the University of Pennsylvania.

The College of Architecture of the University of Michigan announces the award of the George G. Booth Traveling Fellowship Competition in Architecture to Frederick H. Graham of Muncie, Indiana, who graduated this year from the College of Architecture. The subject of the competition was a Cooperative Center of Architecture and Allied Arts. The Fellowship was awarded for travel abroad.

COLUMBIA INAUGURATES NEW COURSES

Building acoustics, air conditioning and illumination are among the subjects to be included in a new series of evening courses to be launched this month by Columbia's School of Architecture. The new program represents a departure from existing educational practices in that these courses will be held by the School of Architecture in conjunction with other departments in the University, according to Prof. George M. Allen, who will direct the program.

Acoustical Design:

A course in building acoustics, sponsored by the Departments of Physics and Architecture, will be under the direction of V. A. Schlenker, former research engineer in the Bell Telephone Laboratories. The properties of sound and vibration will constitute the basis of the first part of this course, with lectures, demonstrations and projects. In the second part of the course—which deals with acoustic design and planning—existing structures will be used for purposes of demonstration.

Air Conditioning:

Two courses in air conditioning, given in collaboration with the Department of Mechanical Engineering, will "clarify the principles and practical technical requirements" of this phase of environmental control. One, covering processes and equipment, will be directed by R. W. Waterfill, of Buensod-Stacey, Inc.; the other, dealing with the technical requirements underlying design, installation and operation, will be taught by C. A. Bulkley, of Niagara Blower Co.

Illumination:

The Department of Electrical Engineering will cooperate in a course in illumination of buildings to be given by Alvin L. Powell, member International Commission on Illumination.

"HOUSING" CONVENTION IN SANDUSKY

Dragging their houses behind them, hundreds of trailer-dwellers last month converged on Sandusky, Ohio, in the annual summer outing of the "tin can tourists." Over 600 trailers, representing nearly every conceivable type, were parked at the local fairgrounds. From lowly beginnings in 1919 these motorized nomads have grown to an estimated 1,000,000, and form the economic base for the "fastest-growing industry in America"—trailers. (See Technical News and Research, August 1936.)

NEW PERSONNEL AT ARMOUR TECH

Louis Skidmore, Chicago architect, has been appointed Director of the Department of Architecture at Armour Institute of Technology as well as Professor of Senior Design. Mr. Skidmore, who succeeds Earl H. Reed, will be assisted by Jerrold Loebl, of Loebl and Schlossman. Mr. Skidmore, a graduate of M.I.T. and winner of the Rotch Travelling Fellowship, spent three years at the Ecole des Beaux Arts and the Academy of Rome. Later, as Chief of Design to the Century of Progress, he was responsible for the coordination of designs prepared by the architectural commission, preparation of all working drawings, integration of sculpture, color, etc. Mr. Loebl, a graduate of Armour Tech in 1921, has served for the past year on the Advisory Committee of Architects. The school year opens this month.

ARCHITECTURE AT NORTH JERSEY COLLEGE

The fall term of the School of Architecture, North Jersey College, will open September 21. Besides the regular 4-year course, the college will offer a 6-year night course, both leading to a B.S. degree. In addition to theoretical and liberal arts courses to meet state requirements, the college will emphasize the progressive educational methods of Antioch College by making industrial and professional experience part of the curricula. All communications should be addressed to John H. Lieban, Dean, School of Architecture, North Jersey College, Teaneck, N. J.

NEGRO TECHNICIANS ASSEMBLE

Meeting in New York this month in annual convention is the National Technical Association, national organization of Negro technical men.

HUMANE ENVIRONMENT: 4 out of 5 have it

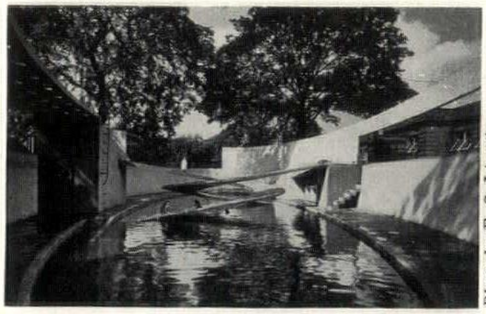
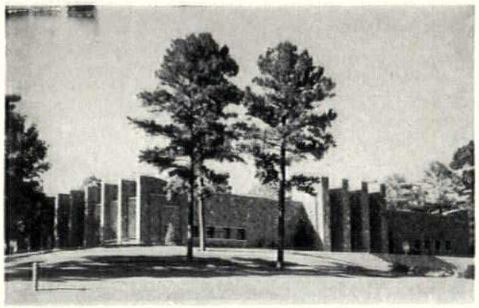
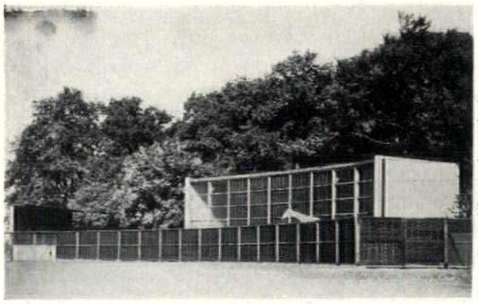


Photo by F. S. Lincoln

penguins

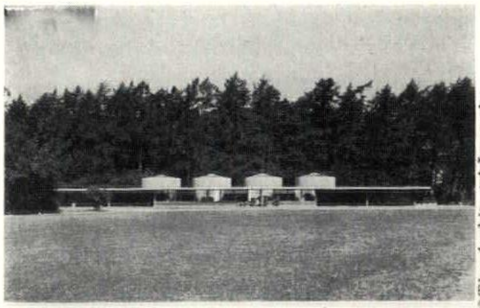


monkeys



American Magazine of Art

giraffes



©The Architects' Journal

elephants

Wide World

man

NEWS OF THE MONTH

The Architectural Review

THE BRITISH HOUSING BOOM— CAN WE DUPLICATE IT?

There is no doubt that the experience of England in the housing field over the past thirty-five years holds out many lessons which it would be folly to ignore. At the same time, there are certain factors, highly important in the success of British housing, which cannot be duplicated in this country. Let us examine some of these features of English housing progress.

Parliament vs. Constitution

Of prime importance is the control of Parliament over the local public bodies responsible for housing activities in each neighborhood. When it was decided to grant subsidies for home building, the local authorities were enjoined with the responsibility of seeing that conditions were complied with; when the British Government decided upon slum clearance, local authorities were ordered to investigate the needs for housing in their area and to submit plans for their own neighborhood. In this country the Government has pleaded with the states and cities to create local housing bodies to study housing conditions and to submit proposals for housing developments suitable to be financed with PWA grants and loans. The National Government has no power over these local agencies, which must be responsible for the clearance of slums, the management of housing projects, and the supervision of home building. Because of the resulting delay and the desire to stimulate employment immediately, large sums originally intended for housing have been spent for other purposes.

Similarly, when Parliament wished to condemn slum districts or force property owners to raze unfit dwellings, it enacted one law which applies to the entire country, and which cannot be declared unconstitutional, for "Parliament is omnipotent." In this country problems involving the "police power"—the control by the Government of the individual for the benefit of public health and safety—are "local," and are solely within the province of the states and their multitude of subdivisions. Thousands of laws and ordinances will be passed, with little uniformity. Hundreds of rulings and decisions will be made, many of them conflicting, before we are sure of the "interpretation" of these laws and whether they are "constitutional." When Congress recently attempted to provide for acquisition of slum property by condemnation, a single property owner in Louisville, Kentucky, objected to this as unconstitutional and for two years the National Government has been waiting, one lower court saying this is proper, another condemning it as subversive of the Constitution. Meantime the appropriation has been spent, in the emergency, for other purposes and we still remain in the dark as to this power of the Federal Government. Thus what England can accomplish in one year in one field of housing may take us twenty years.

Government, business and labor— a partnership

Another difference is the consensus of public sentiment among the British people and the desire to cooperate with the Government program. The tremendous stimulus of Government subsidies for home construction after the War was the result of the super-slogan of wartime—the promise of "Homes fit for Heroes." While this country has been paying bonuses to the veterans, the British Government has been building homes for them. In this country we are torn between the desire to build at once with public "emergency funds," and the belief that it is better to go more slowly and finance with private capital so far as possible.

This British attitude of "pulling together" is indicated by the cooperation between government, business and labor. The Government assures labor of steady work so that labor costs per job remain at a reasonable level while real wages have actually increased, unemployment remaining a minor problem in the home building industry. Moreover, disputes between builders and labor have been infrequent, due to excellent conciliatory machinery adopted in the enthusiasm to build more and better homes. Finally, business works with the "Government," which means the party in power. Whether the program is favored or not before elections, if it becomes the "Government" program it becomes the national program also. The Englishman seems to believe that what will help the country economically must eventually react to his personal benefit.

Quantity vs. quality

It may be said in behalf of the wealthy city property owners that our problem with respect to slum clearance is more a problem of obsolescence, in which the landlord will lose most of his property, whereas the English home, built to last, is objectionable principally because of its size. The prime incentive to home building in England has been overcrowding. The British landlord consequently takes only a slight cut in income, caused by fewer tenants per dwelling. Therefore his opposition to a slum-clearance and low-cost housing program has been far less of an impediment to a housing boom. Obsolescence, instead of overcrowding, dominates as the motivating factor for building revival in all classes of dwellings in this country. It is generally an obsolescence of mechanical parts rather than of structure. In either case, our "modernization" programs and the present large scale of property improvement and repair work, as witnessed by a million FHA "modernization loans" to property owners in the past twenty months, is taking the place of a large amount of new home construction.

The twentieth century crusade

Education is another factor distinguishing us from England. Better housing has been preached by leading English writers, statesmen, scholars and business men for years, until the movement has become a crusade, with political parties outbidding each other for public favor with ingenious housing programs. Today the average American citizen knows as little about the problems of housing as did the Englishman of 1905. The great advance in the social viewpoint of the British is indicated in the public sentiment expressed by Lord Kennet (late Minister of Health) that a person is no more entitled to compensation for bad houses than he is entitled to compensation for bad meat—an opinion which has now become a part of British law. This will be our public opinion, and law, in about twenty years.

Labor costs

The difference between wages of skilled labor in the building trades and the wages of the average home owner in this country also is considered as a basic condition existing here which makes it difficult to emulate England. The wages of skilled labor in building trades in England (as in France and Germany) is only slightly higher than that of skilled workers in industry and commerce, whereas, in this country, the daily wages of workmen in the building trades is from two to three times that of the vast majority of American wage earners. Because of infrequency of employment in the building industry, the annual or "real" wage of both classes may be about the same, but unfortunately the purchaser of the home pays for it at the hourly wage rate. It is asserted that a man whose income is sixty cents an hour cannot afford to acquire a home built by men who receive \$1 to \$1.80 per hour, unless labor costs become a much smaller factor in the total construction cost.

Taxes and the depression

Another factor conducive to home building in England is the fact that taxes, even upon real property, are based upon income. When an economic depression sets in, and the yield upon stocks gradually disappears, the investor buys or builds houses in order to obtain a sure although moderate income. If the dwelling is not rented he pays no taxes. In this country we have looked at property from the viewpoint of expected appreciation in value, rather than from the income derived. We have condoned property taxes based upon a theoretical evaluation because we expected eventually to realize a profit from the inevitable increase in value of our property. The result is that, in periods of distress, the income from property has decreased while taxes have remained practically unchanged. The urge to build homes for income is not then present, and many persons are forced to liquidate their property because taxes exceed income.

As a partial result we are just recovering from a real estate collapse such as England has never experienced. During England's worst depression year twice as many homes were built as in this country's worst year and England has but one-third the population. Moreover, there has been no bank failure in recent times and there has been no wide fluctuation in real estate values. Wholesale foreclosures and liquidation of real property which temporarily annihilated the real estate market in this country have never occurred in England. As a consequence, English home building was able to start from scratch as business turned the corner, while recovery in this country is still handicapped by liquidation of foreclosed homes taken over by banks, insurance companies, and other mortgage investors. While this process of finding new owners for old houses continues, new construction is seriously impeded, for property in liquidation means low rentals, prices far below the cost of similar new dwellings, and terms of credit which a builder cannot meet.

"Three hundred down and a dollar a day"

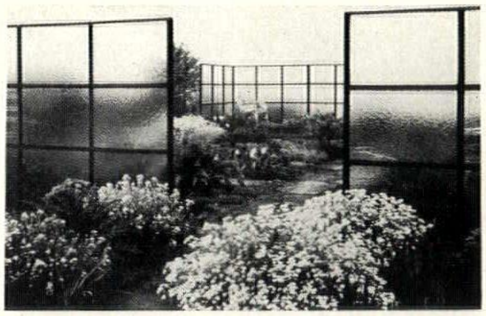
Finally there is this problem of credit. In England one can buy a home for a down payment of five or ten per cent. The monthly or weekly payments are little more than rent payments would be, and yet they include payments of principal which eventually will retire the mortgage. A \$5,000 home can be purchased for \$375 down and \$7 per week, which includes the initial cost of the loan and a \$500 builder's profit. This result has been accomplished without loss of safety to the building societies (which do most of the British home financing and are similar to our building and loan associations) because of the installment payment plan and various other devices which protect the lender in the case of loans greater in proportion to the value of the property than is considered a normal safe ratio. This ratio is from seventy to ninety per cent, apparently depending principally upon the custom of neighboring building societies. The excess borrowing over this ratio is generally protected by a guarantee of the builder, or a deposit by builder or purchaser of cash or satisfactory securities, until the loan has been paid down to the "normal loan." The Government also has an insurance plan for this excess over the normal loan, in the case of houses built to rent to the working classes. If the home investor puts up ten per cent, and the building society advances the balance and assumes responsibility for seventy per cent of the loan and one-third of the "excess" loan of twenty per cent, the Government and the local municipality join in a guarantee of two-thirds of the excess loan.

Home financing in this country has been notoriously bad from the economic point of view. In boom times, when properties are inflated, homes can be purchased with very small down payments, but the terms generally have been indefensible. Second mortgage financing with all its evils has been necessary, and the first mortgage, based on the principle of commercial loans instead of consumer loans (the short-term credit fully payable at maturity rather than the installment payment loan) has been a primary cause of the depression. Then when prices are deflated, when large down payments are not necessary to protect the mortgagee, our mortgage lending practice has demanded initial payments which few prospective home purchasers could make. As a result of President Hoover's Conference on Home Ownership, and the National Housing Act with its eighty per cent insured installment payment mortgage loan, this indefensible system of financing is changing. Nevertheless, there are just as many prospective home owners in this country who have only a few hundred dollars of cash available as in England. Until some method is found which will permit a citizen who is a good credit risk to obtain a home with a down payment of three or four hundred dollars and a reasonable interest rate we cannot expect to have the full success which England has achieved in home financing, construction, and ownership.

John W. Brabner Smith.

CALENDAR OF EXHIBITIONS AND EVENTS

- **September 7-12** — Third World Power Congress and Second Congress on Large Dams, Washington, D.C.
- **September 14** — Opening: Pennsylvania Academy of Fine Arts, Philadelphia.
- **September 15** — Preliminary Examination for Assistant Civil Engineer: U. S. Navy Department, Bureau of Docks and Yards, Washington, D.C.
- **September 21**—Opening: School of Architecture, North Jersey College, Teaneck, N. J.
- **September 25** — Opening: Community Planning and Housing Courses, School of Architecture and Allied Arts, New York University, New York City.
- **September 28**—Opening: Public Housing Courses, New School for Social Research, 66 West 12 Street, New York City.
- **October 19-23**—Eighteenth Annual Convention, American Society for Metals; Seventeenth Annual Meeting, American Welding Society, Cleveland, Ohio.
- **November 18-20** — Thirty-seventh Annual Convention, International Acetylene Association, St. Louis, Mo.

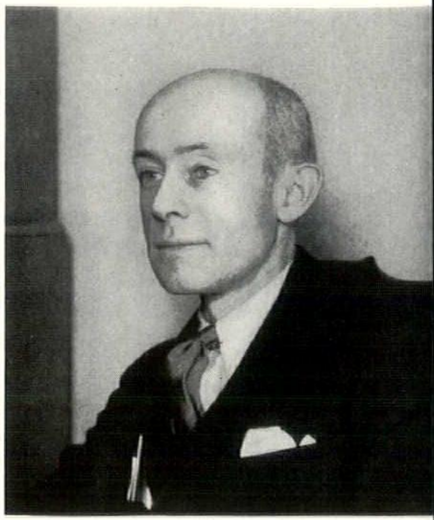


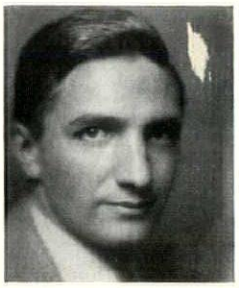
GLASS IN THE GARDEN

A novel use of glass in a German garden. The screens, of translucent glass in steel frames, serve effectively to protect the plants from heavv winds as well as to give privacy to the garden.

ARCHITECTS AND E

ROBERT L. DUFFUS, author of the article in this issue, "THE ARCHITECT IN A MODERN WORLD," was asked by The Architectural Record to interpret the place of the architect in present-day life as well as his future position. His sources of information consisted of: replies to a questionnaire sent to several hundred architects; publications and proceedings of The American Institute of Architects and other architectural societies; various reports and discussions by architects concerning activities of the profession.
Duffus's adventures in the general field of art and architecture include: "The American Renaissance," a study of art schools, museums, etc., for The Carnegie Corporation, published by Knopf; "Mastering a Metropolis," a summary of the Regional Plan of New York and Its Environs, done for the Regional Plan Committee and published by Harper's; and "The Arts in American Life" upon which he collaborated with F. P. Keppel, a study made for the Committee on Recent Social Trends, and published by McGraw-Hill. He is a staff contributor to the Sunday Sections of the *New York Times.*





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JOHN ELY BURCHARD, ARCHITECT
IN CHARGE OF HOUSING RESEARCH
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HO DISCUSS IN THIS ISSUE

HE ARCHITECT in MODERN WORLD

AND

EDUCATION of the ARCHITECT

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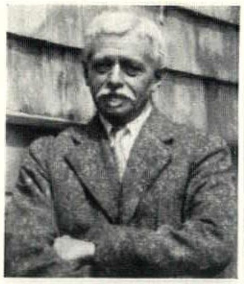

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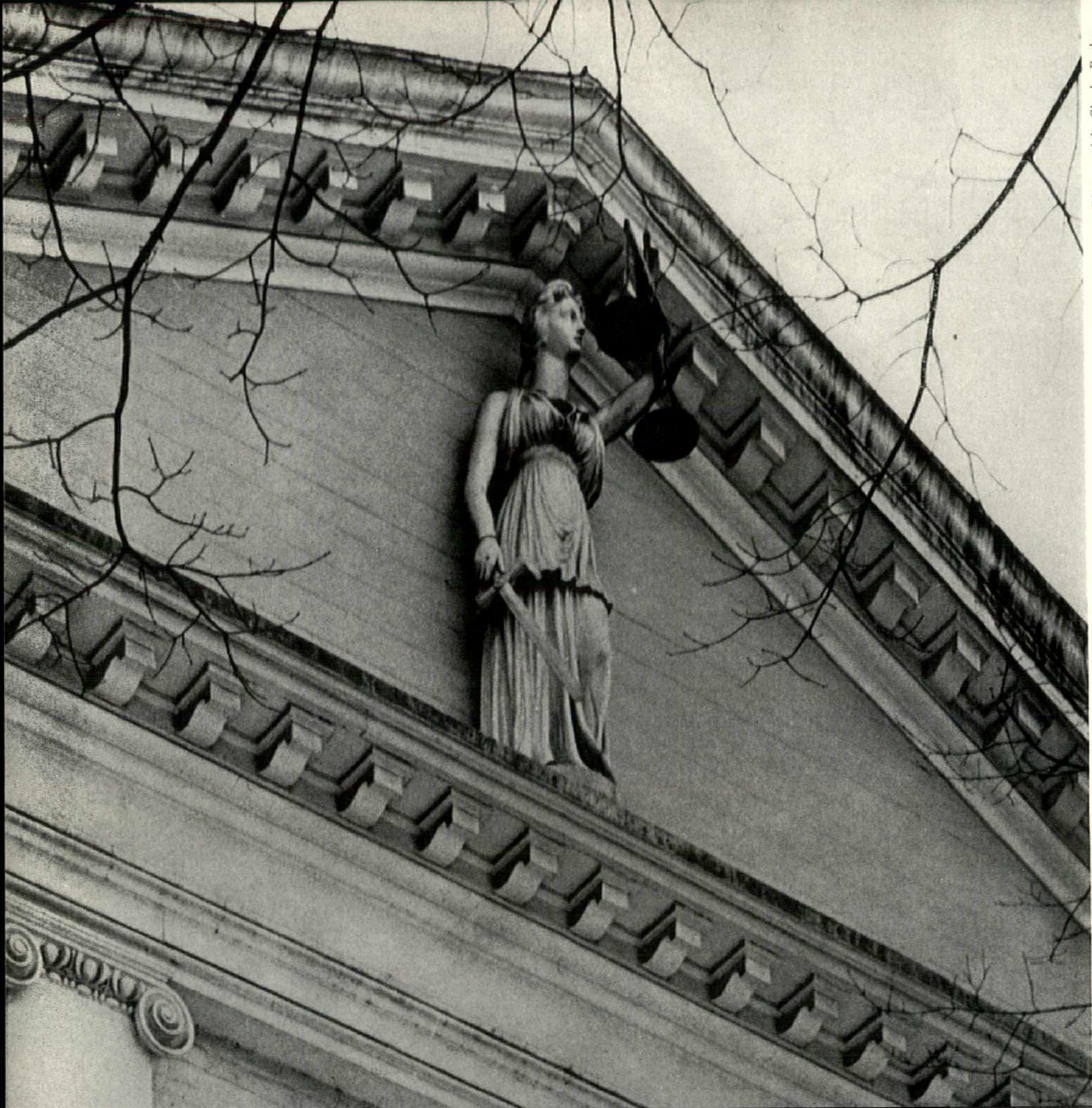
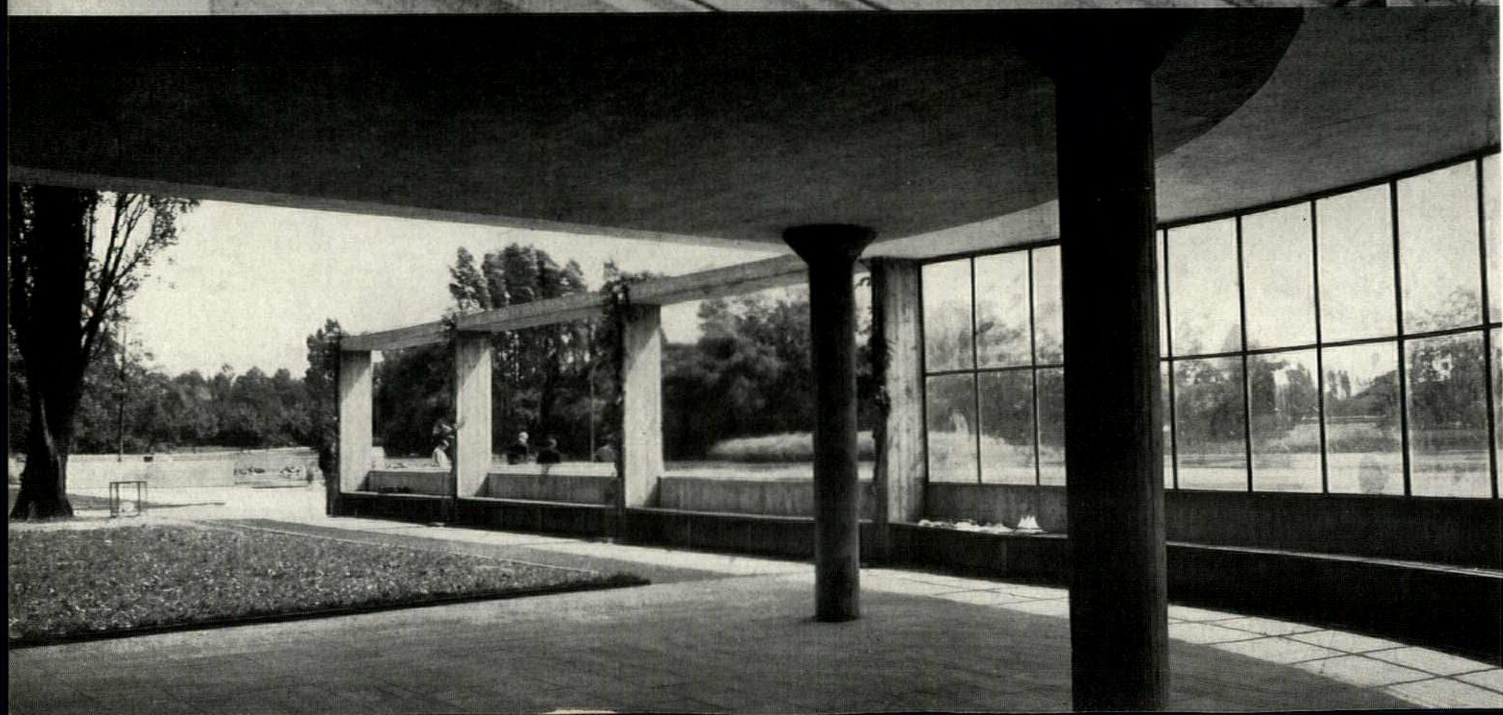


Photograph by Charles Parker



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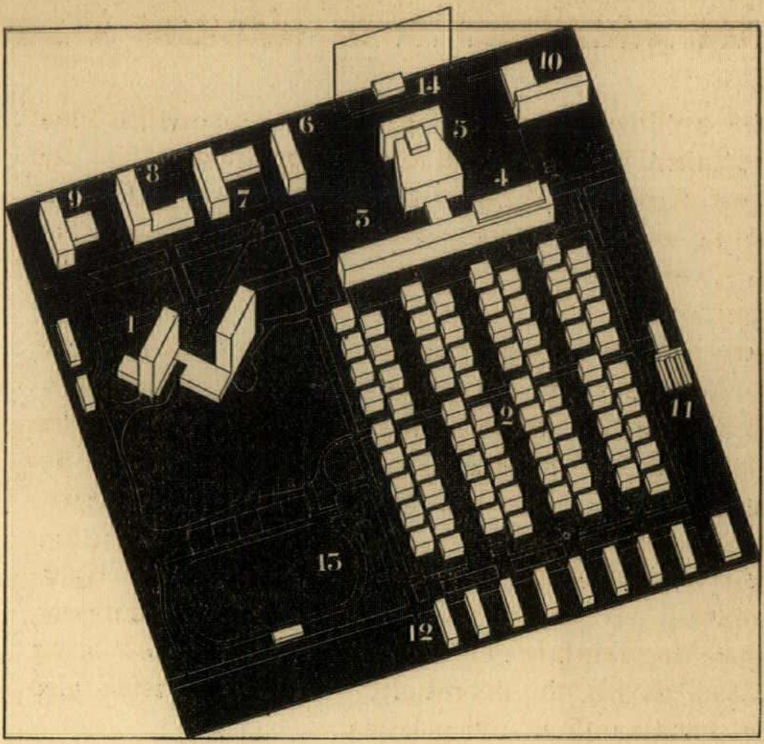
THE ARCHITECT in a MODERN WORLD

by R. L. DUFFUS



1.

\ layman conversing with architects, or thumbing hrough their magazines and books, or, as I have ust been doing, studying their replies to a quesionnaire, discovers at once that they are uncertain bout the future of their profession. Some are pprehensive and some are expectant, but none, so ar as I can find out, is sure.

The profession may be about to be tamed and bsorbed by business enterprise, like a kind of aesnetic Ethiopia. It may, on the other hand, be movng toward a re-assertion of its independence—even oward a dominance never previously attained. I on't pretend to have an answer. I would like to resent the dilemma, largely as the architects themelves see it, and then suggest a layman's reacon to it.

I think we may start from one point of certainty. Vhatever may happen to architects and to archiecture, both will continue to exist in some form as ong as civilization lasts. An architect, as the Greek oots which make up the name say, is simply a aster builder. There will continue to be building nd some group of men will be the masters of it. hey may or may not be the men we call today by e heroic name of architect. If bankers, real estate evelopers, industrialists or politicians determine ow we are to build they will be the real architects, even though they hire draftsmen and engineers to give shape to their ideas and stability to their buildings. The result will be good architecture, mediocre architecture or bad architecture, the architecture of truth or the architecture of falsehood. But we cannot avoid having architecture.

I should broaden the definition of architecture to include much more than the forms and functions of buildings. It enters into the shape, the color, the texture, the fitness of all the physical man-made things we have and use. It is the outward form of our civilization. It affects and is affected by our political, social and economic institutions. It swallows up the plastic and graphic arts and I believe has more to do with the way we think and feel than either music or literature, or both together.

The ugliness and confusion of most parts of most of our cities, the drabness of factory towns, the slovenliness of many of our country villages, the shrieking falseness of many of our suburban developments ("improved real estate," God save the mark!), are the architectural expression of a defective society. I like to think of the architects some day rising in rebellion, not with guns in their hands but with pencils, drafting boards, modeling clay, and all the instruments of the builders' trade, to build them nearer to the heart's desire.

Some one is sure to ask, why put this burden on the architect, who is, after all, only a man with some technical training and experience, trying like the rest of us to earn a living and, like most of the rest of us, not making too good a fist of it just now? The answer is that all who will assume any part of this burden, whether or not they hold degrees or licenses, are sharers in the great adventure of architecture.

Yet, speaking always as a layman, I do not propose that the architect shall be let off easily. At the center of the movement there must be the men of degrees and licenses, who can conceive and construct, and so give form to the dreams of their generation. All civilizations are embodied dreams—or nightmares. At the climax come the master builders, speaking truth in stone and wood and, in these latter days, having the potentiality of speaking truth also in metals, alloys and plastics.

The architect has never been, will never be, allowed to build without interference. He must have land, he must have materials, he must have labor to assist him. He must call in his brother, the engineer, though why a sharp distinction should be made between the two I find it hard to understand. Under credit capitalism he must satisfy the banker, who is thinking not of good building or beautiful building but of stable market values. Whether he builds a summer cottage, a factory or an office building he must deal with owners, whose taste may have been spoiled by their education, their environment or their way of life.

These are the crosses he must bear. But he is no master builder if he merely achieves a reasonable compromise among them. Over and beyond his duty to his associates, to his clients, to those who find the money to make his work possible, he has a duty to society. He owes it to his fellows to have no part in creating slums, in intensifying urban congestion, in vulgarizing the countryside. If he meets these problems he may produce good architecture without ever asking himself whether it is also art. But the final challenge to every generation of architects is to produce great architecture—and by great architecture I suppose one means that which will truly express the dominant aspirations of a period, all the soaring quality, all the beauty that is in them. By means of great architecture a generation of men says: "This may not be what we are, but this is what we wish to be."

Perhaps we are not yet ripe for a great architecture, which demands, to quote from an article by Albert Mayer in the *Nation,* "first a generally accepted background of life and aspiration of sufficient significance so that the artist and the creator can believe in it with passion and assume with serenity that it exists; and second a position of authority for architecture and the architect commensurate with his importance in a vital civilization and with the extraordinary demands made upon him." But whether ripe for great building or not we are either moving toward it or away from it.

We are moving—of that there can be no doubt. The basic assumptions of our civilization are shifting. Professor Charles W. Killam of Harvard has defined "the principal function of the architect today" as being "to plan and direct the execution of building projects so as to produce convenient, safe, economical and durable inclosures for our manifold activities." One would not quarrel with such a definition. But the activities are changing, and with them the personnel of those taking part in them. New groups and classes are knocking at the door, asking as of right what used to be the privileges of the few. Decent housing for all, adequate recreation facilities for all, light and air in working places, spaciousness—these are ideals which change the nature of architectural problems at the very moment that architecture is arming itself with new methods and new materials. Cities are dissolving into the country. In the automobile we have traveling homes or offices.

Yesterday's buildings and yesterday's ideals are less and less satisfactory. At no time in history has a merely imitative and traditional architecture been so inadequate, so incongruous. To express his own time the architect must make a fresh start. To make a fresh start he must be trained to an awareness of his own time. The problem is educational—education of the architect, education of the public to understand its own needs and, even, its own half realized desires.

Before considering what this education might be we will do well to inquire what the architectural situation now is. I shall make use, here and later, of the results of the questionnaire I have been examining, and of other opinions currently expressed by practicing architects.

2.

The practicing architect is but one link in a chain of influences and agencies which cause a particular building, of a particular sort, to be built on a given site at a given time. He is subjected to pressures of many kinds, affecting all phases of his life and work. There are long-term and short-term trends, and trends economic, social, political and aesthetic. Technology changes between one set of specifications and another.

It is not putting the profession in an undignified light, however, to say that the first test of its position is whether its capable and industrious members can earn a living. If they cannot, something must be wrong in the relationship between the profession and the community. It is easy to see that something has been wrong during the past six or seven years, with building operations at a fraction of their former volume.

Not only did the total available commissions decline, but there appeared in the building industry, as in other industries, various methods and devices intended to cut costs. There was a growing tendency among speculative builders to use standardized house plans—often prepared by draftsmen working for small fees; manufacturers offered plan services with their goods; the "talented younger university men" were exploited; there was some increase in the use of fabricated parts; and although the prefabricated house is still a rarity a determined drive is being made to market it. These encroachments were probably inevitable, but the depression certainly accentuated them. They would have seemed less important during the boom days when new office buildings, multi-family apartment houses and factories were offering profitable commissions to the more successful architects. Competition in the comparatively neglected residential field stiffened just as that field was being invaded by agencies which had little use for the architect.

Government offered the architect a certain amount of work through the PWA. It endeavored to stimulate repairs, remodeling and new home construction by broadening the mortgage market. It aroused interest in slum clearance, although the failure of the Wagner Housing Bill in the last session of Congress reduced that activity to a few isolated demonstrations. Building operations rose from about one-tenth of their former volume to one-third or more, but this rise could not restore to the architect his former prosperity—such as that was.

Architectural opinion is by no means unanimous as to the value of the Federal operations: "The chief advantage has been to the speculative builder," says one man; they have tended, says another, to "encourage the speculative builder . . . who operates at cut rates, chiseling down all labor costs and professional services to the detriment of the private architect"; a third declares: "Practically all of the FHA architectural work is done by operative builders, contractors and material supply houses, resulting in poorly planned and designed houses of the 'mongrel' type." But at least a majority of architects seem to agree with the A. I. A. member who said: "I believe these agencies have increased public recognition of architectural services—at least they have tried hard enough."

Public opinion in the United States seems to be waking up slowly to the crying need for better housing—one might say, for a minimum standard of decency in housing—and in this field the architect may find opportunities which will outlast the depression. But it is obvious, and replies to questionnaires bear out the conviction, that under present conditions the architect can rarely afford to serve the small-income group which really needs his help most. As I run through my pile of questionnaires I find some evidence of successful ventures: young architects may cut their eye-teeth on small houses; architects have responded favorably to government proposals for limited services on moderate-cost houses; "the technologically backward residential field still offers a comparative freedom for the free lance architect"; "the small office, with young draftsmen, is the answer"; "architects having low overhead can profitably do small-house work on the basis of the fees recommended by the A. I. A."; "the opportunity is unlimited—none of us yet has found the way to take advantage of it"; "our own firm has now under construction or on the boards six houses costing under $10,000, and we consider them well worth the effort, even though the net return is very small."

As a rule, however, the small house as an individual, full-time field, arouses only what may be called a sacrificial enthusiasm. Restricted service does not satisfy the man who wants to do a thorough job, and who really enjoys solving the variety of problems that small houses offer. "The profession should work out ways and means of producing designs for moderate-cost houses at a lesser cost," one architect believes, "provided such cuts do not affect the quality of the design. We suggest closer cooperation between manufacturing and producing companies and the architects. Produce a more flexible system of stock units, which would allow the architect to specify without such expensive drafting." But the drift of opinion seems to be that the designing of individual small homes by individual architects is a losing game for all concerned. It has a romantic appeal, but it cannot easily be made to fit into the pattern of contemporary society.

Yet people must be housed, no civilization can be considered a success which does not house them adequately, and they cannot be housed adequately without the employment of precisely those qualities and abilities that the good architect possesses.

The solution evidently lies in better organization, in improved techniques, in closer cooperation. Lewis Mumford sees a future for "group designs, where the architect can think and plan in terms of economics and layouts and adaptations." From Paul P. Cret's office John M. Harbeson writes: "The high and continually rising costs of labor indicate that the future of low-cost homes will depend on more and more quantity production of essential parts: these parts should be designed by architects; when they are developed an architect is best fitted to arrange assemblings of them, which must be done at fees much less than 'six per cent of the cost of the job.' " The samplings indicate group practice, with each man having his specialty, and a better working understanding with manufacturers of stock parts and materials, as favored possibilities. In part this attitude may be defensive: if the architect does not assert himself he may find that industry and the speculative builder have destroyed his liberty, reducing him to the status of an office clerk. But the social point of view is not lacking. I believe there are many who would agree with Edward D. Pierre that "the small home is one of the architect's greatest obligations to society."

Domestic architecture is undeniably important as a possible remedy for the architect's economic problems, as an incentive to new forms of organization and operation, and as a fulfillment of a duty to the community. Its success or failure means more to our civilization than does the erection of monumental public buildings, of quarter-mile-high skyscrapers (don't be too sure the next boom won't breed another crop of them), or even of factories, motion-picture theaters and churches. But domestic architecture involves relationships between homes, on the one hand, and schools, libraries, churches, theaters, stores, and public buildings, on the other hand.

The architect is being forced to overcome the obstacles in the small-house field. But the smaller the house, I begin to believe, the larger the architect ought to be, for he must see his house set rightly into the community and cannot do his work to best advantage unless his understanding runs all the way from the layout of streets and parks to the proper composition (not too brittle, not too slippery, not too absorbent) for the drainboard of a kitchen sink.

If one sits down to write specifications from which to construct the ideal modern architect ("modern," not "modernist," please note) one finds himself describing one of those effulgent Titans of the Renaissance, a Da Vinci who can be painter, sculptor, writer and musician as well as architect. How near can the American architect of 1936 come to this description? How near does he think he can come?

3.

Two years ago the A. I. A. sent out a questionnaire, to which it received 240 or more replies. Of the 226 Institute members who tried to classify the architect 187, as Director William T. Warren analyzed the returns, saw him as "a professional man whose idealism carries him beyond the customary thought of the interests of the client coming before the interests of the architect, carries him to that rare and lofty pinnacle where fairness and justice come be fore the interests of either architect or client."

This is admirable, but in practice what does it mean? An architect must be more than fair and just. He must have sufficient knowledge to do a great many things, sufficient wisdom not to try to do too many. In The ARCHITECTURAL RECORD'S questionnaire, now lying on my desk (or, to be more precise, arranged in four or five piles on my floor), there were three queries bearing on this point: "Can the services rendered by the architect be enlarged and, if so, in what new ways? Do you consider the architect capable of undertaking commissions in such fields as community planning, industrial design, furniture design and interior architecture? Can we assume that architects, as users of building materials, should work more closely with industry in improving and producing materials?"

The answers, like most of those in questionnaires deliberately intended to encourage the recipients to be voluble, do not lend themselves to tabulation. They do suggest, however, that the majority of architects are at once anxious to avoid a narrowing of their historic field (which is certainly vast) and puzzled as to just how they shall meet not only the old but the new requirements. The architect would like to think of himself as capable of designing and executing every detail of a building, including the furniture. He can hardly avoid a sense of responsibility for community design, in which the nature, use and spacing of buildings is a major factor. He shrinks from being called an "interior decorator"—why should a well-designed interior have to be "decorated"? He realizes the importance of industrial design, but is not sure that without special training he dare undertake it. In his boldest moments, however, he considers nothing in the field of design alien to him.

Here are some of the answers to the three questions: "The architect must be more flexible in his methods and not conduct his profession as a luxury profession"; "Like other designers, he will, I think, tend to become absorbed by industry"; "He should be the Master Architect of cities and not parts of cities" (Edward D. Pierre); "By definitely integrating his services with a qualified landscape architect, and interior architect, contractor, etc."; "Every architect should have a fundamental sense of design, which makes it possible for him to enter any field requiring design after he has mastered the technical details of that field" (Harvey Wiley Corbett); "Community planning must be a group enterprise, of which the architect must be a part"; "The same architect would probably not do both industrial design and furniture design equally well, but the profession is broad enough to include both types of design"; "I not only see no reason why architects should not enter these fields, but feel it absolutely necessary for the continued life and importance of our profession that they do so"; "All the above fields are integral with architecture, and the young architect's education should be remodeled to assist his participation in them" (Lewis Mumford); "Architecture is one of the worst fossilized of the professions, and it will require great energy, from within, to overcome this handicap."

As to cooperation with industry I pick the following out of a number of pertinent answers: "Without better technique the architect can contribute nothing of value"; "A good architect might be well qualified to do this type of work, but he would be giving up architecture to become an engineer"; "Architects should be the leaders of industry"; "This should be an automatic relationship"; "The architects have been the factors in most all instances in the improvements and developments in building materials, not the manufacturers—this is not generally known, but can be substantiated"; "The Bureau of Standards and other disinterested agencies should cooperate with the profession in setting up standards and facts relating to building materials"; "By employing architects, on a very, very nominal fee basis, in various sections of the country, to prepare designs, details, their ideas, etc., incorporating uses of manufactured materials, products, etc.—such ideas to be massed together by the producer and standardized as far as possible"; "Industry in the long run will manufacture what the architect and the building public really need"; "Closer cooperation could be effected (a) if the average architect had more time for the investigation and observation of manufacturing processes, (b) if the material producers could agree among themselves on standardization in some lines and in acceptable practice, (c) if the average architect had the results of more good research available on all materials and construction in which he is interested" (A. R. Clas, Director of Housing, Federal Emergency Administration of Public Works).

C. Theodore Larson, Technical News Editor of The ARCHITECTURAL RECORD, makes this suggestion as to close cooperation with industry: "Metallography, alloying and modern methods of machine production have already made possible materials which are designed to serve specific purposes. There are over 2,000 registered trade names for plastic compounds. Practically as many different steels and alloys are available commercially. . . . The main job is not the production of more materials but the design of new structural forms which are being made possible through the progressive elimination of old restrictions in fabrication." And that, nobody can deny, is a job for the architect.

In architectural publications there is an enormous amount of material bearing on this question of the architect's capacities and responsibilities. The whole discussion, I believe, proves that the profession is in a state of flux—it is either waking up or dying, no one is entirely sure which, though one may have his hopes. That is to say, it is either waking up to new independence and authority, or dying into an uncreative dependency. "There can be no doubt as to the future of architecture as a fundamental human activity—a necessary function of civilization," writes Sherley W. Morgan in *The Octagon*. "There may well be a question as to whether this vital service will be performed by architects, such as we now know them. It depends on how well the present members of the profession acquit themselves in the next few decades, and on how successful their performance shall be in attracting to their ranks recruits of ability and vision."

It may also depend on the extent to which we allow the blight of salesmanship to invade the field of architecture and design, as it has invaded so many other fields. I tremble for the future of architecture, as of design, when I read such passages as this (quoted in "Industrial Design and the Future," by Geoffrey Holme):

"Industry wants designers of talent and ability—but they must also have a knack for understanding more than the abstract problem of design, they must have commercial sense or instinct. Industry is only interested in those designs that there are good business reasons to manufacture."

I do not believe that "good business reasons" ever produced a great building, a great book, a great picture or a great piece of music. The architect will win his fight only if he is stronger than the "business reason." The "business reason" has given us the sort of architect that Prof. Killam describes:

"Most of our buildings are so inefficiently and uneconomically planned and built that we cannot afford to live, to do business, recreate or worship in worthy surroundings. The homes of nine-tenths of our people lack comforts. They are unbeautiful if not ugly; they are unkempt inside and out, often insanitary and unsafe. Half of our school buildings are out-of-date, musty, poorly lighted, not entirely safe. Our churches are often the largest and ugliest buildings in our villages, less dignified than our pumping stations."

There is a job for the architect to do. There will always be a job. The question is, first, whether society as it is now organized will permit him to do it and, second, whether he himself can meet its exacting demands. And so we come to the crux of the whole matter. We return to the problem of the architect's education. He will not succeed if he is trained to imitate and to obey. He must force building into the mold of his own time. He must make it express the aspirations of a whole people. He must build into it justice, democracy, truth. He must emulate the great tradition—not copy its forms. He must be stronger, in knowledge, in aggressiveness, in character, than the influences that will try to subdue him.

Are the schools preparing him for this battle? Can they do so?

4.

I turn first to THE ARCHITECTURAL RECORD's questionnaire. I find some damning comments on architectural education, and I shall begin with them: "Not thorough enough in school and too unorganized afterward"; "The fundamentals of the practical make-up of the building are not generally stressed enough"; "Inadequate on the social and economic side, backward in technical integration with (a) engineering, (b) community planning" (Lewis Mumford); "Lacking in basic science, which not only is neglected but scorned—too much design—too much on paper and too little in the round, i.e., clay—too much emphasis on such artificial devices as *hors concours,* which never come up in practice" (John Ely Burchard); "It could be stuffed down the drain and never missed"; "Lousy" (this succinct and forceful answer occurred twice); "On the whole, stupid and weak, fawning and dependent"; "Unless it is a whole lot different from what it was fifteen years ago, it is practically worthless" (Miles S. Colean, Technical Director, FHA); "Too theoretical, without enough attention paid to the actual problems which present themselves to the profession" (a typical criticism); "Architects should be fundamentally engineers rather than artists"; "Still, generally, in the horse-and-buggy era."

Few architects seem completely satisfied with architectural education, but many are more indulgent than those I have just quoted. For example: "Good on the whole, but the less we look at the Ecole des Beaux Arts, the better"; "With such faults as it may have, it still is an excellent education" (John M. Harbeson, office of Paul P. Cret, Philadelphia); "On the whole intelligent, desirably conservative in taking up new trends, many only passing symptoms, but steadily developing, through cooperation of the leading schools, so as to meet the needs of the times" (William Stanley Parker, Boston); "Believe it is getting better and better"; "Improving all the time—more emphasis should be given to structural engineering"; "Good in recognized colleges"; "Doubtless the method of the schools might be modified to advantage in some instances, in many respects, but, after all, they have sent a good many men on the right road."

As is, perhaps, usually the case, the criticisms are more specific than the commendations. The basic criticism in the answers to the questionnaires is that the schools are out of touch with reality. What do the critics propose?

Let us run through a few more answers: "The need is for an entirely new system of education, which will conform more closely to the demands of industrialization" (C. Theodore Larson); "In general, the practical side of architecture should be more thoroughly learned"; "Complete renovation, beginning with pre-vocational education" (Lewis Mumford); "A closer integration of the practice with the teaching of architecture"; "A realistic approach to architecture as a part of life, instead of a sentimental attitude toward it as a dream world"; "More practical experience and knowledge of shop work and materials"; "I would favor a course or courses which would cover fields in which it is difficult to get guidance or information after graduation, such as the underlying principles in writing specifications, the practice of architecture, its business and legal side, etc." (Waldron Faulkner); "A real business education, stressed as greatly as design and construction"; "More engineering and mathematics and more economic, political and social training"; "Greater understanding of economic and social conditions" (Miles S. Colean); "The use of models in the study of design"; "The education of the young architects in civic affairs, city planning, etc., should become a part of the educational system"; "Schools should impart (1) knowledge of materials as used in the field, (2) knowledge of construction techniques, (3) knowledge of modern as opposed to eclectic design."

So much for the questionnaires. What are the answers of the schools? What, in fact, are the schools doing or planning to do? Obviously I cannot, within the reasonable limits of this article, analyze the work of even our most important architectural schools. I have selected a few schools and teachers, more or less at random, and will let them interpret themselves, within the brief space available. I think it will appear that in some, at least, of the architectural schools there is a recognition that changing technological, economic and social conditions will force a new architecture upon us—are, indeed, already doing so—and that the schools will fail if they do not prepare their students for this transformation.

Joseph Hudnut, former Dean of the School of Architecture at Columbia, now Dean of the Faculty of Architecture at Harvard, hammered home this point of view most vigorously in an address before the Boston Society of Architects last October. Dean Hudnut had some stinging comments to make on a system of education under which young men who "are to make the environment in which millions of human beings are to spend their lives and in which the children of the next generation are to be born and reared are being trained for this crushing responsibility by the making of a wonderland of drawings, the major intention of which is to 'stimulate the imagination'." Dean Hudnut went on:

"I think we all recognize that the central problem in architecture today is the creation of some harmony between our technology and its applications on the one hand and our expression on the other. . . . I hold it essential that from the beginning of architectural education we should devise some method whereby the creation of practical buildings and the discovery of beauty may be made integral parts of a common process. I conceive it to be our responsibility as teachers to discover and exploit such a process. . . .

"I shall dare to add to this objective still another: namely, that of giving to our students some awareness of the social implications of their art. If the business of an architect is to discover some attributes of beauty in the life of his time and to express this beauty by a harmony between his constructed forms and the life that flows through them, then it seems reasonable to expect that every student of architecture shall attain so far as it is possible a clear and objective view of the world around him; of the structure of society and the intellectual currents that determine that structure. I think that such an awareness might reasonably be encouraged in our courses in design, where every program should imply some necessary relationship between the building to be designed and the purpose which it is to serve in the social scheme."

Prof. Killam, already quoted and also a member of the Harvard faculty, writes that; "We have for years at Harvard required the student to write his own program in the case of his graduating thesis. He goes to the documents; he goes to buildings in use; he talks to the men who use the buildings. He acts exactly like a real architect. Then he writes his own program. . . . I would extend this system throughout his whole work in design."

Harvard has now worked out a new curriculum for its graduate students of architecture, under which "a student will study, as parts of a single problem, not only that organization of space and of mass usually spoken of as 'design,' but also the design of structure and the professional aspects of the problem, including finances and the relation to industries and to law. The students who take this course will not take 'projets' nor will they be trained in competitions and renderings. . . . [They] will take only one subject, namely, *Design,* but this subject will be taught by all the members of our faculty."

Columbia's School of Architecture, under Dean Hudnut for the two years ending in 1935, moved toward closer integration of the teaching of architectural design with the study of construction. In cooperation with the School of Engineering a practical laboratory course is offered which enables students to gain experience with "the basic materials of structure." Two years ago the School sponsored housing studies carried out with CWA assistance under the direction of Dr. Carol Aronovici. There is a "town planning studio," and students have made a survey and proposals for the improvement of the densely settled area lying north of the University.

The present-day ideal of Columbia was probably well expressed by Prof. Leopold Arnaud, chairman of the School's committee on administration, in an article contributed to the *Columbia University Quarterly* last December:

"For generations architectural students have begun their training by drawing the Five Orders as given in Vignola's, compilation founded on Vitruvius. . . . This method, followed in almost all schools, both European and American, has done more than any one thing to hamper the free development of architecture. In order to express himself in the vocabulary of his own age, the student of architecture should *begin* to design without any special knowledge of historic forms. . . . Only after this general introduction through current history should the student begin his study of the past; then he will learn the Orders in their proper chronological place. . . . For all our steel beams, electric wiring, structural glass and bakelite our contemporary architecture has its foundations grounded in the bed-rock of the past."

At New York University the dominance of the subject was recognized when the College of Fine Arts was reorganized as the College of Architecture and Allied Arts. Under Dean E. R. Bossange the College has modernized its courses: graduate architects and engineers may study low-cost housing in the Modern Housing Institute, and there is also a summer course in the same field; there is an exhibition room for showings of housing designs, and there is a museum of building materials, both structural and decorative. A course in community planning is given by Dr. Aronovici. The student may take as long or as short a time as he pleases for his work, provided he is able to pass comprehensive examinations, covering the whole course, at the end. Contacts "in open atelier with other students, including those following painting, sculpture and decorative design curricula," are believed to be of advantage to the budding architect. Construction is emphasized, in order that the architect may not become a mere "building beautifier," a sense of the third dimension is developed by modeling and designing in clay and plaster, and "the student is trained in history, not to supply him models for imitation but as a source of inspiration." "The work in the elements of architecture, instead of being a survey of the orders and other isolated features, is an integrated study of architectural forms based on the major types of construction, including the modern. . . . For all design problems a construction critic is appointed to insure buildable *projets*."

It is Dean Bossange's belief that "the failure of many ventures that were purely utilitarian in character proves that the public insists on aesthetic appeal." Not all modern architects would accept this dictum as expressing the whole truth. Some of them would say that the "purely utilitarian," perfectly conceived and executed, would inevitably have "aesthetic appeal." It depends, perhaps, on what one means by "utilitarian." But Dean Bossange's conception of the rôle of the modern architect would undoubtedly find wide support:

"Besides understanding traditional architecture, the architect of the future must be familiar with new materials and make full use of their qualities. He must be master of the new construction systems so that they become tools to express his aesthetic concepts. That most of his buildings will be 'functional' in character is beyond doubt, but it will be a broad, human conception of function. Thanks to science the architect is liberated from many limitations and more free to dream than ever before. He must have creative imagination and a broad viewpoint. He must be more conscious of community requirements and social conditions, of problems of transportation and circulation. But, above all, he must be capable of sensing and idealizing the human need."

I feel like italicizing the last sentence as a summary of what we have a right to expect of the architect. Doubtless Dean Everett V. Meeks of Yale's School of the Fine Arts would agree to the sentiment, but he fails to express it in his account of the aims behind his sound but certainly not radical instruction in architecture. Yale does emphasize instruction "on both the design and structural sides" during its five-year course. But five years is not a long time. "We therefore confine ourselves," says Dean Meeks, "to fundamentals and avoid extremes of fads, either of an ultra-revolutionary or, on the other hand, of an ultra-conservative nature. Our students, as they go out into practice, have a basic training which we hope will enable them to develop along the lines where inclination leads, free to follow the recognized trends of contemporary architecture."

From the University of Pennsylvania Dean George S. Koyl of the School of Fine Arts writes: "While new problems influenced by current economic and social conditions enter the present-day practice of architecture, such problems do not merit drastic changes in the educational policies at this time. . . . The architect has . . . at his disposal an assortment of servants to do his bidding such as never before, so much so that if not properly trained he may lose sight of their relative importance and be carried away with their novelty. The proper education of an architect attempts to relate the new with the old. . . . We have maintained an open mind toward innovations in design and construction, which must prove their merit before being finally and unequivocally accepted." Pennsylvania offers for the senior or graduate year a construction thesis "under supervision of the practicing architects on the teaching staffs in design and construction, thus bringing office experience into the school without disturbing its traditional policies which provide a broad cultural and technical education in architecture." There have been "no radical changes in general organization" during the past three years, although the courses in the history of architecture have been simplified and there are "courses in construction and mechanical equipment of buildings, augmented so as to include a more complete knowledge of the modern scientific aspect of buildings."

For thirty years the College of Engineering and Commerce of the University of Cincinnati has operated what is called a cooperative plan (fathered by Herman Schneider, dean of what is now the School of Applied Arts), under which students put in five eleven-month years, spending seven weeks at college and seven weeks in private employment alternately. Architecture came into the picture in 1922. The architectural candidate ordinarily begins his practical experience as a workman; from this he is promoted to the drafting room; and toward the completion of his course he gains some insight into the actual workings of an architect's office. Aside from the cooperative system a distinguishing feature of the work at Cincinnati is, Dean Schneider points out, "the greater extent of background training in the arts in general"—painting, sculpture, landscape architecture, and historical material.

In his booklet, "Thirty Years of Educational Pioneering," Dean Schneider sums up some of his conclusions:

"Art is expressed in things. Things are made of all sorts of materials—stone, wood, brick, cotton, wool, iron, clay and a host of synthetic substances. Each one of these has its distinctive art quality. This quality must be known to the designer using it. . . . Our School differs in its conception and plan from the usual American schools in that its work is based on principles rather than periods, on creation rather than copying, on the adaptation of design to function and to materials, and particularly on the application of art to everything we use."

From Princeton Prof. Sherley W. Morgan, director of the School of Architecture, writes to announce, first, that "we do not claim to have found a formula for salvation, in architectural education, nor even a personal devil, denunciation of whom will start us on the road to heaven." He does, however, sum up significantly the changes in the School "since the depression descended":

"1. A more integrated viewpoint of architecture as a social art. . . .

"2. A more realistic approach both to design and materials. Many inspection trips to plants, actual work with hammer and trowel, constant pressure not to draw a line without realizing its meaning in three-dimensional construction.

"3. Emphasis on space organization. The organization of the site and its relation to its neighbors and its community. Circulation outside the building as well as within it. The architect, conscious of his duties and opportunities as a member of society, rather than merely responding to the whim of the individual owner.

"4. Analysis and research. Our creative problems begin with the reasons for the program, social, economical or psychological. . . . The student . . . has to write the program, supply the answer and justify it before a jury. . . . In order to graduate he must successfully demonstrate his solution before a group of practitioners, who are free to question him on any phase of his project, not merely on its aesthetics."

Princeton's is a graduate school, with the degree of Master of Fine Arts in Architecture offered after two or more years of graduate work. "Better than average performance" in one or more subjects is required before the student can undertake a thesis, and he receives his degree only if the thesis passes rigorous tests and is accepted. The Princeton School is still plastic: it is only seventeen years old and the present program did not go into full effect until 1933.

Outstanding at Cornell University are the course in Regional Planning, sponsored jointly by the Colleges of Architecture and Engineering and open to non-professional students; the close relationship between the teaching of architecture and landscape architecture; and the attempt being made to "correlate instruction in design and construction." At the University of Illinois the student in design works "under the instructor in Technology of Materials as well as under the direction of the patron in Design," and is expected to acquire "a working knowledge of the equipment and appliances for lighting, plumbing, heating and ventilating, and the many other mechanical contrivances which go into modern buildings." "A substantial amount of construction" and more and more coordination of construction with design are reported from Michigan. At the Massachusetts Institute of Technology the "freshmen and sophomores study, plan, contract for and supervise the erection of a small house."

At the University of Oregon, as Dean E. F. Lawrence of the School of Architecture and Allied Arts writes, there are no competitions, medals or honors. There are, however, "individual programs, and collaboration among architects, landscapers, interior decorators, painters, sculptors and craftsmen." The "use of materials and construction are stressed as a part of design." There is a course in city planning, a final thesis and comprehensive examinations. Freshmen begin by designing small structures, visiting building under construction and making weekly reports. "Wherever possible," Dean Lawrence says, "we give application before theory."

"Emphasis has been shifted," says Prof. Roy Childs Jones of the University of Minnesota, describing changes carried out during the past three or four years under the leadership of Prof. Frederick M. Mann, "from pictorial and decorative values to special, functional, structural and social values. Students start immediately to exercise themselves in realistic problems that involve the whole of architecture in however small a compass, rather than on 'orders,' 'elements,' highly artificial academic subjects, or 'rendering.' Serious efforts are being made to bring so-called 'construction' and so-called 'design' together in single problems."

From Prof. W. F. Hitchens, head of the Department of Architecture at Carnegie Institute of Technology, comes a summary of two major changes in curricula which he believes to be general:

"A new approach to the study of design tends toward broadening the viewpoint of the student in three-dimensional design and in giving greater realism to his work by a closer correlation of design, construction and materials.

"The second change intends giving the student a clearer understanding of the significance of buildings as related to the community through city planning and research into the programs of single structures."

Finally, I have some illuminating comments from Prof. Roy Childs Jones, referring this time to the general situation in American architectural schools. Prof. Jones wrote as president of the Association of Collegiate Schools of Architecture. To him it seems that there is in American schools today "a nearer approach to mature self-realization than they have hitherto arrived at," a tendency to shake off the "veneer of decorative non-essentials" and to emerge from the "haze of pictorial and competitive artificialities." Educationally, the architectural schools are using their position as "integral parts of universities and technical schools" to teach not only their own young specialists but the lay public. A dozen or more schools have escaped from cramping subservience to engineering or fine arts departments, without losing the chance to cooperate on even terms with these related agencies. As to teaching methods:

"By one device or another, the teaching of architecture is being brought to stress the unity of all its phases. Problems become 'architecture' rather than 'design,' 'construction,' 'decoration,' 'rendering,' etc. Programs invite realistic research rather than pictorial display. Criticism becomes inclusive of all kinds of expert advice. . . . Artificialities like the '*esquisse en loge*' are tending to disappear. The decorative approach to architecture, so long clung to in the shape of the '*analytique*,' is sharing a like fate. Inclosed space to meet functional need—in brief, plans and sections of complete buildings—start the student along a more revealing path. . . . The use of the thesis as a final, independent and all-inclusive proof of the student's capacity is increasing."

I think I have given enough samples of professorial thought to prove that architectural education cannot be dismissed as "lousy" or as "good as far as it goes," or by any other simple generalization. Like all higher education in this country it is changing, and the effects are spotty. It is fair to say that it is beginning to catch up with the times—fair, also, I believe, to say that it has not, on the whole, caught up.

The issue is obviously clouded in many minds by a confusion between modern education and "modernist" architecture. "Modernist" architecture may be anything under the sun, except classical. Its exact meaning depends on who is using the word. My own impression, as I think back over the evidence I have here tried to summarize, is that the word "modernist" is, paradoxically enough, a hangover from the eclectic period—it implies that if the architect stops copying old styles he must at once make himself a definite new style for somebody else to copy. If I am not mistaken in my deductions the modern drive is not immediately toward a style but toward freedom to experiment. It is this freedom that the schools might well strive for rather than for a species of "modernism" which may all too soon become as stultifying as the slavery of the Orders.

I had hoped and intended to carry forward this discussion with an analysis of the architect's relation to his public, but I believe that nearly all that might be said on that score has been suggested by the inquiry into his education. Similarly, the plight of the draftsman is at bottom an educational problem. The making of a whole, all-around architect is not a matter of four, five or six years in school—it comes near being a lifetime job. If architects wish their profession to continue and to be influential they will not only have to look to the schools—they will have to see to it that the apprentice architect is given every opportunity to learn and to develop his abilities, and they will have to have enough discrimination and farsightedness to pick creative talent and push it. They must produce successors, even at the danger of producing rivals.

There is no agreement among architects themselves as to whether they have gained or lost in public estimation during the past few years. I doubt that the question needs to be answered in precisely that form. The public needs builders. It will turn increasingly to the architect if he can give it what it wants. It will turn thumbs down on him if he allows himself to become the mere window display for acquisitive business enterprise.

His future depends, I believe, on character as much as on native ability and good training. He must love beauty but he cannot be the ineffectual type of aesthete and still survive. He must bring to the quest for a sound and fit architecture the courage, the determination and I might almost add the remorselessness that have been devoted in this country to the pursuit of wealth.

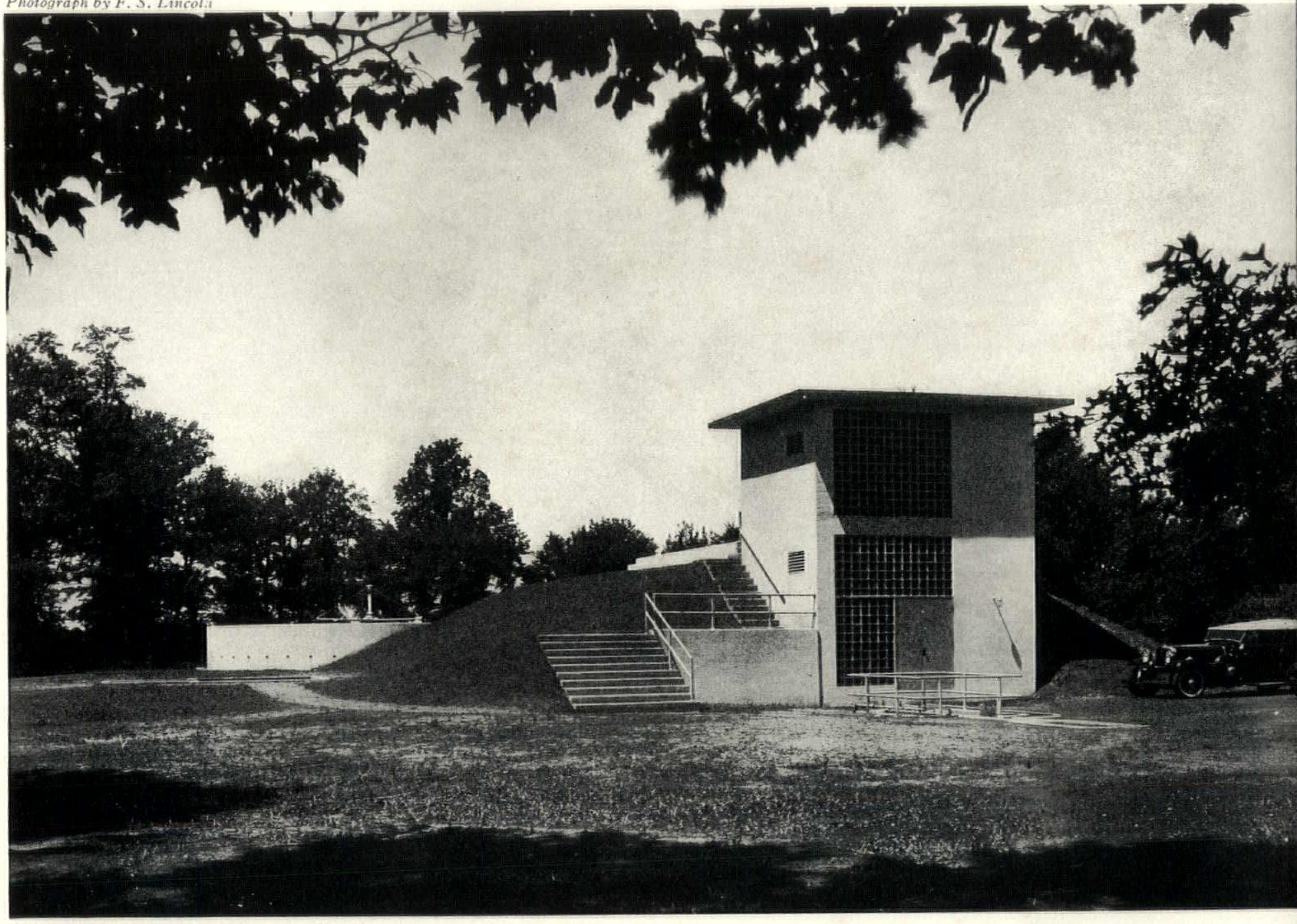
He must have no timidity in the presence of wealth and power. Why should he have? He is at heart not their servant but the community's. He must not be the retainer of a snobbish, genteel and obsolescent profession—a little more independent and having a higher social status than the butler, not taken into confidence like the banker. He must not degenerate into a mere technician, selling his services to the highest bidder. He must not take on so much of the business man that though he retains the name of architect he ceases in fact to be one.

He must hold fast to the literal meaning of his proud and ancient title: he must be a master builder. For such architects the streets of our cities, the green squalor of our suburbs, the stuffed archaism of our public buildings, cry out.

The economic system will not, it may be argued, permit the master builder to step free. If that is so, so much the worse for the economic system. I hold to no "ism" and contemplate no barricades, but I do believe it to be self-evident that there is no higher right in our society than the right of decent, fit and eventually beautiful housing for all the activities of all the people.

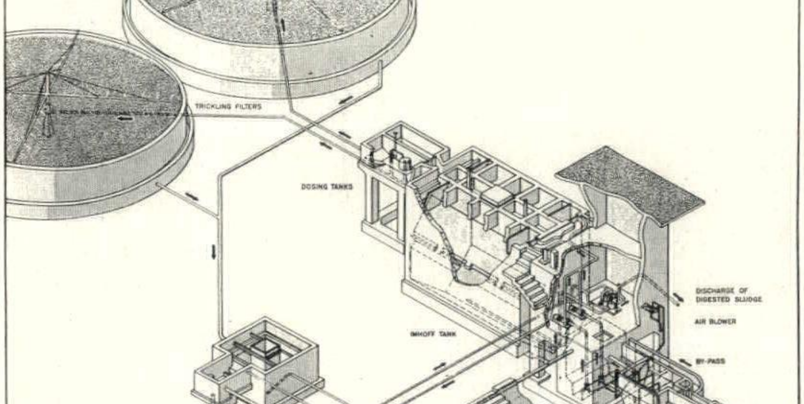
The architect, if he is true to his name, will be a rebel when he has to be.

Photograph by F. S. Lincoln



SEWAGE DISPOSAL PLANT, Project No. 8 NEAR HIGHTSTOWN, NEW JERSI

The Late STANTON M. DORCEY, Sanitary Engineer; ALFRED KASTNER, Archit

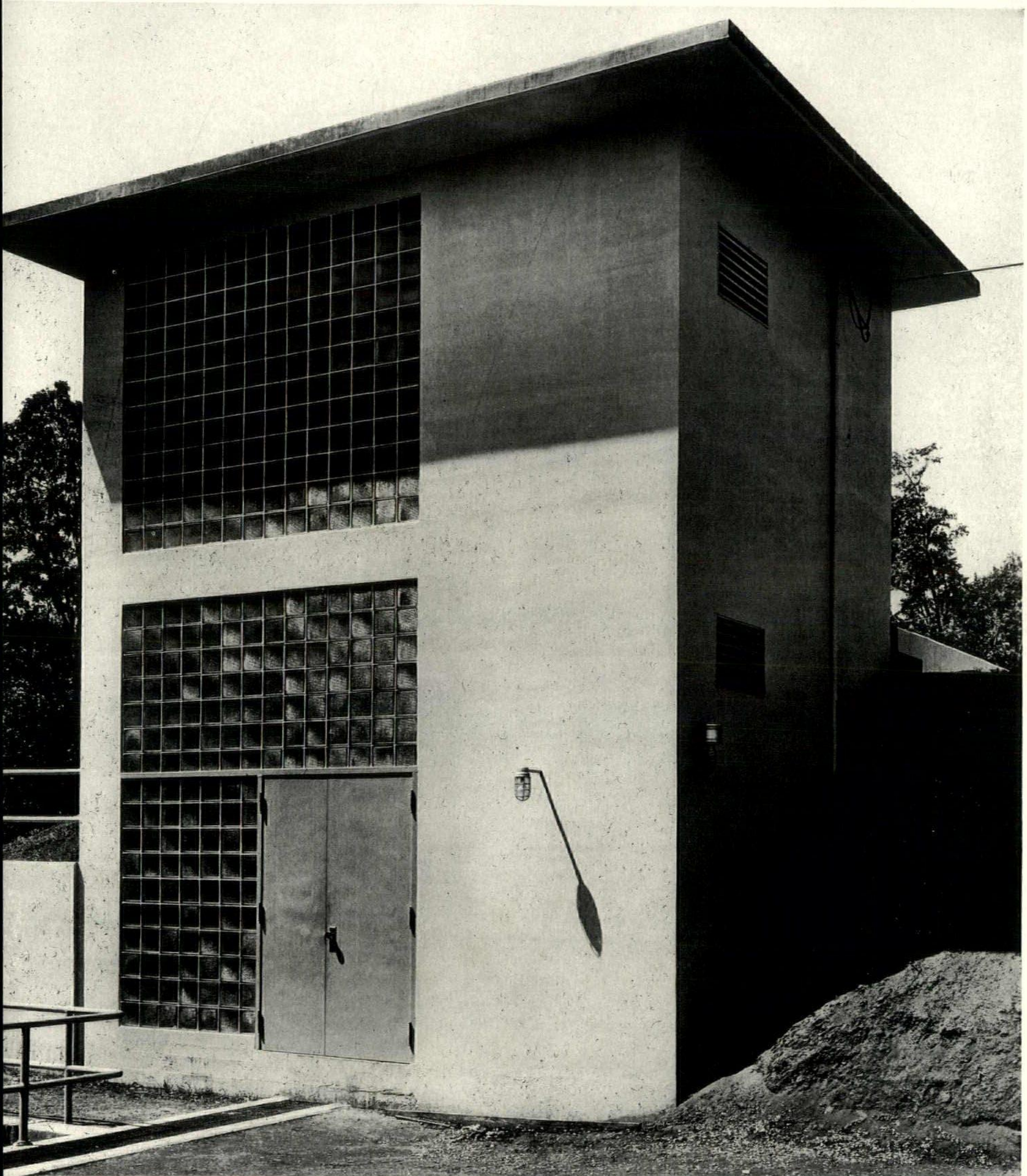


The design of the disposal plant is based on a pro-rated fa of 3.8 persons per house and an ultimate population of 5, gi a total of 1,000; and providing for a wet water flow of 100 gal of water per capita daily. The plant consists of the following u Bar Screen, Aeration and Skimming Tank, Imhoff Tank, Trick Filters, Dortmund and Chlorination Tanks, with a discharge in stream affording an average dilution of approximately 10 ga of water to one of sewage effluent.

The pumping equipment is housed in a concrete building. pumps are of such capacity that one of them can handle average flow, and if flows beyond the average should o another and larger pump adds its output. The sludge pum designed to pump the sludge from the Dortmund tank into Imhoff tank, to circulate the sludge within the Imhoff tank to pump sludge from the Imhoff tank for disposal.

It is intended to utilize the sludge on adjoining farms.

PORTFOLIO



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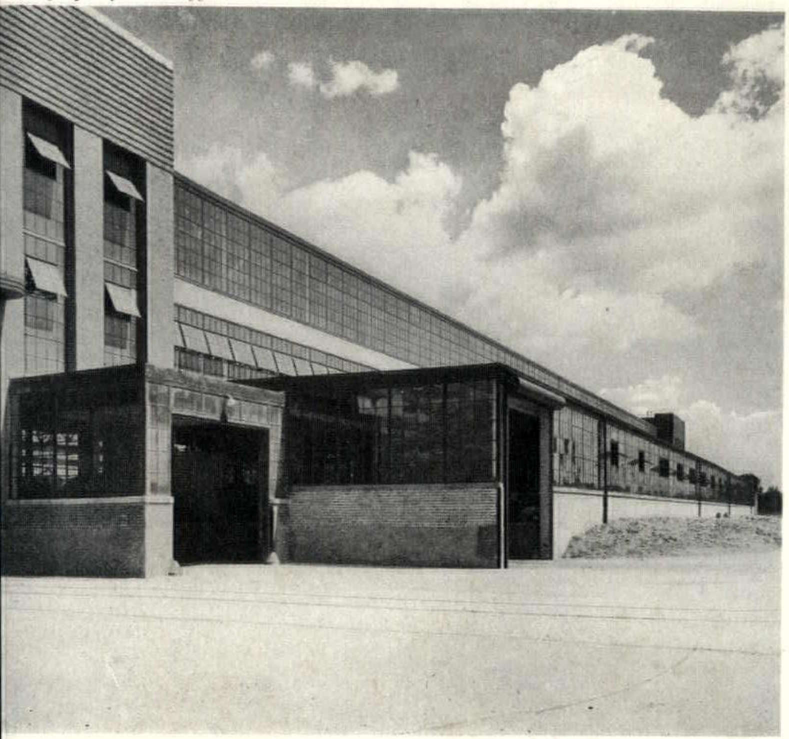

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ALBERT KAHN, INC., Architects

FORD MOTOR CO., RIVER ROUGE PLANT
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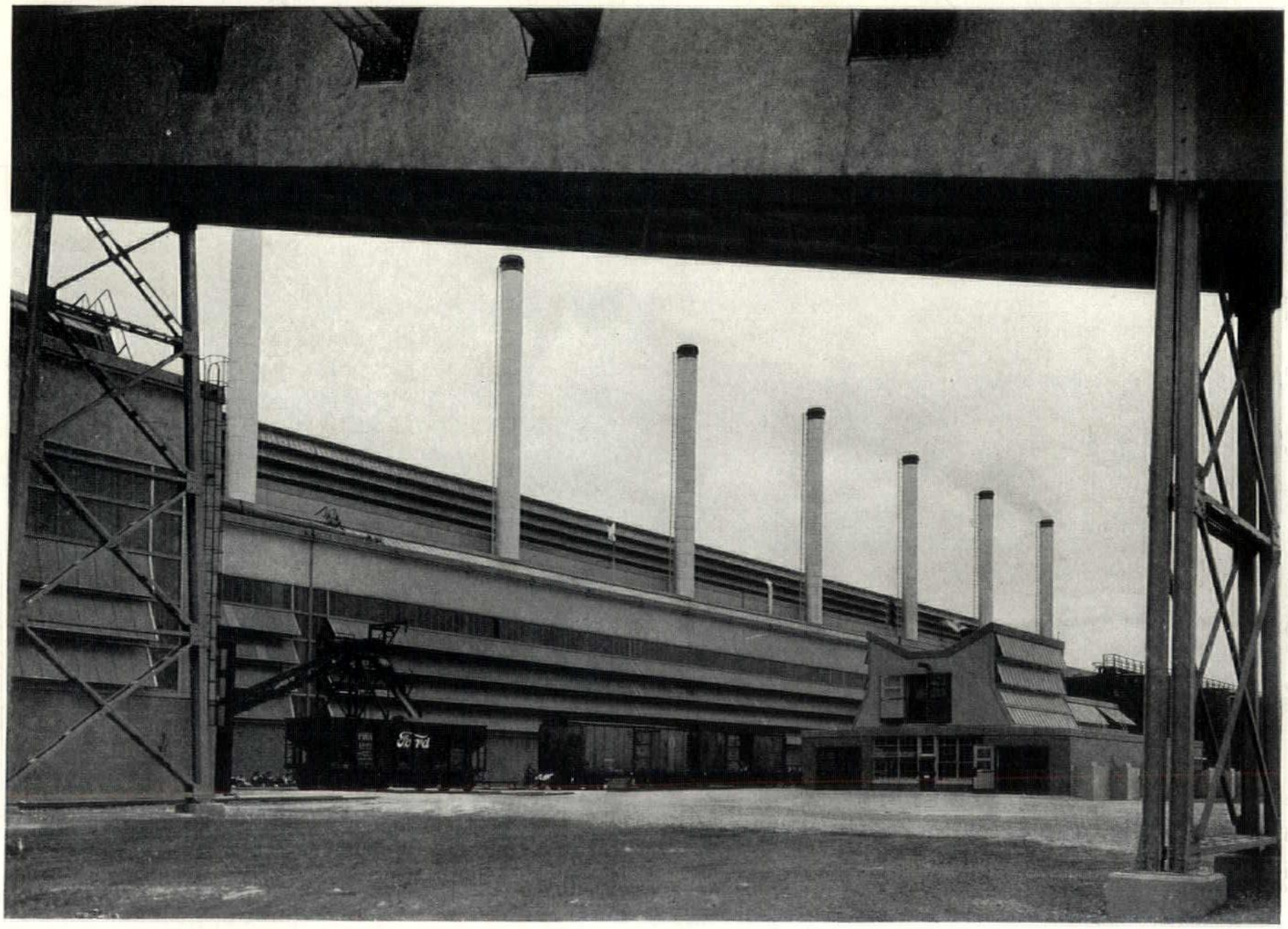
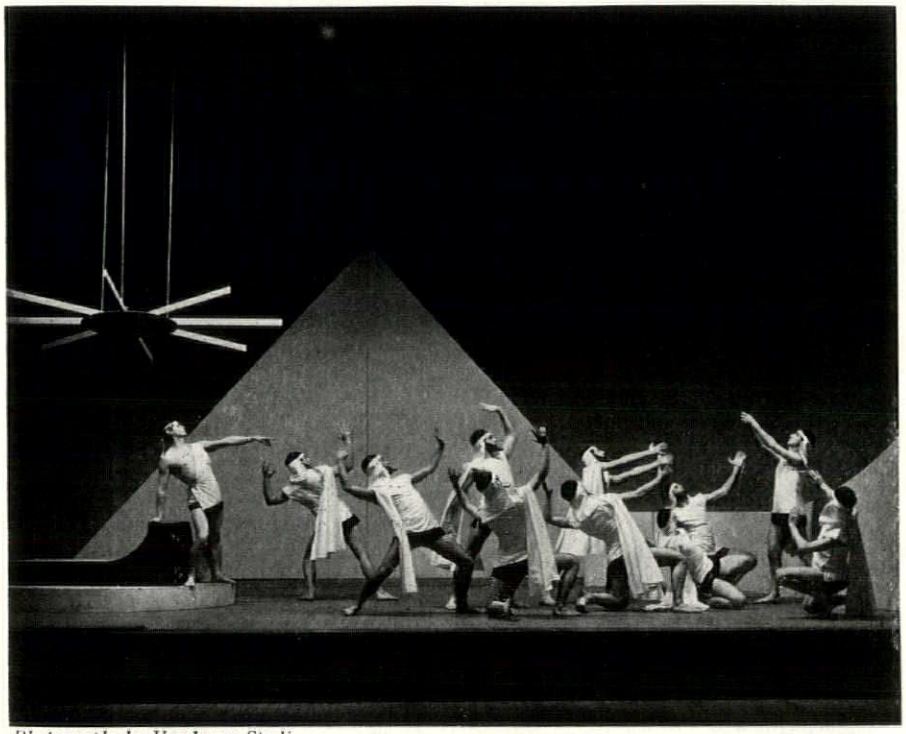
ALBERT KAHN, INC., Architects





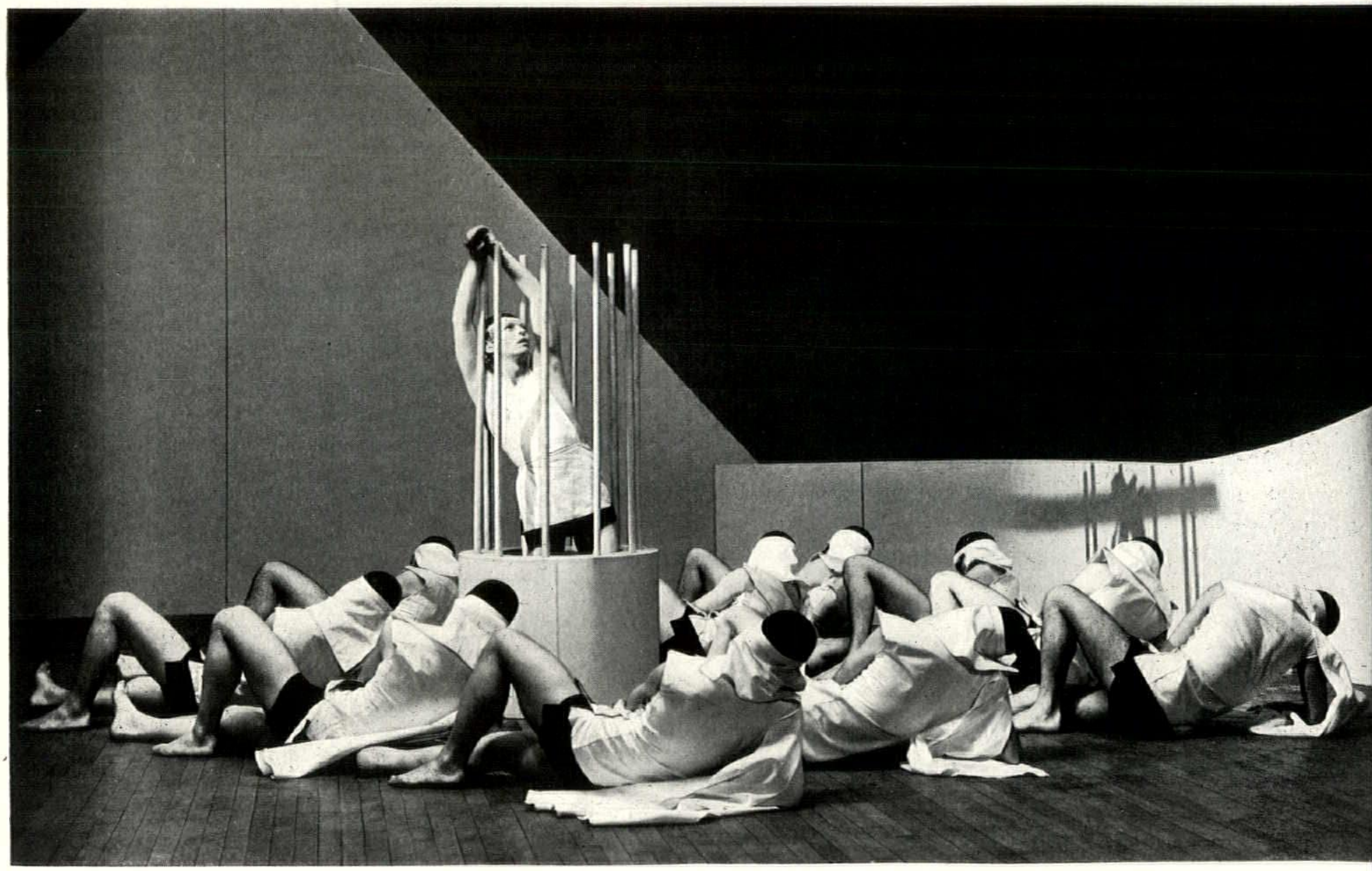
Photographs by Vandamm Studio

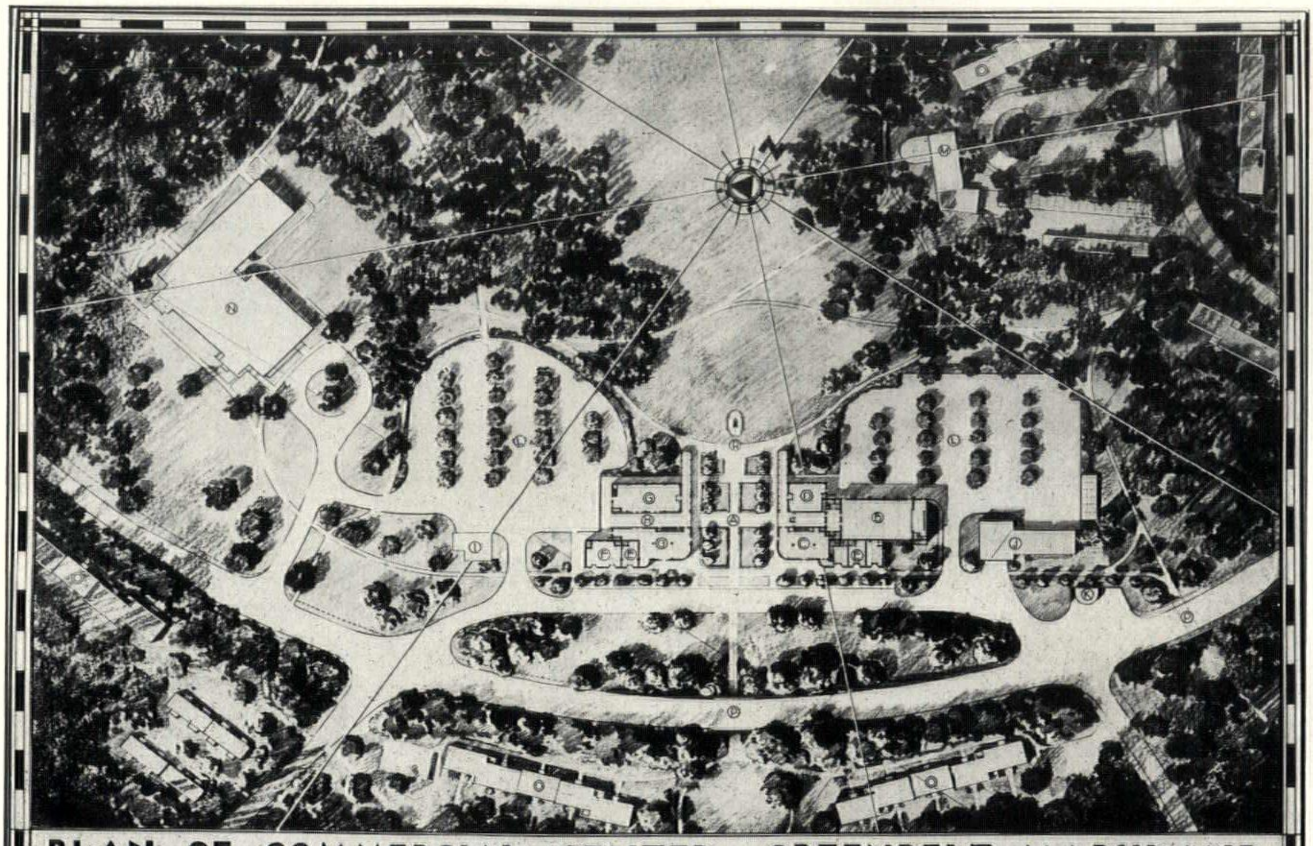
STAGE DESIGN: "JOSEPH AND HIS BRETHREN"

FREDERICK J. KIESLER, Architec

Ballet with music by Werner Josten. Produced for the first time February 1936, at the Juilliard School of Music, New York City.

Settings and costumes by students of the Department of Stagecraft of the Juilliard Foundation for architectural students of Columbia University, under the direction of Frederick J. Kiesler. (Designer: Miss N. Swan.)





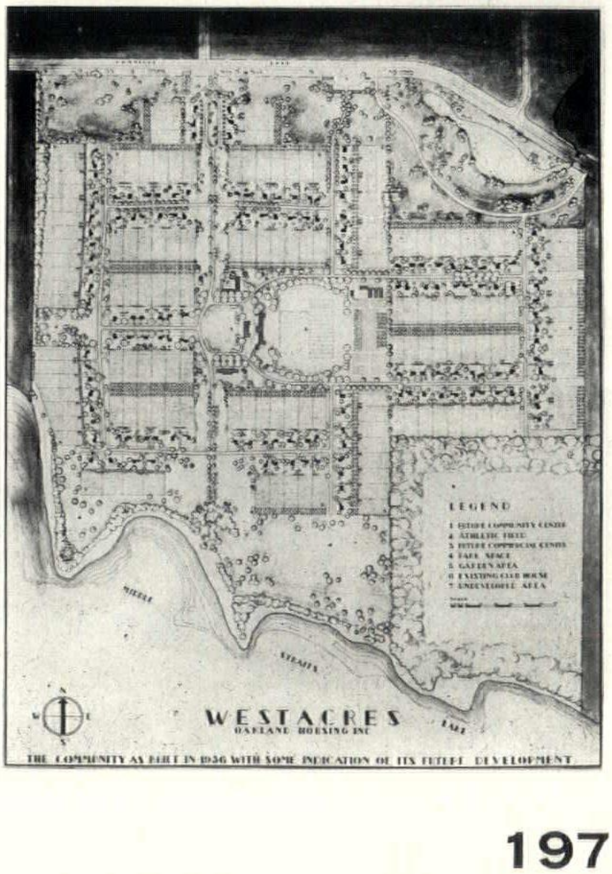
PLAN OF COMMERCIAL CENTER · GREENBELT, MARYLAND.

Courtesy Resettlement Administration

OUGLAS D. ELLINGTON, R. J. WADSWORTH, Architects
HALE WALKER, Town Planner

Features indicated on plan of community center, Greenbelt:

- **A.** Plaza
- **B.** Motion Picture House
- **C.** Drug Store
- **D.** General Merchandise Store
- **E.** Small Stores
- **F.** Post Office
- **G.** Food Stores
- **H.** Open Market
- **I.** Administration Building and Police Office
- **J.** Fire House and Garage
- **K.** Gas Station
- **L.** Parking Areas
- **M.** Inn and Restaurant
- **N.** Community Building
- **O.** Multi-family Units
- **P.** Underpasses
- **R.** Fountain

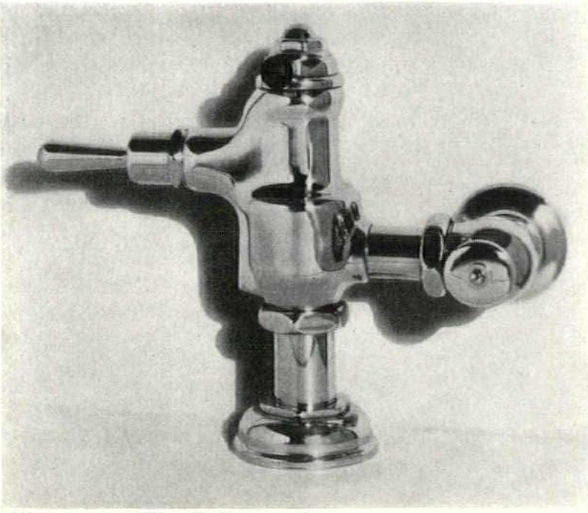


LAN OF "WESTACRES," NEAR PONTIAC, MICH.
Development built by Oakland Housing, Inc.

oject Manager and Supervising Architect: BARTON P. JENKS, JR.
te Plan and Architectural Work by E. G. VON STORCH

APPLIED DESIGN

1



Photograph by Wm. T. Manning Co.

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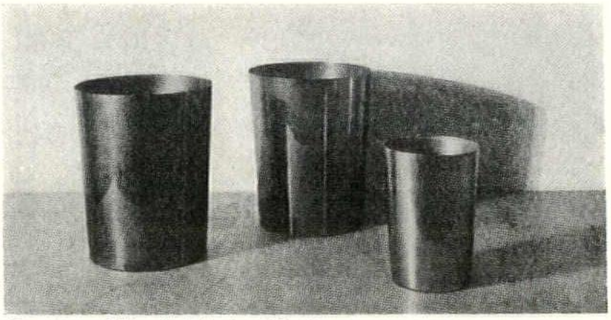


Courtesy of The Architectural Review

"Applied design, interior architecture, communit planning are integral with architecture, and th young architect's education should be remodeled t assist his participation in them" (Lewis Mumford

"Every architect should have a fundamental sourc of design, which makes it possible for him to ente any field requiring design after he has mastere the technical details of that field"
(Harvey Wiley Corbett

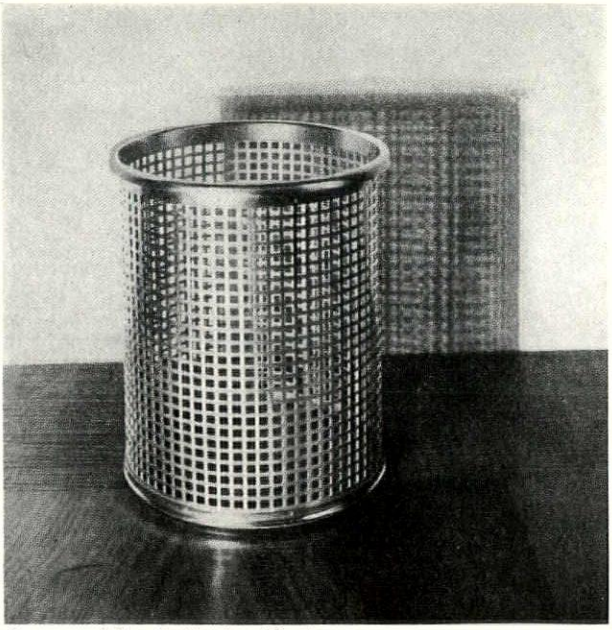
1. **FLUSH VALVE**

2. **WASTE PAPER BASKETS**
   In Plain Aluminum, Gunmetal Finish. They can also be used as Vases.

3. **WASTE PAPER BASKET**
   In Perforated Aluminum. Designed by Walter Gropius.

4. **DESSERT SPOONS AND FORKS**
   Designed by A. H. Staf. The Gorham Company.

3



Courtesy of The Architectural Review

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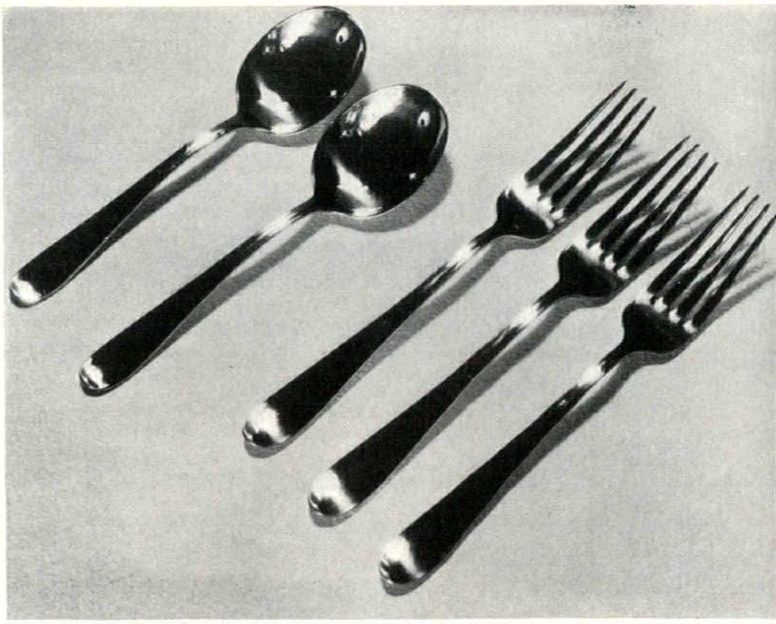


Photograph by Ruth Bernhard

INTERIORS AND MURALS

Photograph by Herbert Felton

BARBER SHOP

APPOINTMENT DESK

JOSEPH EMBERTON, Architect

INTERIOR AND PHOTO MURAL

"SPACE HOUSE"

FREDERICK J. KIESLER, Architect

©F. S. Lincoln

1. **SNACK BAR IN A DEPARTMENT STORE**

JOSEPH EMBERTON, Architect

2. **DETAIL OF STAIR RAILING**

JOSEPH EMBERTON, Architect

3. **FURNITURE**

By GILBERT ROHDE

1

Photograph by Herbert Fenton

2

Courtesy British Aluminum Co., Ltd.

3

Photograph by Hedrich-Blessing Studio

EDUCATION of the ARCHITECT

That changes in method of training the young architect are being effected is evidenced by what the Collegiate Schools of Architecture are doing to make adjustments. There is no school that has not made modifications in curricula during the past five years. Some, in fact, have introduced a complete change in teaching method and nature of problems.

On the following pages are illustrated student work that represents a departure from courses of study in effect before 1930. The work of a selected group of schools is presented as an indication of new approach and not necessarily because of merit as design solutions. So far as we know, none of the illustrated projects was prize-winning."

CERTAIN DEPARTURES AT THE UNIVERSITY OF CINCINNATI

THE COOPERATIVE SYSTEM of education was founded at the University of Cincinnati in 1906 by Herman Schneider and has been the distinguishing feature of the Department of Architecture since its inception in 1922. This system grew out of the need for experience to supplement theory. In orthodox courses, there is usually a tremendous gap between school and practice. Under cooperative training, the student acquires theoretical knowledge from books and practical experience from actual jobs. He leaves school, it is believed, better prepared to adjust himself to the exactions of the building industry.

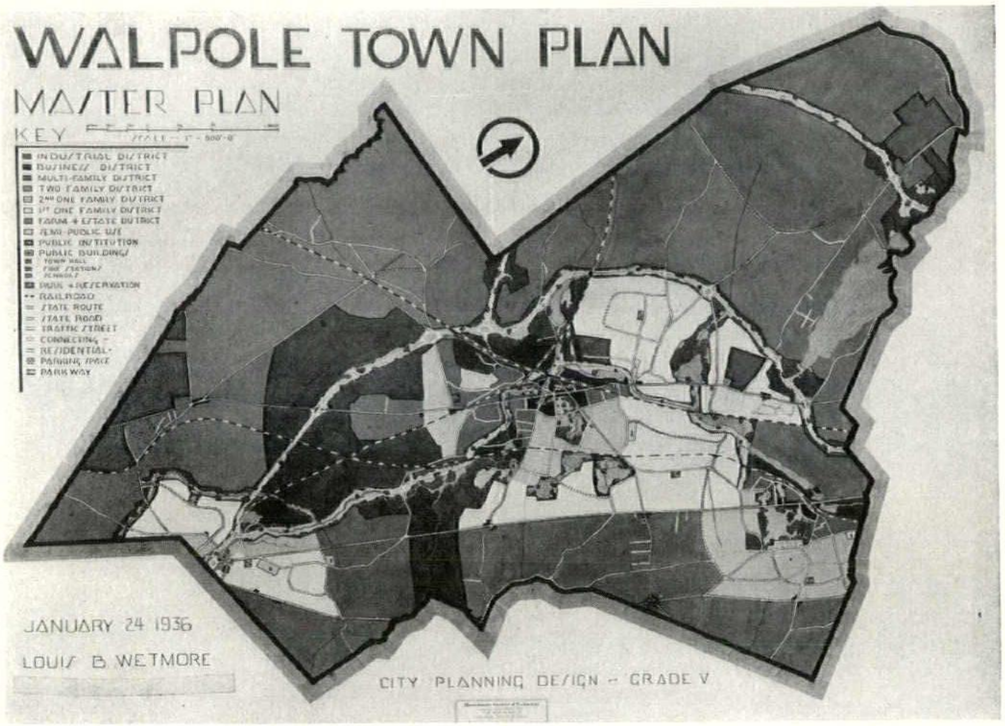
The course in architecture at the University of Cincinnati is five years long, with eleven months in each school year. Each class is divided into two groups. These groups alternate between work and school; while one section is in school, the other is out on the job. Thus, one man relieves his alternate on the job or in the office so that the alternate can return to school. The sections change every seven weeks and all school work is arranged on this basis. A department of coordination secures the jobs, working out an organized scheme of practical training which will bring the student into contact with the various phases of the building industry. This department studies the educational value of each job and the aptitudes of each student. In short, the cooperative system attempts, in an organized manner, to begin the training of the student in the practical side of architecture while he is studying the theoretical.

THE DESIGN OF A SMALL HOUSE IN THE FIRST YEAR

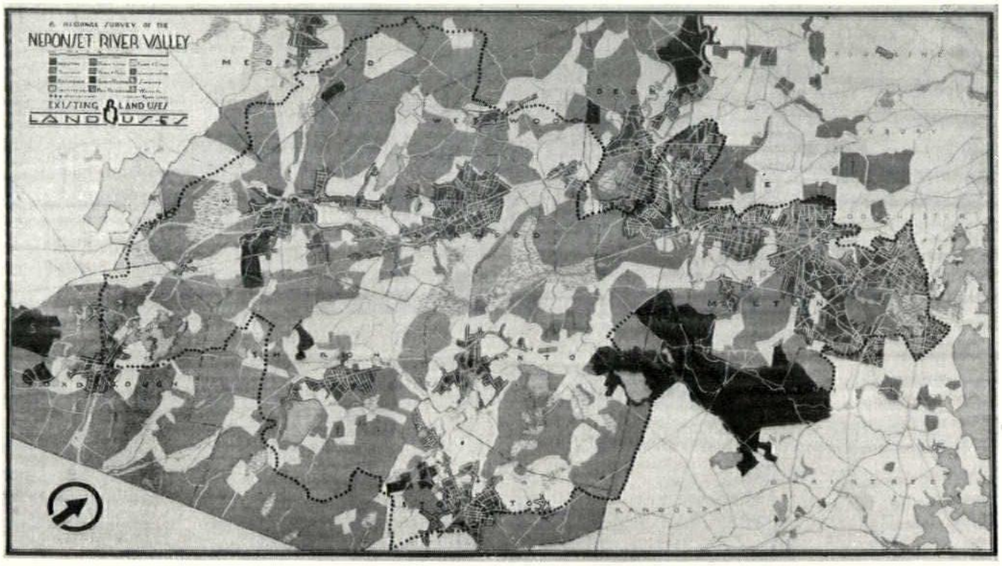
GENERAL SCOPE: This new course, which was commenced at the Institute of Technology in the fall of 1935 and given to the first year students, uses as a basis of instruction the experience which the class gains in performing the full range of architectural services required for a client building a home costing from ten to twelve thousand dollars. The students with no previous experience in drafting are first taught to draw. They then select a lot which is purchased by the Institute. After a study of domestic design, principles of house planning, etc., they design a house and make complete working drawings and details. The lot which has been purchased is surveyed by the students after a short course in the subject. This work occupies ten hours per week during the first year.

During the first term of the second year, for one afternoon per week, they supervise the construction of the house until it is completed. The house is then placed on the market and sold, making funds available for repeating the process.

PURPOSE: It is believed that this experience for the first year students will give them a more vital introduction to the profession of architecture than methods heretofore used. The project selected is a medium-sized house because students coming to us are more familiar with a house than any other structure, and many of them are likely to commence their own practice in the small-house field. It is felt that they are more easily appreciative of the design and construction of a house than of, shall we say, a Greek temple. It is felt and has been borne out by experience that the reality of the project will hold the interest of the students.



Master Plan for the Town of Walpole (original in color), showing highways, parkways, zoning, etc.



Map of existing Land Uses (original in color), showing built-up areas, cultivated areas, woods.

A CITY PLANNING PROBLEM: "REGIONAL AND TOWN PLANS FOR THE NEPONSET RIVER VALLEY." *A Collaborative Problem given to fifth year students in the City Planning Course at M. I. T. School of Architecture.*

This problem was set as a collaborative exercise in both regional and town planning and occupied a full term of sixteen weeks. The exercise was divided into three main sections, viz: The Regional Survey, The Regional Plan, and The Town Plans, the last two sections being developed consecutively.

The Neponset River watershed is an area of approximately one hundred square miles located to the south and west of the city of Boston, Mass. The head waters rise in the Foxboro Reservoir, and the river winds through a number of towns before flowing into Dorchester Bay. The region includes the towns of Milton, Dedham, Norwood, Westwood, Canton, Stoughton, Walpole, and Sharon, and is traversed by U. S. Route 1, connecting Providence with Boston.

The Regional Survey comprised studies of existing conditions such as Land Use and Zoning; Topography and other natural features; Traffic and Transportation; Water Supply and Sewage Disposal; Recreational Facilities, public and private; and Social and Economic Conditions, such as population growth and distribution, and the type, size, and location of industries. Each student was made responsible for one of these studies and individual reports and maps were presented at the end of the eighth week. Each student was then appointed as consultant to one or more towns, and plans prepared for individual towns and for the region as a whole. The group collaborated on the Regional Plan, presenting proposals for land utilization, highways, parkways, public reservations, etc., at a scale of one-half mile to the inch. Plans of existing and proposed land uses, street system, schools, parks, etc., for each town were prepared at the same time, at scales of from 800 to 1,000 feet to the inch, the regional proposals being incorporated in the more detailed studies.

STUDENTS AT MICHIGAN NOW START ARCHITECTURAL COURSE WITH STUDY OF PLANNING ORGANIZATION AND MAKING OF MODELS.

The work illustrated by the accompanying drawings of a modern house was the culmination of a beginning Architectural Design course. First a study was made of the elements which are involved in planning space enclosure by measuring and drawing up at a given scale rooms and furniture. After this preliminary training, which also included emphasis on careful drafting and clear presentation of drawings, a small problem was assigned involving the spacial elements of domestic architecture. To this end a rather simple three or four-room house problem was studied. After this preliminary house was completed, twelve weeks were spent on the problem illustrated herewith, with the work divided into stages as follows:

First, a piece of property was chosen with definite orientation, street locations, view toward a river and toward hills in another direction, and with transportation and surrounding conditions definitely assumed. With this general site decided upon, each student in the class was allowed to choose a lot and then as a group the class started to plan the houses in relation to the site.

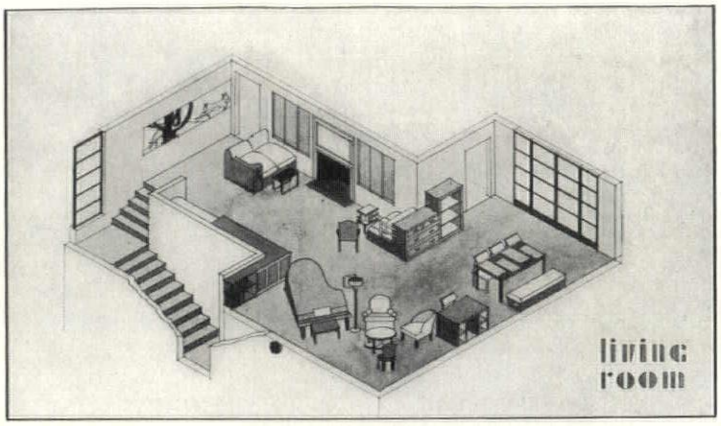
In the next stage emphasis was placed on room planning and interior organization, after which a clay model was made showing the exterior masses without detail.

The third stage involved the drawing of many sections through the building, studying the interior effect of wall and window, and the window sizes and shapes were in this way decided within certain limits before the study of exterior elevations was begun. Where desirable, there was some modification of the window areas when the exteriors were finally developed.

To complete the problem, all of this study and its accompanying revision was brought together on a final plate drawn in ink on Whatman's paper and rendered in water color. Along with these drawings the model was revised and brought up to date.

It is believed that this approach to architecture and architectural design is fundamental because it impresses upon the beginning student the organic nature of architecture. If the course is taught in a broad way, with sufficient emphasis on the aesthetic side, it should give the student a sound method for solving architectural design problems regardless of superficial style.

1



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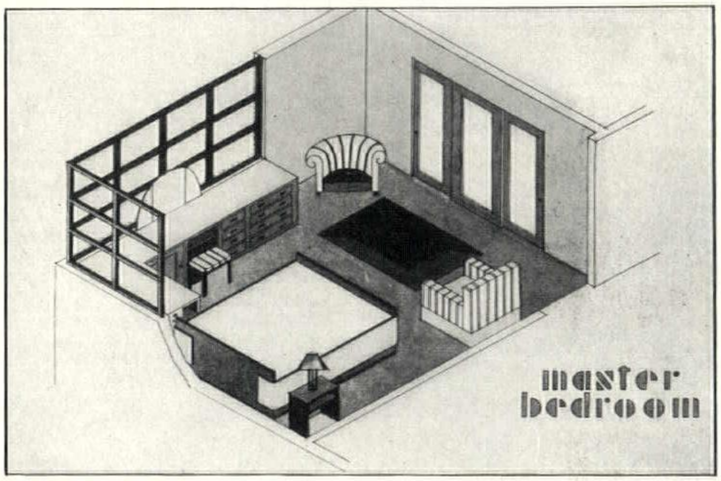

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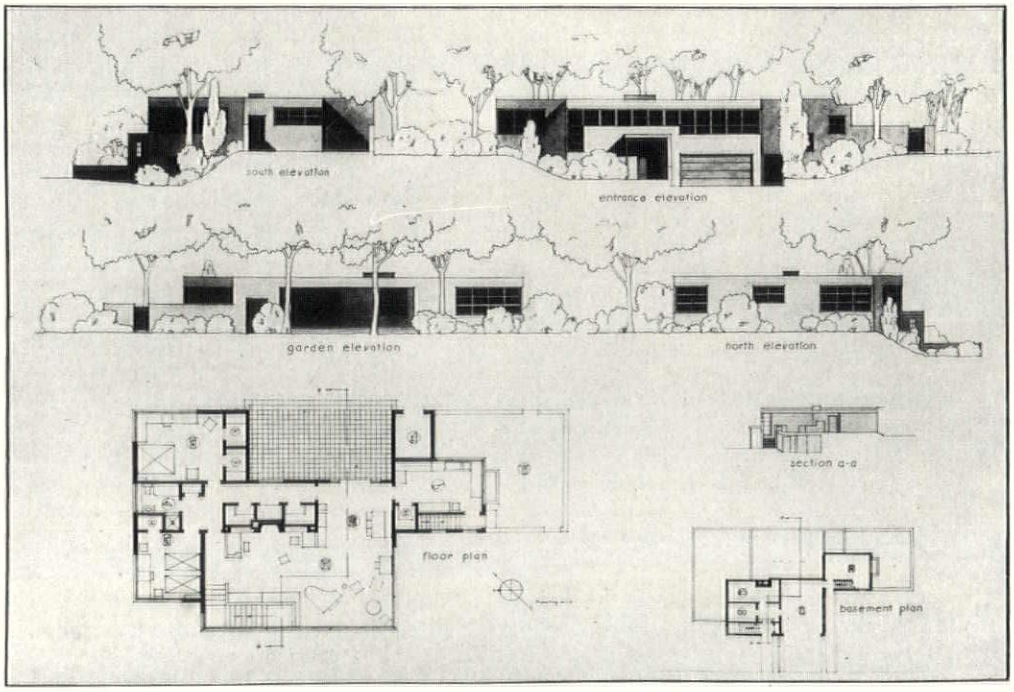
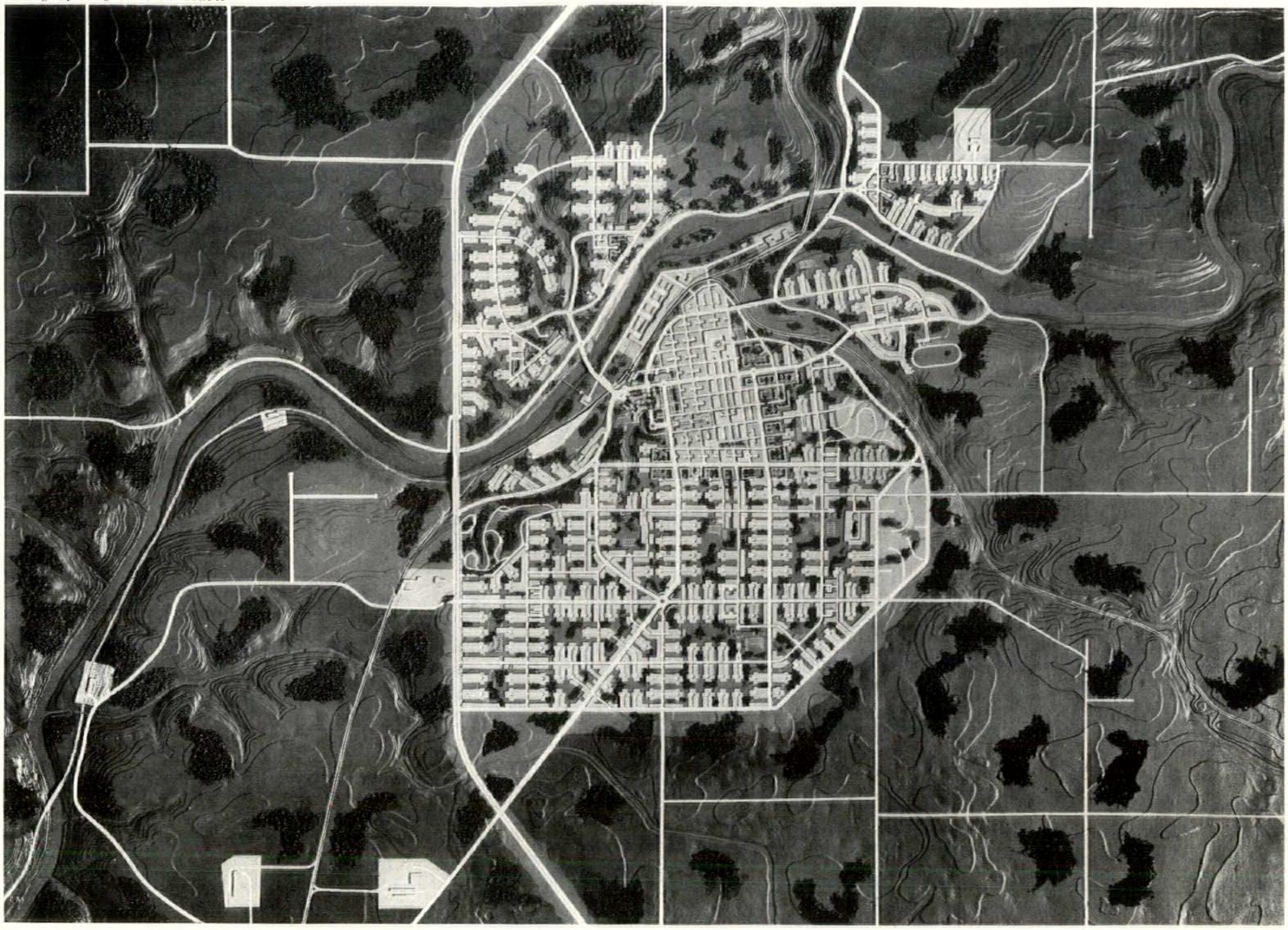


1, 2 Isometric drawings by students at beginning of course in architecture. Emphasis is placed on room planning and interior organization. Drawing of sections and exterior design follows the plan study. 3 Plans and elevations of house, the final stage in development of design.

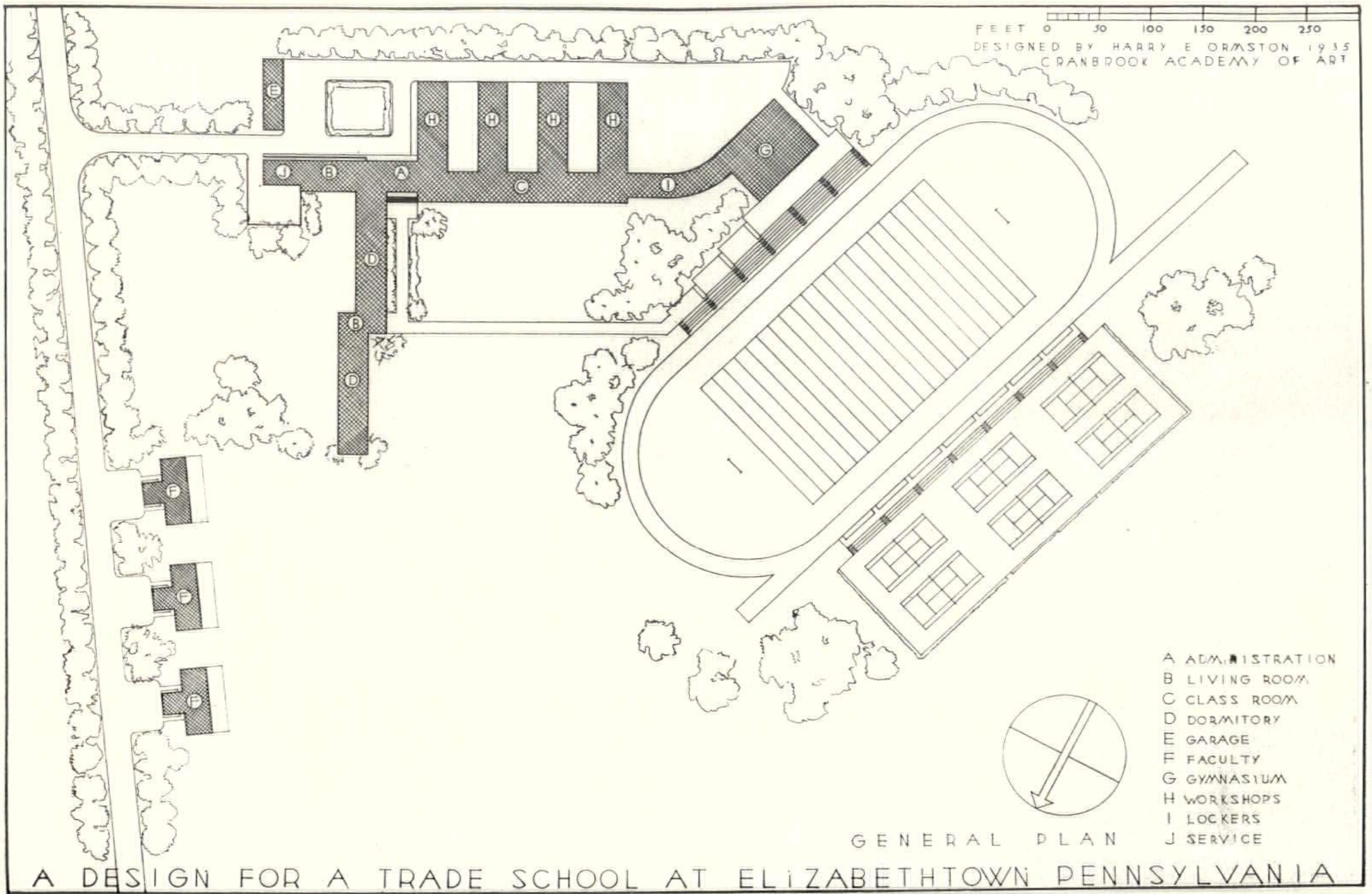
Photographs by Dick G. Askew

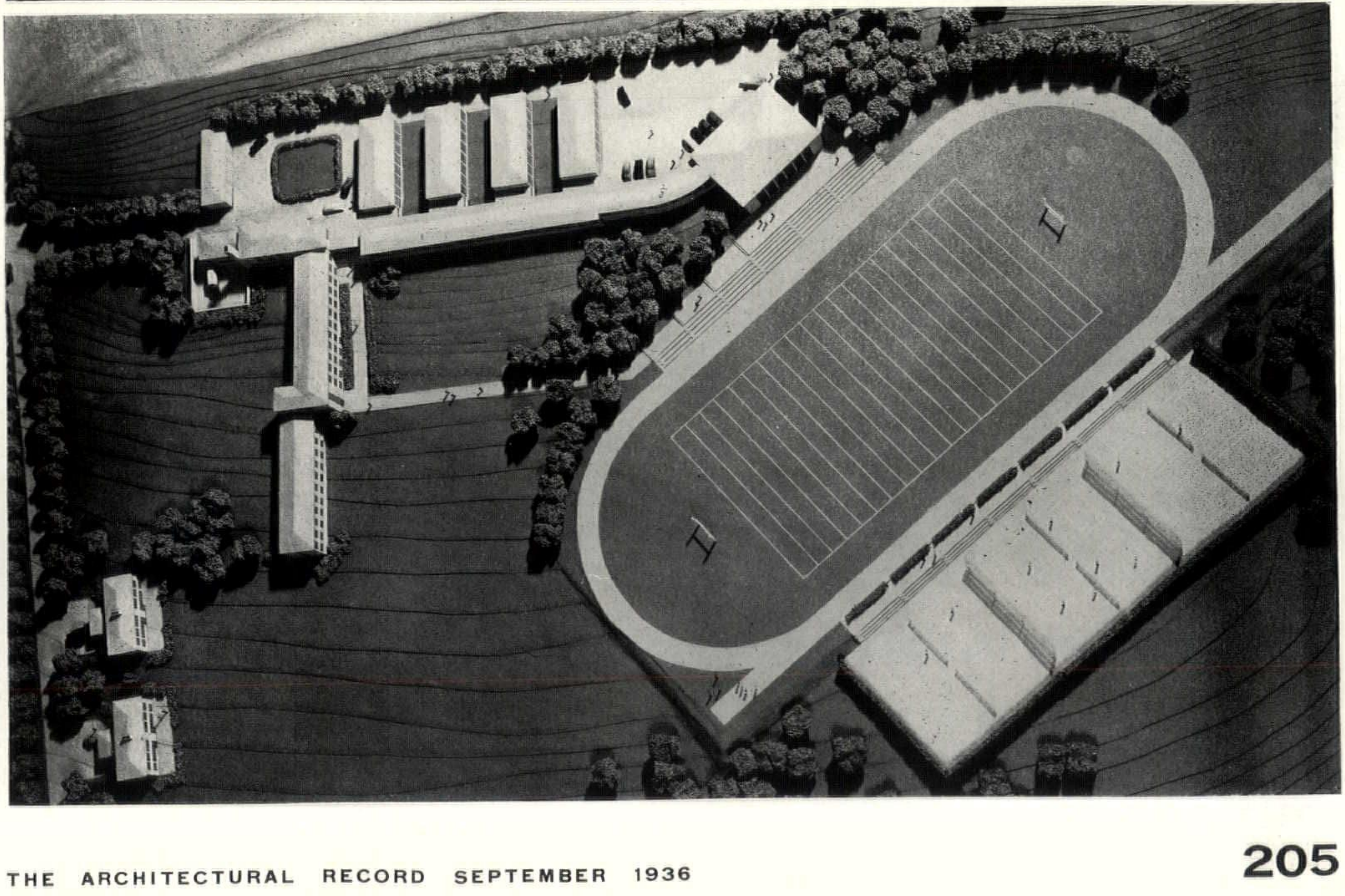


STUDENT WORK: DEPARTMENT OF ARCHITECTURE AND DESIGN, CRANBROOK ACADEMY OF ART
ELIEL SAARINEN, DIRECTOR . . . . MODEL OF PROPOSED REPLANNING OF FORT DODGE, IOWA

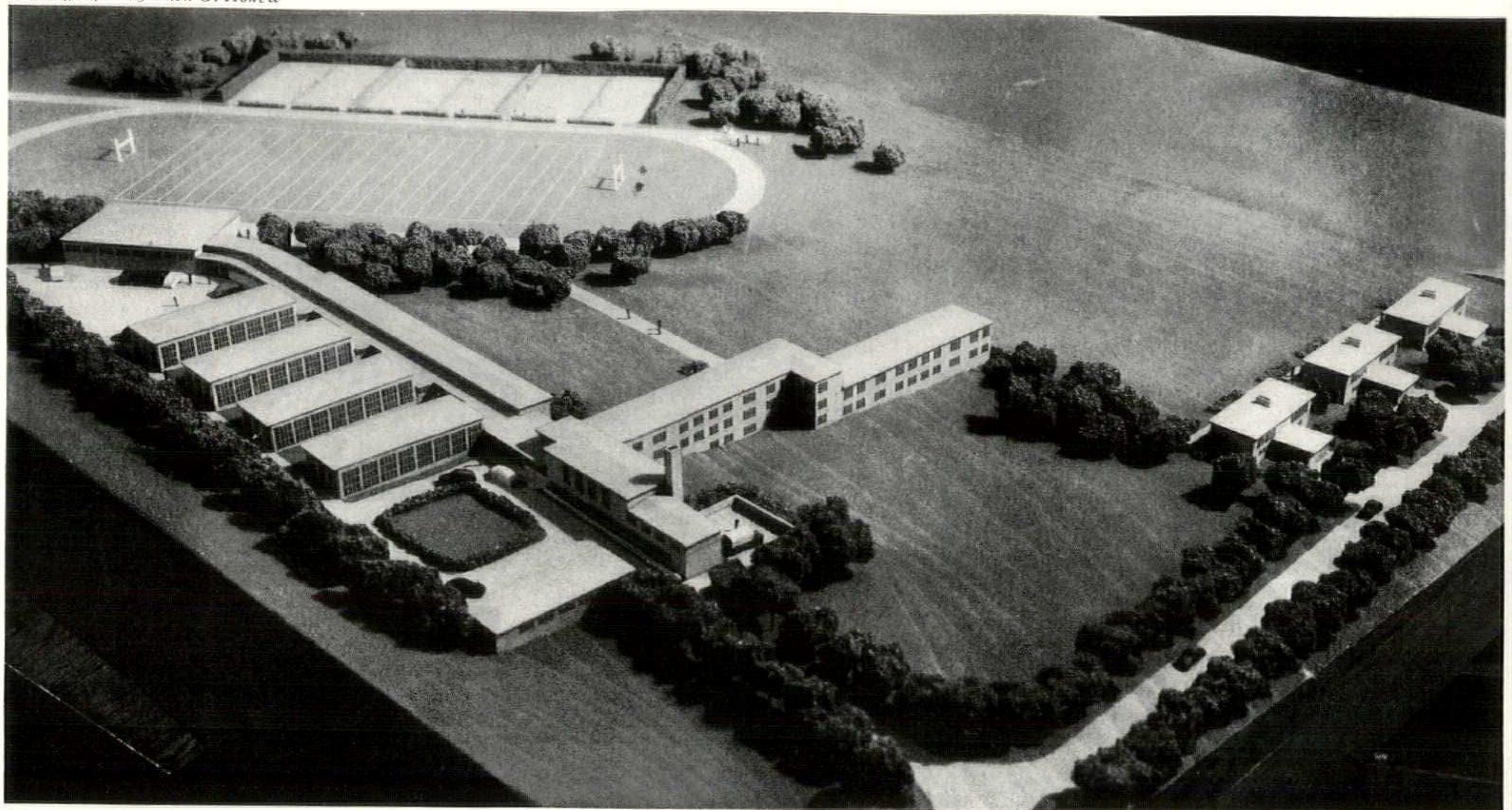
Architecture, at Cranbrook Academy of Art, Michigan, under Eliel Saarinen, is considered primarily from the viewpoint of civic design. Almost all students choose some actual city as a basis for study. This is in contrast to the usual method of architectural education which the student has had in his previous college training, in that no competitive problems are presented for solution. The scope of the city planning problem selected by the student can be as small, or as involved, as he chooses, or as time will allow. It may only be the replanning of a small area, or the complete study with the attendant research of the city in all its phases.

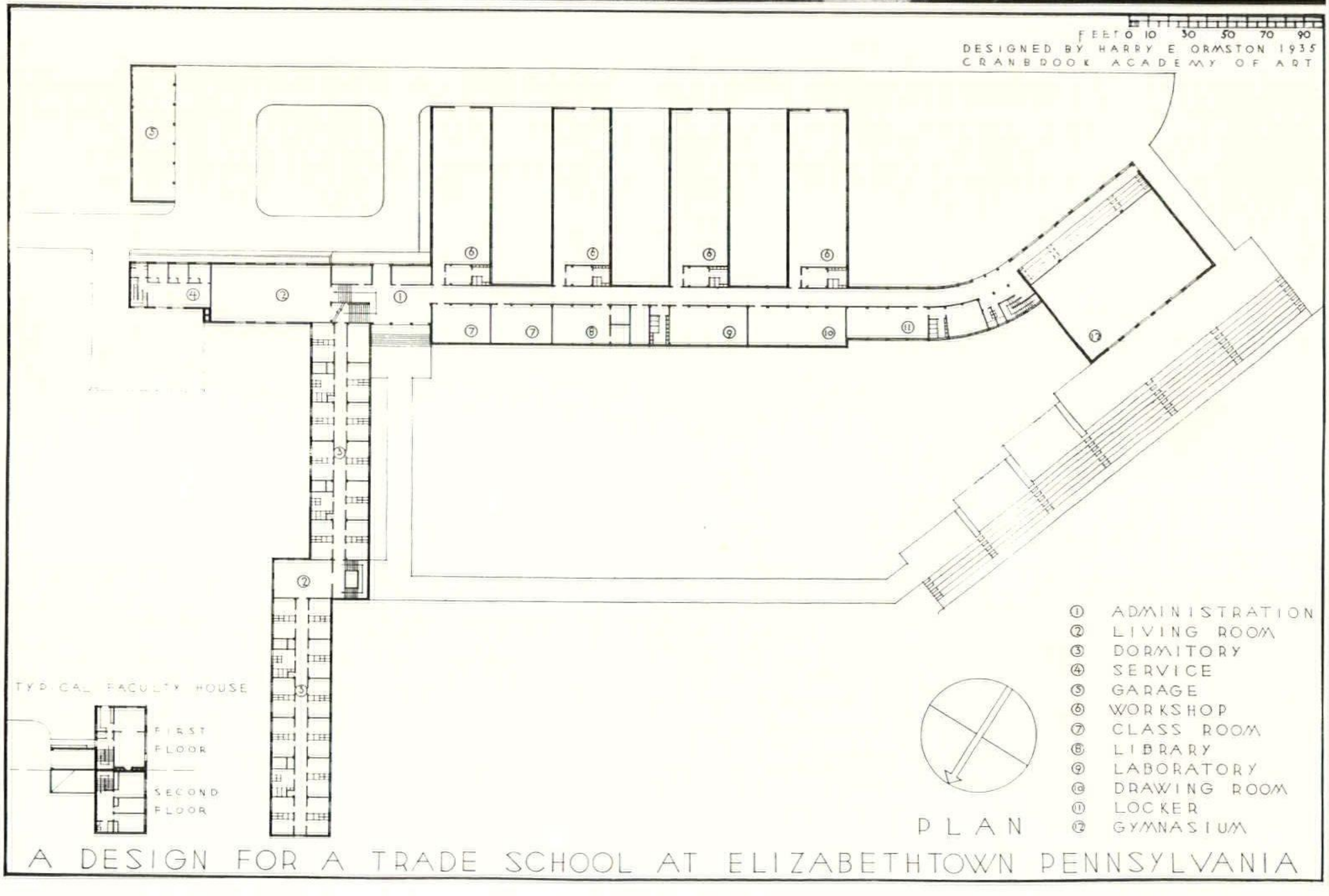
The smaller problems may be the design and planning of an industrial group with its housing development. In any case, no matter how small the problem may be, its solution is dependent upon the conditions of its environment. The practical consideration of modern conditions is followed, rather than the adherence to stylistic forms.


FEET 0 50 100 150 200 250
DESIGNED BY HARRY E ORMSTON 1935
CRANBROOK ACADEMY OF ART
A ADMINISTRATION
B LIVING ROOM
C CLASS ROOM
D DORMITORY
E GARAGE
F FACULTY
G GYMNASIUM
H WORKSHOPS
I LOCKERS
J SERVICE
GENERAL PLAN
A DESIGN FOR A TRADE SCHOOL AT ELIZABETHTOWN PENNSYLVANIA

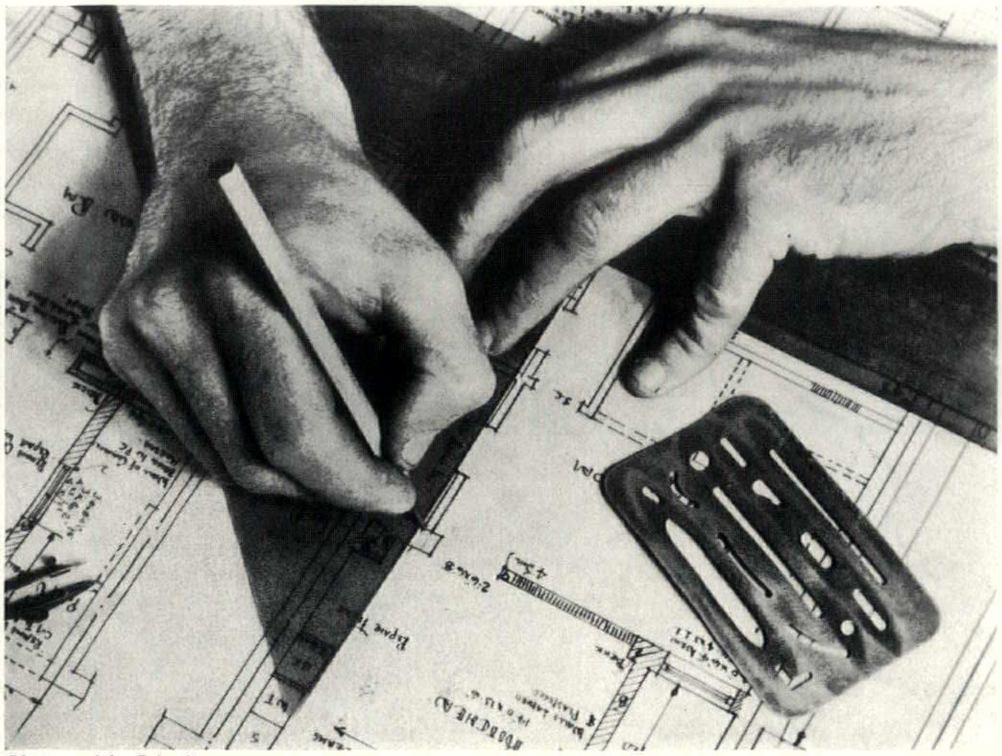


Photographs by Dick G. Askew





APPRENTICESHIP-TRAINING for the ARCHITECT



Photograph by Schnall

by
FRANK LLOYD WRIGHT

• FOREWORD

Why do you—does any one—want to become an architect?

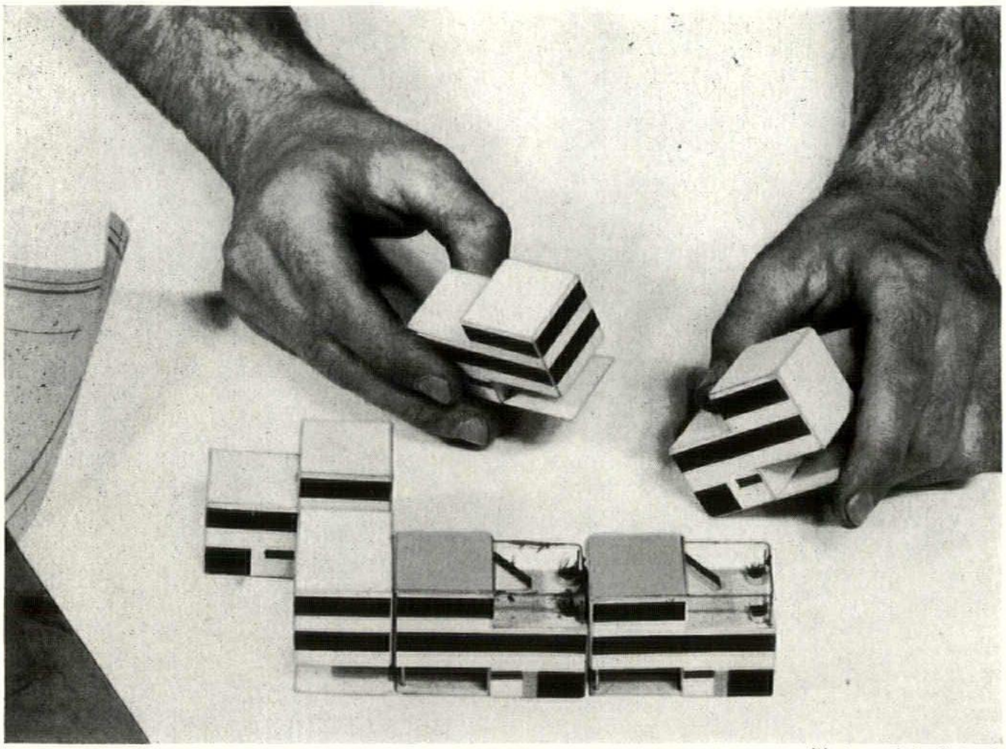
If you can truthfully say you love building and want to know buildings how do you expect to become the kind of builder we should call "architect"?

Precisely what do you expect to learn in the schools that will help you to build good or great buildings?

Experience in actual planning and actual building with wood, plaster, stone, brick, steel, glass, synthetics, learning of the nature of materials by *working* with materials is needed, but where is creative inspiration, that essential qualification of the architect and of true architecture, where is inspiration to be found?

Of what possible use do you imagine schoolbooks and Art history, school-styles and any mere technique whatsoever will be to you in becoming what we should call an architect? America needs organic architecture as she needs organic character in all her institutions where *experience* furnishes the only data and inspiration furnishes the only interpretation.

School education with its styles and history cannot be this inspiration for the young man in architecture today. At best, it can have only a small place in the development of his creative ability. The would-be architect must seek experience under inspired leadership—the guidance of men who do build from the inside out—and from the ground up spiritually as well as physically: men to whom the philosophy of structure is a natural consequence of learning from the great book of books—creation itself.



Photograph by Schnall

• TALIESIN

I should say that present ideals and systems of education are exactly wrong where genuine architecture or any art is concerned.

To justify the statement I need only point to the consequences, that is to say, point to the imitations and sterility that make of America a place wherein you may hardly find one building, wherewith any professional architect artist was concerned, manifestly inspired by the country itself or by any life in it that might be called indigenous.

So, Taliesin has rejected nearly all of the tenets that made and would maintain such a condition, setting up instead a simple experiment in which volunteers are working away at something so simple as to be amusing to the complex mentality that expects to get enlightenment by way of cerebratious student - information or Beaux - Arts training.

For some years past a small changing group of about twenty-five Fellows (young men and young women—all volunteers) has comprised the working group of apprentices to myself at Taliesin. During that time the novice has met, first, neglect, in the hope that he might "relax" and so by natural perception get a "break." The novitiate soon finds books and information, as such, left behind and that all stand in "atmosphere" free of pretense and hypocrisy and upon a "soil" which will nourish only such sincerity of character and purpose as each may possess, as a basis for talent.

Previous education is mostly in the way. All begin again (if they can begin at all) to think of building as an interpretation of life from the ground upward. They cannot avoid the implications of such thinking or get away from its effects. They are here together with me in a way of life and in surroundings that all point in the direction of such interpretation, and they are working comrades of one who has been "seeing it through" long enough to have some little wisdom from actual experience in getting the principles of an organic architecture into concrete form. In this, I think I have been tried by time almost as much as I have been a trial to time.

Apprenticeship, I believe, was something like this in the middle-ages but with this important difference: the apprentice then was his master's slave. At Taliesin he is his master's comrade. He is engaged with him together with others like-minded in the spirit of creation. While up to the present time some ninety young men now practicing architecture around the world have been with me as employees, only during the past several years have any been here in the give and take of apprenticeship.

These previous young men came and went with no deeper intent than to pick up whatever they could and turn it over to their advantage as quickly as possible. I was willing, but not co-operative. Even so some few of them managed pretty well.

Now, I expect these more intimate young co-workers to be valuable as workmen knowing the nature of the whole, able to utter it in building, painting, carving, or able to write or sing or play it in terms of the spirit of our time and our manifold new opportunities.

Unfortunately, a novice must bring money with him to begin with, but we are not interested in getting him ready to earn money on the present basis of brokerage or wagery. I have seen the damage *that* can do to a good cause where all the new methods have so far outrun the understanding of the architect or artist and a feudal hangover kills his effort.

I believe the old-style practitioner—the broker—is dead anyway and a more creative individual capable of going through from start to finish with his own building as *builder* is going to make America the Broadacre City. As architect he—or she—will do several buildings only—and completely—where predecessors did a hundred or so carcasses and turned them all over to the building equivalent of the hairdresser, the couturier, the master of ceremonies.

But the future architect in that Future that I believe to be the Present will be compensated as a creative factor in society, a single factor taking the place of realtor, contractor, decorator, landscapist and financier. That is to say, all responsibility for his client's buildings will be, not theoretically, but actually in this architect's hands. His predecessors have worked for six per cent, say. This architect of the future will work for thirty per cent. What we are trying to do at Taliesin is to make a little human material fit for such responsibility where 30 architects will be needed instead of a single broker.

To this end the Taliesin novitiate is here in a fair way of life wherein "servant" has ceased to exist—where "service" is no sales-talk but is a condition; where all hands are in the mud of which the bricks are made and all hands are there from an early rising bell until all tumble into bed, worn out. The inexperienced have been getting the feel of materials into their hands after working on designs to be executed in the nature of those materials or finding new uses to be made of new materials, getting correlation of hand and brain where any plan, or any necessity for planning is concerned, meanwhile developing mastery over self by way of hard work and clear thinking along center lines that principle lays down—not only those laid down by Tradition.

Yes, again here is the unpopular gospel of Work and at a stage in our state where all work is prostitute to the cash-and-carry system. Therefore, I lay myself open to peculiarly invidious implications.

Again, work. Yes, but with new light for human-nature upon the nature of work and upon the nature of building as a proof of culture.

A dream? As usual. But real enough to those who get into action here. And here is *action*. Action, more action and some more action. Always. Emergency after emergency. Nothing much to work with but all the more necessity to work with thought, actuated by thought and to germinate thought.

Workers are here, themselves becoming the thing they would do for their kind.

No longer "Education," you see, but "Culture" instead. Organic growth is slow growth indeed—but, it is *growth*. No garment to put on.

Not so many "graduates" are fit to enter this sort of thing now. I mean there are few still able to make the necessary surrender to reality. The many are either gamblers hopelessly in love with the romantic aspect of the gamble or have been educated to imagine that certain hard facts constitute reality, and "the many" are therefore in the same case as any squirrel who might mistake the shell of the nut for the kernel. That squirrel wouldn't live long.

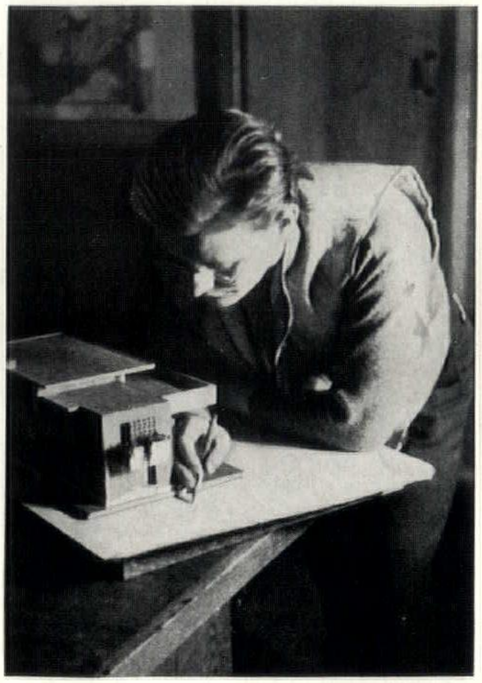
And similarly the architects that made our present architecture are dead. Most of them were, at best, fragments—"designing partners." If anything was needed to prove that our Architecture is their corpse the late attempt at a style as a left wing of an organic architecture proved it.

Not a style at Taliesin. But a variety of daily effort all in the nature of Style. And all the while. The abstraction therefore is continually being made—afresh—by the apprenticeship.

We are learning to think and see in simples. And simples are always "the abstract," are they not?

The workers at Taliesin—when the spirit moves—make drawings recording abstraction as they see into what surrounds them and they make such abstractions as the lighter side of their labors. They are minded to learn to see *inside*. We occasionally exhibit these drawings in our galleries. And we often indulge in talk—sometimes encourage it—and we write, and play too, when the spirit moves.

To work with, meanwhile, we have Taliesin itself; we almost have a spacious new drafting room; we have a new theater; two galleries for exhibitions and many models; and we have it upon a two-hundred acre farm where Wisconsin is most beautiful. Taking our work along with us we leave it all for the three winter months of each year to get fresh contacts with other soil and other scenes, while we work. Arizona desert for two years past. This year Russia. Next year, maybe, Japan. Because any real architect, now, must



be a citizen of this world. No narrow nationalist can exist in any sense in the light of this ideal of architecture as organic expression of life as organic.

And the unpardonable sin at Taliesin is rest unless you are really doing something worthwhile while you are resting. We believe in recreation, not rest, and believe that change of work is recreation: a valid sport. We believe, too, that "reflection" is often clearest in perspective when action is swiftest and most certain. Organic growth is slow growth in this age of the quick "turn-over." But it is not merely some garment, put on.

A short-time ex-apprentice recently asked an apprentice still at Taliesin: "Is Taliesin interested in turning out human-beings or is it interested in turning out architects?" I should answer him by saying that, in spite of machinery, the human tide is so turning that unless we have the one we cannot have the other. The ideal of an organic architecture is such that you *are* the thing you do or you can't do anything. The builder who will take the place of the broker must interpret *life* in terms of building—out of *himself*. Not knowing life from within himself how is he going to make life objective by building?

STUDENTS AT TALIESIN WORK WITH MATERIALS AND BUILDERS' TOOLS

1 Conference with representative of steel industry.

2 Model of Broadacre City in the making.

3 Student at work on model.

4 Clearing a site for construction.

5 Out of a rut.

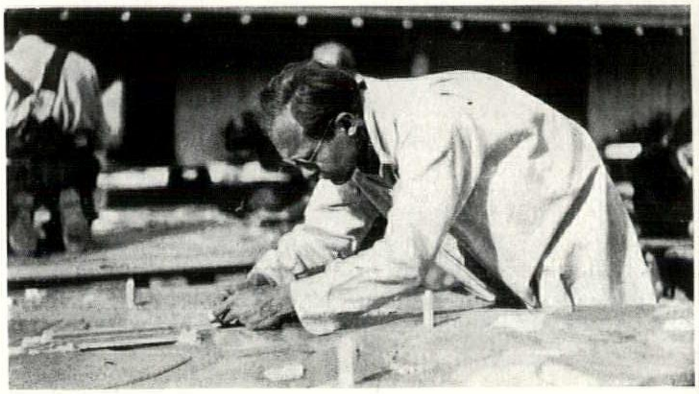
6 Student burning lime.

7 Sawing lumber.

1

2

3



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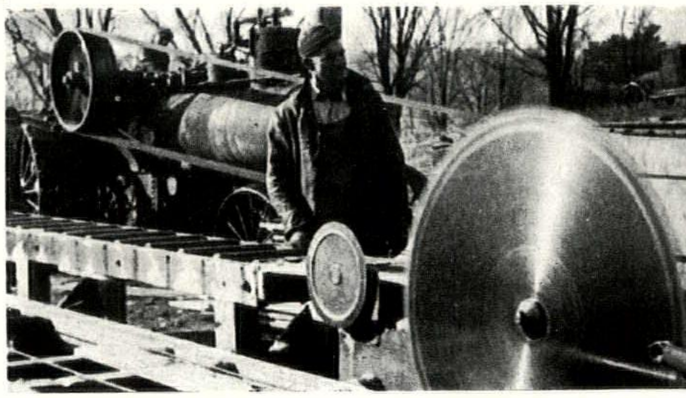
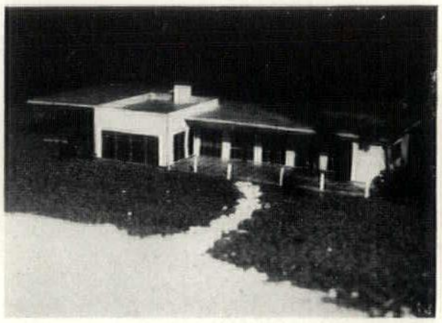


INSTEAD OF SO-CALLED "ELEMENTS," STUDENTS AT MINNESOTA START OFF IMMEDIATELY BY PRACTICE IN DESIGNING THE WHOLE OF A BUILDING

1



Changes in methods and objectives of architectural teaching at the University of Minnesota involve four special things: (1) Starting students off immediately by practice in designing the whole of a building, however small, instead of in so-called "elements"; (2) Inclusion under design of all phases of architecture, especially both composition and construction, in one unified effort under collaborative criticism; (3) Opportunity for the student to develop his own power of independent achievement by occasional "Solo Problems," done entirely without criticism; (4) Use of a somewhat different type of program, leaving the major part of investigation and formulation to the student himself.

The object of the courses in Architectural Design at Minnenesota is to develop each individual student's skill in creative effort as applied to the production of architecture. They provide opportunity for the student to exercise himself in all necessary phases of that creative effort, including especially research, composition, construction and representation as four essential and interrelated parts of one unified process.

The courses consist of a series of problems, classified into three stages of advancement, and culminating in a thesis whose satisfactory completion is a prerequisite for the degree in architecture. Most problems are done under criticism in which critics representing the several phases involved will collaborate. Certain problems are done entirely without criticism, in order to develop and test more fully the student's own power of independent achievement.

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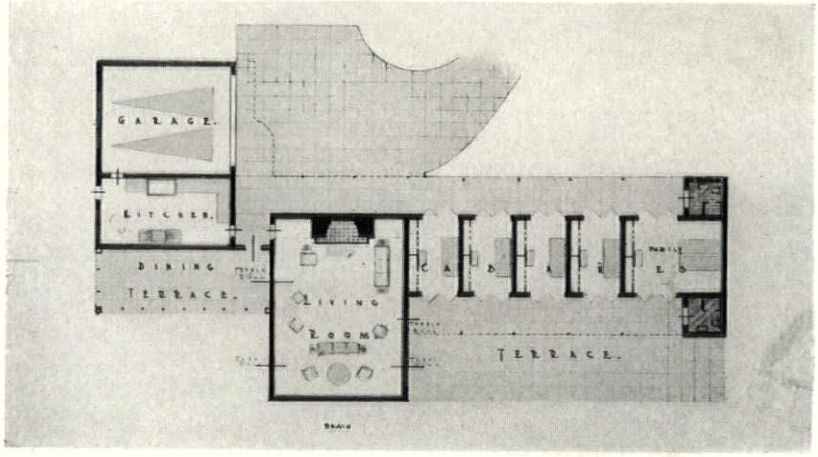

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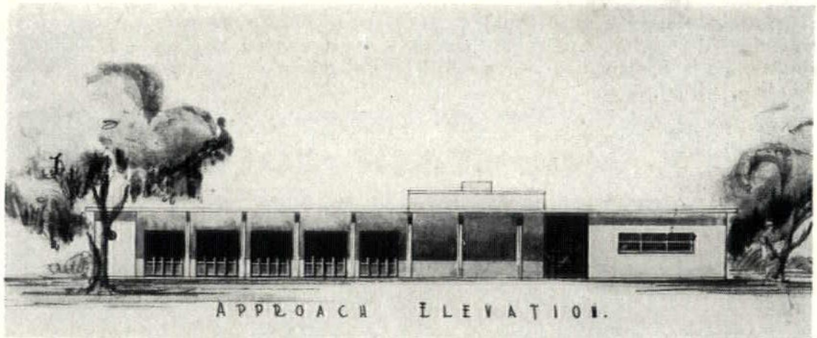

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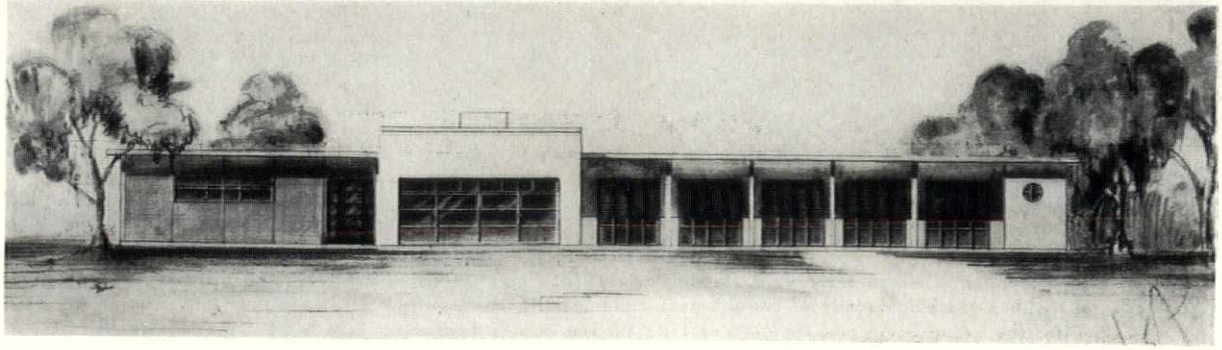


1 Model of Beach House —a final step in design study.

2 Plan, including location of furniture. The method of construction and materials are studied by student while plan is evolved.

3, 4 Exterior elevations.

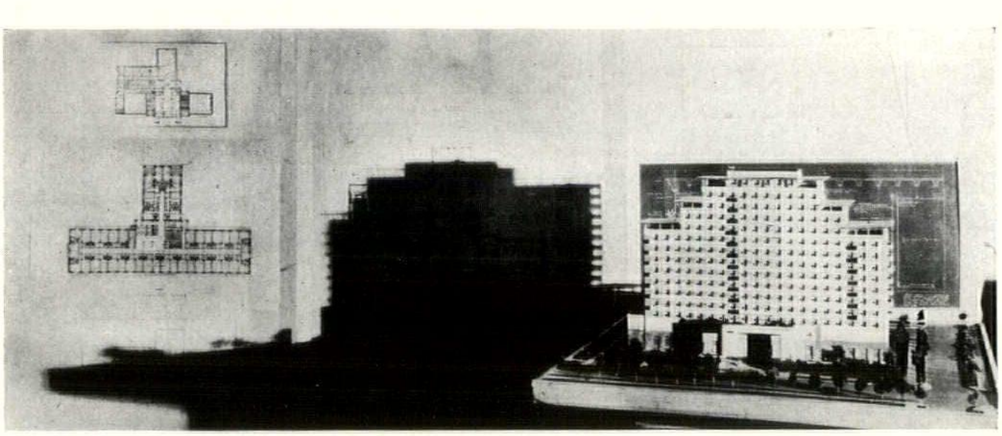
HARVARD UNIVERSITY

REORGANIZATION OF INSTRUCTION IN ARCHITECTURE UNDER HUDNUT

An extensive reorganization of the instruction in architecture has been effected. Three curricula will now be offered: namely, (a) a non-professional curriculum, for undergraduates, to be given by Harvard College with the collaboration of the Department of Architecture; (b) a professional curriculum for graduates of colleges; and (c) an advanced professional curriculum for graduates of schools of architecture.

(a) THE UNDERGRADUATE COURSE. On February 4, 1936, the Faculty of Arts and Sciences approved a plan for the establishment in Harvard College of a FIELD OF CONCENTRATION IN THE HISTORY AND PRINCIPLES OF DESIGN. A student who is a candidate for the degree A.B. (or S.B.) may designate DESIGN as his subject of major interest and such students will include in their college studies two courses in the history of art and architecture, two courses in drawing and in the theory of design, and two practical courses in design, including architectural design. They will also be required to take courses in physics, mathematics, economics and history.

This undergraduate course of study is in no sense a professional course. Although it includes many of the subjects usually found in the curricula of architectural schools, it includes none that may not properly be parts of a general college course.



Typical advanced design problem at Harvard University with emphasis on the correlation of function, design, construction. Student work is carried through detailing and making of model. Instructors in construction and mechanical equipment cooperate in solving intricate framing, facing, heating, wiring, etc.

(b) THE CURRICULUM FOR COLLEGE GRADUATES. The completion of the course of study outlined above, and the degree A.B. or S.B., will be prerequisites for admission to the Department of Architecture as a candidate for the professional degree B.Arch.

The curriculum for college students will normally include only professional subjects: design, building construction, and other courses relating to the practice of architecture.

(c) THE CURRICULUM FOR GRADUATES OF SCHOOLS OF ARCHITECTURE. Students who have completed, either at Harvard or at another approved university or scientific school, a professional course leading to the degree B.Arch. may be admitted to the Department as candidates for the degree M.Arch.

BLACK MOUNTAIN COLLEGE

OUTDOOR ART CLASS

Wide World

At Black Mountain College forty-eight students work, study and live, together with a teaching faculty of twenty, as a close social unit very much after the group living and studying at Taliesin. The college had its inception in the attempt of a faculty group to change educational methods at Rollins College and, following dismissal, the establishment of a college in the mountains of North Carolina.*

Black Mountain College is considered in this review of architectural teaching because of the forceful influence of Josef Albers, trained in architecture and a prime inspiration in the guidance of students in "intuitive search for and discovery of form and, on the other hand the knowledge and application of the fundamental laws of form." Black Mountain College does not train youth to become professional architects. It is an experiment in training. It offers "a suggestion of what people in colleges and universities seriously interested in education and the future can do and, more or less, how to go about doing it."*

The force of Mr. Albers in the school is so great as to dominate the school. It is because of this that we list some of his ideas.

"I believe that it is now time to make a change of method in our art teaching—that we move from looking at art as a part of a his

* "Education on a Mountain." By Louis Adamic. Harper's, April 1936, p. 520.

torical science to an understanding of art as a part of life. Under the term 'art' I include all fields of artistic purposes" . . .

"We over-accentuate the past, and often are more interested in drawing out a continuous line of historical development than in finding out which of certain art problems are related to our own life, or in getting an open mind for the newer and nearer and forward-looking art results of our period.

"Do not misunderstand me. I admire the earlier art, particularly the earliest art. But we must not overlook that they do not belong to our time and that the study of them has the purpose of understanding the spirit of their period or, what is more important, to get a standard for comparison with our own work. What went on is not necessarily more important than what is going on.

"If art is an essential part of culture and life, then we must no longer educate our students either to be art historians or to be imitations of antiquities, but for artistic seeing, artistic working and, more, for artistic living. . . . .

"We in the school have the duty to remove all the fields of art from their decorative side place into the center of education—as we are trying to do at Black Mountain College."*

* "Art as Experience." By Josef Albers. *Progressive Education*, October, 1935.

"How in school would you value an economist, chemist, geographer who lives only in the nineteenth century? Or a writing class which never shows contemporary problems? And what about an artist, a language teacher or a musician of the same taste! Let us be younger with our students and include in our consideration new architecture and new furniture, modern music and modern pictures. We ought to discuss movies and fashions, make-up and stationery, advertising, shop signs and newspapers, modern songs and jazz. The pupil and his growing into his world are more important than the teacher and his background.

"Our aim is a general development of an open-eyed and open-minded youth seeking out the growing spiritual problems of our days, not closed to his environment; and forward-looking, with the experience that interests and needs are changing; a youth with criticism enough to recognize that so-called "good old forms" sometimes can be over-used, that perhaps some great art important to our parents does not say anything to us; one who has reverence for earnest work and working, even though it seems at first new and strange to him, and is able to withhold judgment until clearer perception comes; who knows that one's own experience and discovery and independent judgment are much more than repeated book knowledge."*

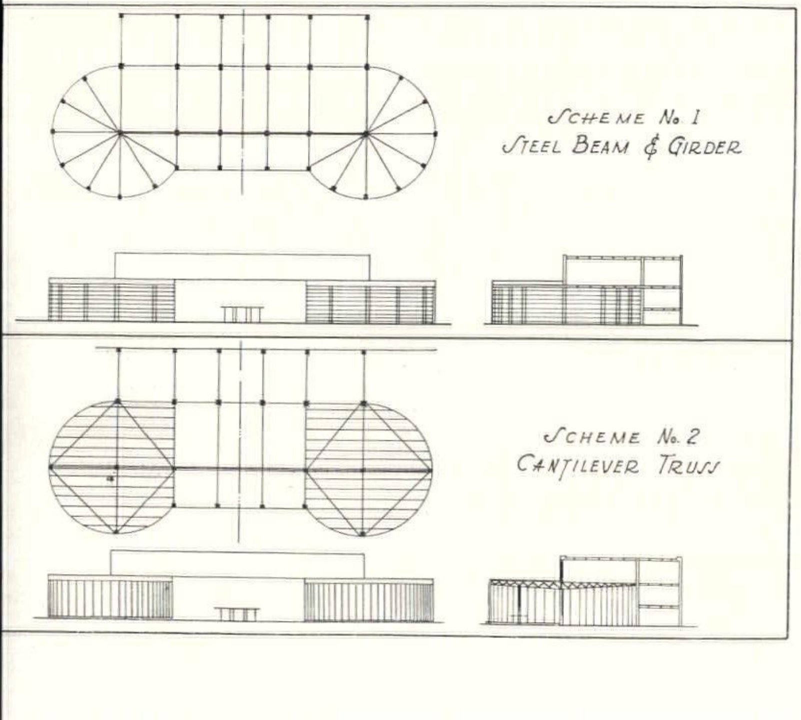
* "Art as Experience." By Josef Albers. *Progressive Education*, October, 1935.

BEAUX ARTS INSTITUTE OF DESIGN

The Beaux Arts Institute of Design, founded in 1916 and carrying on the work of the Society of Beaux Arts Architects founded in 1894, had as its original objective the desire, on the part of men who had profited by training in the Beaux Arts in Paris, to assist young people who could not afford academic training. It was never the intention of the Beaux Arts Institute to compete with any school, but to supply a program writing service, juries and professional guidance for the student who needed such assistance. The years that have passed have modified the work of the Institute by reason of the fact that as architectural schools developed, fewer private ateliers remained and more and more of the architectural schools wished to avail themselves of the opportunities the Institute presented.

The essential feature of the Institute's work is that programs are written by competent professional men best qualified to handle the particular problems that the Committee on Architecture selects. The juries are picked from the profession at large—the selection among those men who through their experience will be the best judges that can be brought together. Technical experts, where advisable, supplement these juries. The criticisms, as published, present to the competitors the opinions of the jury, so that a student may be able to learn why, in the jury judgment, his problem is ranked high or low. Whether the competitive system so organized is still the ideal one, or whether the Institute has outlived its original function as a guiding body, remains to be seen.

NEW YORK UNIVERSITY



It is the policy of the School of Architecture and Allied Arts of New York University to keep in the fore the integration of the practical and the aesthetic aspects of architecture, says Dean Bossange. This is established from the start, beginning with the elementary courses and continuing throughout the curriculum.

THEORY OF ARCHITECTURAL ELEMENTS. The approach to the elements of architecture is treated from the point of view of construction types rather than stylistic types. Where styles are introduced, they are used as illustrative examples of structural systems rather than as styles, per se.

ARCHITECTURAL DESIGN. While in the teaching of design, Beaux Arts problems are used as subject matter because of the stimulation of imagination and the increased interest resulting from the comparison of work with that of other students, the approach to the solution of the various problems is consistent with our policy of the integration of the structural and aesthetic components of building. Structural studies form a recognized step in the solution of each problem rather than explanatory details of the completed design.

The student is required, in the early stage of the development of a problem, while considering function, to present studies showing the general solution based on various systems of construction and the design effected by each. The accompanying diagram illustrates one of the systems developed by the student as a preliminary step in design.

SUMMARY OF RECOMMENDATIONS

1. Appointment of architects of outstanding experience and technical ability as professors or leaders of a reduced number of schools of architecture.

2. Increased specialization in planning requirements.

3. Schools of architecture should become the source from which is disseminated a well defined and applied knowledge of construction materials, processes, and construction methods. In the future the cooperation between architects and manufacturers must be closer, in order that an architect need not passively accept all that industry produces. The universities by their technical staff (properly selected) can appraise the needs for new materials and indicate applications and new standards. It is obvious that laboratories and research stations should collaborate in the testing of new materials. The universities should influence from the very beginning the production through requirements which are in accordance with a favorable architectural development. We have not succeeded in creating housing in individual and multifamily form which is adjusted to advances in our knowledge of materials, building methods and research by physicians and sound social workers. Schools can facilitate the ability to absorb the inventions and productions sensibly and for social and economic reasons.

4. The general education of the architect should include knowledge of pertinent facts about economics, living conditions, building management, building codes and financing. The young architect should be informed of systems of government, the essentials of social orders and the functions of classes within our country. These subjects should be taught with consideration of their relation to architecture.

5. Practical experience in construction in the nature of field work.

6. Town planning should be included in the training of every architect so as to focus attention on improvement of the locality and also to broaden a general interest in housing and community arrangements beyond professional circles.

7. Teaching of design that places emphasis on "fine forms" or "fine appearing plans" on paper should be abolished. Fine forms can be logically defended if they fellow a recognition of essentials of planning and construction.

8. Train the architect for reality. In the whole of today's architecture the fact can be perceived that its development has lagged behind other technical activities. Mechanics and bridge building, for example, have advanced without the dead load of a purely decorative tradition. Because architecture has been excessively concerned with decorative questions, there has been almost complete neglect of improvements of our cities and neglect of problems of planning for improved living.

9. Abolish competitions which place award on presentation of building appearance. The detailed search for the requirements of a building type and the logical translation of requirements into plan and exterior are of infinitely greater import than fine renderings of designs made from a "faculty-prepared" program. The "judgment" of prize-winning designs by a jury composed of faculty or outside men is almost universal. The student's advancement is commonly dependent on the award he gets in judgments.

In a study of architectural schools prepared by F. H. Bosworth, Jr., and Roy Childs Jones for the Collegiate Schools of Architecture in 1932, it was found that, "Oregon is the only school that dissents from the idea of judgments." Now there are several.

"In theory, and as far as possible in practice, the students' work at Oregon is not formally evaluated in any way. It is considered that each student's work is his own individual business, that its value is no way conditioned by comparison with other students' work, or by the judgment of other people."

TEACHERS OF ARCHITECTURE SHOULD BE PRACTICING ARCHITECTS

The education of the young architect should admittedly be placed in the hands of architects who have professional experience and leadership—and not in the hands of men without building experience and whose selection was made because they were winners of competitions. Boards of selection in universities, however, have not been inclined to appoint advanced practitioners for teaching architecture. This is contrary to common practice in the teaching of medicine, engineering and chemistry.

The report of the Association of Collegiate Schools of Architecture indicates that

"there are in this country alone over five hundred persons engaged in teaching in the collegiate group of schools. Many of these five hundred are young men with little, if any, experience in the practice of architecture. They, in the very nature of things, can only transmit to the students under them their own attitude of mind. Whether that is mature enough, has been ripened and enriched enough by time and contact with reality, is a question of grave import. For many schools the answer to that question is so clearly in the negative as to point to conditions of doubtful value or even of positive harm to the future of architecture. Too many graduates of architectural schools approach the practice of their profession with an attitude of contemptuous indifference to its realities—for the practical considerations of building, for the business and social side of architecture. Consciously or unconsciously faculties without experience of practice tend to encourage such an attitude in school. It becomes a handicap in practice that must be painfully overcome if the graduate is to succeed in his profession."*

Architecture then should be taught by experienced practitioners who understand construction and the fundamentals of planning, and who keep up with technical progress looking to the improvement of living conditions and to the attainment of a more healthful, pleasant and homogeneous form of life.

In France architectural education is proceeding in ateliers. At the same time it is probable that those of Perret and Le Corbusier (both active architects) have done more for the education of the young architect than all the schools of France together.

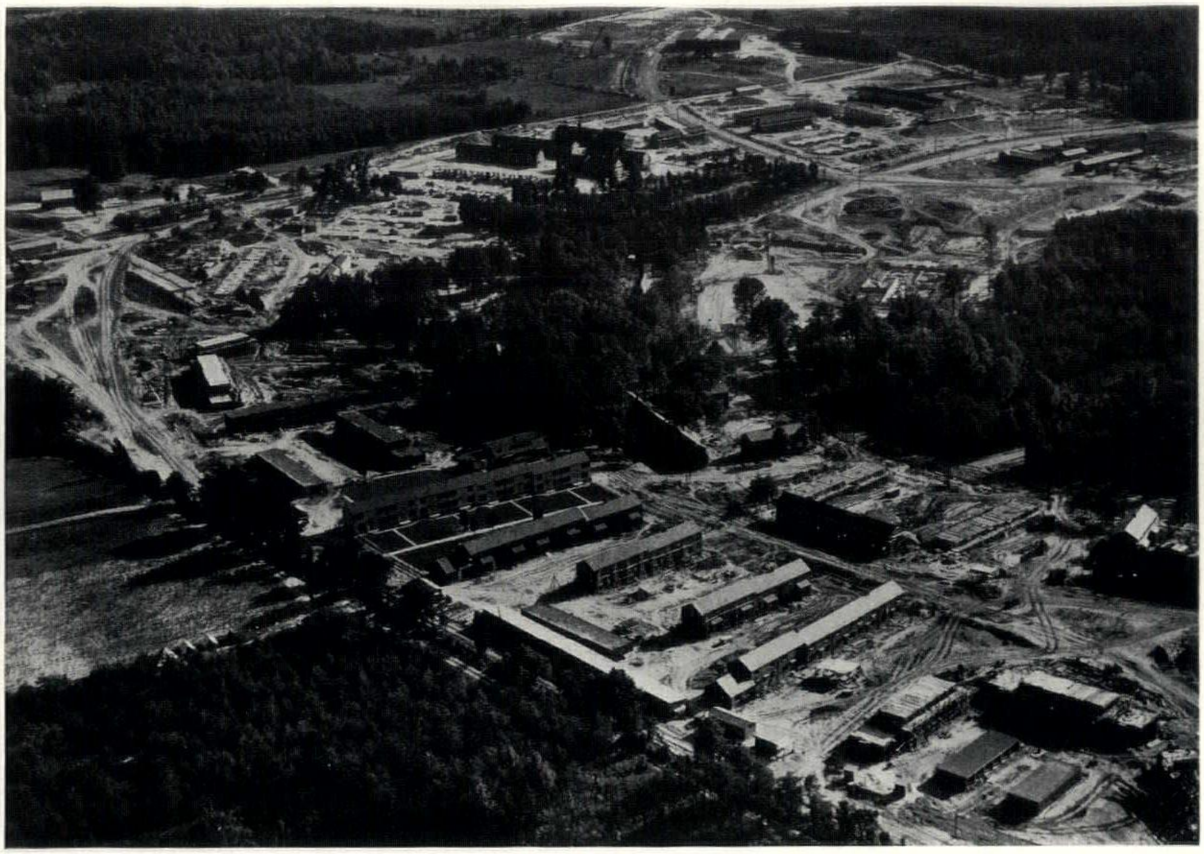
The "Bauhaus," founded in 1919 at Weimer, Germany, by Walter Gropius, was a powerful and successful force contributing to the improvement in housing, furnishing, photography, typography and other arts up until the time of Hitler. The notable success of the school may be attributed to the experienced leadership of such men as Gropius, Mies van der Rohe, Moholy-Nagy, Hannes Meyer.

• • •

"In applied construction the problem of the window is a fascinating one which could not but grip the interest of the student. The setting before him of that problem in its entirety could not but open his mind to a far greater number of possibilities and chances of exercising his ingenuity than is inherent in copying the details of window trim from no matter how profound an authority on that subject. It would raise the whole question of what a window was for; of how big it should be; of where and how it should be placed in the wall of a room; of how it should be opened or shut; and lastly, of how—if at all—it should be curtained. If such a problem were given, the student could not help doing his own searching and trying—in short, his own thinking. The actual result he arrived at might not of necessity be the best possible answer, but the process by which he arrived at that result would be of far greater value than any factual knowledge he might temporarily acquire under the copying method."*

* "A Study of Architectural Schools." By F. H. Bosworth, Jr. and Roy Childs Jones for the Association of Collegiate Schools of Architecture. Charles Scribner's Sons, New York. 1932. Price, $1.50.

* "A Study of Architectural Schools." By F. H. Bosworth, Jr. and Roy Childs Jones. Charles Scribner's Sons. New York.



THE NEW TOWN OF GREENBELT, MARYLAND, near Washington, D. C., is the most advanced in construction of the low-rent communities being built by the Suburban Resettlement Division. In the center are the almost completed exhibition houses, with sod and plantings between the two brick veneer rows. Foundations for the business block appear in the cleared space to the right of center. Part of the protective greenbelt area may be seen along the upper margin and at lower left.

GREENBELT TOWNS

In a little more than a year the Suburban Resettlement Division of the Resettlement Administration has conducted a nation-wide survey of larger cities to determine the most logical locations for the new greenbelt communities, has completed plans for the development of four projects, and is now seeing construction well under way on three sites.

Through its suburban program, the Resettlement Administration is building three communities to provide low-rent housing for industrial workers near Washington, D. C., Cincinnati, and Milwaukee. A fourth project, originally planned for Bound Brook, N. J., has been held up by legal controversy in the courts of the District of Columbia. In the comprehensive nature of their plans, the four "greenbelt" towns, as they are called, are commencing a new chapter in American town planning and community architecture.

The greenbelt projects, which constitute the work of the Suburban Resettlement Division, involve the development not merely of low-rent housing but of complete communities for workers of modest incomes. Greenbelt, near Washington, D. C., and Greenhills, near Cincinnati, will each provide living accommodations for 1,000 families in the houses now under construction, while Greendale, near Milwaukee, will house 750 families. In addition, the towns will each include a business center with shops, stores and offices necessary to the ordinary requirements of a town of that size, as well as schools, recreational facilities and community buildings.

The distinguishing term "greenbelt" comes from a feature common to all projects, and one of outstanding economic and architectural importance. This is the area of farms and woodland which surrounds the town proper, affording permanent protection against undesirable developments. The greenbelt also presents opportunity for the development of recreational facilities, allotment gardens, and for the general blending of the town with the life of the adjoining rural communities.

A concise statement of the objectives of the Suburban program is contained in the following official description of the function of the organization:

> To obtain a large tract of land, and thus avoid the complications ordinarily due to diverse ownerships; in this tract to create a community, protected by an encircling green belt; the community to be designed for families of predominantly modest income, and arranged and administered (managed) so as to encourage that kind of family and community life which will be better than they now enjoy, but which will not involve subjecting them to coercion or theoretical and untested discipline; the dwellings and the land upon which they are located to be held in one ownership, preferably a corporated entity to which the federal government will transfer title, and which entity or corporation will rent or lease the dwellings but will not sell them; a municipal government to be set up, in character with such governments now existing or possible in that region; co-ordination to be established, in relation to the local and state governments, so that there may be provided those public services of educational and other character which the community will require; and, finally, to accomplish these purposes in such a way that the community may be a taxpaying participant in the region, that extravagant outlays from the individual family income will not be a necessity, and that the rents will be suitable to families of modest income.
>
> To develop a land-use plan for the entire tract; to devise, under the direction of the Administrator, a system of rural economy coordinated with the land-use plan for the rural portions of the tract surrounding the suburban community; and to integrate both the physical plans and the economies of the rural area and the suburban community.

With this broad objective in mind, work was started along three different lines. Economic surveys were made to determine the best locations for the projects, and to assemble necessary facts concerning the types of houses desired and needed to meet the local conditions. Land acquisition, always a difficult problem where the government is concerned, was initiated. Finally, the architectural planning of the towns and buildings was commenced, dependent to a large extent upon the material furnished by the other two lines of work.

The suburban housing program has been undertaken under the Work Relief Act, and certain definite requirements in regard to employment and time have strongly influenced it. Rapid progress has been essential. Time could not be wasted in assembling the land. Insufficient time to acquaint the local communities with the nature of plans resulted in misinterpretations of the program. Architectural planning had to be guided by the need of using a maximum of unskilled and semi-skilled labor which constitutes the majority of the workers on relief rolls. In the face of these difficulties, progress has been considerable.

The three greenbelt towns are being built to last a long period of usefulness. Consequently, it was essential that they be constructed in areas where there would be, so far as humanly possible to determine in advance, a fairly steady demand for labor and a consequently sustained need for the type of low-rent housing which the new towns provide. A wide field of economic research was opened up.

The first move in determining the best cities for the location of these projects was to examine the economic background of the hundred largest cities in the United States. Research men assembled all pertinent material they could lay their hands on. It included such data as the rate of population growth, the number of persons employed in industry, the wages paid out in manufacturing and distributing industries, wholesale and retail sales, and other factors. Records were made of the trends as shown by these figures from 1900 to 1935.

The composite experience of these 100 cities was used as a criterion with which to compare the records of any one individual city. On this basis, a number of cities which showed up particularly well were chosen for further investigation. These cities selected for further analysis were those which had shown a steady economic growth, without great booms and without severe slumps. Special consideration was also given to those cities which showed a large proportionate volume of manufacturing, which had a high percentage of the population employed in industry, and which enjoyed good wage levels.

Diversity of industry and occupations was another economic factor to receive careful attention in this survey. It was considered wise to give preference to those cities which had a rather wide diversity of employment, inasmuch as such a condition would tend to add to the economic stability of the community. Diversity of employment also reduced the possible chance that any subsidy involved in the providing of low-rent housing would develop into an indirect subsidy of low wages.

Cities which showed the best rating in accordance with these standards were then visited by industrial engineers who made investigations of the present conditions of these cities, and their prospects of future development. The outskirts of the cities, in which the new towns might possibly be located, were examined to see to what extent subdivision had already taken place. Excessive development of this type was considered prejudicial to the success of a project, inasmuch as the result would be to drive land values too high for any locations that might be near enough to existing opportunities for employment. Moreover, the need for large blocks of land, varying from 3,500 to 6,000 acres, made it impossible to plan a greenbelt town in a heavily subdivided community.

Finally, the public attitudes expressed in the various cities were taken into account. Standards of local government, industrial labor policies, and the probable attitude of the community towards a new development such as the Resettlement Administration proposed were among some of the factors noted.

When the four cities had been selected for the suburban projects, a further study had to be undertaken to locate the most desirable site. Here again trends of industry and urban development were examined. Accessibility to employment was taken as the first criterion for the site of a greenbelt town. Not only present jobs but future employment as indicated by the trends of industrial development were taken into account. Topography and land prices were also carefully observed before the final selection of the greenbelt area was made.

A third factor remained to be studied: the human element. What did the people in each town selected want in the way of housing, What were their needs? What did they not want?

To answer these questions the Resettlement Administration sent out several thousand questionnaires, in each of the cities, to families of modest incomes, whose wishes might be similar to those of the future tenants. Labor organizations and other groups cooperated in distributing and returning the questionnaires.

Considerable variety in the three towns was found. Washington families, for example, were found to be smaller on the average than those of Cincinnati or Milwaukee. Cincinnati people displayed a penchant for owning their own stoves and carrying them from place to place. The population of Milwaukee showed so strong a preference for detached houses, that the majority of the homes in Greendale have been designed of that type. In all projects there was a great wish expressed for libraries and athletic facilities.

Each of the greenbelt towns is patterned on a similar basis—the residences and other buildings comprising the town itself surrounded by an area of recreational and farm land. At this point, however, differences in the plans make themselves evident. Topography, of course, plays an important part in determining the layout of roads and utilization of the land. Again, the ideas of the different project staffs, which work independently, differ sufficiently to account for interesting variations on the common theme.

Since the towns are planned from the very beginning, a completely new approach to town designing was required. Permanent single ownership of the property makes the basic plans now being worked out safe for future years, subject of course to later changes which may be desirable.

The street systems in the suburban projects, for example, have completely abandoned the usual gridiron pattern of subdivision. Instead a system of super-blocks has been developed which, it is maintained, results in greater economy, more pleasing appearance, and greater utility. Three objectives can be noted in the design of the street systems. Residential streets should not be dangerous or noisy because of speedy and heavy traffic. The town should not be burdened with undue costs of capital and maintenance because of a lavish street system such as is often designed to bolster real estate values. Finally, the street system should be planned for the greatest convenience in the use of automobiles. An integration of these purposes has resulted in the considerable use of cul-de-sac streets, and has placed the towns away from heavily trafficked highways.

All properties included in the greenbelt towns will be owned by a local holding corporation, and residences as well as stores will be rented, not sold, to individuals. This permanent single ownership has also greatly influenced the architectural design. Lot boundaries need not be so clearly marked, and houses can be grouped with a certain convenience and economy that would be difficult at least if each home were to be sold as an individual unit.

The policy adopted by the Division of Suburban Resettlement regarding the sale of the properties to a non-profit holding corporation means a long term amortization of the cost in order to make low rents actually possible. This in turn has demanded low maintenance and a high quality of construction as opposed to a low initial cost that might result in frequent charges for maintenance and repair. For the sake of economy, also, a policy was adopted in each project of including a certain number of apartment units and group houses. The distribution of individual houses, group houses and apartments varies considerably due to local demands. In Greenbelt, for example, there are no single houses, while in Greendale 51 per cent of the homes are detached houses.

Suburban Resettlement's projects are demonstrations in town planning such as have not heretofore been attempted. One of the outstanding results of these developments will be the knowledge of just what the initial costs and maintenance costs of the whole town are from the very beginning. If there are any extravagances in the development of these towns, they will appear at once, and not be hidden beneath a confusing pyramid of municipal debt. The value of this factor alone to future town planners will be inestimable.

HOW DOES SUBURBAN RESETTLEMENT OPERATE?

The Resettlement administration, headed by Administrator Rexford Guy Tugwell, is divided into several operating Divisions, each concerned with various phases of the Administration's broad program. The designing of the four complete communities described in the following pages is the special task of the Suburban Resettlement Division, of which Assistant Administrator John S. Lansill is the Director. The construction of the projects is entrusted to a Construction Division; inspection is the duty of a subdivision of another Division; and there is constant correlation with the Management Division, upon which will devolve the management and operation of the rented properties until they pass into other than Federal ownership.

The Director of the Suburban Resettlement Division has four special, non-technical assistants, called Regional Coordinators, each of whom represents the Director in contact with the planners of one project and in relation to other Divisions, and also in maintaining contact and conducting negotiations with public officials and agencies and the general public in the territory in which his project is located.

Director Lansill's conception of the problems of designing and building four complete communities led him to set up four vertically organized planning groups, one for each project. Each is headed by a group of co-equal Planning Principals. These Principals are men well known in the fields of regional and town planning, architecture, and landscape architecture. In their organizations they have, by their own selection, engineers and architects and other technical staff members who, together, are competent to design cooperatively the developmen of the large tracts of land, the suburban communities, the roads and all public utilities, the buildings and the parks and general landscaping.

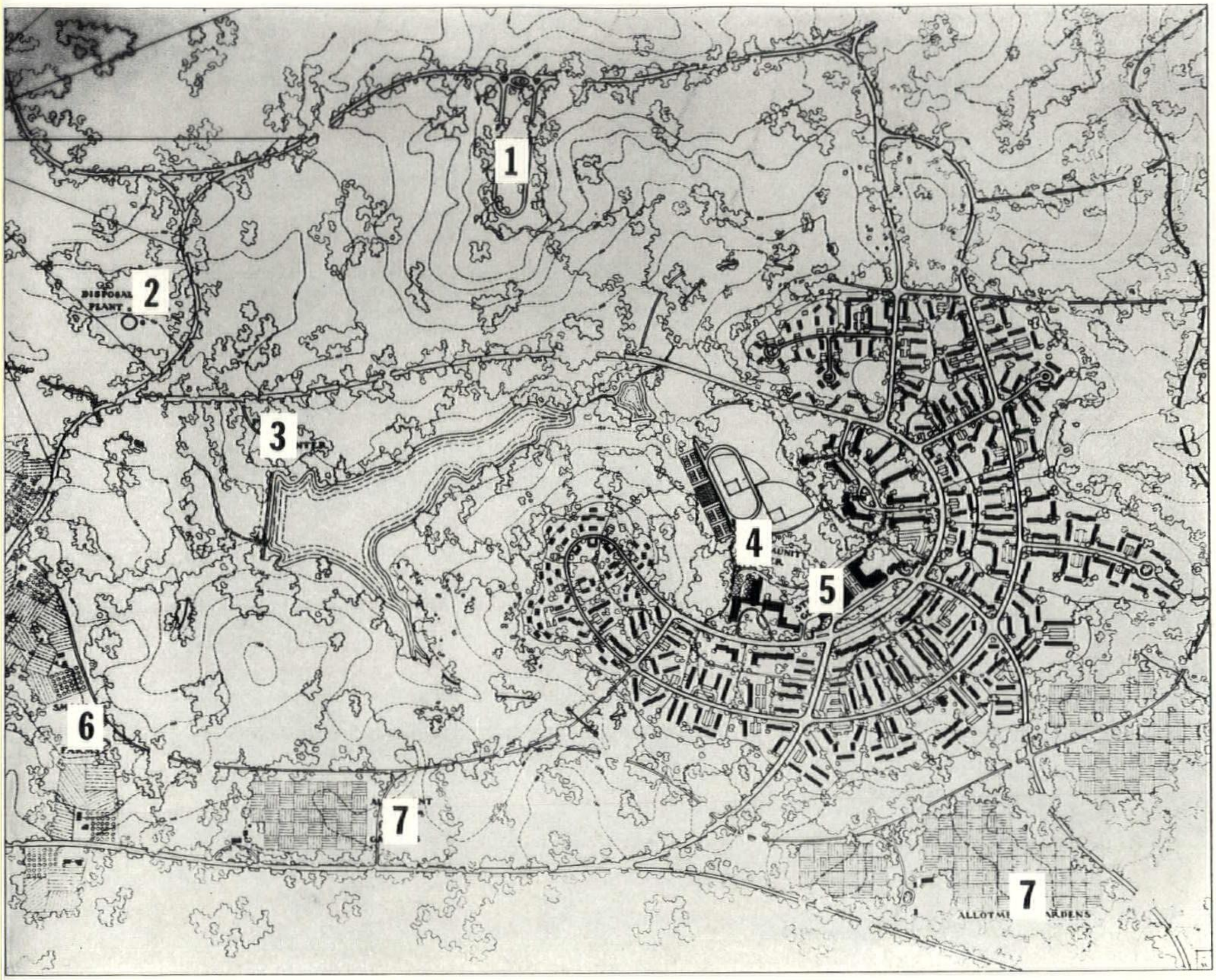
The Director looks upon each group of Project Planning Principals as if they were a firm of professional men engaged in private practice and dealing with highly complex technical problems. He does not regard a town planner as superior to an architect or engineer, nor does he regard any one of them as alone competent to contribute all the analyses and thought and design which are necessary to achieve the Division's objectives. The Director also has looked to these men and his other associates for cooperative advice in the gradual evolution of the policies of his Division.

Necessarily there is horizontal correlation between the four projects for, although there is leeway for different judgments to be made in the different communities in the light of local conditions there remain always basic policies to which all mus conform in principle. The Director is assisted b a Chief of Planning Staff, Frederick Bigger, experienced in the fields of town planning and architecture, through whom a great deal of the correlation is effected.

Because the entire organization is an emergenc one, looking to the employment of relief labor (wit some exemption in favor of special building trad skills), and because of the urgency to expedite employment, none of the four projects could be designed in full prior to releasing plans and specifications to the Construction Division.

GREENBELT, MARYLAND

NEAR WASHINGTON, D. C.



EXPLANATION: 1 Water Tower 2 Disposal Plant and Incinerator 3 Picnic Center and Lake 4 Community Center 5 Store Group 6 Rural Homesteads 7 Allotment Gardens

Town Planner: Hale Walker

Architects: Douglas D. Ellington, R. J. Wadsworth

Engineering Designer: H. B. Bursley

Coordinator: Wallace Richards

GREENBELT, MARYLAND

PROJECT STATISTICS

Planning started July 1935. Construction started October 1935. Completion date: February 1937.

TOWN SITE: 2,100 acres including recreational areas, farms, gardens. Housing area: about 250 acres.

DWELLING UNITS total 1,000: Row houses—712 units, 169 buildings. Multi-family—288 units, 11 buildings. Garages total 500.

NON-RESIDENTIAL BUILDINGS

COMMUNITY BUILDING: Two-story building containing 16 classrooms, a health room, teachers' room, principal's office, auditorium and gymnasium unit accommodating 750 persons; two large rooms for laboratories and workshops, and a library for adults and children.

HIGH SCHOOL: Located within proposed Greenbelt municipal area and readily accessible to Greenbelt students.

INN AND RESTAURANT to provide hotel facilities for the community and for overnight visitors to the experimental farms and laboratories of Department of Agriculture.

MERCANTILE CENTER provides space for post office, food stores, shoe repair, tailor, laundry, barber shop, bus terminal, drug store, variety store, beauty parlor, dentist and doctor's office, and theater with 600 seats. Also administration offices, renting agency.

FIRE ENGINE HOUSE.

GARAGE AND AUTO REPAIR.

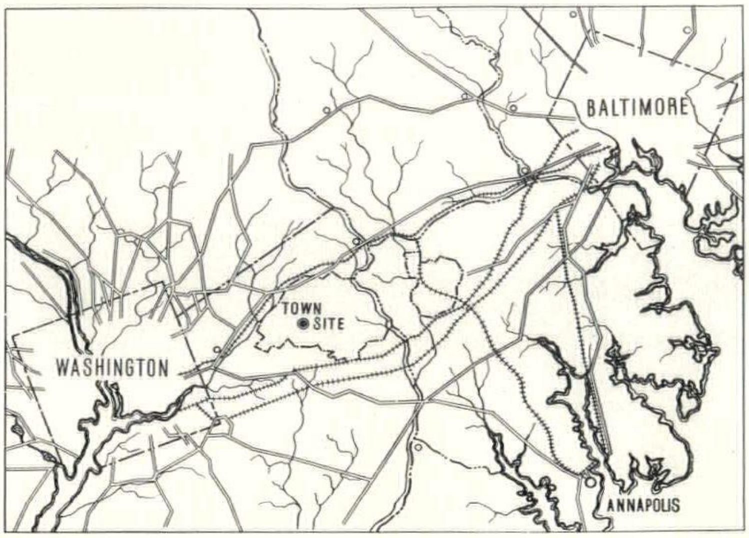
GAS STATION.

RECREATION FACILITIES: Athletic field. Picnic grounds. Artificial lake.

GENERAL AIR VIEW

WHY WASHINGTON? Rapid population growth, especially in last 15 years; large proportion of workers with modest income but assured employment. Housing need: No vacancies in dwellings fit for habitation; rents 30% higher than in other large cities; inadequate accommodations for low incomes. Greenbelt will be an important factor in development of National Agricultural Research Center, one of world's largest.

WHY THE SITE? Easily accessible in 25 minutes by motor to industrial and commercial workers and 138,000 government employees in Washington; will provide accessible housing for Research Center, of which it is designed as an integral part. Site well adapted because of: excellent topography with good building sites and natural park areas; out of direction of expensive residential developments; land suitable for farming and gardening; area free from subdivision, in large plots easily acquired.



REGIONAL PLAN

The Resettlement Administration's planning staff has worked closely with the District of Columbia and Maryland officials to fit this new community, 5 miles north of the District line, into the regional plan for the entire Washington-Baltimore area. A high, crescent-shaped plateau was selected for the principal residential district. This site presented three advantages. It led to considerable economies in the arrangement of streets, water supply and sewer lines; it made possible an orientation of houses which takes full advantage of sunshine and prevailing winds; and it required a minimum of clearing.

The main arterial road to the town follows the sweep of the crescent leading to the Edmonston Road on the east and the Branchville Highway on the south. Careful planning has led to considerable economy in the arrangement of inner thoroughfares. In the preliminary sketch 60 miles of streets were called for; the final plan serves the same number of dwellings more efficiently with 6 miles of road.

Roadways have been placed far apart and in general they follow the natural contour of the land. The result is a series of extraordinarily large blocks of irregular shape, each containing about 120 dwelling units grouped around the edges of these blocks leaving parks and playgrounds in the center. Footpaths run through the interior parts, instead of beside the streets. For the protection of pedestrians, underpasses have been provided where important paths cross a busy street.

A town common and the business center of the community find their natural place at the center of the crescent-shaped townsite. Here, within easy walking distance of every dwelling, are the stores and service establishments, as well as a two-story community building which will serve as an elementary school in the daytime and as a social and recreational center at night. A recreation field with space for baseball diamonds, tennis courts and a running track, will be built on the town common close to the school and business center. The field has been placed a safe distance from the street so that children can play without the slightest danger from traffic.

To the west of the town center, and still within easy reach of all house units, is an artificial lake, created by a newly constructed dam. The shores of this lake, for the most part wooded, lend themselves to easy development for picnic and play areas, available not only to the residents of Greenbelt, but to those of other nearby towns as well.

Water supply is obtained from the existing public utility of the Washington Suburban Sanitary Commission. A main built by the Commission leads to a standpipe on Hurley Hill, the highest point on the property. Gravity will carry water through the whole town, and out via the sewage disposal plant located at the far western end of the property, which is also the lowest point in altitude. On the Hurley Hill, there will also be an observation tower for visitors, giving an unparaleled view of the town and of distant Washington.

Fertile tracts lying south of the town have been set aside for use as allotment gardens, which will be available to tenants who wish to supplement their regular income by raising their own vegetables. Much of the remaining acreage surrounding the town has been left in its native wooded state for use as parks and recreation areas. The National Agricultural Research Center, which adjoins the Greenbelt property on the north, plans to use some of the open space surrounding the community for demonstration work in forestry and soil conservation.

TYPICAL BLOCK "D":

This block will house 400 to 500 persons. It provides 122 units varying in size from the one-bedroom unit which will accommodate 1 to 3 persons to the three-bedroom unit which will accommodate 4 to 6 persons. A garage is provided for every dwelling unit; 15 are attached to the row houses and 107 arranged in compounds. For the entire project 500 garages are provided, although space for future garages is available. Park and play areas for small children, to be maintained by the community, run through the center of the block. Underpasses provide safe access to the town center and school.

SUPER BLOCKS:

Homes have been arranged in unusually large residential blocks five or six times as big as an ordinary city square. Each super block resembles a small park and has about 120 dwellings grouped around its borders. A continuous parkway runs through the center. Houses have been carefully oriented so that each may have a maximum of sunshine, air and open space.

BUSINESS CENTER:

Plans show details of administration building, shopping facilities, theater, post office, parking space, and so on. Only ten commercial establishments are provided for here while in the ordinary town of this size it is not unusual to find thirty business establishments. When required, further expansion will take place as indicated in the town plan.

ROAD SYSTEM:

Developed as an integral part of the town plan and studied in relation to existing roads, topography, block sizes and layouts, construction factors, and operation-maintenance costs. The result is a system of about six miles of road to serve the present community of 1,000 families. The town could be increased by 50% at an increase of only 20% in roads. Operation-maintenance costs will be at a minimum because of the materials used and the limitations on the use of the roads; for instance, heavy traffic has been reduced because of the fact that coal deliveries and ash removal have been eliminated.

ELECTRIC SYSTEM:

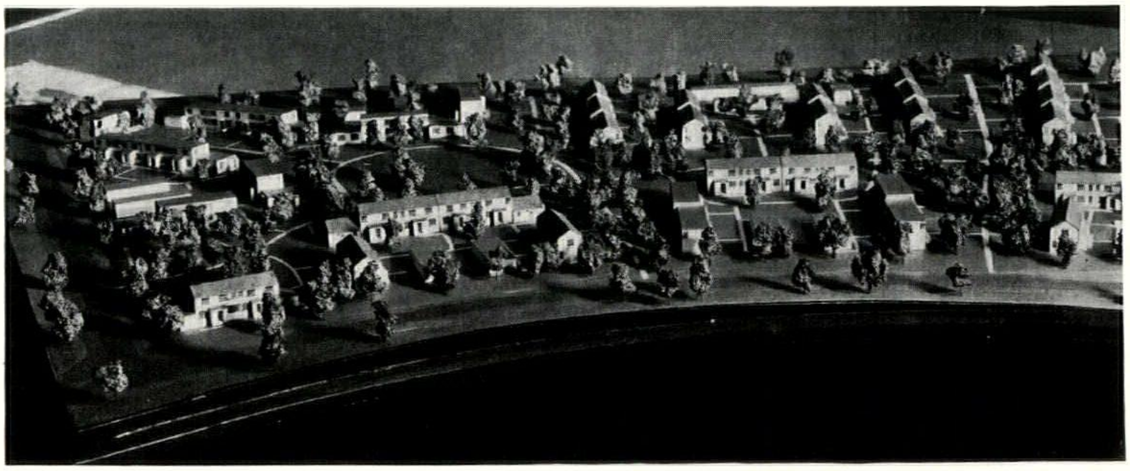
The possibilities (1) of generating electricity, (2) of having the local electric power company install a system and meter service to tenants, (3) of buying the power from that company and charging tenants on the basis of amount used, were explored. The last arrangement was selected as the most economical and desirable from the standpoint of control in operation.

WATER SUPPLY SYSTEM:

After a careful study of the various sources of water supply available at or near the project, it was decided to make a connection with the mains of the Washington Suburban Sanitary Commission. This supply is sufficient for both present and future needs and is economically sound. The supply line brings the water to the high point of the project, at which place a two million-gallon standpipe will be erected to serve both as storage and pressure control. From here the water will be metered and distributed to the various parts of the project. Owing to the group arrangement of the houses in the various blocks, the usual method of connecting each house directly to the main has been found unsatisfactory and uneconomical. Spur lines and loops have been designed to supply one or more groups of houses in the most economical arrangement possible.

SEWERAGE SYSTEM:

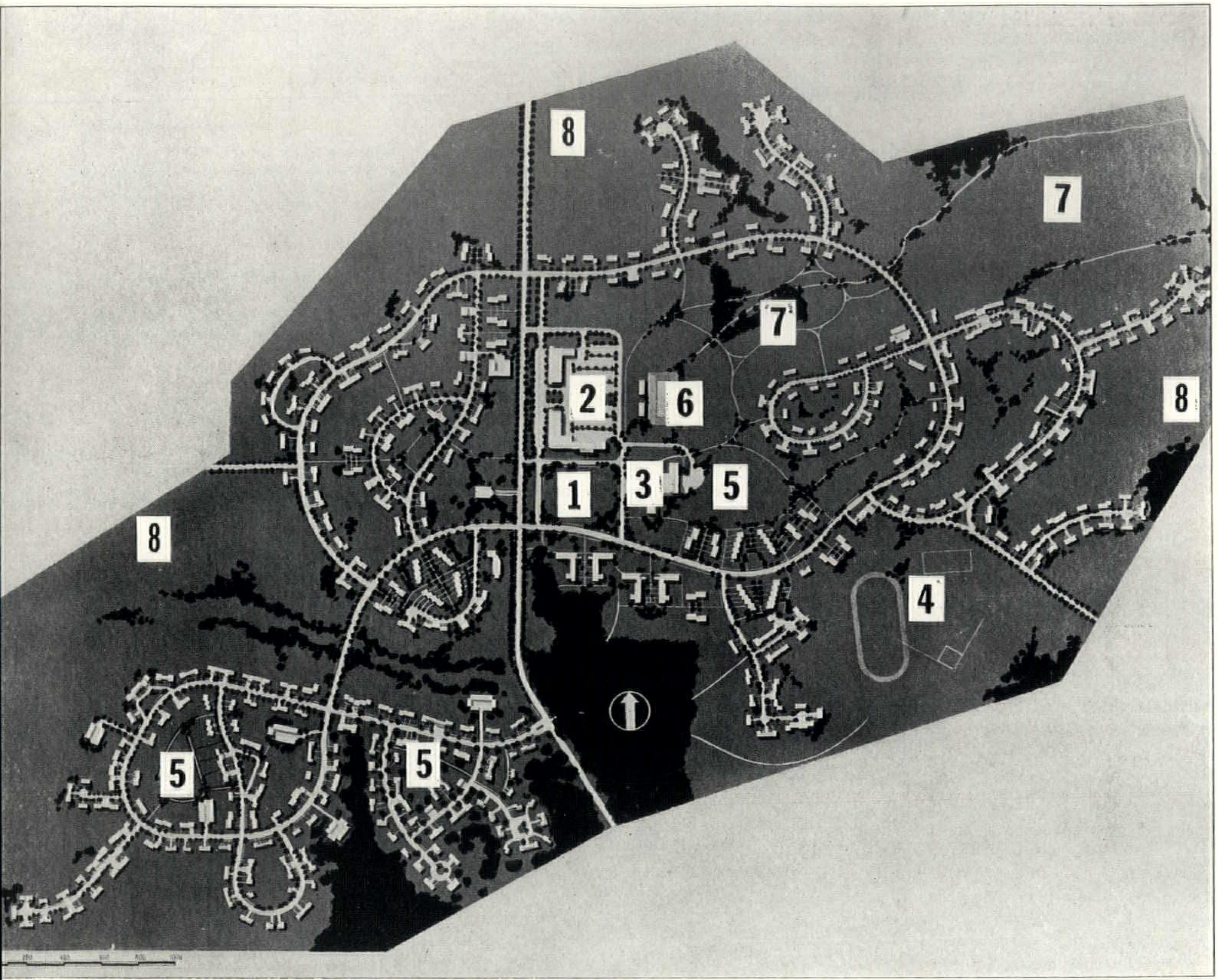
The sewage treatment works is designed to serve the present community, but the units are arranged so that the capacity could easily be increased by the addition of similar units. The trunk sewer to the works will be capable of carrying flows for twice the population. The system used is a trickling filter installation, with primary and final settling tanks, with arrangements for pre-aeration of the sewage and for the addition of chlorine and other chemicals if required. This will give a high degree of treatment with low operating costs. An incinerator is designed to burn the treatment plant sludge, and all garbage and waste paper from the project. There will be no smoke, odor, or dust.



MODEL — SUPER BLOCK "D"

GREENHILLS, OHIO

NEAR CINCINNATI



EXPLANATION: 1 Town Common 2 Commercial Center 3 Community Building 4 Athletic Field 5 Interior Park 6 Swimming Pool 7 Sites for Future Residential Development 8 Greenbelt

Town Planners: Justin R. Hartzog, William A. Strong
Roland A. Wank, G. Frank Cordner

Chief Engineer: William G. Powell

Coordinator: Albert L. Miller

GREENHILLS, OHIO

PROJECT STATISTICS

Start of land optioning: September 16, 1935. Start of construction, temporary Field Construction Offices: January 28, 1936.

Community development area: 960 acres. Breakdown by uses: Houses and interior of blocks, 168 acres; roads, 35 acres; community center, 12 acres; allotment gardens, 50 acres; community parks, playgrounds and protective areas, 695 acres. Rural areas (farms, woodland, park and recreation spaces, wildlife conservation areas, etc.): 4,970 acres. Total acreage of project tract: 5,930 acres.

Number of dwelling units: Present program provides for construction of 1,000 units, though planned to allow expansion to a total of 3,000 units; utilities are to be constructed to allow such expansion.

Grouping of units: Single detached houses, 2.5% of units; semi-detached houses (two-family), 18.0%; group houses (three to six families), 46.5%; multi-family buildings, 33.0%. Attached and integral garages: 17% of dwelling units. Provision is made in plans for convenient location of future garages and garage compounds for remaining 83% of units.

The community center is designed to contain the following buildings in addition to the town common: (1) administration building; with management offices, office space for professional services, fire and police quarters, post office, garage for maintenance of trucks and equipment, and general storage space; (2) store building and arcade; with space for drug store and luncheonette, two food stores, general store, barber shop, beauty parlor, tailoring and pressing shop, and laundry agency, and public toilets; (3) service garage; (4) open arcade which may be used at present as farmers' market, and which will front upon open space reserved for future construction of store buildings; (5) community building, providing facilities for general community recreation; combination auditorium-gymnasium to seat 1,100 persons; grade and high school facilities for 1,000 pupils, special-use rooms for arts, sciences, etc.; library, cafeteria, etc.

GENERAL AIR VIEW

VHY CINCINNATI? Steady and conservative growth in popula-ion and employment; industrial importance—proportion of popu-ation engaged in industry 21% greater than average of 100 argest cities. Great diversity of industry assures relative conomic stability; favorable location and transportation facil-ties contribute to city's promise. Housing shortage: Almost omplete stoppage in residential construction since 1931 — 175 nore dwellings demolished than built since 1931.

VHY THE SITE? Within 30 minutes by motor of 53,800 jobs in ndustry alone; direction of industrial growth northward along Aill Creek and railroads will bring further employment nearer ite.

ite has excellent topography with good building sites and atural park areas; out of direction of expensive residential evelopments; land suitable for farming and gardening; area free rom subdivisions, in large plots easily acquired.

REGIONAL PLAN

ireenhills is located some 11 miles north from the downtown rea of Cincinnati. The tract falls entirely within Spring-eld Township, Hamilton County. The project, situated in rolling, rural country of high scenic attractiveness, is sur-ounded at varying distances by a number of cities and owns, among which are the following: Hamilton, 9 miles to he north; Glendale, 4 miles to the east; Wyoming, 5 miles o the southeast; North College Hill, 4 miles to the south, nd Mount Healthy, 3 miles to the southwest.

'he project tract is located between two important radial ighways of regional significance. Cincinnati-Hamilton 'ike (U. S. 127) runs in a north-south direction at the west roperty line of the tract, and a mile to the east of the east roperty line is Carthage-Hamilton Pike. These two high-rays carry the majority of automobile traffic converging on incinnati from outlying communities and more distant oints to the north. Main roads running in an east-west irection are, in accordance with the provisions of the official legional Thoroughfare Plan of Hamilton County, to be so outed as to pass around the urban development and not hrough it. The community is, therefore, fully protected rom intrusion of through traffic, although conveniently ccessible to major highways. Advantage has been taken in own planning of an existing minor highway, which enters he project from the south, and which will be retained to rovide direct access to the metropolitan area of Cincinnati. ireenhills is easily accessible to locations of industrial em-loyment, over 50,000 jobs being available in manufacturing ndustries within from twenty to fifty minutes' travel by utomobile. Studies of the economic development of the incinnati region indicate that the trend of industrial growth northward along the course of the Mill Creek Valley, rhich will bring an even larger number of opportunities for ndustrial employment within a short distance of the com-nunity.

nterurban bus and electric lines are now accessibly located. Short extensions of bus lines will provide transportation to workers and families not possessing automobiles.

The portions designated for immediate community develop-ment comprise an area of rolling and well-wooded terrain in the southern section of the tract. Land further to the north is better adapted topographically to the conduct of farming operations. The northern section of the tract also constitutes a reservoir from which land may be withdrawn at a future date and used for residential development and related purposes.

Of regional interest with respect to the Greenhills program is the projected development of the Mill Creek Parkway, an integral part of the County Recreational System. The sec-tion of the parkway through the project tract has been tentatively laid out along the valley of the West Fork of Mill Creek, to the south of the Townsite, in coordination with this system.

The greenbelt which surrounds the community is designed to assist in the preservation of community entity, and to protect the town from future intrusion of unrelated developments. Sections of greenbelt penetrate from the south, east and west into residential blocks along the course of ravines and heavily-wooded areas, thus adding to the scenic attractiveness of the community and providing space for various types of active and passive recreational enjoyment.

TOWN PLAN:

The portion of the tract which has been selected for com-munity development is topographically varied. Level and gently sloping terrain is utilized for residential construction, whereas the more rugged areas which surround and penetrate the community have been designated for greenbelt use, such as parks, playgrounds and allotment gardens. The layout of the road system has been carefully adapted to the contours of the land, and has been designed to meet the needs of a logical distribution of land uses. Residential areas are served with a minimum of road length compatible with the provision of convenient circulation and ease of access to all residences.

BLOCK PLAN:

Service entrances to homes front upon streets, whereas living quarters face gardens, open spaces and play areas, away from street traffic. An objective in the planning of the community has been to give the effect of a pleasant rural village, through informality of design and landscape architectural treatment. Planting schedules call for the use of both trees and shrubbery, although greater emphasis will be placed upon the use of trees than upon small shrubs in establishing a distinct landscape character for the town.

TYPICAL RESIDENTIAL BLOCK:

Net area contained in house lots: 848,988 square feet or 19.5 acres. Interior play spaces: 10,950 square feet; garage compounds and easements: 21,500 square feet; walk easements: 18,720 square feet; total: 51,170 square feet or 1.1 acres. Streets (property line to property line): 191,651 square feet or 4.4 acres. Gross area (Block "G"): 1,091,809 square feet or 25 acres. Number of buildings: 14 detached houses, 10 semi-detached houses, 8 3-family houses, 6 4-family houses, 2 5-family houses, 3 6-family houses; total: 43 buildings. Approximate number of people to be accommodated: 489.

WATER SUPPLY:

Water for domestic use and general community purposes will either be supplied from project wells drilled into the water-bearing strata of the Mill Creek Valley, or purchased from the municipal system of Cincinnati. In either case, dwellings and nonresidential buildings will be serviced by a project distribution system.

ELECTRIC POWER:

Electricity, which is to be used for cooking, as well as lighting and power purposes, will be bought at wholesale rates from a private utility, and distributed unmetered through project distribution lines.

RECREATION:

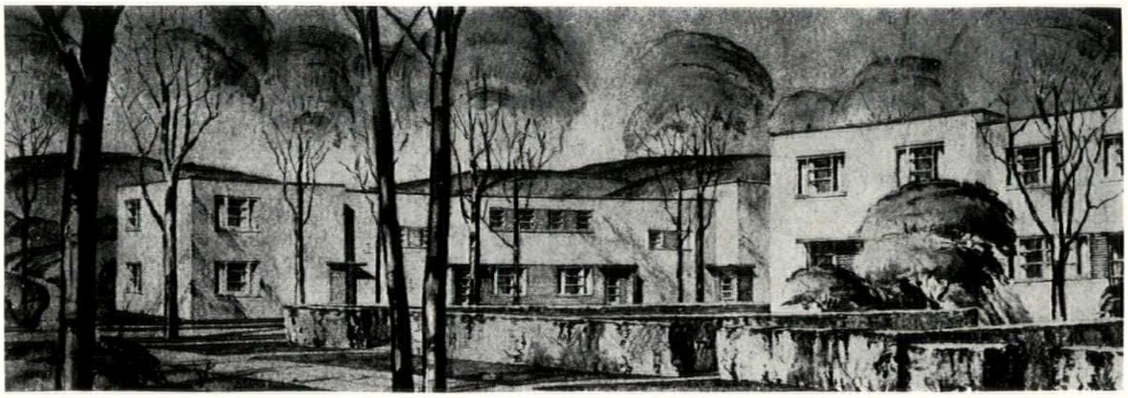
The present scenic attractiveness of the site will be maintained by preserving in their natural condition the prominent Mill Creek Valley to the south and other wooded ravines intersecting residential blocks from easterly and westerly directions. Such areas will also provide opportunities for hiking and other informal types of recreational enjoyment for community residents. An athletic field in the southeastern section has been laid out for organized games and sports, and will contain baseball diamonds, a football field, running track and other game areas. Inter-block play areas designed for the use of children will be situated where they are easily and safely accessible to all homes. A community swimming pool is being considered in close proximity to the community building and town common with ample automobile parking space.

COMMUNITY CENTER:

A dominating feature is the community center, located to the east of Winton Road in the approximate geographical center of the town. To the north of a central, rectangular town common are located the administration building, containing management offices, a post office, fire and police quarters, and the southerly portion of the business group. To the east of the common is the community building, designed to contain facilities for general indoor community recreation as well as elementary and high school classrooms for an estimated attendance of 1,000 pupils. Sites are reserved in approximate locations for the future erection of community and Catholic churches, and building locations have been designated for a parochial school and additional public grade schools when required by increases in population and expansion of the town.

SEWERAGE SYSTEM:

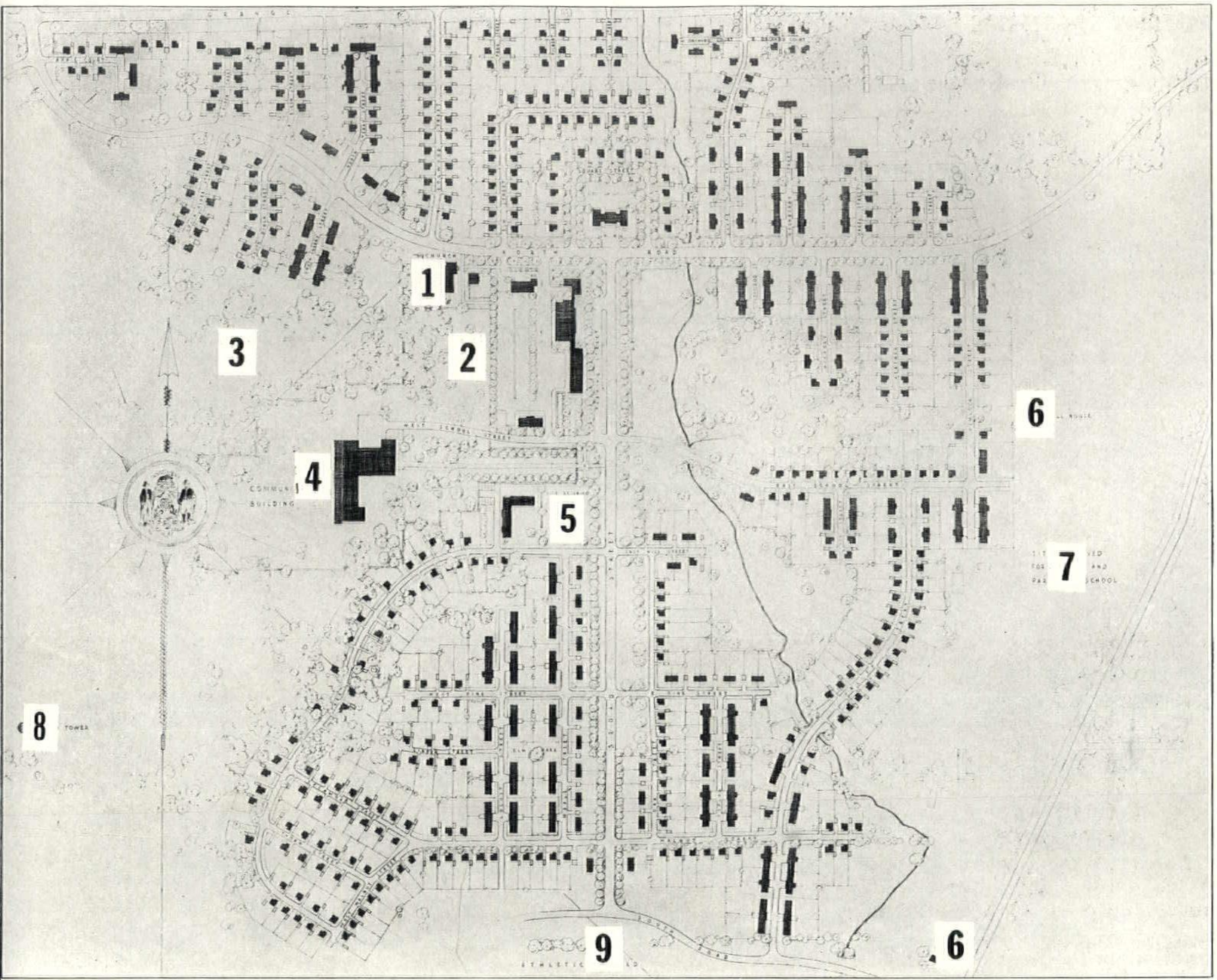
Disposal of sanitary sewage will be accomplished by connection of project trunks to the regional trunk sewer system of Hamilton County. A separate storm water sewer system to consist of a number of individual collection grids, will provide surface drainage and will discharge directly into conveniently located nearby ravines. An incinerator will be constructed in an inconspicuous section of the project tract for disposal of garbage and rubbish.



RENDERING — TYPICAL GROUP HOUSES

GREENDALE, WISCONSIN

NEAR MILWAUKEE



EXPLANATION: **1** Church **2** School Garden **3** Park **4** Community Building **5** Site Reserved for Future Library **6** Well House **7** Site Reserved for Church and Parochial School **8** Water Tower **9** Athletic Fields

Town Planners: Jacob L. Crane, Elbert Peets

Architects: Harry H. Bentley, Walter G. Thomas

Coordinator: Fred L. Naumer

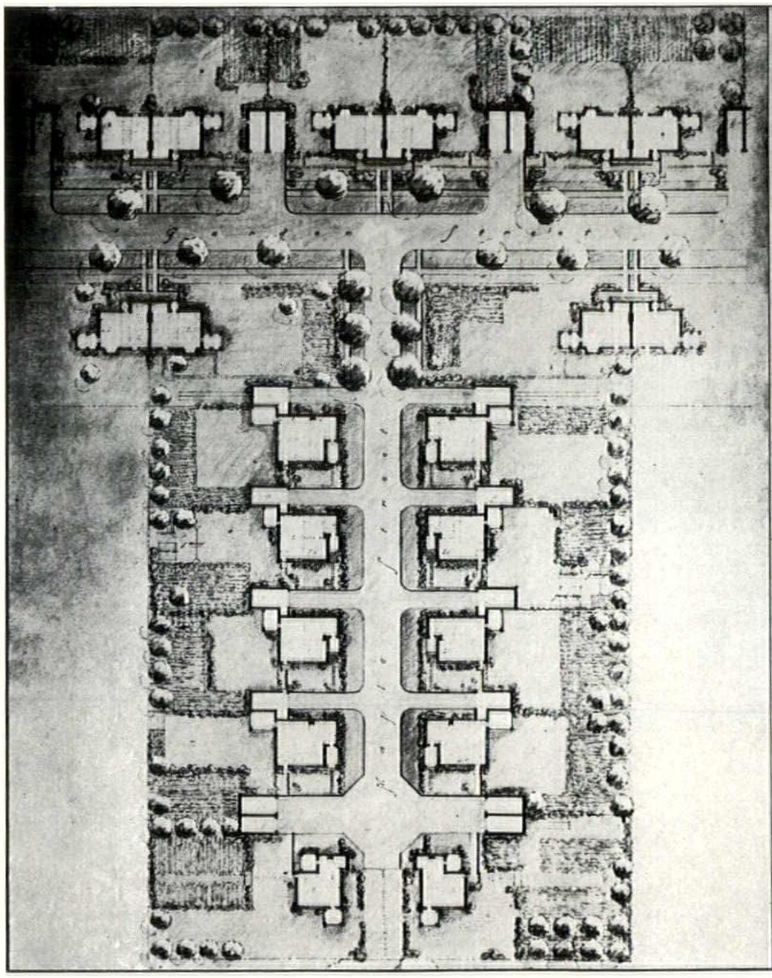
PROJECT STATISTICS

First budget approved: June 1936. Completion of present layout: February 1937.

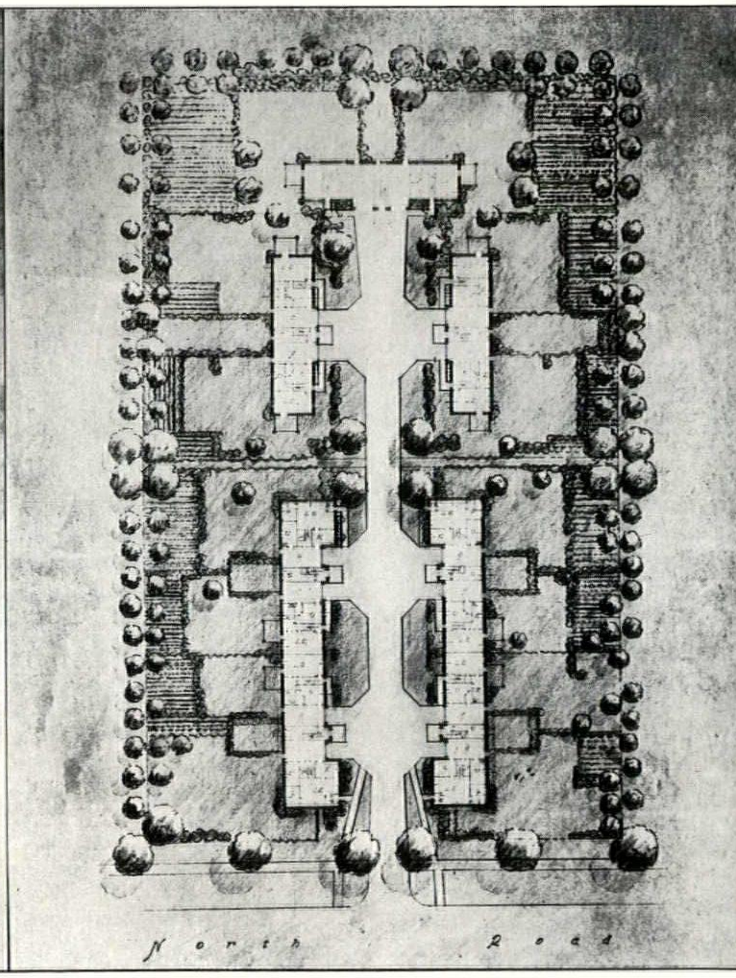
Town site: 185 acres. Town park: 225 acres. Recreational groups: 20 acres. Allotment gardens: 65 acres. Small homesteads: 385 acres. Farms: 1,830 acres. Shelter belt: 170 acres. Parkway: 620 acres. Light industry: 10 acres. Total acreage: 3,510 acres.

750 living units; 370 of these units are to be of the group and twin type and 380 are to be single-family type. Approximately 53% of all units have 5 rooms with 3 bedrooms. Most units are planned to have garages and a screened porch or terrace. Garages are either incorporated or closely adjacent to avoid inconvenience during the severe winter weather.

Business group: Motion picture theater. Two food stores. Variety store. Drug store. Tavern. Barber shop. Beauty parlor. Tailor shop. Shoe repair shop. Garage and filling station. Post office. Also, an administration building, a fire and police station together with a central heating plant that will provide heat for these buildings as well as an apartment house to be placed just south of the business group.



CUL-DE-SAC WITH SINGLE HOUSES

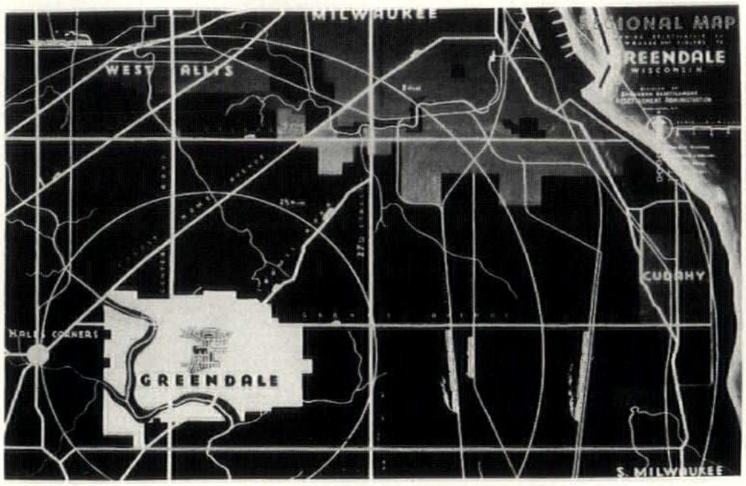


CUL-DE-SAC WITH GROUPED HOUSES

WHY MILWAUKEE? Growth in population at same rate as in 100 largest cities; growth in employment more rapid than average. Industrial importance — proportion of population engaged in industry 60% greater than average of 100 largest cities; great diversity of industry assures relative economic stability, to which favorable transportation facilities contribute. Housing shortage: Almost complete stoppage of residential construction since 1931; 689 more dwellings demolished than built since 1931; vacancies rapidly diminishing and rents rising, with inadequate facilities for low-income groups.

WHY THE SITE? Within 30 minutes by motor 141,000 jobs are available in industrial and commercial establishments (not including estimated 62,500 in Central Business District).

Site has excellent topography with gently rolling terrain — woods, meadows, lakes and streams form natural park areas; out of direction of expensive developments; land suitable for gardening and farming; area available in large plots and bounded on one side by County Park system.



REGIONAL PLAN

Eight miles from the center of Milwaukee, and within easy driving distance of Cudahy, South Milwaukee and other industrial centers, the Resettlement Administration is building Greendale, a low-rent community for families in modest income brackets. The 3,500-acre property has an ultimate capacity of 3,000 families, although units are now being constructed to accommodate only 750. The plans of both immediate and future use of land within the project area have been developed in close cooperation with the Milwaukee County planning and park officials.

The land is gently rolling, and somewhat more attractive than most of the environs of Milwaukee. The Root River runs southward through the western half of the site; near the southwest corner of the site it turns eastward and runs through the site near its southern boundary. This is a very beautiful valley and affords excellent natural drainage for most of the tract.

An area considerably larger than the town site, lying both east and west of the town, is devoted to town park. This area, partly wooded and gently rolling, is only a few minutes' walk from all parts of the town. A recreation field has been set aside at the foot of Broad Street, as an appropriate level area, easy of access, to be developed into several kinds of athletic fields and to provide for a swimming pool. Adjoining the recreation field on the south will be allotment gardens for the use of the townspeople.

A series of small homesteads from one to ten acres in size dispersed through the project area has been planned for long-term leasing by the town management. A small area near the northeast boundary of the tract has been set aside for possible use by light industry. Although it is a major premise that most people of the town will continue in their present places of employment in Milwaukee, certain light industries such as canning of fruit, drying factories or other industries serving local needs might be useful to the community, especially in the employment of women in the town.

A strip of land extending along most of the property boundary has been set aside, to be planted extensively with trees and used as a shelter belt to the area, protecting it from wind storms and setting it off from the surrounding country. Inasmuch as it is a basic assumption in creating this community that the typical family to be accommodated will be one which can afford the daily use of an automobile, the transportation problem is simplified to some extent. An analysis of the major transportation needs of the community and of available transportation systems in the vicinity has led to the following conclusions:

For carrying workmen who live in the community to and from work in Milwaukee, a very wide use of small cars is anticipated, with from one to five workers in each car. The cost of such transportation will range from 5 to 30 cents per man per round trip and may be expected to average between 10 and 15 cents per man per round trip.

Other transport to and from work will be provided by bus, shuttle bus to street railway and rapid transit line with transfer privileges in the city. These seem to be less convenient, slower, and no less expensive than the "Jitney" mode.

High school students living in the community will be taken by bus to and from West Milwaukee High School.

Day by day shopping, movie going, access to grade school, and so forth, in the village can be done almost altogether by walking, since every dwelling unit of the community will be within one-half mile of these facilities.

The road system for Greendale is based upon a policy of designing the new town in the form of a village suited to the tradition and needs of the locality. The roads are of three major types: main streets which will carry the heavier traffic and on which there will be little if any residential frontage. Secondly, there are collector streets, also primarily for traffic, but having some residential frontage. Finally, there are the residential streets themselves, generally in the form of cul-de-sacs. The problem has been to work out this type of road system in conjunction with maximum economy, which is of course the basic objective.

COMMUNITY CENTER:

A business group and community center are located at the center of the town, on an axial main street, within one-half mile of all dwelling units. The business group contains stores, a cinema, a tavern and a garage, as well as an open-air market, a police and fire station and an administration building which will house the town management. The community center will contain elementary classrooms, industrial arts, household and fine arts rooms, a library and a combined auditorium and gymnasium.

DWELLING UNITS:

A distinctive feature of the Greendale project, as contrasted with the other two suburban towns under construction by the Resettlement Administration, is the larger percentage of individual houses included in the plan. This was decided upon as a result of questionnaires which indicated a great preference for individual homes among residents of the Milwaukee region. The disposition of 370 units of the group and twin types and 380 units of the single-family type follows the conclusion that the single-family cottage with a plot of about 5,000 square feet is the normal type for this project. The dominant (53%) 3-bedroom type provides for the most nearly normal family composition, with only 10% to 15% greater initial cost and maintenance than the 2-bedroom unit. The group house thus becomes a measure to help keep down the total construction cost. Individual yards provide for privacy, gardening and services.

RECREATION:

With each of the separate houses provided with private garden space, it has been unnecessary to establish large interior parks at different points in the project. Moreover, the character of the single-house architecture has somewhat influenced the policy of keeping the country village atmosphere in Greendale. This is reflected in the fact that outlying recreation areas, aside from athletic grounds, rather than being carefully landscaped parks, will appear more as fields or pastures in natural state, where children may play as they would anywhere on the edge of a rural community.

SEWAGE DISPOSAL:

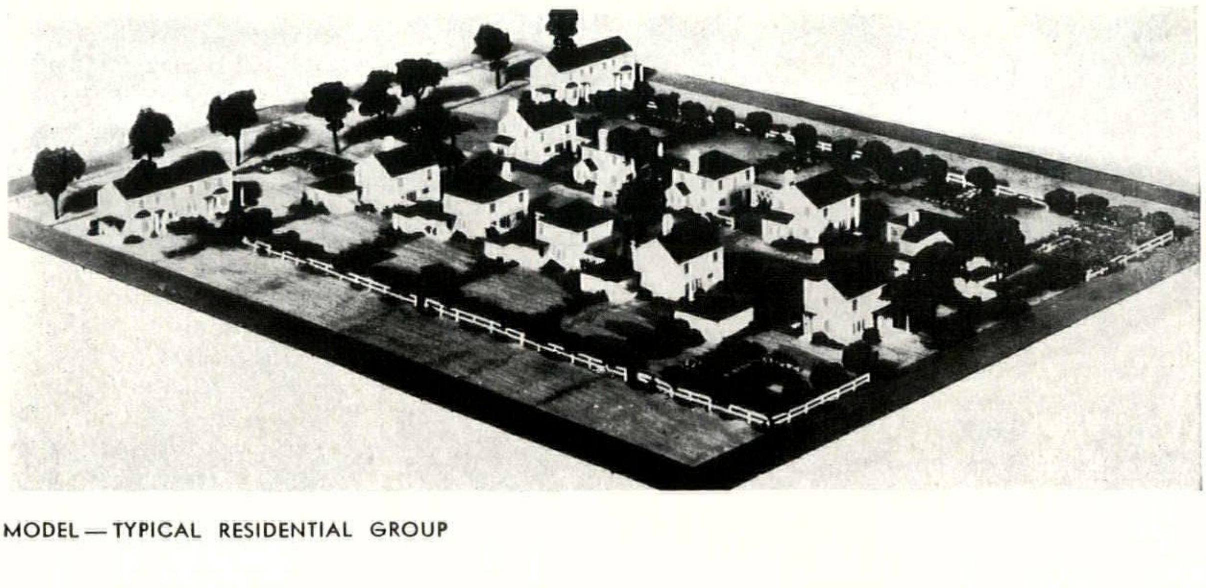
A sanitary sewage collection system serves the residential and non-residential buildings. A system of storm water sewers collects the storm water and surface water and drains into the tributary streams of the Root River which flows through the site. A sewage disposal plant is also being constructed. All plans have been designed to conform to the rules and regulations of the State Board of Health and have been approved.

WATER SUPPLY:

There are two possible sources of water: (1) through a feeder main connected to the city of Milwaukee waterworks system, or (2) from deep artesian wells in the project area. The decision to use the well supply was based on a comparative cost study of the two methods. The water from two wells will be raised to the surface by electrically-driven deep well turbines, and an electrically-driven centrifugal booster pump will elevate the water to the 400,000-gallon elevated steel tank which is to be located on a high hill just west of the town.

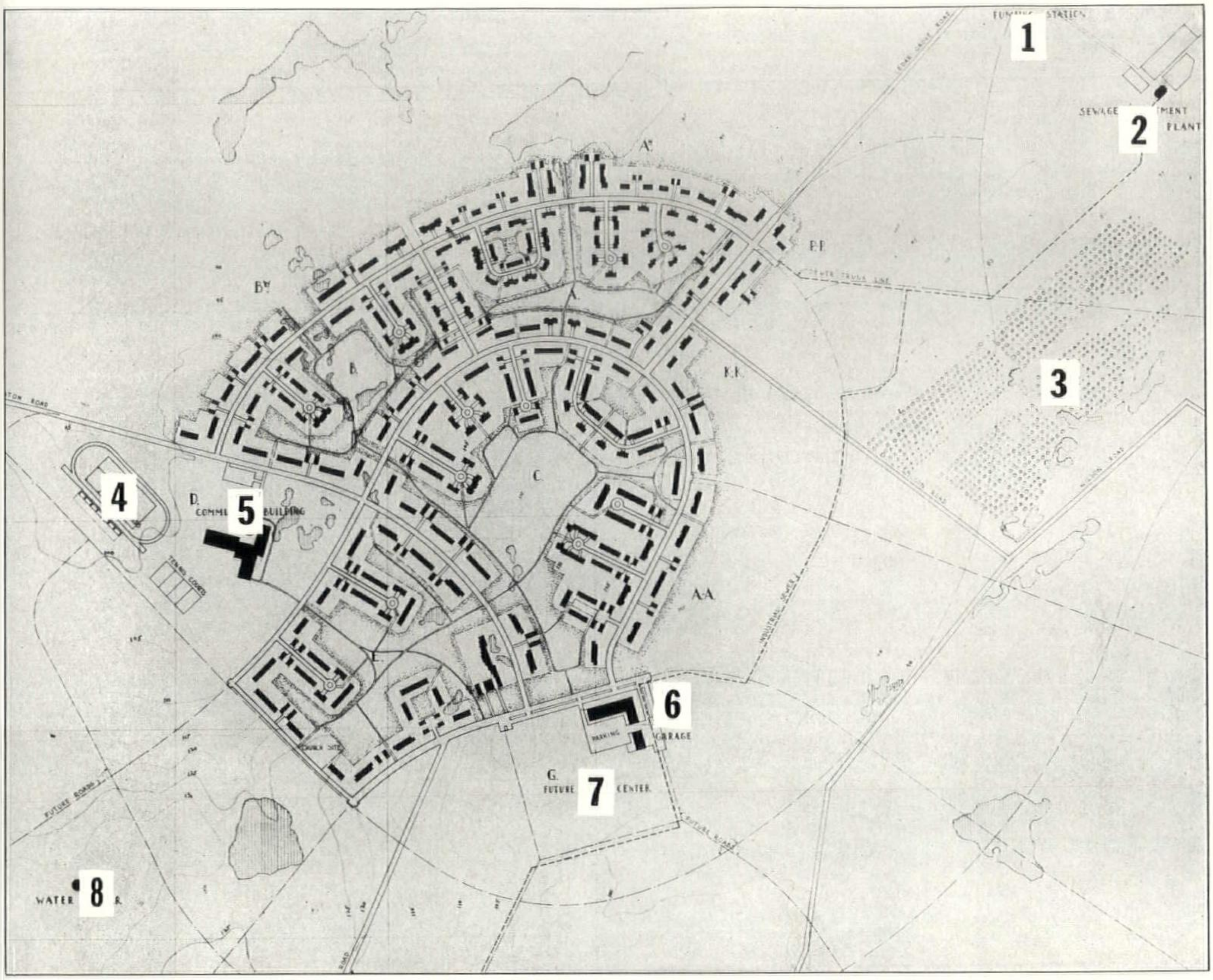
POWER:

The source of electric supply will be the Milwaukee Electric Company. The company will deliver wholesale current to the management by a master meter. The project is constructing its own distribution system.



MODEL — TYPICAL RESIDENTIAL GROUP

GREENBROOK, NEW JERSEY IN BOUND BROOK AREA



EXPLANATION: 1 Pumping Station 2 Sewage Treatment Plant 3 Gardens 4 Athletic Field 5 Community Building 6 Shops and Garage 7 Future Town Center 8 Water Tower

Town Planners: Henry Wright, Allan Kamstra

Architects: Albert Mayer, Henry S. Churchill

Chief Engineer: Ralph Eberlin

Coordinator: Isaac McBride

GREEN BROOK, NEW JERSEY

PROJECT STATISTICS

Planning began October 11, 1935 and ended in May 1936 when legal controversies made it necessary to stop work on this project. At that time planning work was approximately 40% complete; 461 signed and approved drawings were ready for the field.

The site was to have been between 3,800 and 4,200 acres. Land for houses and interior of blocks: 125 acres. Roads: 25 acres. Community center, commercial area and town common: 10 acres. Schools and playgrounds: 20 acres. Allotment gardens: 50 acres.

Farm land, awaiting development of ultimate town: 1,195 acres. Future industrial site: 125 acres. Greenbelt for farming, recreation and protection: 2,350 acres.

Number of dwelling units: 750 of which 70% were to have had garages, 35% to 40% of that number as integral parts of the dwellings and the balance in compounds located not over 200 feet from the farthest dwelling.

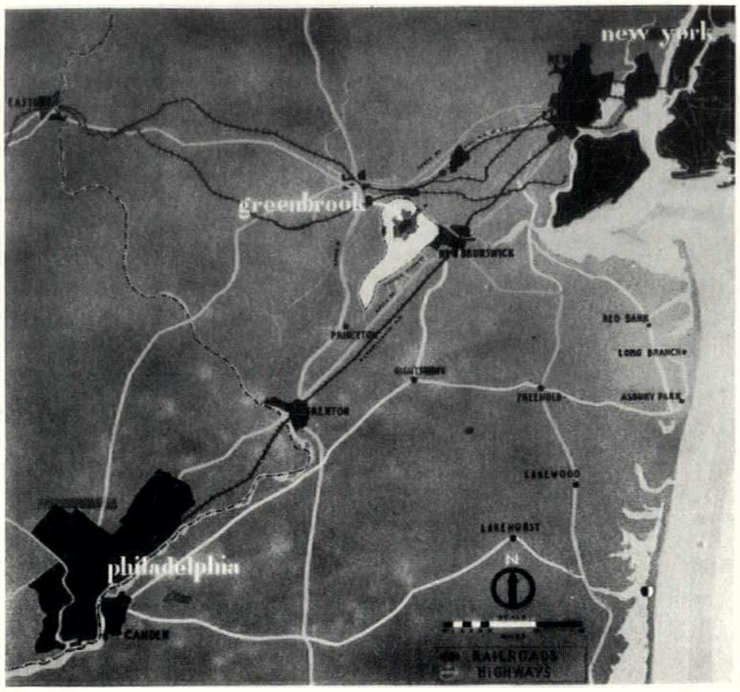
Type of structures: Single detached houses, 3% of units; double houses, 20%; groups of 3 to 6 houses, 70%; multi-family buildings, 7%; brick veneer; 65%; wood or asbestos lumber finish, 35%.

GENERAL AIR VIEW

WHY THE BOUND BROOK AREA? Located on front of advancing wave of urbanism moving southwest from New York - Newark area; population and employment growth more favorable than average of 100 largest cities; proportion of population in industry 46% greater than average. Rapidly growing industries in chemical, building materials and garment fields; wide diversity assures relative economic stability. Housing shortage: Scarcity of adequate low-rent housing in adjacent areas is 3 to 4 times greater than housing proposed at Greenbrook. Many workers live 20 to 30 miles from jobs, while most housing available lies in slum areas.

WHY THE SITE? Within 40 minutes by motor 49,500 jobs are available in industry alone, with anticipated growth of 9,500 more in 2–3 years.

Site unimproved at present — presents perfect situation for new community; topography excellent with natural park areas; land suitable for gardening and farming.



REGIONAL PLAN

Greenbrook is located about 4 miles directly south of Bound Brook and 5 miles west of New Brunswick. It is thus in the extreme southwest edge of the great New Jersey industrial belt which spreads southward from the Hackensack Meadows and along the Jersey shore opposite Staten Island. It is about 25 minutes by automobile from Plainfield and about 35 minutes from Perth Amboy and about an hour and a quarter from New York City.

The site is uncrossed by heavy traffic of any kind but is within easy distance of transportation both by rail and road. Regional consideration showed that there was no danger of encroachment on the site by any new routes, the principal lack being a direct connection from Route 31 to the shore. There has long been under consideration a plan for the development of a parkway along the Millstone River and it was hoped at first that land acquisition for the project could assist this, but various obstacles made it necessary to relinquish this idea.

The heaviest immediate industrial areas are Bound Brook, Manville, and New Brunswick. The heavy industries of Perth Amboy, largely clay works, are not beyond daily commuting distance. There are many small industries at Dunnellen, Plainfield, Somerville and the other smaller towns.

In Franklin Township area are medium-sized farms. Prospective development of the area seems to indicate a future for dairy farming only, as the soil is not particularly good quality for truck gardening on a commercial basis. Fruit growing is also possible in this area, and in the past a certain amount of chicken farming has been attempted, the countryside being dotted with abandoned coops. This expansion of chicken farming has pushed subdivisions out from south Bound Brook and from New Brunswick. It was to prevent future encroachment of such unsightly developments, as well as to provide a link between agriculture and the city and incidental recreation areas, that made provision of a greenbelt particularly necessary in this area.

In the particular case of Greenbrook it is doubtful whether the agricultural aspects of the greenbelt could ever assume the importance that they are to have in the other three towns and consequently its development was projected on somewhat different lines than the others. There seems to be a possibility for cooperative dairy farming and fruit growing, but there was no hesitancy in setting aside a certain portion of the greenbelt for a hoped-for industrial area centering around the spur on the Pennsylvania Railroad. Such a development would have greatly helped not only in balancing the community but in providing the "hidden subsidy" which exists in other communities.

The north-south location was determined partly by the desire to have sufficient greenbelt to the north to provide protection from the chicken coops and partly by the objective of being within easy reach of the railroad as a site of an industrial area. It was also thought that the large holdings of the Radio Corporation of America provided additional physical protection, certainly for many years to come.

The general topography rises from the rivers to the center of the project, the highest point being a little to the southwest of the center of the town. This was the location chosen for the water tower. The main body of the first unit of the town lies on a slight promontory sloping on three sides which determined the system of using cul-de-sacs on the rising sides of the streets and frontage houses on the lower side. The general outlook from the knoll is over pleasant rolling country and from the higher points there is a good view of the Watchung Mountains which rise back of Bound Brook. There are some fairly good woodlands and where possible these were to have been preserved and incorporated in the general landscaping of the town.

The basic pattern of the town is cellular so that as the town grew it would be possible to add complete blocks which would immediately tie in with the town pattern and would prevent the usual straggling appearance of roads that end in nothing but a few houses on the outskirts.

BLOCK PLAN:
Sizes vary from about 12 acres for the blocks near the greenbelt to 38.6 acres for the large central block. The final scheme for the ultimate town provided for 3,990 families at 4.9 families per net acre (net acre: exclusive of streets but including all interior open spaces, school areas and peripheral blocks, to the rear lot line). The first unit was to provide for 743 families on 150 acres at 4.95 families per acre.

EDUCATION:
The first school unit was to be located in an interior block to take full advantage of the recreational area naturally provided by the greenbelt. This comprised a combination grammar and high school, with community auditorium and facilities for adult education in a separate building in the group in order to permit the residents of the town to maintain freedom of control over their meeting place and social activities without being under the jurisdiction of a school board. It was decided not to use any underpasses for the school as some kind of control would be necessary to get the children to use them and it was believed that it was simpler to provide control, probably by junior policemen, on the street itself; further, there would not be much traffic on that street.

RECREATION:
Adult recreation was provided in connection with the high school athletic field. The interior parks were to be furnished with simple playground equipment for pre-school children. The size of the lots in many cases allowed for small vegetable gardens; those desiring more space for such activities were to be provided with allotment gardens in the greenbelt area.

TRAFFIC:
The street system provided for main road right-of-ways 78 feet wide with a 34-foot concrete pavement, secondary roads with 66-foot right-of-way, and a 34- or a 24-foot pavement, depending upon the importance of the circulation, and minor roads with a 50-foot right-of-way and a 25-foot pavement; the cul-de-sacs were to have a 30-foot right-of-way and an 18-foot center dished pavement. In general, sidewalks, because of the interior park system, were all on one side of the street and were omitted altogether in the cul-de-sacs. Parking bays were provided wherever necessary.

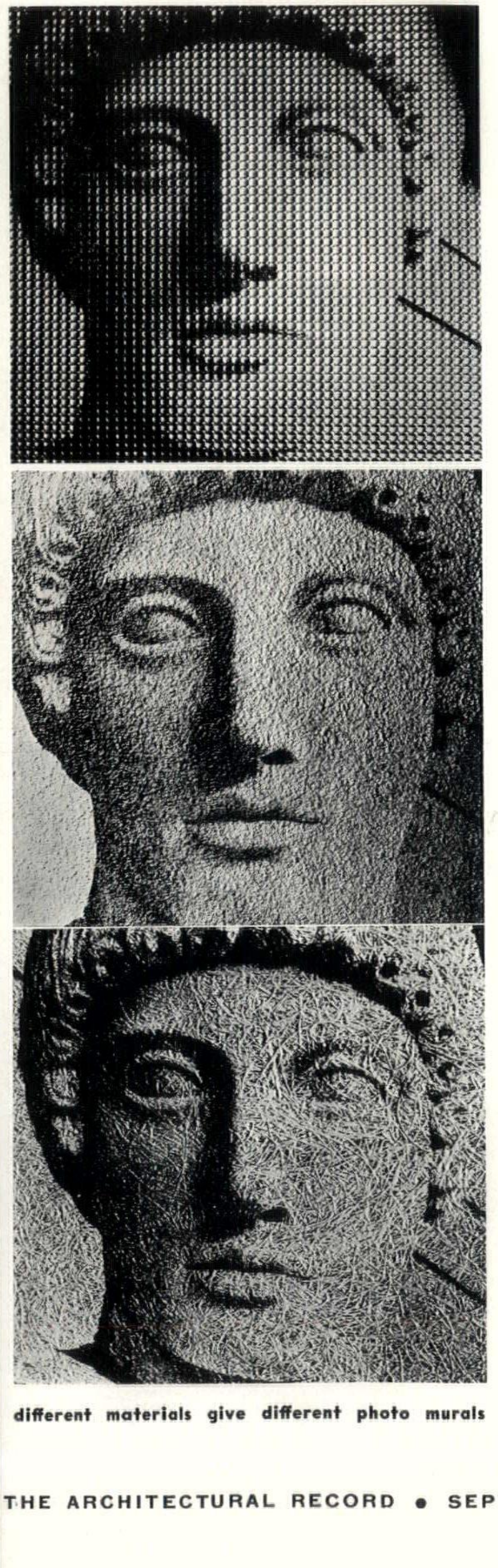
UTILITIES:
Electricity was already in the area and gas could be extended either from Bound Brook or from New Brunswick; the latter was eventually agreed upon with the gas company. Water supply presented a more difficult problem as there seemed to be a conflict of supply and franchises between several water companies, and this question had not been determined when the project was closed down. The sewer system provided for a main trunk line which was extended to the industrial area and carried down to a disposal plant located outside the town. A separate system of storm sewers was required by the Board of Health and these were to be emptied into natural flow wherever possible.

MODEL — AREA "A" AND "A_X"

EDITOR'S NOTE:

Comparative architectural details and specifications on the 4 Resettlement projects will appear in AMERICAN ARCHITECT AND ARCHITECTURE *for October* 1936.

TECHNICAL NEWS AND RESEARCH



different materials give different photo murals

WALLS ARE MADE INTO PICTURES

A new photo mural process, based on two years of experimentation, has been developed by Eugene Mollo, a London architectural decorator, working in collaboration with Paul Lamboit. An option for exclusive use of the Mollo photospray in this country is held by Jenter Displays, Inc., 511 *Fifth Avenue, New York.*

Gas-masked men, working at night or in darkened space, spray the surface which is to be decorated with a patented light-sensitized emulsion. A photographic image is then projected on the surface by means of an ordinary enlarger, and subsequently developed and fixed, again by means of spraying. Sheets carry the fixing solution off into tanks and protect the rest of the wall. The result is a photographic enlargement of any selected size, printed directly on to the wall, or any other surface, at a comparatively low cost and in a comparatively short time. It is possible if desired to achieve results in two or three colors. Jointless photographs with a hard washable surface can be produced not only on a flat wall but also on any bas-relief, curved, corrugated or fluted surface.

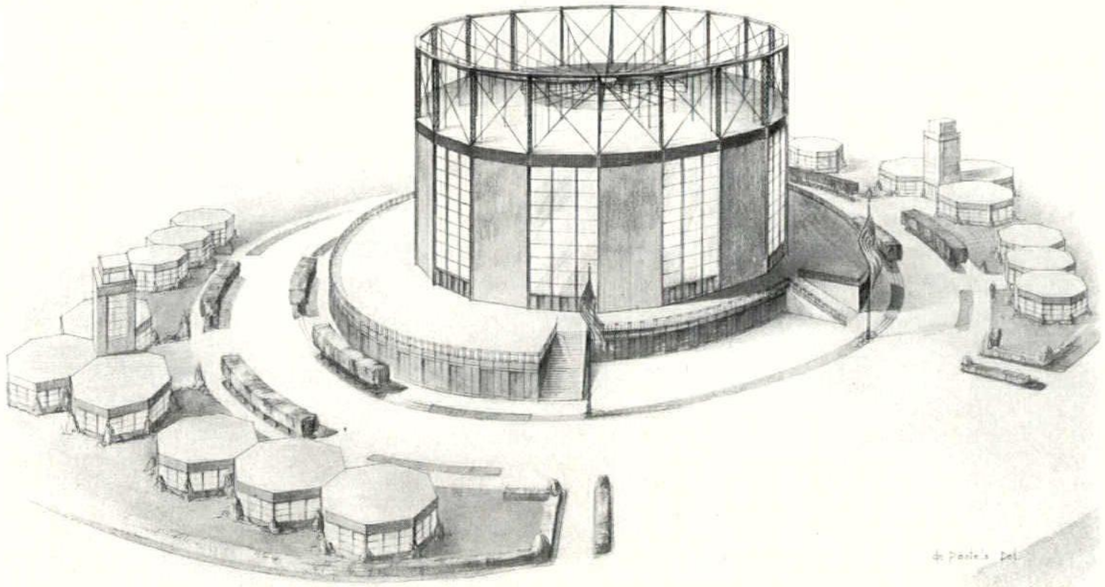
Decorative effects: Photographic light and shade can be combined with variation of form to give an unusual sense of depth to bas-relief. For example, a bas-relief can be lighted in any desired way, photographed, sensitized and its own photograph then printed directly on to it to give what the inventor calls a "fixed lighting" effect which can be seen under conditions of variable lighting. Varied results can also be obtained by decorating direct, by means of this process, rough and uneven surfaces such as plaster, composition boards, wood, cement or canvas.

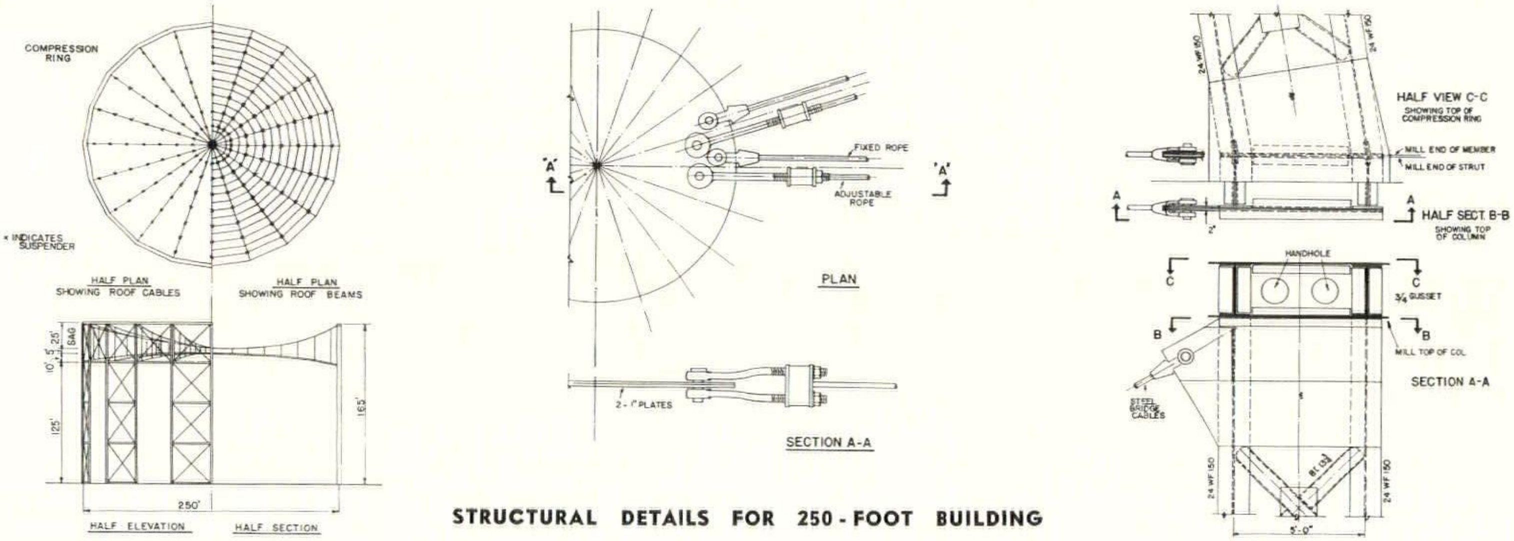
Applications: Posters, window displays and movie backgrounds represent other important uses. There is a saving in time and costs also in applying the invention to the design of exhibition booths and stands. The whole structure can be sensitized and decorated all over at one exposure; different parts will receive a different intensity of photographic design, however. Since photographs can be removed by chemical means and the surface re-sensitized, the same wall panel can be used repeatedly.

Technical limitations: Spraying the sensitizing emulsion is a comparatively simple matter; the most intricate part is the developing and fixing when in a vertical position. Where very large surfaces are to be treated, developing becomes a most difficult and delicate procedure. The even distribution of liquid over the whole surface, without over-developing some parts and under-developing others, is difficult. It requires specialists.

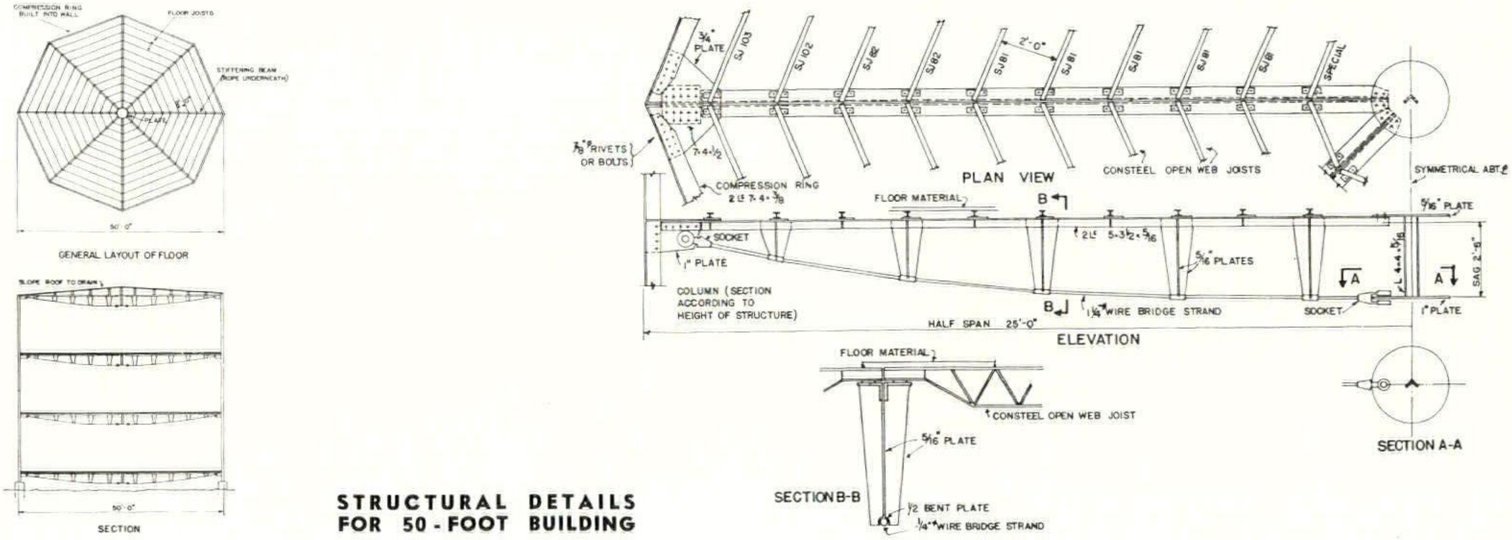
Artistic problems: In the inventor's own opinion, the reproduction of original snapshots or naturalistic photographs is hardly correct, for this would constitute a *tour de force* in decoration. He has found that reproducing microscopic designs, or photographs of plants, enlarged to about 200 times their real size, is more suitable. Reproducing enlarged existing artistic effects is another branch where the process can be exploited. Archaic sculptures, negro masks, designs from Chinese and Grecian vases, provide suitable subjects. He believes, in short, as a new technique in pictorial reproduction, the process calls for the development of new designs impossible to achieve otherwise.

Proposed design for an exposition building at the 1939 World's Fair in New York, utilizing a self-anchored steel suspension system. Simon Breines, architect. Robinson and Steinman, consulting engineers.

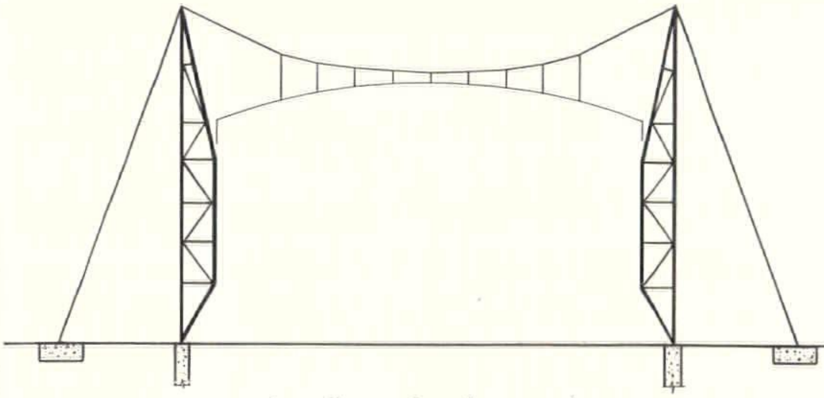




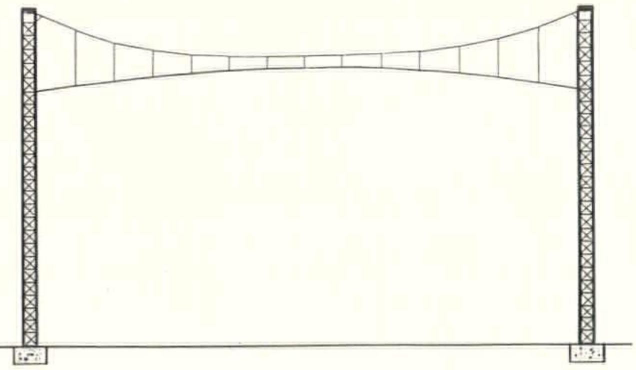
STRUCTURAL DETAILS FOR 250-FOOT BUILDING



STRUCTURAL DETAILS FOR 50-FOOT BUILDING



externally - anchored suspension



self - anchored suspension

STEEL IN TENSION . . . . . BREINES SELF-ANCHORED SUSPENSION SYSTEM

Steel is most efficient when used in tension. It then has a working stress of about 70,000 pounds per square inch, about four times its strength when used in bending or compression. In spite of this fact, modern steel structures practically never use steel in tension. The vertical members usually are columns and the horizontal members are girders or beams, a system fundamentally little different from the post and lintel work of ancient builders. The things that have changed in all this time are the materials; the system of building is essentially the same.

The reason that wire ropes and steel cables, in spite of their great strength and efficiency, are rarely ever used as structural members in buildings is the inavailability of an economical system of construction to take advantage of this strength and efficiency. Special problems in design are involved. When a wire is used horizontally to support a load, it becomes taut. The tensile stresses thus induced must be resolved at the ends of the wire. In the case of a suspension bridge, for instance, the cables must be anchored, in one way or another, at both ends of the bridge to counteract the induced stresses.

A notable attempt to use steel in tension in a building was made in the Travel and Transport Building at A Century of Progress, the Chicago Exposition of 1933. (Edward H. Bennett, Hubert Burnham and John A. Holabird, architects.) The construction is known as an externally-anchored suspension system. Stresses induced in the roof cables are taken up by backstays (guy-wires) which are then anchored into the ground outside the building by means of masses of concrete, as in a suspension bridge.

The difficulties of external anchorage are overcome in a new system of using steel in tension, invented and patented by Simon Breines, New York architect. In this construction—known as a self-anchored suspension system — the load-carrying cables radiate from a common central point to the corners of a polygonal compression ring, like a bicycle wheel laid sidewise. The horizontal components of the cable tensions are resisted by compression in the circumferential ring. The vertical components are then carried directly to the ground through the supporting columns.

A 250-foot diameter exposition building utilizing the Breines system is under consideration for the 1939 World's Fair in New York. According to calculations made by the consulting engineers, Robinson and Steinman, well-known bridge designers, such a structure would offer an economy in weight of materials amounting to a total saving of over $200,000 in comparison with an externally-anchored type using backstays with a 1:2 slope.

The system can also be used in multistory form, as shown by studies which have been made of a 50-foot diameter structure. The elimination of internal columns provides clear floor space. The 50-foot structures suggest possibilities for small prefabricated shelters—construction camps, gasoline stations, refreshment stands, tents and the like.

Structural analysis: Stresses are segregated. All tensile stresses are taken by wires and cables. All compressive stresses are taken by vertical columns and by the compression ring, essentially a series of horizontal columns. Roof loads are transferred to the vertical columns directly over their centers of gravity; this means the practical elimination of eccentricity and columns can be designed for pure compression. With the externally anchored system, the expansion and contraction of the roof cables and backstays cause a considerable eccentricity and movement in the columns; consequently the columns must be relatively large in size, and furthermore, they must stand on pin rockers which means added cost. Large footings are also necessary to cope with the heavy columns and the down-pull of the backstays and cables; the more acute the angle formed by the backstays and the columns, the greater is the vertical stress. Footings for the self-anchored system are obviously very much smaller.

Structural assembly: The self-anchored structures can be erected without falsework. With large buildings it may be necessary, however, to guy the first few columns until a sufficient number are erected to form a self-supporting arc. With small buildings the assembly process would be merely the setting up of wall panels (these could be completely prefabricated standardized members with built-in doors and windows, including insulation, exterior and interior finishes), applying a rubber or similar gasket at the joints, and then tightening the cables. Floor loads would tend to draw the structure even more closely together, eliminating the possibility of cracks and air leakage. The floor panels are not part of the structural system, but are used only to achieve a horizontal floor surface. In the calculations made by Robinson and Steinman for the 50-foot unit, the floor surface is assumed to be built up of junior beams in order to arrive at an immediately practical solution. Ideally, these floor panels would be prefabricated units which would drop into place on the cables. The upper horizontal surface of the panels would constitute the floor and the lower curved surface would be the ceiling of the floor below, if any. The ceilings follow the curve of the cables in order to allow easy access for repair.

Structural unity: Wind loads are resisted efficiently because the entire structure tends to act as a unit. The spider-web network of cables provides a fluid distribution of loads.

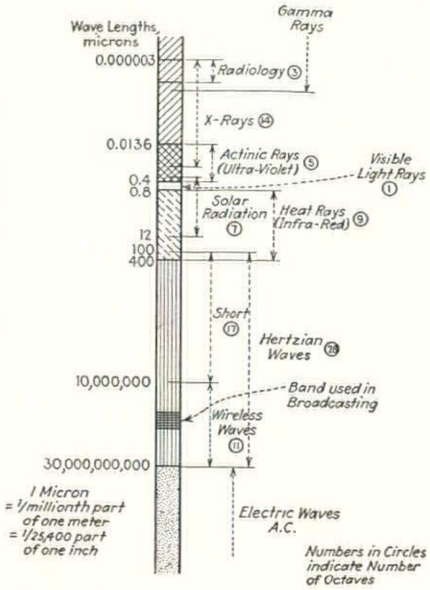


figure 1

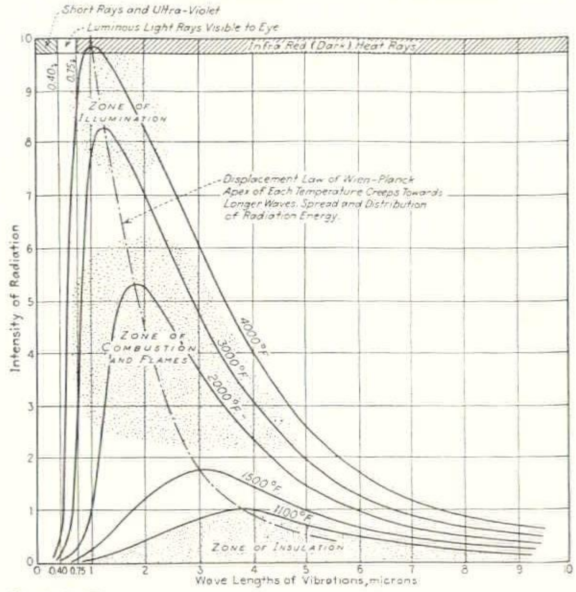


figure 2

INSULATION

All radiant vibrations, as shown by figure 1, are identical in their nature; all propagate at the same constant speed of 300,000 kilometers a second. Heat rays—the range of radiation from below one up to 400 microns in length—differ from other forms of electromagnetic radiation only in frequency, wave length, intensity. Heat, therefore, can be defined as one physical form of the action of these heat rays on various substances.

According to the Wien-Planck displacement law (see figure 2), the maximum intensity of each temperature differs with the wave length. This principle has been utilized by the illuminating engineers in their efforts to increase generation of rays in the luminous zone (0.4—0.7 microns) by producing the highest possible temperatures. The latest example of such experimentation is the new "capillary" mercury arc lamp which produces a temperature so high that it cannot be measured by ordinary instruments and which gives an illumination that approaches sunlight in color composition (see May issue, Technical News and Research section, page 408).

Only in recent years, however, have the thermal engineers given much consideration to the radiation effect for insulation in the low-temperature zone. Materials and designs developed from 1900 until lately have been based on diffusion characteristics (heat transferred by convection and conduction) rather than on radiation phenomena. Insulation in such instances depends on the low conductivity of the material and its porosity, generally on the presence of tiny internally-trapped air spaces which resist the passage of heat. The outstanding feature of such materials is their mass.

The importance of radiation in thermal insulation was brought out by R. H. Heilman of the Mellon Institute of Industrial Research in a paper entitled "Surface Heat Transmission," presented at the Rochester meeting of the American Society of Mechanical Engineers in 1931. His tests showed that at high temperatures the radiation effect contributes over 85% of the heat loss and at low temperatures never less than two-thirds. (See figure 3.)

New studies of insulation based on control of radiation have shown that the critical factor is the surface, not the nature, of the material. Paradoxically, good conductors of heat—steel, zinc, aluminum, copper—become effective heat insulators because their surfaces, even when dull, reflect the radiant heat.

Since only the surface of the material is involved, the metal insulation can be made in the form of thin sheets. Installed to form dead air spaces (preferably 3/8″ to 1/2″ in width) which thus serve to prevent heat transfer by diffusion, the sheets offer what is known as "massless" insulation. Aluminum foil is a familiar insulator of this type. The newest arrival in the building field is Ferro-Therm, utilizing steel sheets, as described herewith.

Readers interested in a more detailed discussion of "massless" insulation will find useful data in two articles—"Heat and Cold Insulation—A New Field of Application for Sheet Steel," and "Metallic Insulators Are Effective Heat Ray Traps"—by Joseph F. Shadgen, engineer, from which the diagrams illustrated above have been reproduced. These articles appeared in the January 17 and February 14, 1935 issues, respectively, of The Iron Age.

steel sheets for insulation

Produced under trade name of Ferro-Therm by American Flange & Manufacturing Co., Inc., 30 Rockefeller Plaza, N. Y., and 825 S. Kilpatrick Ave., Chicago. Used extensively in refrigeration work: specified by United States government for installed ice boxes in CCC camps and second corps area.

Ferro-Therm is a sheet steel insulation which reflects 95% of all radiated heat striking it from either side. This high reflectivity is effective for the entire range of temperatures from subzero up to 1,000° F. In winter heat inside the building is reflected back into the building from the walls and roof, thus reducing heat losses. In summer heat waves from the sun are reflected back from the walls and roof, thus preventing the heat from entering the building.

Characteristics: The sheets have a smooth, dull surface, protected from corrosion by a coating of a lead and tin alloy. This coating does not detract from the reflectivity of the steel plate, although lacquers or paints of any kind or color will reduce the reflectivity approximately 30%. The sheets do not absorb moisture; they do not settle or pack down; they are noncombustible, vermin-proof and light in weight (0.25 lb. per square foot with a thickness of 0.006″ for No. 38 gauge).

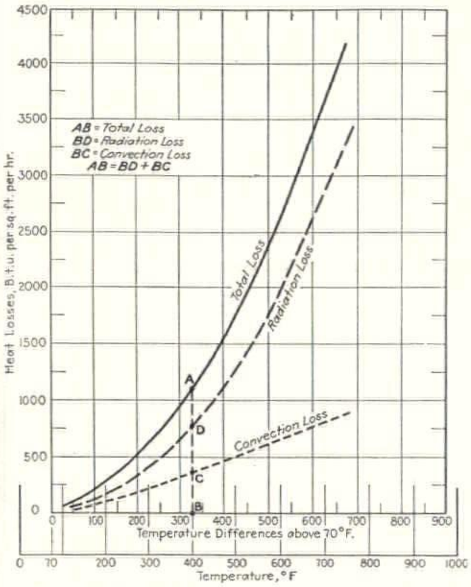


figure 3

insulating with steel

Installation: Ferro-Therm is made in sheets 24″ x 32″, crimped at 4-inch intervals for stiffness, so that they are adaptable to either 12″ or 16″ spacing of studs without waste, or to 20″ spacing of roof rafters with slight waste. Carpenters can install on an average of from 600—800 square feet a day in ordinary frame house construction. Five sheets can be cut at a time by a knife cutter and the edges quickly flanged. Ordinary wood lath or ½″ furring strips are cut to fit between the studs with a spacing of 24″ or 32″. The Ferro-Therm sheets are then stapled to the lath and also to the studs through the flange edges. In this manner a series of dead air spaces is maintained between the sheets and the sheathing, which prevents the transfer of heat by diffusion.

insulating plaster

Produced by F. E. Schundler & Co., Inc. (miners, processors and grinders of non-metallic minerals), 45-15 Vernon Blvd., Long Island City, N. Y.

Schundler insulating plaster, in dry form, is less than one-half the weight of sanded gypsum plaster. It derives this lightness from its vermiculite base. (Crude vermiculite, a form of mica, is heat-treated and expands to form millions of tiny air cells which offer insulating qualities.) A ½″ or ¾″ plaster coat cannot perform a job for which a loose fill of 3 or 4 inches would be recommended, but it is claimed that warmer and drier walls are obtained with this product than with ordinary plaster. Applied as a finish coat, either tinted or in natural color, the plaster may be floated, troweled, stippled, sponged or textured.

new glass halts solar heat

Developed by Pittsburgh Plate Glass Company (Sweet's Catalog File 17/1), Pittsburgh.

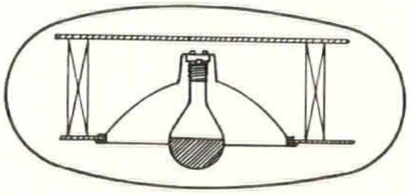
By varying its composition, glass can be made to act as a filter for keeping out or transmitting particular wave lengths. A new glass, known as Solex, has the property of absorbing a large proportion of the heat in sunlight. Its actual transmission of visible light is approximately 75% and its actual absorption of total solar energy is approximately 56%. It will transmit less than 28% of the solar infra-red. In color it is a rather dark blue green when looked at edgewise, but when glazed into a window it is difficult to distinguish Solex from other plate glass, unless the two glasses are glazed exactly side by side.

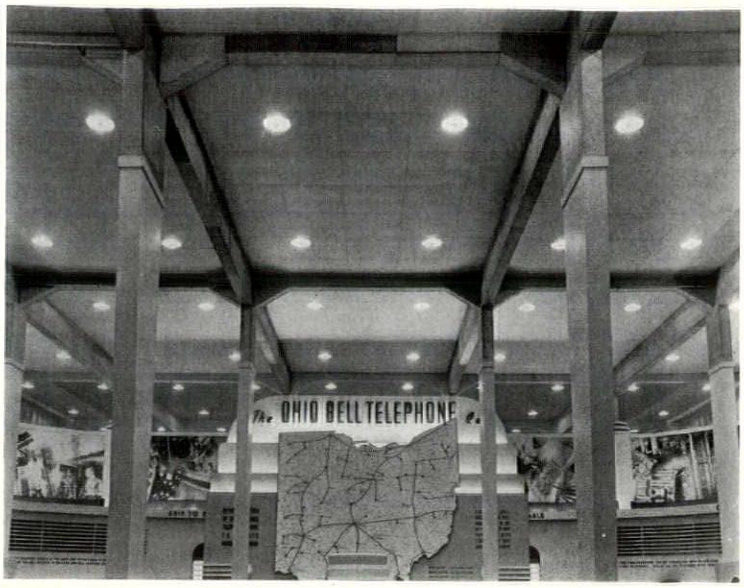
Atmospheric control: Since the sun load is the most appreciable factor in summertime cooling, the development of a window glazing material which excludes the maximum amount of such solar energy is desirable. A maximum amount of light should also be permitted to pass, as the efficiency of any heat-absorbing glass must be measured in terms which consider both the heat absorption value and the light transmission value. In several experimental installations it has been definitely shown that the temperature within a room glazed with Solex will show the temperature 10% to 20% cooler than the outside surrounding air. In one particular instance, where two private cars were attached to the same train, one of the cars being glazed with Solex and the other with normal plate glass, the temperature reading indicated a difference better than 10 degrees between the temperature within the cars; this comparative test was run over the route of the Santa Fe Railroad in the summer of 1935. No single thickness of glass of any type should be considered an insulating glass as regards sensible heat, however. In other words, almost as much heat from the surrounding air will be conducted through glass of the Solex type as through any other type of glass, when both glasses are in the shade. When both glasses are in the direct sunlight, the total heat passing through the Solex type will be very materially less than the total heat passing through normal plate glass.

corkboard for ducts

Developed by Armstrong Cork Products Company (Sweet's Catalog File 13/43), Lancaster, Pa.

This new product, known as Armstrong's DI (duct insulation) Corkboard, is intended to meet the requirements of small commercial air conditioning installations. The main problem in such installations is to prevent condensation rather than to conserve refrigeration, hence the new type of corkboard, offered in ½″ thickness in 12″ x 36″ sheets, is said to be sufficient. Where insulation is required to conserve refrigeration, standard corkboard in heavier thickness should be used. DI Corkboard is not affected by moisture; a thin mastic coating on one side strengthens the material, increases its flexibility, seals it against moisture penetration, and provides a finish. It can be erected readily in waterproof cement or asphalt and, because of its light weight, reinforcement with wires or bands is not necessary in many cases. It can be made to conform to sharp curvatures.





Hall of Progress, Great Lakes Exposition

directed indirect lighting

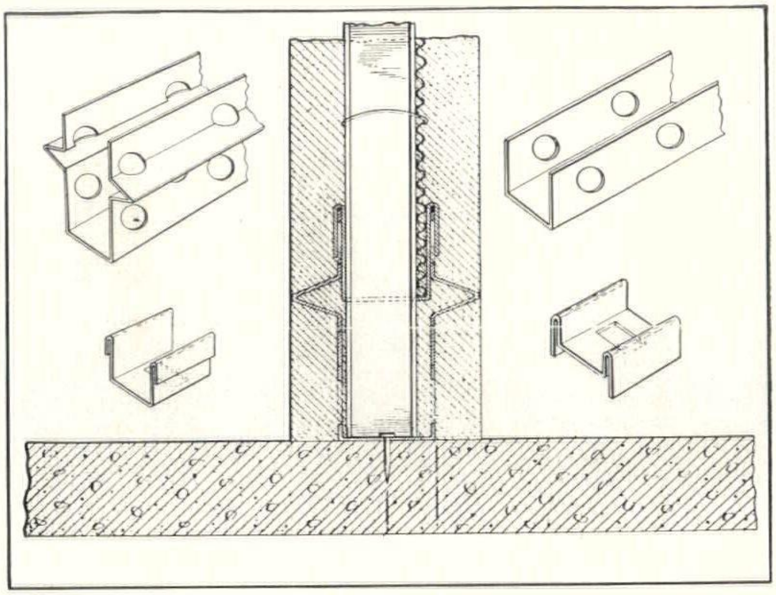
The problem of providing suitable interior illumination for the Great Lakes Exposition buildings in Cleveland called for the development of an inexpensive, efficient system of lighting. Direct lighting is the least costly way to transfer a given amount of light flux to the field of view, but unless proper methods of application are used, the disadvantages of excessive brightness, shadows and reflected glare are likely. In the Cleveland Exposition—as explained in the following report by Frederick C. Winkler, Lighting Division, Westinghouse Electric and Manufacturing Co.—fairly low wattage sources have been used to obtain an intensity of 4 to 6 times more foot-candles of diffused, relatively glareless illumination than has been provided at any previous exposition of this magnitude.

Bowl-silvered lamps and the "port style" reflector offer a combination which may be justly called directed indirect lighting—no direct light is emitted from the lamp, for the illumination comes from a large light-reflecting source of relatively low brightness. The problem is simply a matter of designing a reflector of proper contour to distribute the light lumens from the lamp over the area to be lighted as to product average intensity.

Control of light: To obtain sufficient diffusion and eliminate harsh shadows and still have enough "punch" to project the light down on the working plane efficiently, a diffuse reflector with some specular ability must be employed. The brightness of the "port style" unit can be kept within safe reasonable limits by what is known as area or ray control. This means that for any fixed condition the intrinsic brightness of the unit is a function of its area; in other words, the larger the area of the reflector the lower the brightness. In any given installation the unit can be viewed only from certain angles, and if the direction of light rays is controlled so that very little light is permitted to escape at those angles, the unit from the observer's viewpoint can be kept to a satisfactory brightness. Dense, black, non-luminous shadows are generally due to too small a number of light sources, or to these sources being too small in individual area, or to very dark surroundings; in order to eliminate these harsh shadows, both the number and unit area of the sources are increased and the reflection factor of the surroundings is raised. Reflected glare is mainly a function of the angular relationship of the surface viewed to the light source, and is frequently capable of satisfactory adjustment in the design stage; with the bowl-silved lamp this difficulty is easily overcome by locating the lamp properly in the reflector, using a diffuse reflector instead of specular, or by increasing the reflector area itself.

Installation requirements: "Port style" units must be mounted flush with the ceiling in order to eliminate ceiling shadows. They must also be designed in such a manner that they can be installed easily, quickly and rigidly. In the Exposition buildings, between the roof proper and the ceiling in some sections, a space approximately 9⅞" deep including the ¼" wallboard was available, while in others a depth of 7⅞" was provided. Units using lamps larger than 500 watts would be too deep and smaller than 200 watts would be impractical under these conditions. To eliminate the possibility of lamps freezing or sticking in the sockets, only nickel-plated metal parts may be used. Allowance must also be made for ease of wiring and installations. With these fundamental facts in mind two types of "port style" units were designed—one a 300-500 watt, 18" in diameter by 8 13/16" deep; the other a 150-200 watt, 14" in diameter, by 7¾" deep.

Design of reflectors: The 300-500 watt unit consists of a one-piece reflector spun from .032-inch thick commercially pure etching grade aluminum sheet. The reflecting surface is acid-etched, thereby providing a reflection factor of approximately 86%. A small neck or extension at the top surrounds a special type Mogul skeleton socket, which is held in place by two screws with nuts and lock washers. The position of the socket in the reflector is such as to locate the light center or filament of the lamp at the exact focal point of the reflector. The socket is of the front connected type with large binding head screws and polarized. A knockout for flexible conduit is provided in the extension opposite the socket terminals, so that bending and twisting of wires is eliminated. The reflector together with lamp and socket is held in position by a simple and practical method. For this particular size unit a circular hole 13⅞" in diameter is cut in the ¼" wallboard at the proper location. The complete assembly is then inserted in the opening. Four horseshoe type slots around the periphery of the reflector each ½" wide and 9/32" from the bottom edge are provided in each unit. After insertion of the unit only ten seconds are required to push out the horseshoe slots, thereby locking the reflector tight against



plaster partitions 2 inches thick

the wallboard. While this construction might not be considered suitable for permanent installations, it is satisfactory for temporary work because of its ease of installation and neatness of appearance. The 150-200 watt unit is of the same design as the 300-500 watt, except that a medium socket is used in place of a Mogul, and the diameter height and other dimensions are correspondingly smaller.

Relative efficiency: The over-all efficiency of "port style" reflectors varies considerably, of course, with the type of reflecting media used, shape or contour of reflector and location of the lamp in the reflector. The light center of the lamp in this particular installation is approximately 1" above the bottom edge of the reflector. If the lamp center is located higher in the reflector, the over-all efficiency will decrease; if the lamp center is lowered it will increase. There is, however, a definite point at which to locate the light center not only to insure proper distribution of light but to provide a suitable light cut off; for this reason the lamp was located so that the off angle would be approximately 7° which is quite satisfactory for mounting heights of 16 feet and over and results in an over-all efficiency of 74% to 76% of bare lamp lumens.

Flexibility in use: With this type of lighting more liberties can be taken with color schemes than usual without incurring loss in efficiency. This is due to the fact that the walls and ceilings of interiors are not directly responsible for the resultant illumination levels obtained. Other forms of lighting, such as direct lighting from enclosing globes, semi-indirect lighting, or totally indirect lighting in various forms, require color schemes with high reflecting qualities to insure high levels of illumination. Light from "port style" units is actually directed at the working plane and is effective regardless of its surroundings. This allows the exhibitor greater freedom in his choice of decorations without the necessity of subordinating them to the lighting. It also allows him to place his exhibits in practically any location in his space he desires without fear of dark spots, heavy shadows, or the necessity of additional local lighting.

multi-breaker load center

Simultaneously announced by Westinghouse Electric and Manufacturing Company (Sweet's Catalog File 27/16), East Pittsburgh, and the Square D Company (Sweet's 27/14), Detroit.

A small low-priced multi-breaker load center has been developed as a substitute for the conventional 115/230 volt a-c entrance and branch circuit protective equipment. Hinge-mounted in a cabinet, it consists of one or more small but highly effective automatic circuit breakers grouped in a sealed molded housing and each capable of interrupting 5,000 amperes at 115 volts a-c. It has been possible to make the breakers extremely compact since their design involves only about one-fifth as many parts as usually employed in circuit breakers. The operation of the breakers is similar to that of larger and more costly breakers. The load centers are manufactured with varying number of circuits and circuit ratings to suit all ordinary residential demands. The branch circuit breakers are provided in ratings from 15 to 35 amperes. The first arrangements available will consist of combinations of single and double pole breakers suitable for residential requirements where the service is not above 70 amperes. The first of these combinations is arranged for the so-called new sequence as provided for in the National Electric Code.

renewable fuse plugs

Produced by Perma-Fuse Corporation, Louisville, Ky.

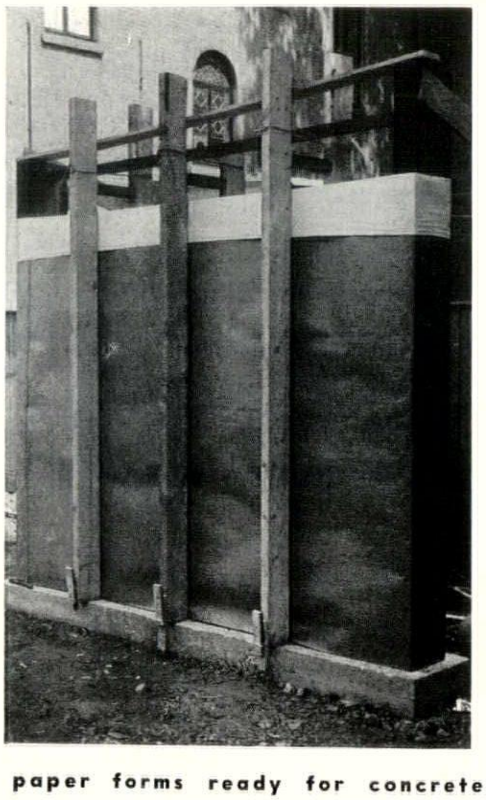
In the Perma-Fuse, mercury is used as the current conductor. When a short circuit or overload occurs, it generates heat which expands the mercury and breaks the circuit. To renew the Perma-Fuse, all that is necessary is to unscrew the plug and swing it, contact end down, like a thermometer. This action returns the mercury to the two contact points within the fuse and it is then ready for reuse.

space-saving plaster partitions

System developed by Penn Metal Company (Sweet's Catalog File 14/11), 40 Central Street, Boston.

A solid wall only 2 inches thick is provided by the Pennmetal Partition. Essentially, it is a two-way steel reinforced vertical slab of plaster. Studs consisting of steel channels anchor the partition to floor and ceiling and reinforce it vertically. The entire slab is reinforced horizontally and diagonally by sheets of metal lath which are securely attached to the studs and function both as plaster base and reinforcement. Consequently the construction acts as a unit to resist physical impact, wind, fire, water, sound and vibration.

WALLS, FLOORS



paper forms ready for concrete

concrete wall forms of paper

In a recent series of tests at McGill University and in a laboratory in New York City, the vacuum concrete process has been extended in application to the construction of walls. This process, invented by Karl P. Billner, engineer, 30 Rockefeller Plaza, New York, was described in the March issue, Technical News and Research, pages 238 and 239.

The vacuum concrete process is based on the combined action of suction and compression. A relative vacuum is created under mats placed inside the forms and sets the atmospheric pressure to work. The undersides of the mats are grooved in order to distribute the vacuum evenly over the whole surface, and are covered with a filter to prevent any removal of cement. The pressure of the atmosphere, amounting to about 1,500 pounds a square foot, squeezes out the excess mixing water and eliminates voids which would otherwise occur. The resulting concrete has a dense no-slump quality, containing about three gallons of water per bag of cement. Consequently, its strength is increased considerably, tests having shown improvements of 50% to 80% above untreated concrete, depending upon the wetness of the original mix. In other words, the process allows enough water to be added to the concrete for easy handling and placing, but leaves ultimately in the forms only water sufficient for proper hydration.

Lighter forms: If the dewatering of the concrete is done successively in strips 2 feet high, there will be maximum fluid concrete pressure on the forms. This fact was demonstrated by employing building paper for forming the inside space of a hollow wall, 2½ feet high and 40 feet long. The paper form bulged about 1″ under the concrete pressure between interior posts spaced 20″ on centers. This paper, costing less than 1 cent a square foot, was left in place; being of a dense asphalted type, it gives added dampproofness to a wall already well insulated by the central hollow space. The use of atmospheric pressure for the elimination of 90% of the strain on the forms makes it possible for the first time to simplify the forms to such an extent that strong waterproof paper can be used. It also permits the elimination of tie wires or bolts through the wall. The vertical spreaders which support the paper forms are tied merely at the top and bottom without having any holes or markings to be pointed up.

Flexible walls: The form used for the outside and inside surfaces of the 40′ wall may be described as a "wrapper." The wall surfaces may be flat or by wider spacing of vertical mat supports can be given a fluted appearance. Window and door frames can be placed in position before pouring the concrete so that the resulting wall will be absolutely watertight and seamless. The outside forms may be removed in less than half an hour after applying the vacuum to the top of the wall. This means that, in the case of standardized houses, the forms can immediately be re-erected for a new unit. It will be feasible to use the forms twice in one eight-hour shift.

Wall finish: The concrete has such a hardness when the forms are removed that thumbprints cannot be made on the surfaces. It is, therefore, possible to treat the surfaces either by troweling colored cement wash or cement finish immediately after the removal of forms.

flooring from brake linings

A new line of floor covering, known as Dee-Gee tile, is announced by Paul Coste, Inc. (Sweet's Catalog File 15/28. 15/37, 15/38), 32 Custom House St., Providence, R. I. This new material comes from the automotive industry where it has been developed and tested for a period of two years. The abrasive resisting qualities of brake lining suggested the idea that a similar compound might be developed to produce a resilient soft type of floor covering.

Dee-Gee tile is a compound containing cork, rubber and other ingredients. Being non-porous, it absorbs no moisture or discoloring fluids. It is not slippery when wet. It is practically noiseless. It is so soft that point loads will naturally dent the material, but such dents disappear entirely after a few hours. Its light weight makes it especially adaptable for such installations as airplanes, railway coaches, buses and trailers; it is estimated that on a ship the size of the Queen Mary, the use of this tile would have saved approximately 100 tons in actual weight of floor covering used.

Installation: Since the tile is die cut, irregular shapes can be produced through the use of special dies. A set of such dies has been made, and 13 pieces of irregular shape, each a little less than one square foot in area, fit together on the floor in a varicolored unit. This unit of 13 pieces is so arranged that it can be repeated again and again to fit any size area. Six soft colors are available at present in both ⅛″ and 3/16″ gauge. Though the material is intended to be laid as a finished floor, it has a surface which may be sanded; if the tile is installed over uneven wood floors, waves and high joints can be sanded with a sanding machine, if necessary, to produce a level floor. It is not easily marked up or scarred by foot traffic.

THE ARCHITECTURAL RECORD

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CONTRIBUTORS

BARTON P. JENKS, JR.

EARL G. VON STORCH

WALLACE K. HARRISON

J. ANDRE FOUILHOUX

LE CORBUSIER

ALFRED ROTH

MARCEL BREUER

EMIL ROTH

BARTON P. JENKS, JR., Supervising Architect for "Westacres" near Pontiac, Michigan. The houses, including one acre of land, sell for $4,400 (pages 253-274). Jenks is a graduate of Harvard and the Ecole des Beaux-Arts.

EARL G. VON STORCH was responsible for the site plan and the design of houses at Westacres (pages 253-274). Formerly instructor in architectural design at University of Virginia. Von Storch was assigned the Michigan project after working with FERA.

WALLACE K. HARRISON, architect for Rockefeller Apartments (pages 302, 303) in association with J. André Fouilhoux.

J. ANDRE FOUILHOUX, architect associated with Wallace K. Harrison as designers of Rockefeller Apartments (pages 302, 303).

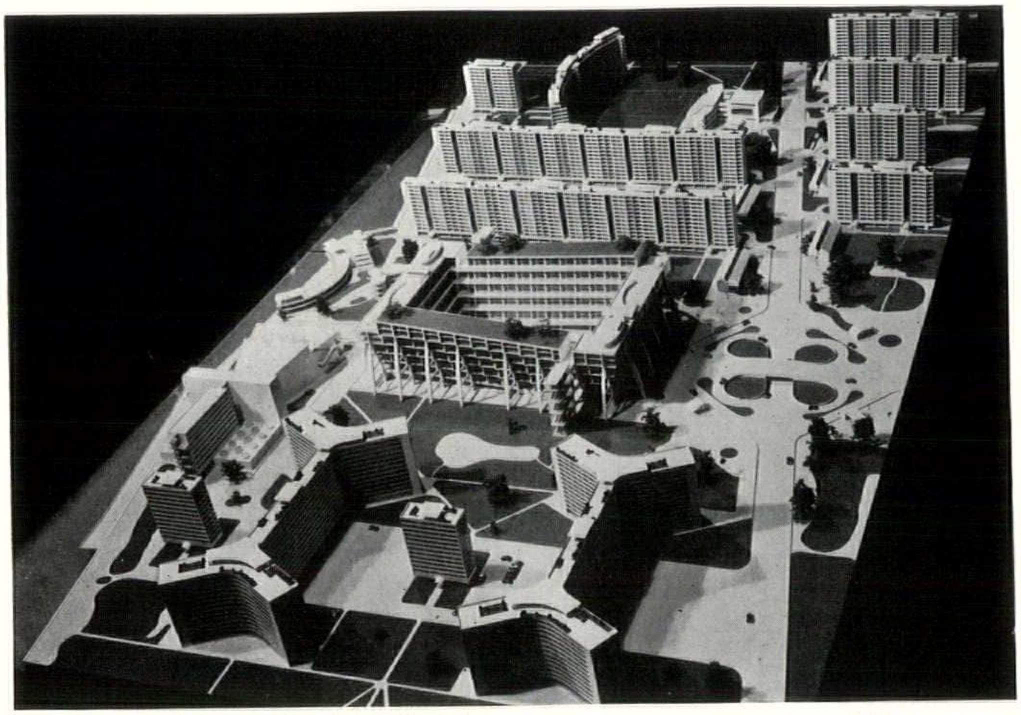
LE CORBUSIER designed apartment house in Paris (page 313).

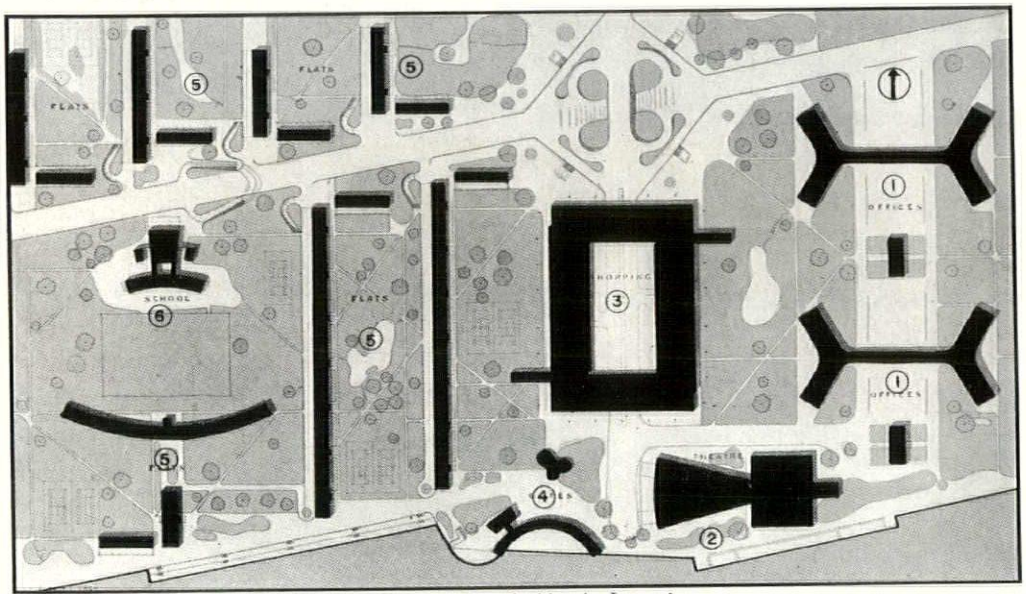
ALFRED ROTH, architect of Zurich who with his cousin, Emil Roth, and Marcel Breuer designed apartment house for "simplified and pleasant living" (pages 287-294).

MARCEL BREUER, architect and famed as furniture designer (pages 287-294, 306).

EMIL ROTH, associated with his cousin, Alfred Roth, and Marcel Breuer in design of apartment group in Zurich (pages 287-294).

NEWS OF THE MONTH





Photographs by Dell and Wainwright, courtesy The Architect's Journal

PLAN

1. *OFFICES AND FACTORIES have light, air and are placed in parked areas; electricity eliminates industrial blight.*

2. *THEATER is accessible to shops, amusements, housing, and seashore.*

3. *SHOPPING CENTER employs novel design to achieve concentration.*

4. *CAFES, RESTAURANTS AND GAMING have a section of their own.*

5. *HOUSING of the multi-story type is set in generous parks and surrounds school and sports field.*

6. *SCHOOL, designed to serve social as well as educational purposes, is surrounded by parks, sports fields and housing.*

TRAFFIC. Congestion is avoided by making under-and-over crossings. At intervals, between the main traffic crossings, secondary subways are provided, to enable cars to double back without holding up fast traffic on the road. In this way no limit is imposed upon speed, but safety is assured, particularly for pedestrians, because paths for walking are separate from ca traffic. All trains are below ground.

PARKING. The housing is carrie on columns; cars are parked on th ground under the housing and garage in underground garages, approache by concrete ramps. Secondary road give access to the flats and offices.

WATERSIDE. The continuou promenade and parkland along the se is free from traffic routes, and is re served for pleasure and sport.

The stilted apartments, seen from the highly-developed ocean front, with their dressing rooms under the promenade.

Residential area with shops and school either side of the east-west thoroughf

BRITISH ARCHITECTS SHAPE FERRO-CONCRETE UTOPIA

When F. R. S. Yorke and Marcel Breuer, British architects, finished this model of an ideal modern town, they achieved something far more than advertising copy for ferro-concrete. Commissioned last spring by the British Cement and Concrete Association to create a project showing the adaptability of concrete to modern demands, they ended up with "the principle rather than the exact arrangement" of the city of tomorrow. While the use of concrete is apparent in the entire model, the elements which chiefly make it notable are (1) the logic of its schematic arrangement, (2) the strength and clarity of its architecture, and (3) the striking competence of the model itself.

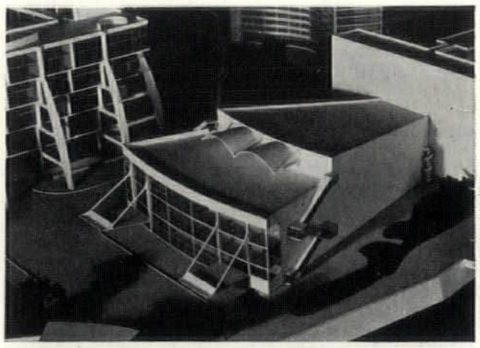
The problem was a common one—to plan a city fit for human habitation; to free it from congestion, "to let sunlight and clean air penetrate freely . . . so that it might become a pleasant and healthy place to work and live in." Messrs. Yorke and Breuer did not view this problem simply as one of placing buildings in a pleasant pattern. The modern city is an increasingly complex organism: they realized they must first of all "define clearly the various functions of the town and make possible their exact organization."

The architects have indicated this segregation of function in the model: the business area extends eastwards into the industrial area—manufacturing and distributive agencies; west of the business area is the central shopping and theater district; beyond this, the apartments, schools and neighborhood stores, with sparser housing as the open country is approached. But because of the theoretic nature of the project and the limitations of the model itself, the architects—"who wished first to demonstrate the interrelation of the several parts of the town"—were forced (1) to make a schematic rather than specific solution and (2) to treat only a typical sector of the town.

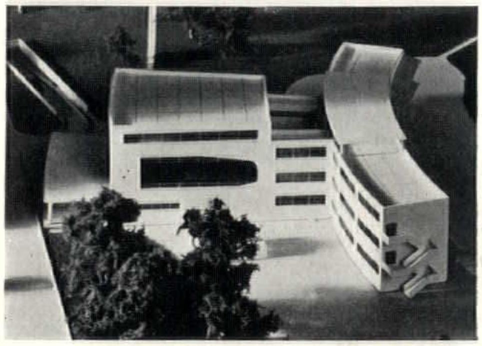
The outstanding characteristic of contemporary life is the trend towards increasing mobility—not only of people, but of things, buildings, cities themselves. Up to a certain point, the Yorke-Breuer study reflects this. Having isolated the various functions of the town, they have organized them by means of a carefully-studied transportation system (though here again the condensed character of the model limited them). Motor and pedestrian traffic is segregated, with local and long-distance motor traffic again subdivided. An elaborate system of underground garages, together with stilted buildings, everywhere provides ready access to motors. The airdrome—indicated as being to the north—is connected to the city by means of an underground railway, while the industrial area is presumably served by rail, sea and motor.

However, the implications of mobility do not stop here; the buildings themselves must increasingly be mobile—demountable with a high salvage ratio. It is here, perhaps, that architects Yorke and Breuer were stopped by the basic limitations of their project—to establish ferro-concrete as the material of tomorrow.

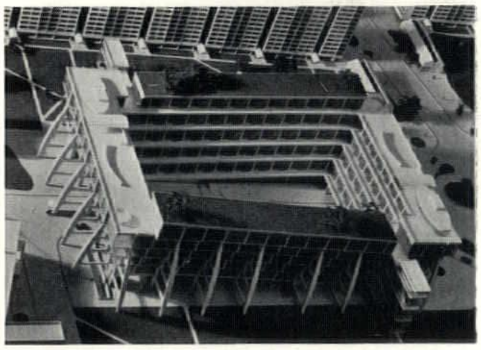
The buildings often achieve a freshness not possible in traditional materials; in some cases—the shopping center for example—an entirely new structural form has been evolved to meet the desired function.



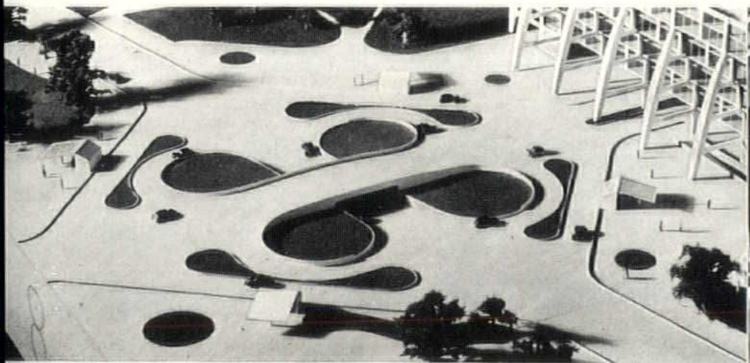
A simple form—lobby, auditorium and stage—the theater overlooks a gay seaside plaza.



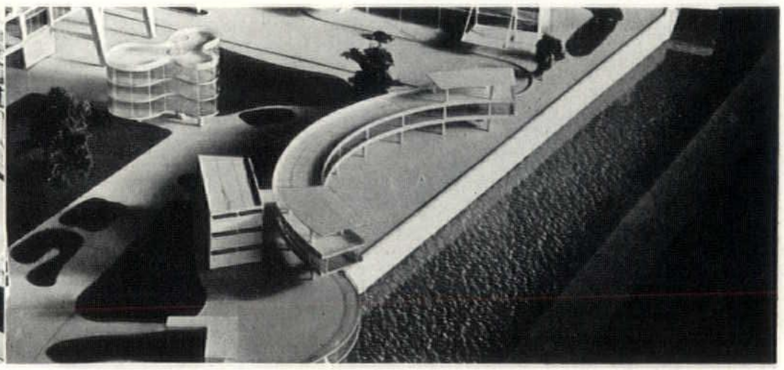
The school centers the residential section, facing sports fields and parks.



The shopping center throws tradition overboard. In plan and elevation a spiral, its courtyard profile steps back for increased light; buttresses carry the corresponding overhang outside.



ncreasingly familiar to Americans is this clover-af intersection at north end of shopping center.



Facing the theater and the sea is this delightful group of restaurants, dance places, and cafés.

NEWS OF THE MONTH

FAIRS: COUNTRY TOWN IN SWEDEN SHOWS THE WORLD

With "Leisure" as its theme, ancient Ystad rings the bell.

In a little provincial town dating from the Middle Ages was staged this summer an exposition whose content and general high level of competence would shame the great cities of the world. Fairs must have a reason, said the Ystad people when they first talked of having one. So the Ystad city fathers allied themselves with the *Svenska Slöjdföreningen*—a national council of sports, hobby, arts and crafts clubs—who had a theme which was basic indeed: *the proper uses of leisure.*

This council, through its president, Gregor Paulsson, well-known Swedish writer, furnished the basic theme; Ystad gave up its town park; and a Fair Committee, with Hans Westman as supervising architect, was set up to execute the plans.

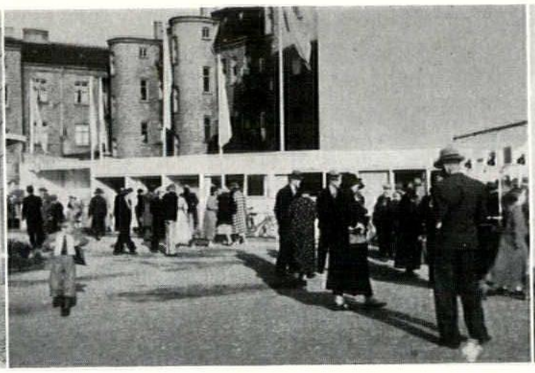
Before any planning was begun, however, the subject was first carefully analyzed. Was *fritiden*—leisure time—a valid social theme for a fair? Certainly, said Mr. Paulsson; it was indeed "the very life condition of democracy. As the English sociologist Bradford said, people who are too tired to think, read, or discuss a problem with sustained interest, necessarily turn to the cheap substitutes for these things. They become easy victims for suggestions and emotional influences, surrendering unconditionally to the demagogues, the war promoters, and the sensational press. A democratic government presupposes intelligent, cultured people as voters, and human beings can only develop their intelligence and become cultured if they have the means, security, and the time."

Gotthard Johansson, editor and head of the Fair Committee, seconded Paulsson. "It can never be unimportant how people spend one-third of their lives. . . . Leisure time has become a social problem because society cannot be indifferent as to how its members spend it." This interest takes different forms according to the structure of the State. In fascist countries "leisure time is considered as belonging to the State and is expressed by such organizations as the Italian *Dapo Lovoro* and the German *Kraft durch Freude*." But a democracy conceives of *leisure time as free time:* citizens may use it as they will but democracy must promote those uses of leisure time which are "valuable to the individual and, in the final analysis, also valuable to society."

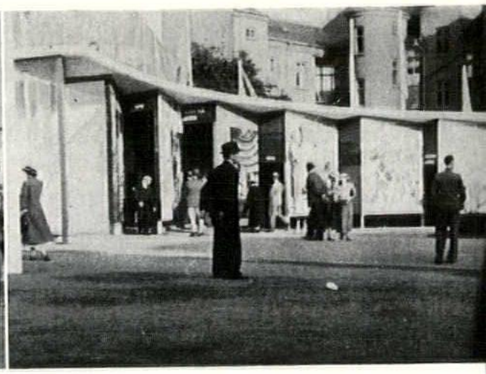
Fritiden, then, was valid as a theme: but was it a sound commercial venture? Of course, said Mr. Johansson, pointing out that "the automobile industry in America was primarily a leisure-time industry, as were the movies and the radio." Furthermore, it was possible to analyze leisure time by types of employment — industrial, professional, agricultural, housekeeping — as well as by the day, week, year and the life span itself: to discover and catalogue the means that each employed: to attract commercial interests in each of these fields.*

* All exhibition material was contributed by the manufacturers but the exhibits were designed and executed by the architectural staff as part of the general plan.

No dramatics at the entrance; you go through a plain wire fence . . .

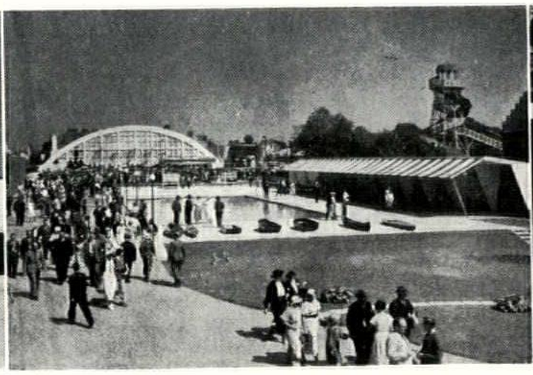


and find Fair Office, Information and Check Rooms neatly housed at your right.

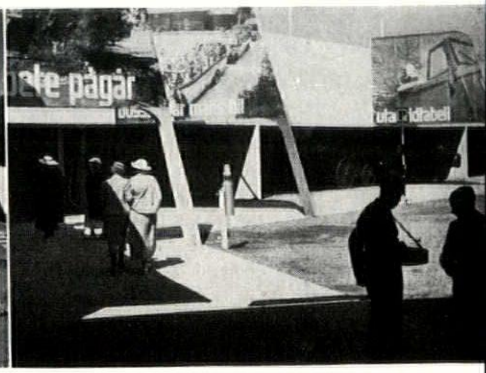


Impedimenta aside, you can study the "State ment of the Problem" in brilliant photomontage

The Press, one sheet for each paper, clamors for your attention in 2-story editions.



Beyond, the main vista opens: pool and water sports center, with wood-arched café beyond.



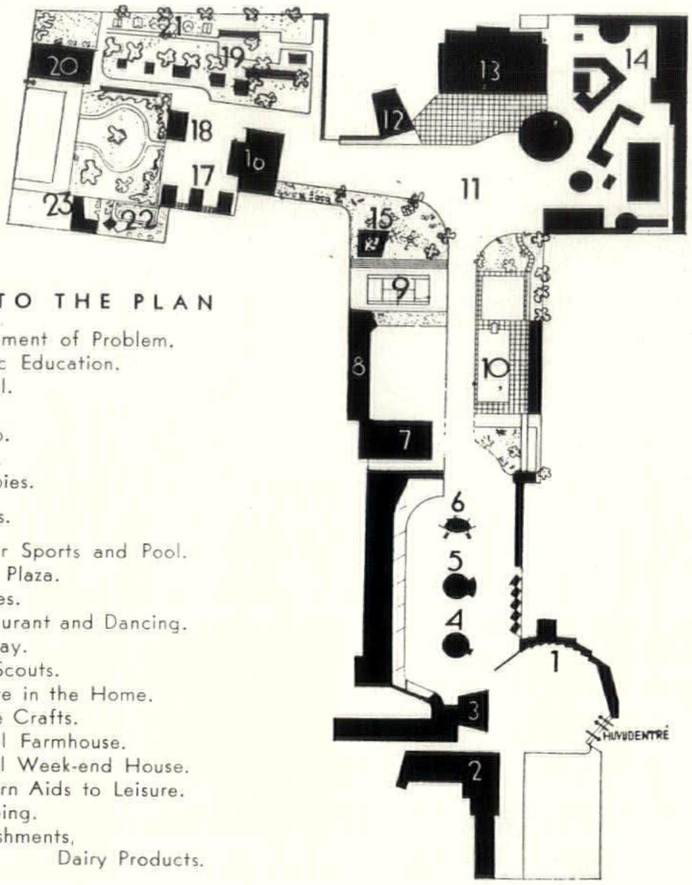
But meanwhile, on your left, the travel exhibi Here, exposition design touches a new hig

Integration was the controlling factor in this plan—it must be so organized as to permit the visitor to grasp its message without confusion, haste or weariness. But the architect Hans Westman was faced with the necessity of adapting the directors' theoretic plan to the actual limitations of an irregular market square in a medieval village.

Low, simple and compact, the entire project is in scale: and it has a unity of appearance which comes only from centralized design. The plan permits an orderly and easy flow of traffic—the entire fair may be covered without effort in a day. At the same time, there is a concentration of informative material which makes each exhibit worthy of detailed study.

The buildings are as they should be—bright (there is a wide use of color), newsy and ephemeral. They are distinguished by their confident use of synthetic materials—plastics, metal alloys, glass and cloth—and by their use of photomontage, which here becomes an integral part of exterior design.

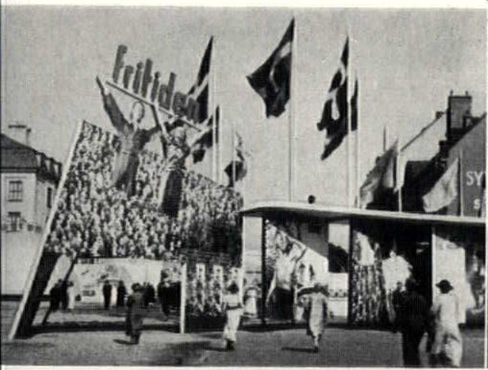
There is no pretense anywhere: this is clearest in the "Midway," an Alice-in-Wonderland affair of distorted perspective and painted wallboard. They were built for one summer's pleasure and instruction and in every line they show it.



KEY TO THE PLAN

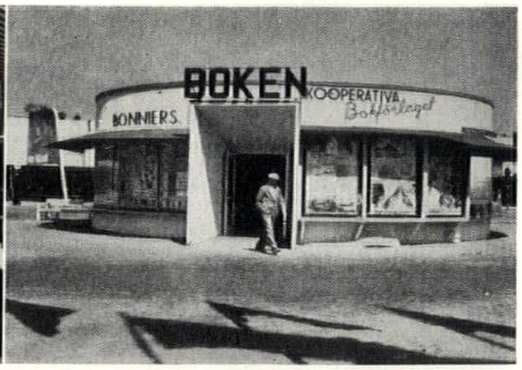
1. Statement of Problem.
2. Public Education.
3. Travel.
4. Book.
5. Radio.
6. Press.
7. Hobbies.
8. } Sports.
9. }
10. Water Sports and Pool.
11. Main Plaza.
12. Movies.
13. Restaurant and Dancing.
14. Midway.
15. Boy Scouts.
16. Leisure in the Home.
17. Home Crafts.
18. Model Farmhouse.
19. Model Week-end House.
20. Modern Aids to Leisure.
21. Camping.
22. } Refreshments,
23. } Dairy Products.

Photographs by Voltelen and "Form"



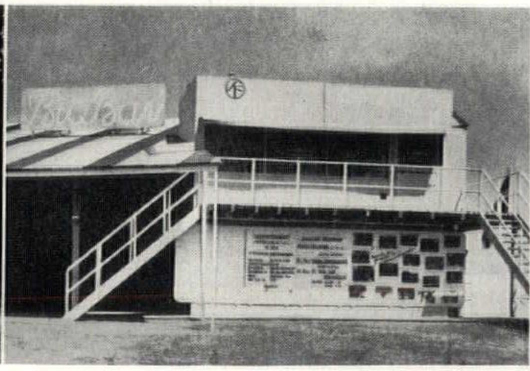
he arch is what it seems—wallboard, photo-raphs and varnish.

Little shops—well-designed, standardized—carry souvenirs such as you never see in U. S. A.

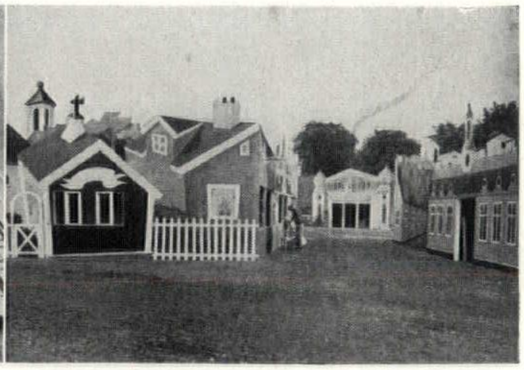


One of the famous Cooperatives displays books for leisure time; beyond it, the radio.

is week-end house is only one of a series in e wooded Housing Section, at extreme left.



Ubiquitous news reels are housed in a prefabricated structure next to the café . . .



while a midway, such as American villages never dreamed of, bids for your "Fritiden."

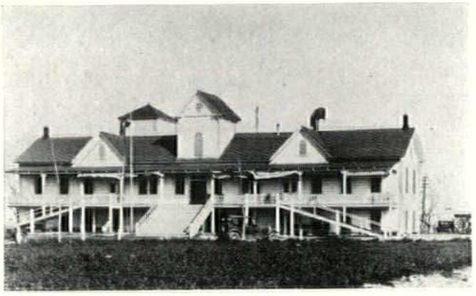
Spear aloft, Italia plays host . . . .

Photo by Crimella-Milano

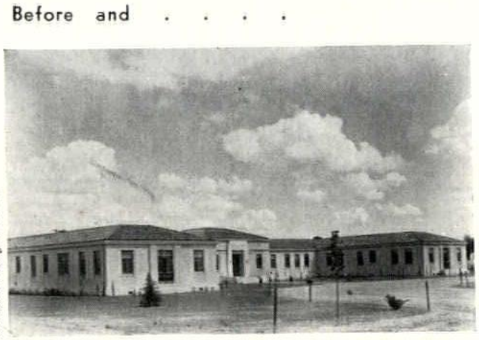
. . . . to exhibit of peacetime arts.

ARCHITETTURA FASCISTI

Two views of the exhibition rooms of the recently-closed International Exposition of Decorative Arts, Industrial Design and Architecture. The Exposition, which was "endorsed by Mussolini himself," made a wide use of photography, glass and plastics. Most of the countries of the world were represented in the architectural section (shown above) where hundreds of recent buildings were shown in photo murals.



Before and . . . .



Photos courtesy PWA

. . . . . . After PWA

ENOUGH TO MAKE ANY ONE SICK

For 43 years this Victorian firetrap served as a hospital in Madera County, California. The new 42-bed structure, made possible by a PWA grant, recently replaced it.

ANONYMOUS COMPLAINT

Mild as they were, New York City's tenement house laws have never been welcomed by the city's landlords. But a new law effective January 1, 1937 goes much further than its predecessors in establishing minimum requirements in all multi-family dwellings, involving such structural features as metal stairs, fire-resisting stair halls, modern fire escapes, etc. Although causing a large increase in modernization work on the one hand, it also finds many small landlords unable to meet the expenditures required. And the plight of the latter is eloquently—though ungrammatically—expressed in the following letter to *Real Estate Record*:

"Dear Sir:

"Its a shame how the poor Landlord is continually pestet and submit from this Ten. Dep., since 1901 they molest the Owners at the same houses, and we pay Taxes for that. This odious Dep. should be removed, it has so Impudent Pull, If it is true, to compel the tenants to move out, even if they satisfied to reside, whit the pretence, the house is not situate to live (Condemn) if the Owner can not afford the work what this Dep. compel to do, steel the peoples property after it was hard it to earn, this is the dirtyest trick since existence of this Dep. and the city renounce rather the Taxes, and let the rabble to destroy the property, what? The Mortgage, real estates Companys has no obyection to go against this Dep. Nobody kan force the tenants to reside, and if the house is empty, the Owner has the damage, if it comes to go against, I be very glade, I pay the Taxes, Int. eetc. 36 years and make my living whit that house, if they throw me out of my property they don't support me.

"Respectfully
"One Poor Landlord.

"I desire to see this artikel in some newspaper."

FINDS HOUSING PROJECTS MOST "MODERN"

PWA and RA housing projects, says Lewis Mumford, are the only Government operations which show "even a glimmer" of modern design. Mr. Mumford "was surprised at the large number of sensible, straightforward designs and at the generally high level of the work."

F.A.E.C.T. INTO A.F. OF L.

Aristocratic Newport was last month the scene of negotiations between A. F. of L.'s long-established International Federation of Technical Engineers and the Federation of Architects, Engineers, Chemists and Technicians. An agreement of unity was reached, whereby all F.A.E.C.T. chapters will be accepted and granted charters as locals of the A. F. of L. The agreement was made possible by a decision at F.A.E.C.T.'s national convention last April to negotiate for affiliation. The agreement will be placed before the membership in a referendum.

NEW TALENT SOUGHT BY FAIR BOARD

To achieve "an imaginative and festive quality" in its buildings, New York's 1939 World's Fair last month announced a competition for one of the Fair buildings. Although Grover Whalen, president of the Fair Corporation, announced that the purpose of the contest was "to discover valuable, latent talent . . . particularly among the younger and unknown architects," the program limit all entrants to registered architects with offices or residence in the New York metropolitan area. A first prize of $1,000 plus contract for one building; second prize of $750; third prize of $500; and twenty honorary mentions of $100 each will be awarded.

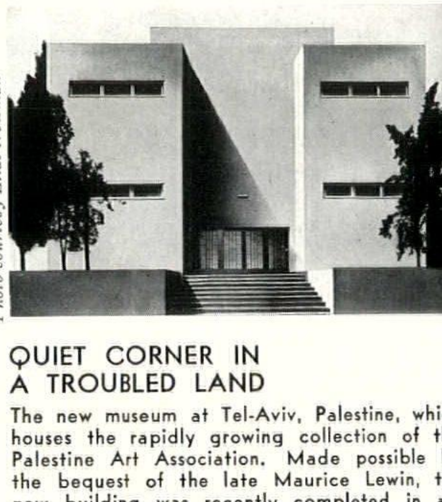


Photo courtesy Elias Newman

QUIET CORNER IN A TROUBLED LAND

The new museum at Tel-Aviv, Palestine, whi[ch] houses the rapidly growing collection of t[he] Palestine Art Association. Made possible [by] the bequest of the late Maurice Lewin, t[he] new building was recently completed in a[ll] Jewish Tel-Aviv, suburb of the ancient port c[ity] of Jaffa. The museum has recently acquired [an] American collection, work of six America[n] Jewish artists; and Elias Newman, represent[a]tive of the Museum, is now touring this count[ry] on behalf of the American Friends of Tel-A[viv] Museum Society.

PICTURES CAN'T LIE BUT LIARS CAN PICTURE

A widely circulated photo of lean cows grazing before Holabird and Root's new North Dakota Capitol met the charge that the picture was faked. But investigation forced the *Fargo* (N.D.) *Forum* to admit that "the picture of these cows was not, as the *Forum* believed and said when it first branded this shot as a faked picture of the drought, superimposed on a picture of the Capitol itself. It is an honest picture."

FLAT ROOFS TRIUMPH IN CANADA

Recently closed was the Ontario Government's small house competition. Open only to Ontario architects, the contest aimed at securing the best minimal solutions for a family of 5 and one of 8. Prizes were small and the use of the plans undisclosed but, exults *Architect and Building News*, "all six of the prize-winning designs have flat roofs."

T. E. LAWRENCE: SOLDIER AND ARCHITECT

Somewhere on the outskirts of Oxford, a Nonconformist church is embellished with the carvings of T. E. Lawrence, that enigmatic figure who gallantly conquered the Arabs for British imperialism only to die on a motor cycle in an English lane. Lawrence's deep interest in architecture—especially medieval architecture—was more than a romantic whim; according to a recent biography by Vyvyan Richards, Lawrence was an admirer of the ideology of William Morris and a craftsman of the first water. While on one of his expeditions in Syria, his need of a European bathroom led him to build one; "he melted soft Roman glass, and constructed a luxurious bath with continuous walls, floor and ceiling from this ductile material."

HURRICANE-PROOF SHELTERS FOR FLORIDA WORKERS

Work on concrete shelters is being pushed in South Florida and the Keys that the disaster of last September—in which scores of lives were lost in the construction camps of the Florida Canal—will not be repeated. All public buildings receiving Federal loans or grants will be of reinforced concrete of stormproof design: they will serve as community shelters in an emergency.

PROGRESS OR REACTION AT PARIS NEXT YEAR?

Photo by Baranger

Wide World Photo

All that's chromium is not modern; and before it's over the 1937 Paris Exposition may well be the gravestone of that school of functional design which, for over a decade, has been the rallying point of the French architects. Louis Cheronnet, editor of "Art et Decoration," watches the technical reaction evidenced in the developing Exposition with unconcealed alarm. "The machine," says he editorially, "has never yet damaged the human spirit." On the contrary, by a proper use of it, "modern man faces a future in which the most practical kind of comfort will be combined with unostentatious luxury."

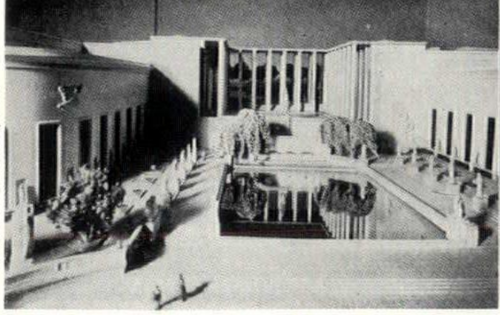
The school of reactionary designers (calling themselves Neo-Humanists) threatens the progress already made in architecture, M. Cheronnet charges. "Under cover of maintaining certain traditions—a return to humanity—they propose a reversion to a decorative morphology . . . which the rationalists many years ago disavowed." Theirs is "the art of the scenery designer, which by a choice of suggestive details and a diabolical mise-en-place" strives for dramatic effect. What place has this philosophy got in a modern industrial world, queries M. Cheronnet. How can an exposition designed by such men be expected to reflect the forces of progress? All functionalists—architects and designers—must unite to prevent technical reaction, he concludes.

From the air, the Paris Fair forms a giant cross. . . .

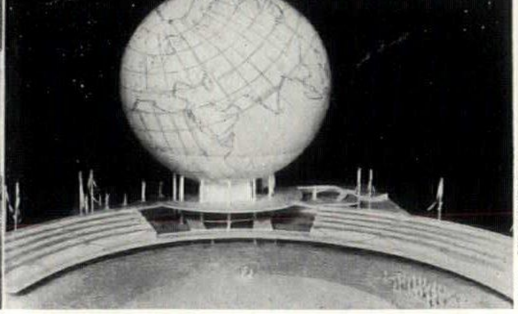
Photo by Baranger

at one end of which is the remodeled Trocadero, in its "moderne" dress.

American Magazine of Art



The Museum of Modern Art is not "modern at all, but neo-humanist."

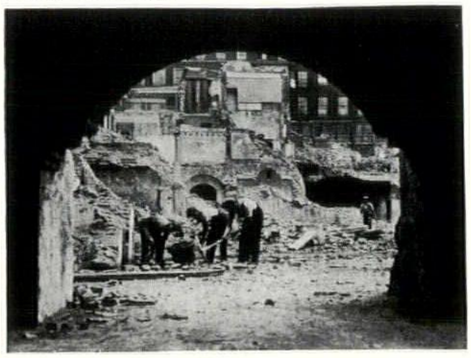


Wide World Photo

Auxiliary feature of the Fair is this stadium topped by a huge hollow globe.

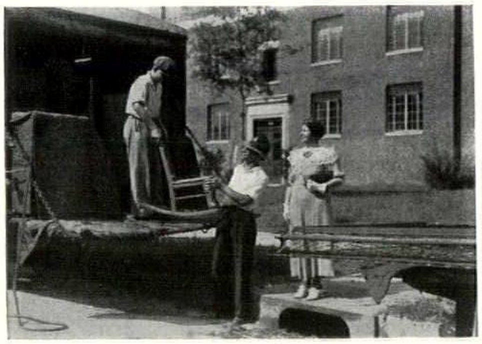
NEWS OF THE MONTH

©Wide World Photo



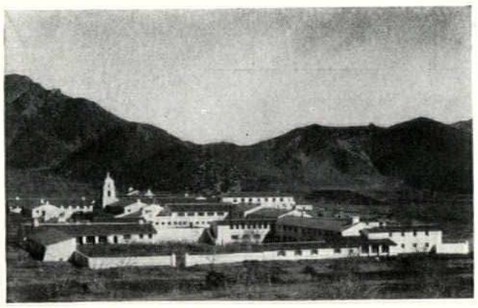
BENEATH THESE ARCHES LIES A ROMAN ROAD

In demolishing the famous Adelphi Arches, backwater of London's last Bohemians, the traces of an ancient Roman Road were uncovered. The Arches, being razed to make way for a modern skyscraper, were the original of Dickens' "Thieves' Kitchens." This portion will be preserved. Aside from rats, over 700,000 bottles of wine were made homeless by the razing: they have been skillfully removed to other storage places.



MRS. STEELE MOVES IN

One of the 604 families who rushed in when PWA's Techwood Housing Project threw open its doors in Atlanta last month. First government-owned housing ever to be constructed in U. S. A., Techwood offers low-income families a three-room apartment for $23.47 including utilities. Qualifications as careful as any club prevent persons with high incomes getting in.



FOR INSANE CALIFORNIANS

Recently opened in Camarillo, California, was this magnificent first unit of the state's new institution for the insane. Already housing 1,000 patients, the plant will later be expanded to a 6,000 capacity. Departing from the grim tradition of the past, the new hospital will besides vegetables, dairy products, etc., provide wholesome rural environment for its inmates.

DEAN LAWRENCE'S ADDENDA TO OREGON COMPETITION

In recent discussions of the Oregon State Capitol Competition, criticisms of the winning design, the Jury, and Mr. Thomas' reports have been made. It would be more constructive and sporting to confine our efforts to the improvement of the Institute Code of Competitions and let what has been done rest in peace and good will, excepting as necessary in facing the facts of the case, that lessons may be learned from it.

Presumably all competitors entered the competition fully aware of the weaknesses of the program and the dangers of a nonprofessional Jury. As such juries go, this was well selected—one juryman being a bank president, a graduate of M.I.T. in architectural engineering and a former professional architect; another a prominent contractor accustomed to reading plans; and the third a lady of recognized taste.

It was the program itself which was at fault; and as it was based on the Code, an impersonal and frank consideration of its weaknesses should be helpful. The August number of The Architectural Record, in the article on the competition, quoted a correspondent—"He (the architectural adviser) wrote a good, clean program and it was approved by the Institute sub-committee." There has been no suspicion of dishonesty or crookedness on the part of the Commission, Adviser or Jury, but the sub-committee of the Institute approved only *a part of the program.* This should have been stated in the program. Competitors, as well as your correspondent, were misled by the failure to do this. The writer does not believe any Institute Sub-committee on Competitions, or the National Committee, would approve a program in which the winner is not guaranteed adequate compensation.

The Secretary of the Institute and the Oregon Chapter, the writer understands, were notified by the sub-committee the extent of their approval. It would be of value to know just what part of the program this committee saw, and if the National Committee would have approved the program as written.

The writer has participated in several competitions, as competitor, adviser and juryman. From these experiences, he suggests the following changes in the Code to improve competitions. By them he believes the interests of the Owner as well as the competitor would be better protected, and architecture be improved.

1. The Institute Sub-committee on Competitions, in cases of local competitions, and the A.I.A. National Sub-committee on Competitions in cases of national competitions, should approve the selection of the Architectural Adviser and the Jury, as well as the program in toto, not in part.
   These committees of the Institute should be given larger responsibilities and duties. They are, in many cases, the only spokesmen the competitors have. Before deciding to enter the competition, competitors should have full assurance that approval by these committees cover all contractual relations, type of program, adviser and jury. If this cannot be given—better not have a competition. In the Oregon case, the competitors had no voice in selection of the Jury.
2. The purpose and justification of a competition should be to secure a distinguished solution. Mere selection of an architect could best be accomplished by direct selection. The Institute Committees should be instructed in the Code not to approve a program based on a preconceived solution, for the competitors should be given freedom to create as they desire.
   In the Oregon case, the mandatory north frontage of the building and the assumption that only property to the north could be acquired in the future robbed the State of an opportunity to secure many solutions which might have more wisely used the property.
   Incidentally, if any legal difficulty arises in this Oregon project, it will probably center around these two mandatory and needless restrictions, for the Legislature authorized a building for the present site only. This is cited to strengthen the case against needless restrictions. They may be dangerous legally, as well as detrimental to brilliant design.
3. The winner of a competition should, of course, be guaranteed adequate compensation, even though it may be necessary to allow the Owner to supplant him. This is certainly implied in the present Code. The Code should insist on this point, if it does not already do so.
4. The duties of the Adviser should be more clearly stated in the Competition Code. In open competitions, the writer believes he should not pass upon qualifications of competitors, or advise in selection of associates. To do either jeopardizes confidence in his impartiality. It was for such a reason that the Adviser, a few years ago was barred from acting on the Jury.
5. The majority of the Jury should be architects. Without this, let us have no mor

approved competitions.

When a profession gives a present of its collective services, as it does in such competitions as the Oregon case, it deserves at least a trained and competent jury to select the most "distinguished solution."

What would the State of Oregon have paid for the services of these 123 competitors, had it gone out to purchase that service? It is a case of the good old American habit of getting something for nothing. The architects fall for it because they love the challenge of solving problems, and the public laughs at them for doing it.

First—the rules of the game must be broad enough and sound enough to insure getting the best from each competitor.

Second—The umpire who interprets the rules must be fair and competent.

Third—the Judges **must be experts:** if they are not, in spite of good rules and umpires, the contest is a failure—the competitors giving all they have are rebuffed and the sport falls into disrepute.

6. The personnel of the Jury should be made known in the program. Only with such knowledge is the competitor able to decide intelligently whether or not he should enter. A designer of the modern school would save his labor if the Jury was made up from the academic or conservative group. Did not the B.A.I.D. decide some years ago to have two juries—one for the "modern" and one for the "academic"?

   Of course, if we class ourselves with the boxing fraternity, where the referee is announced at the ringside to avoid fixing and murder—then we have little to sustain our plea for an announcement of the Jury in the program. By keeping the identity of the Jury secret, it appears we either do not trust their integrity, or fear the competitors will be unduly influenced—a reflection on both—is it not?

   Tendencies in architectural design today are reflected in two antagonistic camps, and so knowledge of the jury should be one of the determining factors in the choice of entering a competition.

   Most of the designs in the Oregon competition were in the modern manner. As one of the Jury remarked—"It looked as though we were in Russia." For these designers, no matter how sound their "parti" —the mask or outward expression precluded their winning with such a lay jury—fine and upright as it was.

7. All designs should be shown to the public and the competitors given a full report by the Jury. The refusal to show the Oregon designs in public exhibition, or in the press, left a very bad impression which could easily have been avoided.

ELLIS F. LAWRENCE, Dean,
School of Architecture, University of Oregon.

Wide World Photo

Sir Raymond Unwin

UNWIN AT COLUMBIA

Filling the vacancy left in the Town Planning Studio by the death of Henry Wright, Sir Raymond Unwin last month began a half-year term of lectures. Sir Raymond, dean of English town-planners and coiner of the phrase, "No need for over-crowding," is well known in this country, which he toured in 1934 while making a survey of American housing.

LEO FRIEDLANDER TO N. Y. U.

Well known for past performance is sculptor Leo Friedlander, new head of the Department of Sculpture at New York University's School of Architecture and Allied Arts. Mr. Friedlander, believes "that, with our present-day new order of things in architecture, we are sadly in need of ways and means for decorating our new buildings." Rigid, isolated or academic methods will be avoided in the new classes, which began last month.

NEW PARTNERSHIP

Architect & Building News

Walter Gropius **E. M. Fry**

Recently announced was a new partnership between Professor Walter Gropius, famous head of the now extinct "Bauhaus" in Germany, and the young English architect E. Maxwell Fry. Now in self-imposed exile from Nazi Germany, Prof. Gropius has done several jobs in Europe and the Soviet Union: he is now living in England. Mr. Fry is an active English architect.

CALENDAR OF EXHIBITIONS AND EVENTS

- **October 1**—Opening, New York University lecture courses; Metropolitan Museum of Art, Morgan Library, Frick Art Library, New York City
- **October 1–2**—Sixth Annual Meeting of Porcelain Enamel Institute, Hotel Statler, Cleveland, Ohio
- **October 9**—Closing date, New York World's Fair architectural competition, New York City
- **October 19–23**—Eighteenth Annual Convention, American Society for Metals; Seventeenth Annual Meeting, American Welding Society, Cleveland, Ohio
- **October 21–23**—Fourteenth Annual Convention, American Institute of Steel Construction, White Sulphur Springs, W. Va.
- **November 18–20**—Thirty-seventh Annual Convention, International Acetylene Association, St. Louis, Mo.
- **November 30 – December 4** — American Society of Mechanical Engineers Annual Meeting, New York City
- **November 30 – December 5** — Twelfth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City

Wide World Photo

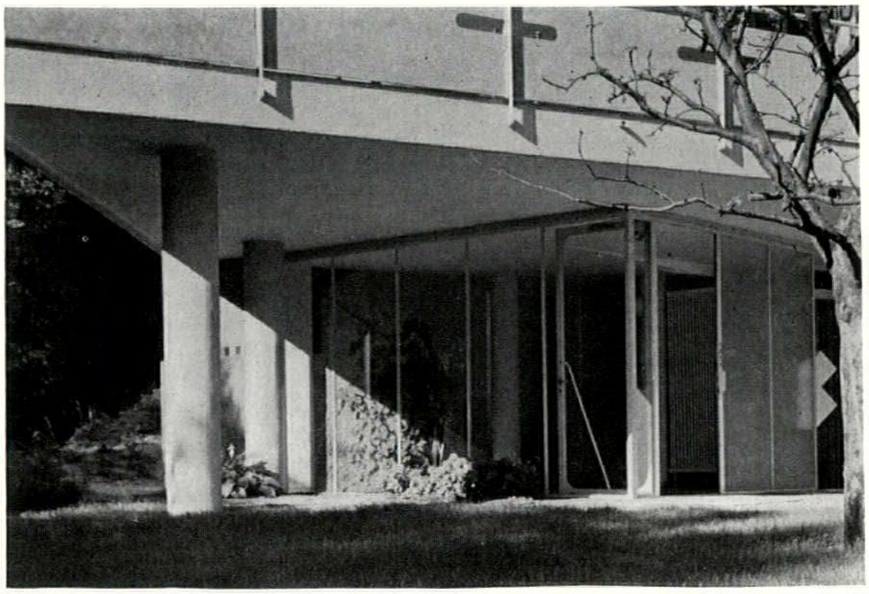
CITY PLANNING WHERE MEN ARE MEN

When 200 families from the Middle West last year invaded this quiet Alaskan valley, they found a wilderness. Today they are well on their way towards a self-sustaining community, with "the sturdier and more aggressive type" already off the relief rolls. The photograph, by Father Hubbard, the Alaskan explorer, shows a tent village at Palmer Center.

ROTUNDA TOO SMALL FOR VIRGINIA TOMES

When he died in 1826, Thomas Jefferson left behind him a partially completed University of Virginia. His largest architectural commission was centered by the rotunda-topped library. Some years ago the structure burned and was rebuilt. The new library, which conforms to Mr. Jefferson's enthusiasm for Palladio, will supplement it.

Photo Finsler



APARTMENT HOUSE LOBBY

ALFRED AND EMIL ROTH,
MARCEL BREUER,
ARCHITECTS

(See pages 287–294)

WESTACRES

A PRACTICAL DEMONSTRATION OF PRODUCING HOUSES TO SELL UNDER $4,500 (ONE ACRE OF LAND INCLUDED)

STATEMENT OF FACTS

A development of 150 homes built by Oakland Housing, Inc., nine miles west of Pontiac, from a fund of $850,000 consisting of a gift of $550,000 by Senator James Couzens and a grant of $300,000 by the Federal Emergency Relief Administration. The capital return from the sale of homes to be placed in a revolving fund to expand the present project, or to build similar projects.

Total acreage owned by the Corporation—874 acres
Total acreage in homestead development—295 acres
Total cost of homestead development—$665,916
Total cost per unit—$4,439.44
Construction started September 13, 1935
150 houses closed in December 20, 1935
150 houses ready for occupancy March 15, 1936
Houses occupied by August 1, 1936—100
Average income per family of 100 families—$1,649.04
Average age of heads of family—31
Project Manager and Supervising Architect—Barton P. Jenks, Jr.
Site Plan and Architectural Work—E. G. von Storch and R. O. Cuppy
Construction Engineer—R. C. Perkins
Landscape Architect—E. Genevieve Gillette
Heating Engineer—Newell J. Hill

HOMESTEAD COSTS (Average)

		TOTAL	UNIT	TOTAL
I. HOUSE CONSTRUCTION:				
Material	$298,716.00		$1,991.44	
Labor	177,486.00		1,183.24	
Construction overhead	45,420.00	$521,622.00	302.80	$3,477.48
II. LAND AND IMPROVEMENT:				
Landscape and soil improvement	34,558.50		230.39	
Water mains	21,564.00		143.76	
Roads and streets	22,917.00		152.78	
Land	29,145.00		194.30	
Septic tanks and drains	12,160.50	120,345.00	81.07	802.30
III. OVERHEAD APPLICABLE TO ITEMS I AND II:				
Engineering and architectural services	5,620.50		37.47	
Original survey	3,006.00		20.04	
General administrative expense	15,322.50	23,949.00	102.15	159.66
TOTAL COST		$665,916.00		$4,439.44

Photographs by F. S. Lincoln

CONSTRUCTION OVERHEAD

	SALARIES AND WAGES	OTHER	TOTAL
Engineering	$7,001.76	$1,415.01	$8,416.77
General clean-up	1,383.63	456.81	1,840.44
Material handling	7,218.49	2,403.66	9,622.15
Original survey		1,447.47	1,447.47
Clerical	1,911.53		1,911.53
General expense	582.83	6,945.35	7,528.18
Temporary heat	4,022.30	7,988.34	12,010.64
Insurance		1,719.29	1,719.29
Maintenance	480.10	443.43	923.53
TOTAL	$22,600.64	$22,819.36	$45,420.00

AIMS AND OBJECTS

When Senator James Couzens and the Federal Emergency Relief Administration made their contributions to the Oakland Housing, Inc., their gifts were made with the purpose of finding out whether it was possible for a nonprofit organization to build homes that could be bought and paid for by the average industrial worker and, also, whether such a nonprofit organization by various means could spread the purchasing power of the *average wage* so as to bridge the gap between the inadequate standard of living that the average wage now affords, and an adequate standard of living.

METHOD OF ACCOMPLISHMENT

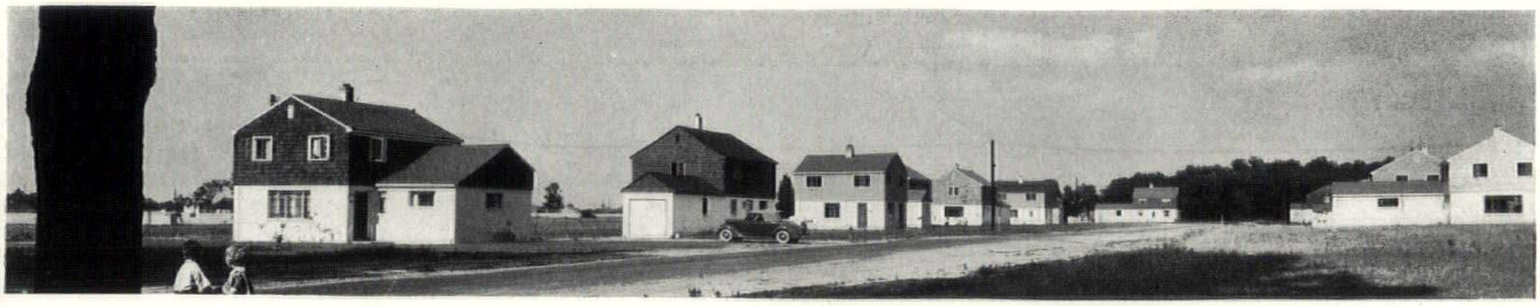
So far Oakland Housing, Inc., has attained its first objective of providing homes within the means of the average industrial worker. It has partially attained its second objective by providing gardens which can be used to supplement an inadequate income due to seasonal unemployment or actual low wages. It has accomplished these results by two major methods; *first*, by carefully determining in advance the monthly amount the average industrial worker can pay for shelter without endangering his other budgetary needs, *then*, by capitalizing this monthly amount on the basis of a long-term contract at a low rate of interest, thus fixing the maximum debt that the worker can incur for his home.

To determine the monthly amount the average industrial worker could pay for shelter it was necessary to know his wage. Investigation of the wages paid in the three big plants of Pontiac which employ approximately 80% of the labor disclosed that the average wage for the years 1934-1935 was $1,200 for one plant and $1,600 for the other two. Incidentally, it might be said here that the 1936 figures are slightly higher for all three plants.

Knowing the average wage it was then possible to make budgetary studies, thus determining the monthly amount of the workers' income that could be allotted for shelter. In making these studies the $1,200 figure was used to which $100 was added representing the amount that the garden might provide in the way of food that would otherwise represent a cash outlay. Studies were made not on the basis of a relief budget but on the basis of $1,300 for the statistical family of four. Prices used were those established by the Good Housekeeping Association of Detroit, for the spring of 1935. These figures were corrected to conform to local conditions in Pontiac, and detailed figures were established for food, clothing, medical care, etc., a summary of which will be found later in this article.

When all the budgetary needs of the family were established with the exception of the cost of shelter, it was found that a small residue was left over. This residue represented what the family could pay for shelter. By capitalizing this residue according to the previously decided long-term contract of 30 years and at a 3% interest rate, a further figure was established representing the maximum indebtedness that the family could incur for a home without endangering other budgetary needs.

The actual monthly figure that the budget studies revealed could be spent for shelter was $19.42. Simple calculations demonstrated that such a monthly payment would amortize a capital investment of $4,600 at 3% within 30 years. Therefore, it was clear that were Oakland Housing, Inc., to build



homes that the average industrial worker could pay for, the total cost of such a home could not exceed $4,600. Further, if the budgetary studies were correct, there was no special reason for the Corporation to attempt to reduce unreasonably the total sum that could be spent on the home.

Realizing that the maximum sum of $4,600 was all that could be spent on a home unless the Corporation were to resort to subsidy, it became incumbent upon the architects and engineers to bend every effort if they were to provide modern suitable homes within this figure. It was clearly evident from the start that all the work had to be budgeted—so much for the house proper, and so much for land, utilities, and landscaping. Once having established the budget system, it became a matter of give and take between the different items since the total could not exceed a fixed sum. The fixed sum was set considerably lower than $4,600 to allow for desired extras and unexpected contingencies.

The question of roads and water mains was a fairly easy one to solve from the point of view of cost, since it resolved itself into a problem of the shortest lineal feet of both services that would meet the requirements of the site plan. Repeated studies were made until the roads and mains were reduced to about three and one half miles in length. Greater reduction could not be made without seriously weakening the site plan. Having arrived at this point it was a fairly easy matter to set up a budget that would allow for suitable roads and water mains.

The landscaping was somewhat of a different question since it involved what might be termed a purely aesthetic problem. That landscaping was necessary was not in question, but there was the question of how much and where. Finally, a budget was established which allowed for landscaping of individual lots, streets, and recreational areas.

Having established budgets for the utilities, landscaping, and the land already bought at approximately $100 an acre, simple arithmetic showed how much could be spent on the houses. The problem of the house then became that of producing the most house for a given sum of money or, to put it another way, to constantly reduce the cubic foot volume of the structure, and at the same time increase utilizable space; to do away with unnecessary surface trim or eye appeal, yet provide a house economical of operation and maintenance; last but not least, to provide a house that would withstand the wear and tear of 30 years' time. Whether the result has been obtained in its entirety remains to be seen, but the attempt has been made.

What has been written about the budget system of building may seem simple theory, but impossible in execution. To some extent this is true, and there has had to be constant give and take between the various budget items. For instance, some 30′-0″ finished roads were reduced to 20′-0″ to allow the difference in cost to be used elsewhere. Finally, as stated above, original budgets were set somewhat lower than the actual amount that could be spent, to allow for desirable extras or unforeseen contingencies, and by constantly referring to the original budgets it became immediately evident whether any given extras were permissible or not. Since the "proof of the pudding is in the eating," it may now be said that Oakland Housing, Inc., has been able to provide homes that cost $4,400 and, because of the terms of purchase, may be bought and paid for by the average industrial worker without benefit of subsidy.

COMMENTS ON LONG-TERM CONTRACTS

It hardly seems necessary to state why the long-term contract at low rate of interest has been used by Oakland Housing, Inc., since it has long been known that of all the factors that make home ownership prohibitive for the low-income worker, high interest rates are the most important. Coupled with high interest rates the short-term mortgage or contract makes for monthly payments not in keeping with the average worker's income.

ANNUAL FAMILY BUDGETS

Size Family:—	2	3	4	5
Food	$210.00	$306.00	$396.00	$480.00
Clothing	98.70	116.02	133.41	181.92
Fuel and light	133.50	133.50	133.50	133.50
Furniture replacements	34.00	36.00	38.00	40.00
Transportation	60.00	60.00	60.00	60.00
Medical care	30.00	35.00	40.00	50.00
School expense	....	2.50	4.75	6.50
Cleaning supplies	11.66	13.32	14.98	16.64
Personal care	11.00	16.00	21.00	26.00
Miscellaneous	54.40	58.90	63.40	67.90
Home obligations	310.80	310.80	310.80	310.80
Life insurance, Recreation, Education, Sundry	200.00	225.00	250.00	275.00
Total Annual Budget (30-year basis)	**1,154.06**	**1,313.04**	**1,465.84**	**1,648.26**
Savings from food produced and bulk purchases	125.00	139.00	153.00	165.00
Net minimum requirements	1,029.06	1,174.04	1,312.84	1,483.26
Net minimum requirements (20-year basis)	**1,099.26**	**1,243.34**	**1,383.04**	**1,553.46**

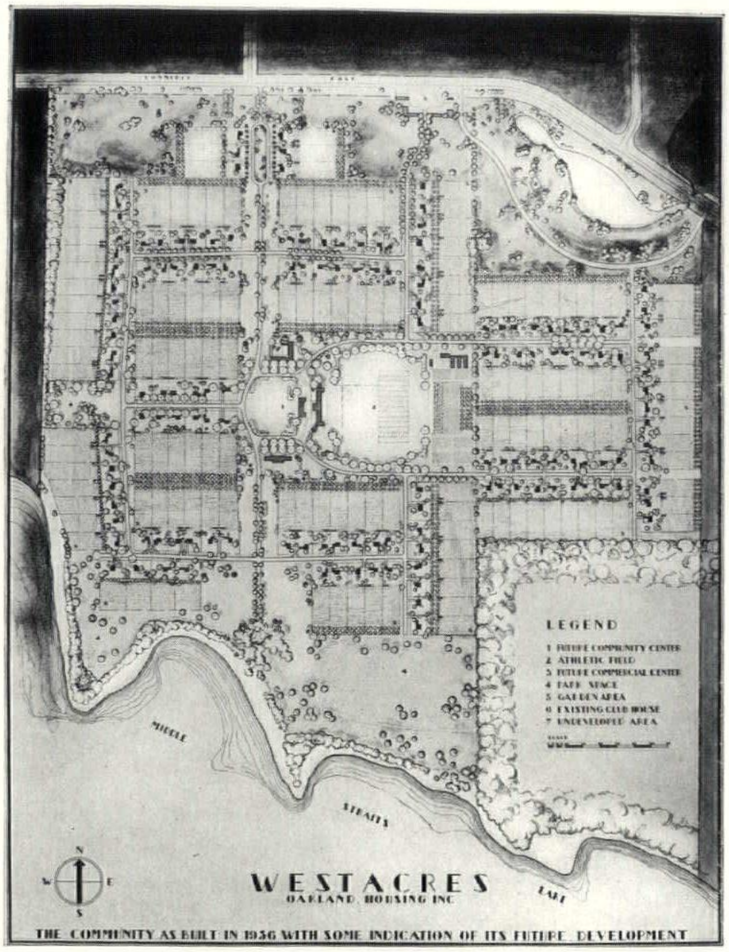
HOME OBLIGATIONS

	30 years	20 years
Payment on home	$222.84	$293.04
Fire insurance	9.00	9.00
Taxes	36.96	36.96
Water	12.00	12.00
Maintenance	30.00	30.00
	$310.80	**$381.00**
PER MONTH	**25.90**	**31.75**

SURPLUS AFTER DEDUCTING ANNUAL REQUIREMENTS AT VARIOUS INCOMES

Size Family:—	2	3	4	5
			30-YEAR BASIS	
ANNUAL INCOME		Surplus		Surplus
$1,100.00	$ 70.94	$	$	$ ...
1,200.00	170.94	25.96	....	...
1,300.00	270.94	125.96	....	...
1,400.00	370.94	225.96	87.16	...
1,500.00	470.94	325.96	187.16	16.7
1,600.00	570.94	425.96	287.16	116.7
1,700.00	670.94	525.96	387.16	216.7
			20-YEAR BASIS	
1,100.00	.74	....	....	...
1,200.00	100.74	....	....	...
1,300.00	200.74	56.66	....	...
1,400.00	300.74	156.66	16.96	...
1,500.00	400.74	256.66	116.96	...
1,600.00	500.74	356.66	216.96	46.5
1,700.00	600.74	456.66	316.96	146.5

NOTE:—Figures for Budget and Surplus are used as a *guide only* in the selection of families. They are not absolute; much depends on past performance of families in budgeting their income.



Each family is provided with enough land to enable it to raise fruits, vegetables and poultry for its own consumption. There is also provision for recreation area, a school, community building and stores.

SITE PLAN

The site is a level tract of land about nine miles west of Pontiac in an area dotted with small lakes which are widely used as recreational areas by the people of Detroit. It is limited on the north by a main highway and on the south by some woodland and Middle Straits Lake. The property includes some 55 acres of woodland, 6,000 feet of lake frontage, and 65 acres of the lake itself. On the northeast corner of the property is an old clubhouse which was built as part of a subdivision scheme and at present is used as a corporation office and meeting place for residents of the community. The lagoon in front of it connects beneath Commerce Road with Green Lake which is privately owned.

The subdivision of the land and its final organization into the site plan as reproduced was governed by a consideration of several factors which have made the problem both unusual and interesting. The plan shown, which is exactly as built, has been developed directly from the demands of the problem, rather than a restatement of a particular theory.

There were certain things to be done. Each family was to be provided with enough land to enable it to raise fruits, vegetables and poultry for its own consumption; the land must be divided into equal units since residents were to be selected from one definite income class and the costs of development were to be equally divided; there must be provision for recreational area and the future development of a community center which might include a community building, a school, work centers, or any one of a list which could be developed to greater length; a shopping center would probably develop as a separate unit since it would be supported by residents of adjacent areas; there must be provision for future expansion since the 150 houses built as an initial operation did not represent the capacity of the land; landscape features such as the lake, woodland, and an existing avenue of trees must be kept the property of the whole community.

A highly centralized community with outlying tracts of land which could be worked as allotment gardens at first seemed the most economical solution, but a preponderance of sentiment in this area for a personally owned home and land caused the final subdivision to be into plots of approximately one acre. These plots became units averaging one hundred by four hundred feet; for economy of streets and utilities they are grouped so that the garden areas become simple rectangular shapes which permit full use of mechanical working of the soil and its use in a cooperative fashion if such a desire might develop among small groups of residents. Fruit trees have been used to establish rear lot lines and to relieve the openness of the plan.

An existing avenue of poplars reaching from highway to lake was developed as an axis of the plan and its meeting with the area for community buildings and recreation, which is centered geographically, resulted in the development of a counter axis. This rigid geometrical development of streets and open areas is in a very real harmony with the flat plane of the land and the highways and blocks of woodland which divide it.

Some of the land adjacent to the highway could only have been developed at considerable cost and was instead used as a protection from traffic. The clubhouse and land surrounding it have been kept apart from the general scheme in order that any desire for commercial development would not be at the expense of the privacy of the community.

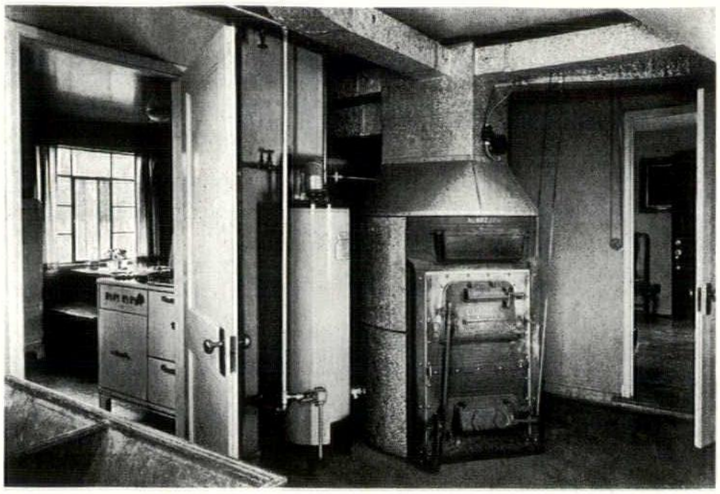
ARCHITECTURE

In regard to the architecture of the houses, there was no attempt to define a "style" which would be the result of a personal predilection toward details and forms. There were definite matters to be solved: the houses must have a real utility value to be of any significance to low-income families; they must be of materials and a construction which would be durable and of lowest cost; the technique of construction must be one which would allow full use of available labor and speed in construction. The style of the finished product must be considered as resulting from the manner in which the above points were solved together with the influence of the use of the land.

DESIGN OF HOUSES

The houses resolved themselves into very simple units and the factors which governed their plan and design were the result of a very careful analysis of the problem to be met and, once stated, were rigidly followed.

1. The length of the contracts for purchase make a house of at least three bedrooms necessary in order to provide for children of both sexes and possibly, at a later date, aged parents.
2. The locating of the community at a distance of several miles from occupational centers requires the inclusion of a garage with each house.
3. Dining rooms as separate units can be eliminated if table space for five is included in the kitchen area.
4. Space for the heating unit and laundry equipment is most conveniently located on the ground floor. Consequently basements can be eliminated and advantage taken of resulting economies.
5. The above requirements can be most economically built into a two-story house of simple shape which is developed from a nearly square floor plan. The garage is most convenient when attached and it can also become a design unit to give variation to the house mass.
6. Room sizes should not be such as to produce a minimal house but should be as small as will provide for best physiological and psychological development of a family of from four to six people. The purpose is to provide workingmen homes which would recognize the standards of good architectural practice in the plan of each part.



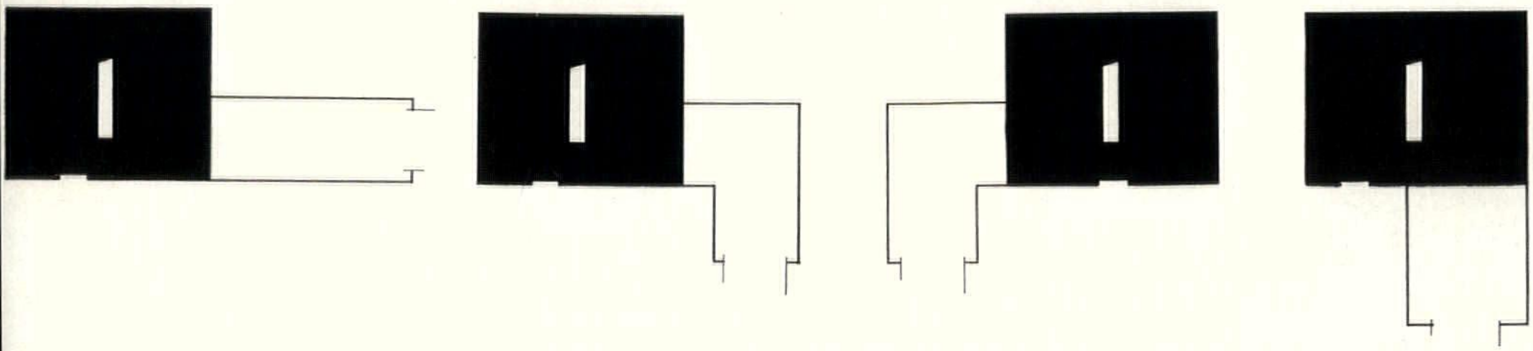
Utility room with heater and laundry is on ground level. The cement floor is supported on steel bar joists.

Three house plans were finally developed which have some individuality in details but which are essentially similar in organization, since each must satisfy the same requirements with no decided differences in cost. Each of these three plans was given four variations by changes in the relation of the garage to the house proper and re-design of the fenestration. These variations had practically no effect on structural methods and materials and consequently did not defeat the possibilities of savings due to standardization. So the houses were located on their respective lots, and were oriented so that each living room would have one southern exposure and at least one exposure to either east or west.

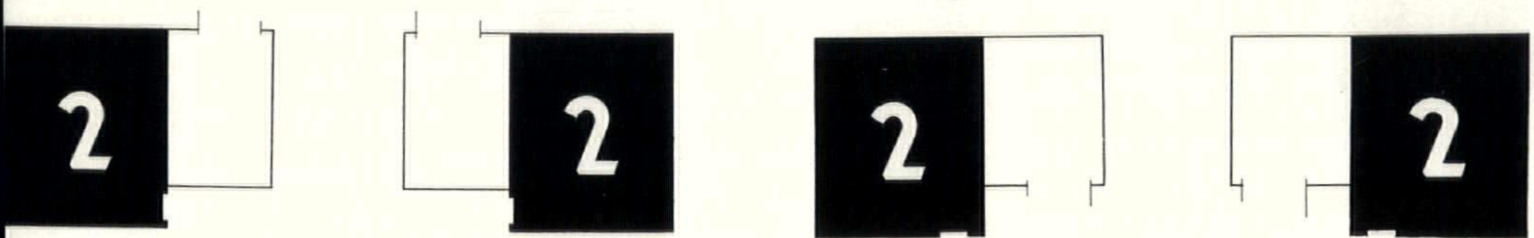
The design principle evolved for the exterior is simple; concrete block for the first-story walls in all homes and a second story of wide siding, shingle, or vertical boards and battens on wood frame. This constant line of division between masonry and wood materials provides a horizontality which unifies what otherwise would be wholly separate small, cubical units. The finish color of these materials filled the role of ornament, and a color design for the whole project was developed which kept the masonry walls closely related in color in order to further their use as a unifying material, while the wood was treated with paint and stains in colors specially made for this project. Sidewalls, trim, sash, and doors became parts of a related design which was linked to the street designs.

Photographs by F. S. Lincoln

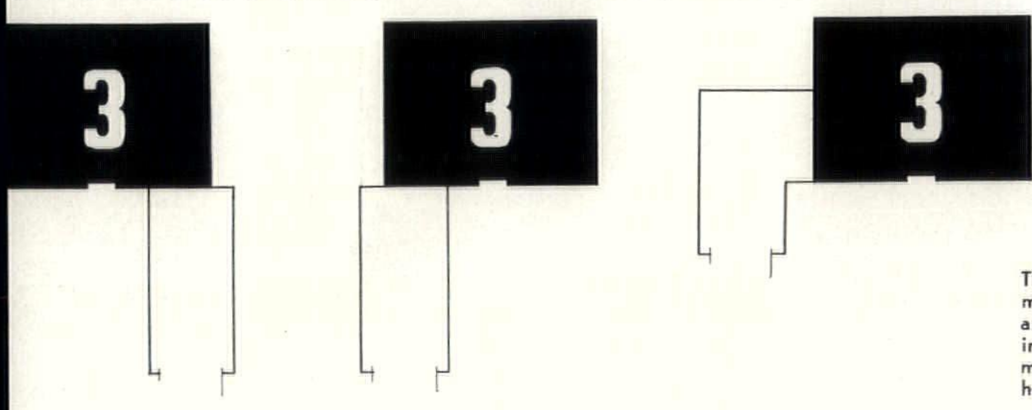
PLAN NUMBER I with four garage variants. House plans under each number are identical.



PLAN NUMBER 2. A more compact plan, having storage space between house and garage.



PLAN NUMBER 3. The garage changes are due to nature of lot, whether corner or in between.



The HOUSE PLAN TYPES as developed permitted a grouping of houses on streets. There are some courts which embrace the entire block, in some others a progressive scheme of arrangement was followed. The acre tract for each house means that there is no crowding.

CONSTRUCTION AND COSTS

The following outline specifications and cost data are given with brief comment.

Contracts for labor and material were made for heating, plumbing, and electrical work. For the general construction the Corporation purchased and distributed materials and contracted for labor. Two builders, each being awarded seventy-five houses, conducted the general construction operation, one contract being for a fixed sum while the other was on a cost-plus basis. All contractors were required to pay wages at least equal to prevailing wages in the locality, on the following scale:

MASONS	$1.00 per hour	PLASTERERS	$1.00 per hour
CARPENTERS	.80 per hour	ELECTRICIANS	1.00 per hour
PAINTERS	.80 per hour	PLUMBERS	1.25 per hour
COMMON LABOR	$0.45 per hour		

The detailed labor costs given below are of those houses built on a cost-plus basis since complete payroll figures are available on this work. The houses in the table of labor costs are numbered in the order of construction so that they might be studied for savings. The last twenty were closed in during late November and December so were somewhat affected by cold and stormy weather. Plastering was done between November 15 and March 1. Some allowance should be made on the costs of the first houses for the fact that mechanics in this vicinity had not been steadily employed at their trades for several years and some breaking-in was necessary.

SPECIFICATION OUTLINE

FOUNDATIONS: Reinforced concrete and concrete blocks.

STRUCTURE: Exterior walls; first story of concrete block, furred and plastered on inside; wood frame above, sheathed, covered with building paper and finished with wide siding, shingle, or vertical boards and batten. Insulating lath on interior and on second-floor ceiling. All ceilings plastered. Interior partitions wood frame, plaster board and plaster.

ROOF: Wood frame and asphalt shingles.

CHIMNEY: Brick, terra cotta flue lining.

WINDOWS: Steel casements, housing type, with steel interior casings.

FLOORS: Utility room concrete on steel joists; kitchen and bath maple on wood joists; all others oak on wood joists.

WOODWORK: All trim wood to special detail; interior doors two panel; entrance door six-panel wood; other exterior doors two-panel wood, glazed.

PAINTING: Concrete block cold water paint. Shingles dipped in creosote stain. Remaining exterior woodwork stained or lead and oil paint. Kitchen and bathroom walls, utility room walls and interior doors and trim washable paint. Other walls casein paint. Oak floors semi-gloss varnish, maple floors two coats sealer. Metal sash and casings oil paint on special primer.

HEATING: Fan-driven, re-circulating, warm-air system, Fox coal-burning furnace.

PLUMBING: Copper piping; Brigsteel sink, lavatory and tub; "Standard" toilet; concrete laundry tubs.

WIRING: Romex cable, bakelite switches and plugs.

SANITARY: Concrete septic tank with tile field. Terra cotta grease trap with separate tile field.

AVERAGE COST OF HOMES

	Material	Labor	Overhead	Total
Gravel	$13.80			
Sand	4.20			
Cement	25.65			
Mortar	20.33			
Blocks	121.15			
Brick	15.65			
Reinforcing steel	4.50			
I-Beam	6.36			
Gabriel joists	32.55			
Termite strip	8.13			
Wire mesh	2.69			
Sills	11.66			
Lintels	33.00			
Steel sash	106.34			
Flue lining	3.93			
Rough lumber	266.65			
Roofing	48.86			
Siding	59.67			
Plastering	140.00			
Building paper	6.53			
Flooring	65.50			
Trim	207.72			
Plumbing	198.00			
Heating	272.00			
Electrical	65.30			
Electrical fixtures	22.97			
House service (water)	67.70			
Glazing	20.50			
Clean-out door	.57			
Chimney caps	.90			
Flashing	3.44			
Nails and screws	19.06			
Finished hardware	30.28			
Anchor bolts	4.20			
Miscellaneous	90.77			
Labor		$1,183.23		
Construction overhead			$302.80	
Waste	9.96			
Grading	13.67			
TOTAL	**$2,024.19**	**1,183.24**	**302.80**	**$3,510.**
Less Material Returned to Inventory	32.75			32.
NET TOTAL	**$1,991.44**	**1,183.24**	**302.80**	**3,477.**

LABOR COSTS OF HOUSES

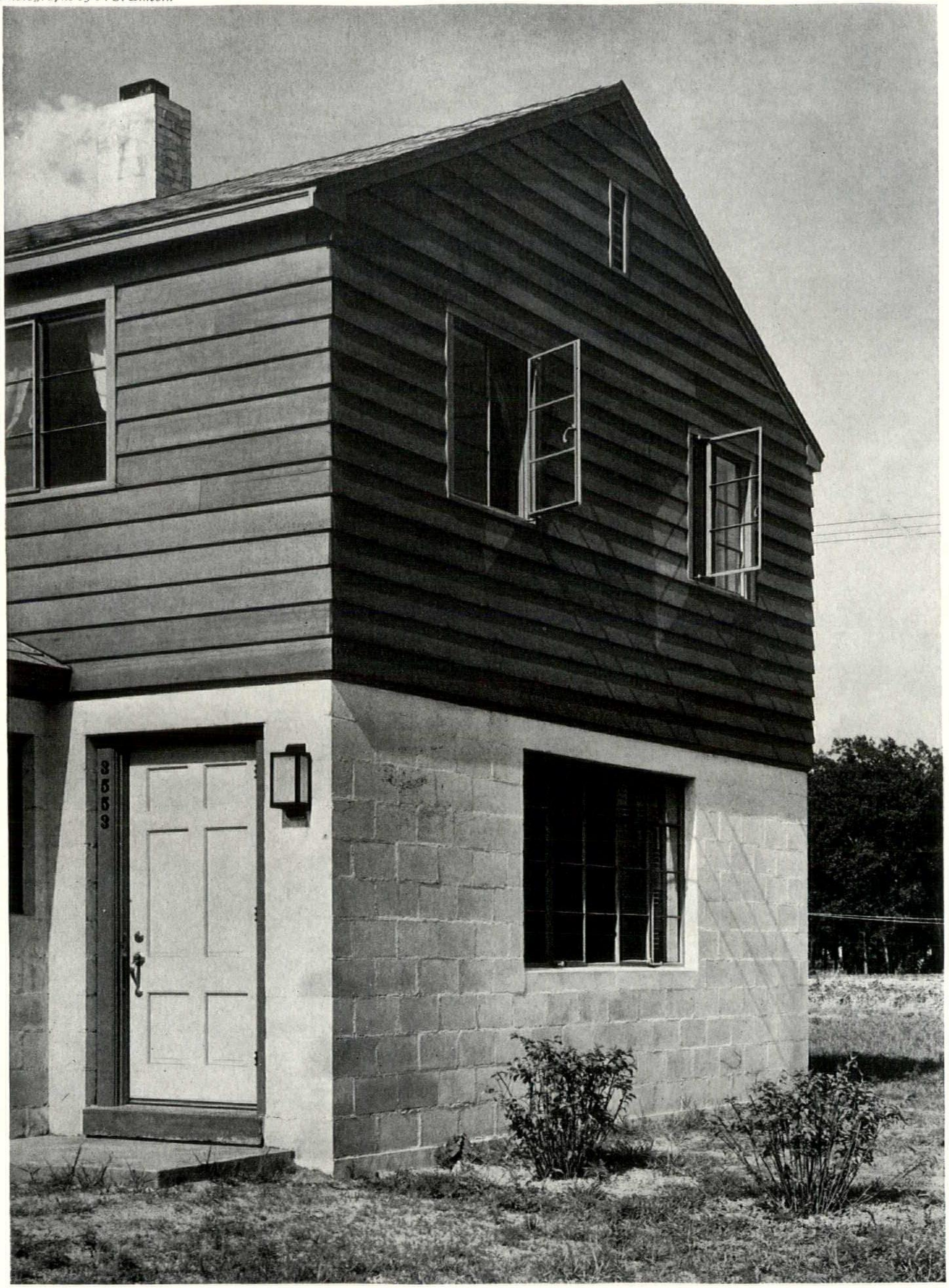
No.	TYPE	MASONRY	CARPENTRY	PAINTING	PLASTERING	Misc. Including SUPT'S	TOTAL
1	2	$205.75	$491.75	$252.30	$172.16	$101.89	$1,223.85
2	1	192.98	528.51	266.07	154.73	104.68	1,246.97
3	2	178.89	512.49	249.80	156.63	100.19	1,198.00
4	3	252.92	493.13	225.89	141.14	105.00	1,218.08
5	3	197.12	536.56	227.25	146.79	105.60	1,213.32
6	1	211.74	470.13	232.92	138.78	102.93	1,156.50
7	3	211.20	531.58	227.05	143.86	106.04	1,219.73
8	2	220.02	455.03	213.90	160.97	103.47	1,153.39
9	1	210.83	452.43	205.69	154.40	102.75	1,126.10
10	3	198.19	473.38	204.90	161.20	104.89	1,142.56
11	2	188.61	500.98	215.88	156.44	104.95	1,166.86
12	3	195.64	551.32	211.86	146.66	106.97	1,212.45
13	2	162.60	494.76	219.85	164.43	100.10	1,141.74
14	1	204.59	460.81	245.99	160.51	103.53	1,175.43
15	3	183.72	473.43	197.88	153.20	100.35	1,108.58
16	3	180.08	469.91	190.43	133.60	100.72	1,074.74
17	1	158.42	473.08	235.32	160.81	98.83	1,126.46
18	1	210.36	507.83	195.39	162.98	103.64	1,180.20
19	3	177.71	468.83	200.60	150.98	98.70	1,096.82
20	3	183.15	501.13	231.64	154.24	105.77	1,175.93
21	2	170.29	410.03	185.55	163.28	93.77	1,022.92
22	1	178.66	429.53	244.25	161.63	99.28	1,113.35
23	2	159.33	484.08	189.63	156.55	97.63	1,087.22
24	2	159.58	435.98	220.03	166.17	97.87	1,079.63
25	1	183.70	509.33	185.43	178.25	100.24	1,156.95
26	2	166.75	473.08	214.05	180.17	102.31	1,136.36
27	3	171.17	545.63	185.04	149.78	100.86	1,152.48
28	1	197.33	568.88	197.99	159.53	104.75	1,228.48
29	3	202.03	461.90	210.85	176.76	99.63	1,151.17
30	1	165.25	436.63	238.90	150.74	93.88	1,085.40
31	3	200.39	434.23	176.95	161.18	91.50	1,064.25
32	1	192.31	434.03	200.42	148.49	91.56	1,066.81
33	2	179.89	423.68	191.43	171.21	93.84	1,060.05
34	1	207.70	462.08	194.29	180.32	100.73	1,145.12
35	3	205.08	472.81	195.32	138.17	97.44	1,108.82
36	2	196.40	415.83	200.52	175.31	96.67	1,084.73
7	1	209.19	493.25	183.52	171.55	.99.27	1,156.78
8	1	188.89	434.45	214.39	165.80	89.73	1,093.26
9	3	192.88	487.73	179.76	156.26	97.75	1,114.38
0	1	186.76	470.30	182.73	163.97	87.41	1,091.17
1	2	177.49	377.18	195.21	183.95	91.49	1,025.32
2	3	170.98	398.95	187.20	181.65	87.33	1,026.11
3	3	202.35	399.13	201.64	167.24	90.55	1,060.91
4	2	178.95	483.45	188.30	168.98	92.06	1,111.74
5	2	170.45	451.08	202.07	164.00	92.49	1,080.09
6	3	178.25	445.29	192.77	194.16	89.41	1,099.88
7	2	191.35	376.24	185.87	199.86	89.81	1,043.13
	1	190.79	428.05	195.50	155.10	88.08	1,057.52
	1	199.41	402.55	179.55	172.71	90.34	1,044.56
	3	198.84	493.90	201.27	147.58	93.26	1,134.85
	3	227.96	471.48	179.07	148.21	97.69	1,124.41
	1	198.02	472.90	169.05	153.76	93.87	1,087.60
	3	164.79	510.82	175.98	168.54	98.83	1,118.96
	3	235.14	461.35	171.03	160.59	97.59	1,125.70
	1	201.78	426.72	206.57	156.01	95.43	1,086.51
	1	161.76	454.71	192.25	157.47	88.55	1,054.74
	2	177.99	397.96	198.44	157.82	91.71	1,023.92
	1	200.21	458.40	184.60	178.98	90.05	1,112.24
	2	190.96	434.34	182.93	156.11	92.46	1,056.80
	3	199.30	421.60	178.59	156.79	86.55	1,042.83
	2	181.31	483.43	202.62	180.36	99.28	1,147.00
	2	190.30	464.18	199.21	175.88	95.06	1,124.63
	2	197.84	451.97	191.95	166.91	99.52	1,108.19
	1	183.17	476.47	200.32	191.53	104.74	1,156.23
	3	198.13	430.82	166.55	148.64	94.83	1,038.97
	1	232.80	470.40	194.14	165.28	103.70	1,166.32
	2	175.47	454.37	186.97	162.23	92.49	1,071.53
	2	156.47	464.11	188.49	163.78	100.54	1,073.39
	2	209.10	402.87	181.59	171.25	86.21	1,051.02
	3	202.57	464.13	175.65	162.62	91.05	1,096.02
	2	189.71	429.08	191.75	180.46	90.21	1,081.21
	2	210.18	439.64	200.20	179.66	92.75	1,122.43
	1	207.40	529.09	179.38	192.11	99.03	1,207.01
	1	188.78	468.44	165.50	178.26	90.52	1,091.50
	3	215.04	534.82	176.25	169.83	99.59	1,195.53

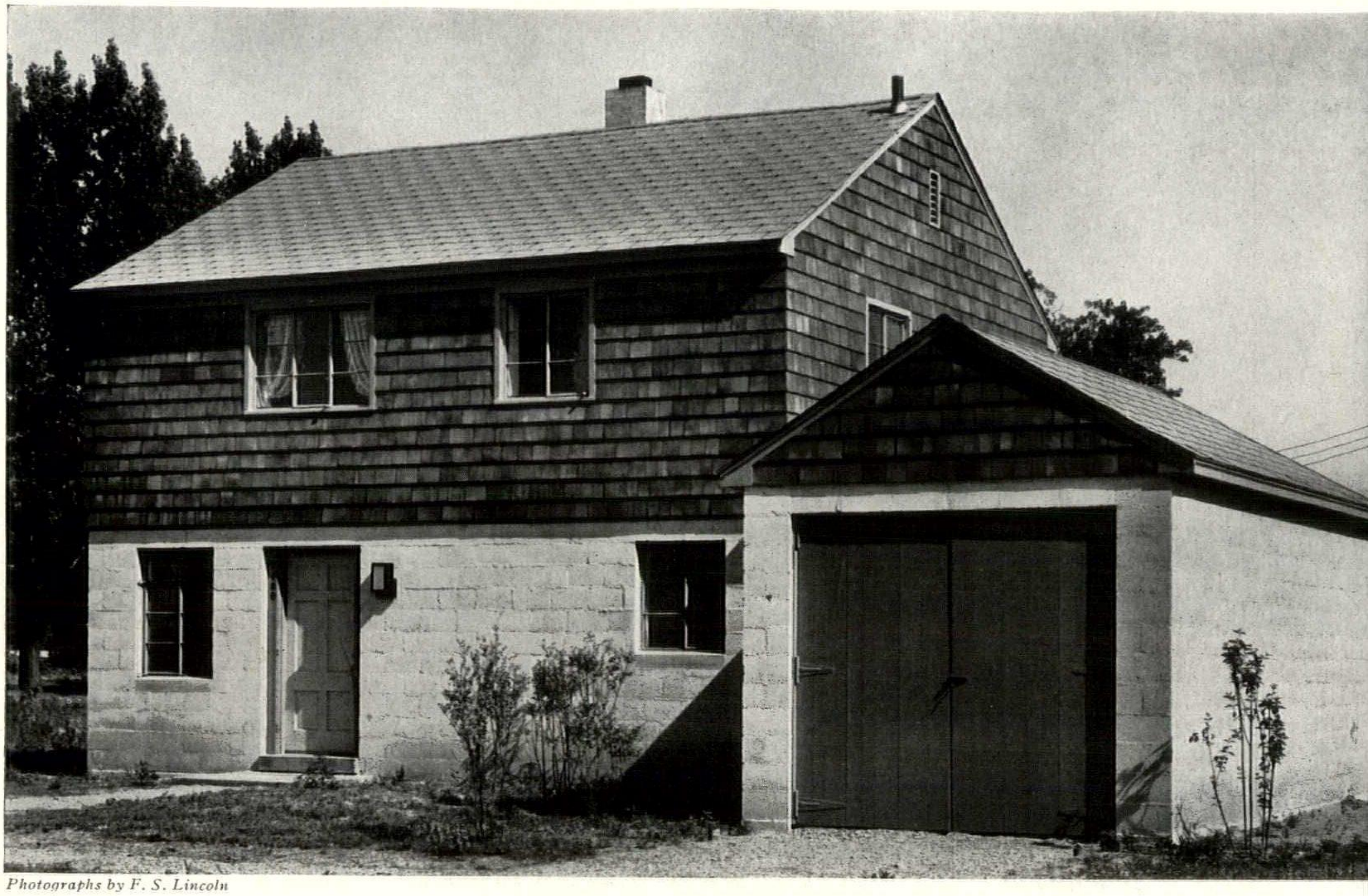
st 20 houses are those most affected by winter weather before being closed in. . . . Wide variation in figures for painting is due principally to
e fact that shingles used as siding were pre-dipped in creosote stain.

WESTACRES • A HOUSING DEVELOPMENT NEAR PONTIAC MICHIGA

Photographs by F. S. Lincoln

Photographs by F. S. Lincoln





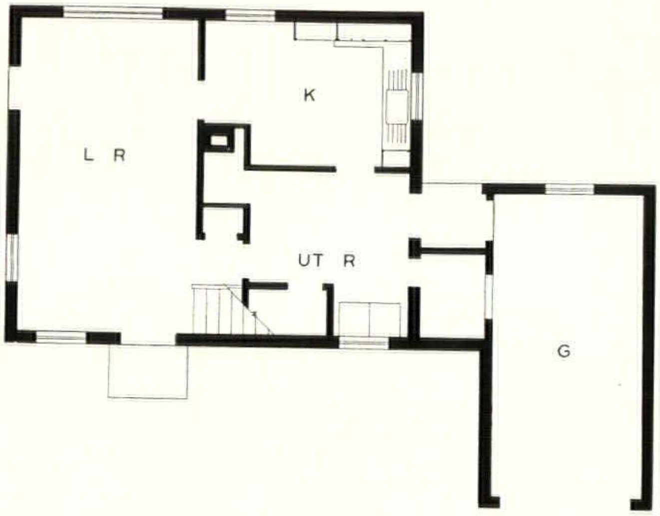
Photographs by F. S. Lincoln

7480 HONEYSUCKLE ROAD

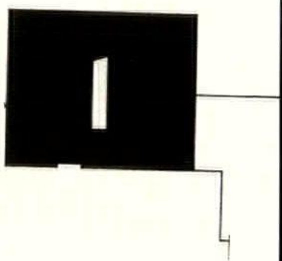
PROJECT MANAGER AND

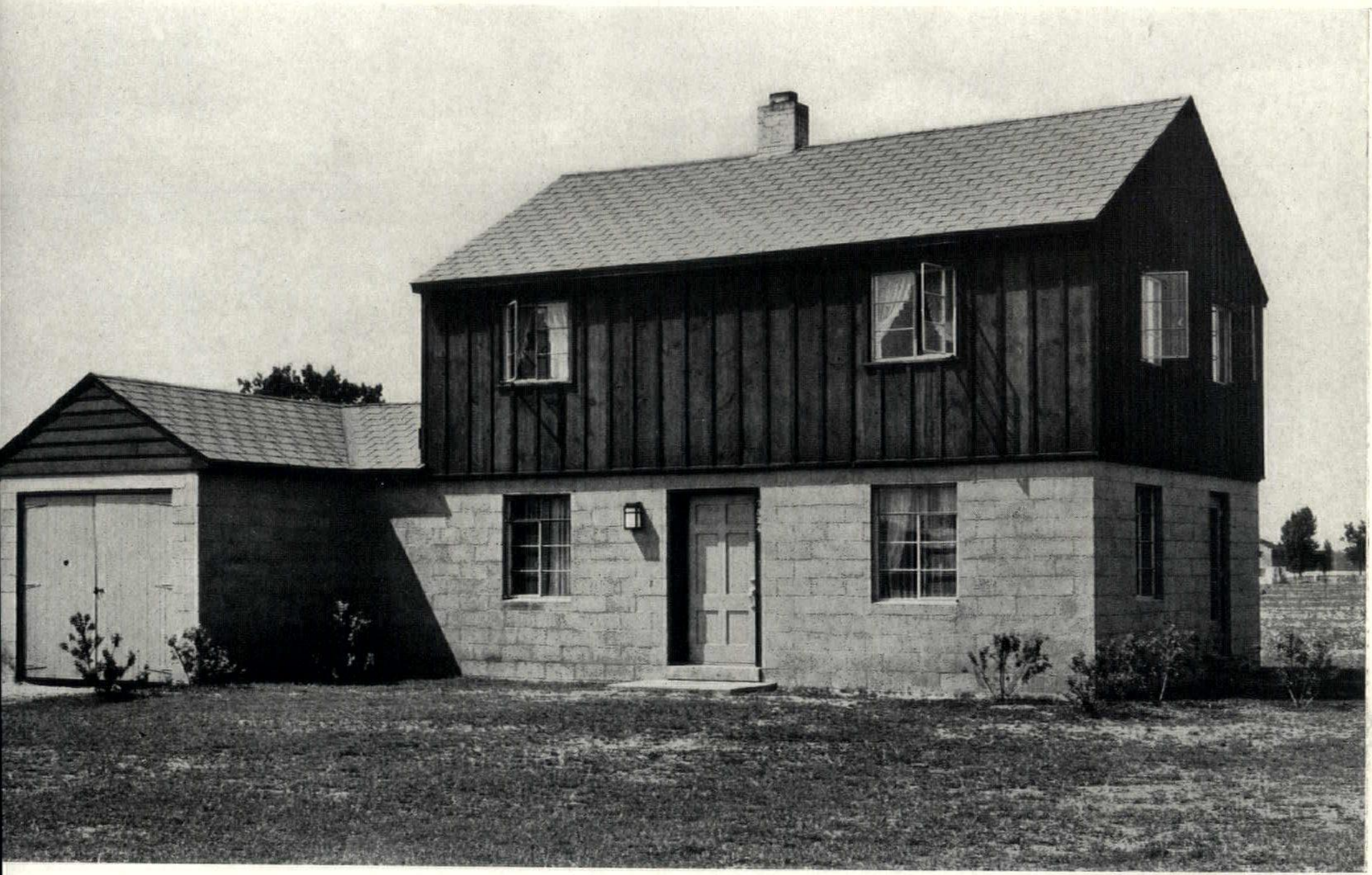
SUPERVISING ARCHITECT—

BARTON P. JENKS, JR



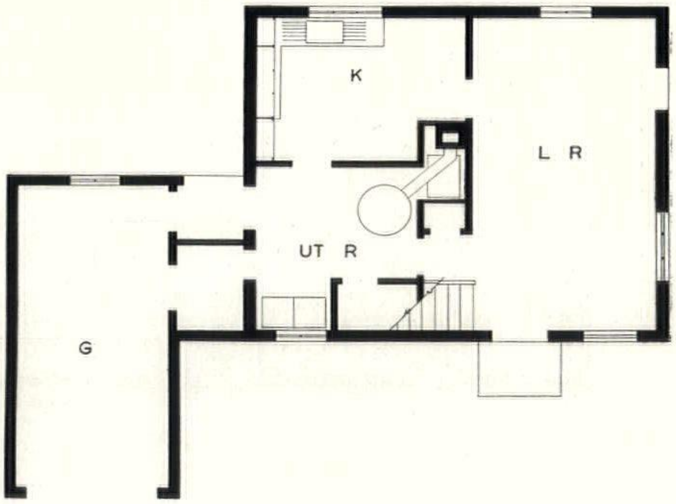
HOUSE PLAN





7524 LILAC COURT

ARCHITECTURAL WORK by
EARL G. VON STORCH



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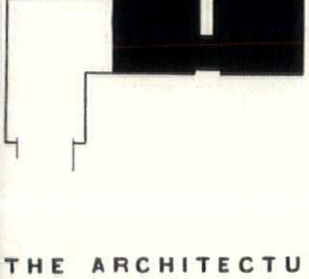
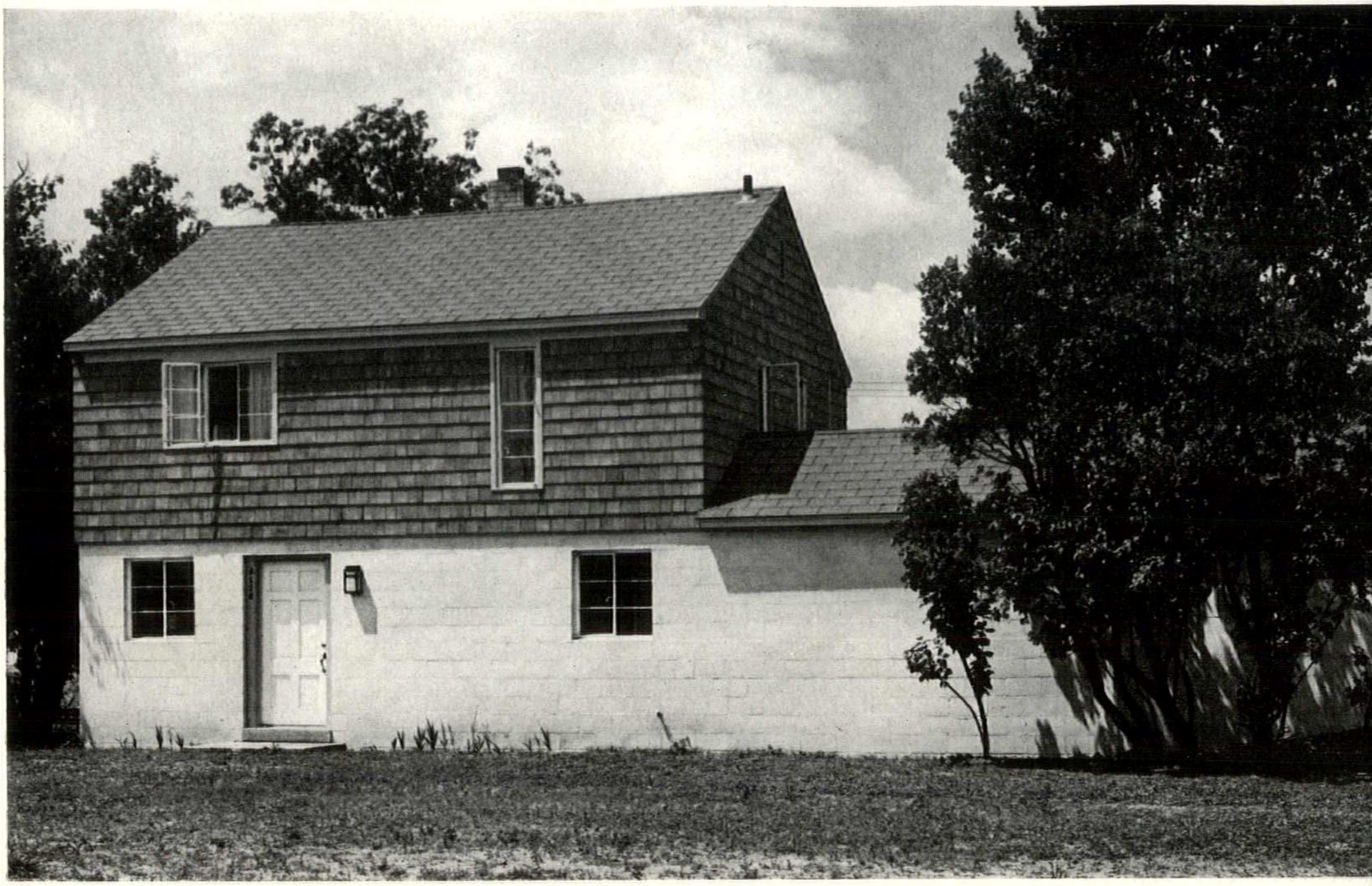
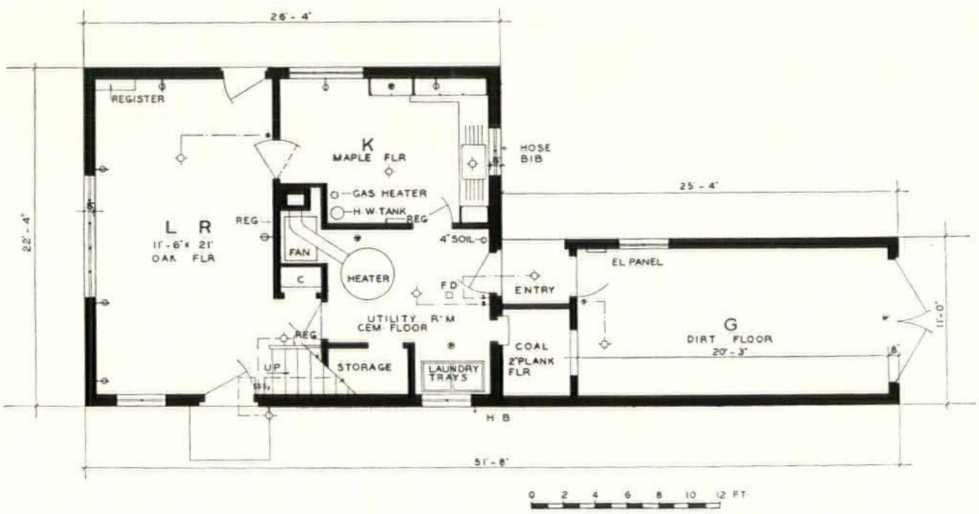




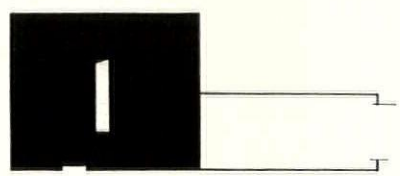
Photographs by F. S. Lincoln

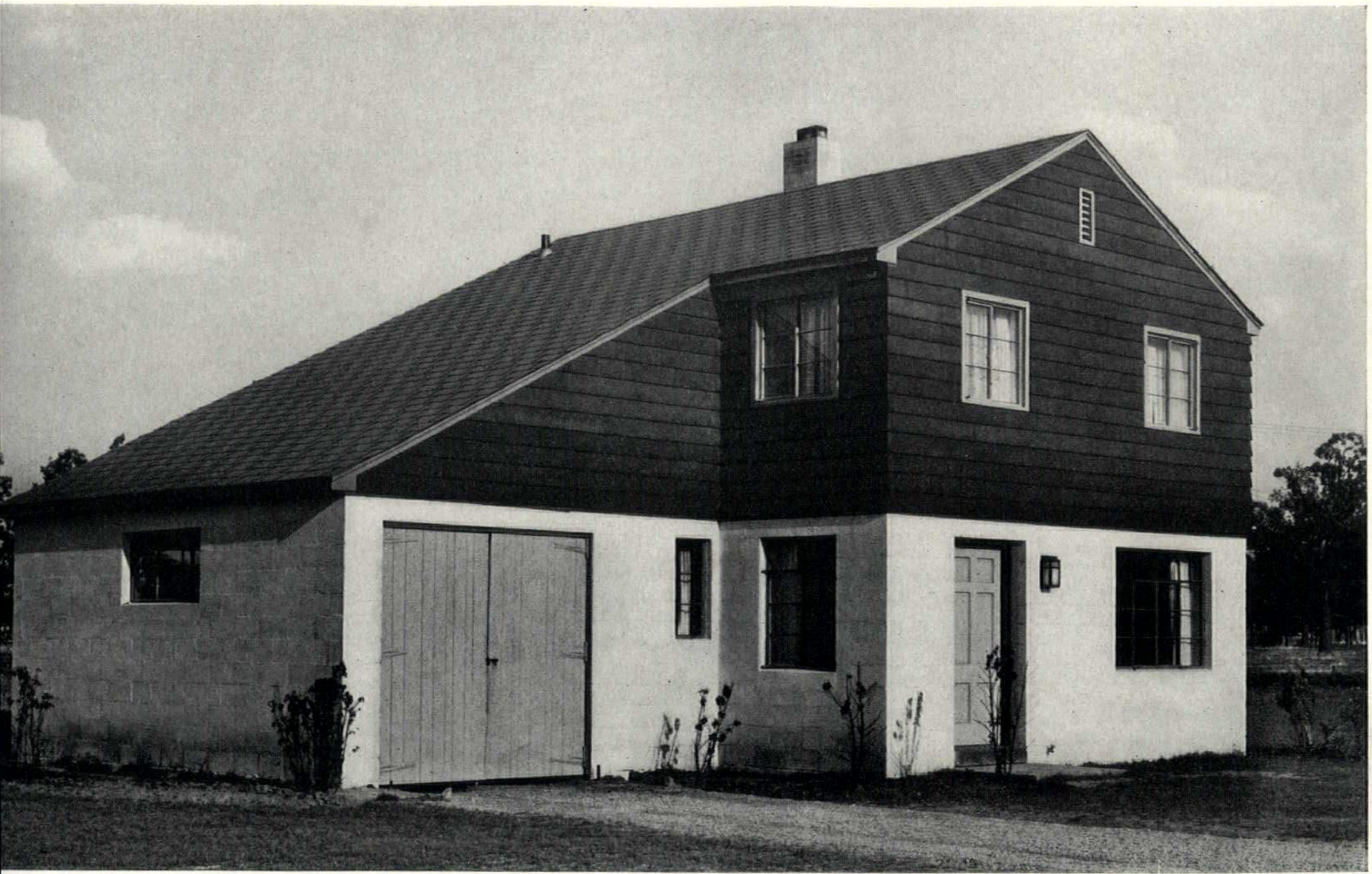
3116 POPLAR COURT

PROJECT MANAGER AND SUPERVISING ARCHITECT—BARTON P. JENKS, JR.



H O U S E
P L A N

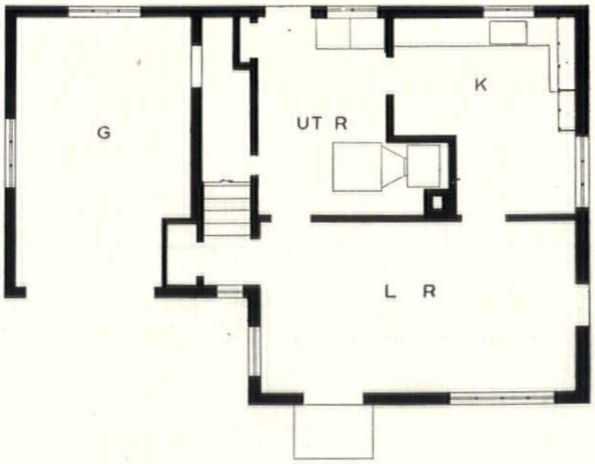




3153 ELDER ROAD NORTH

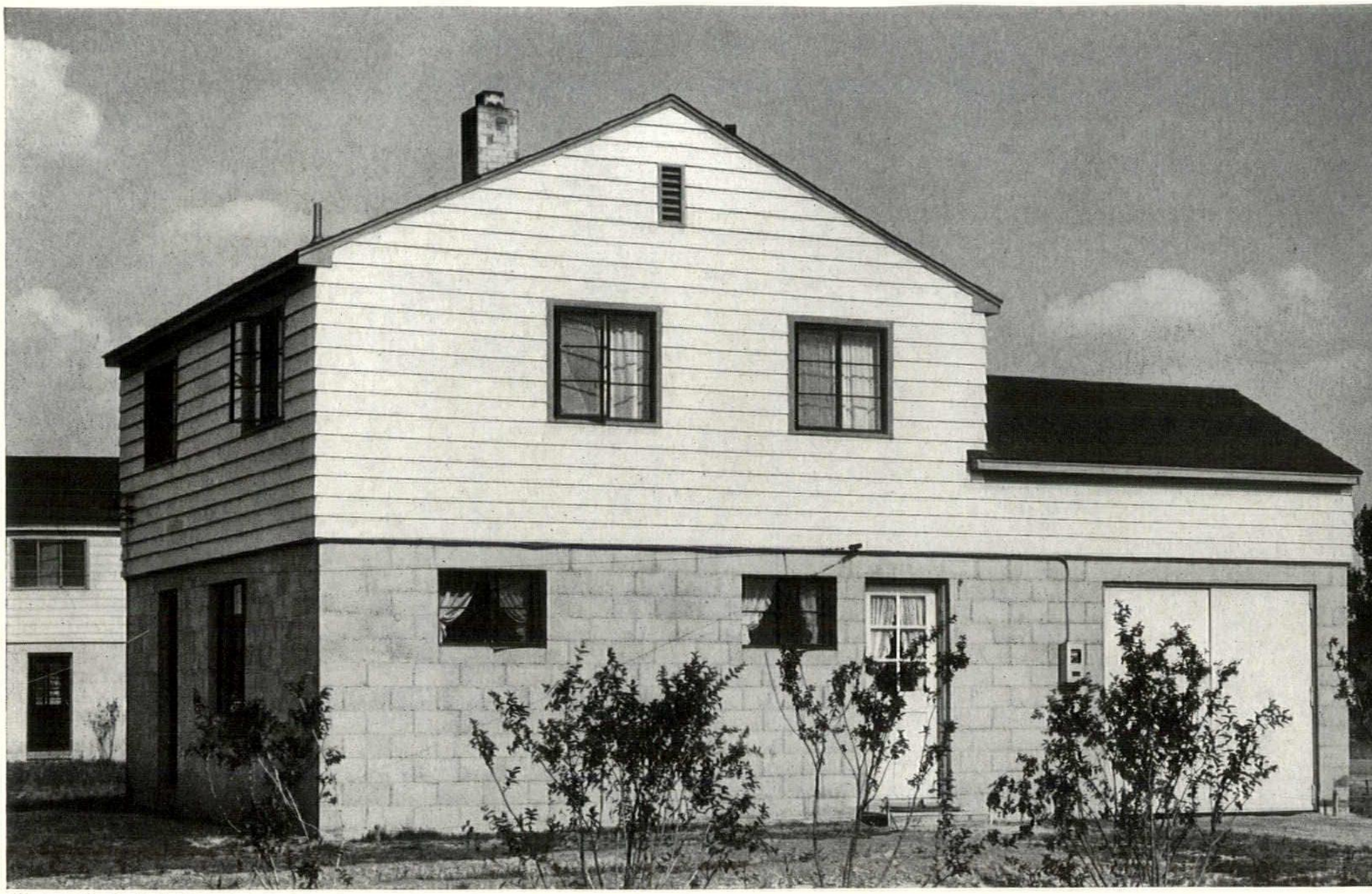
ARCHITECTURAL WORK by

EARL G. VON STORCH



HOUSE PLAN

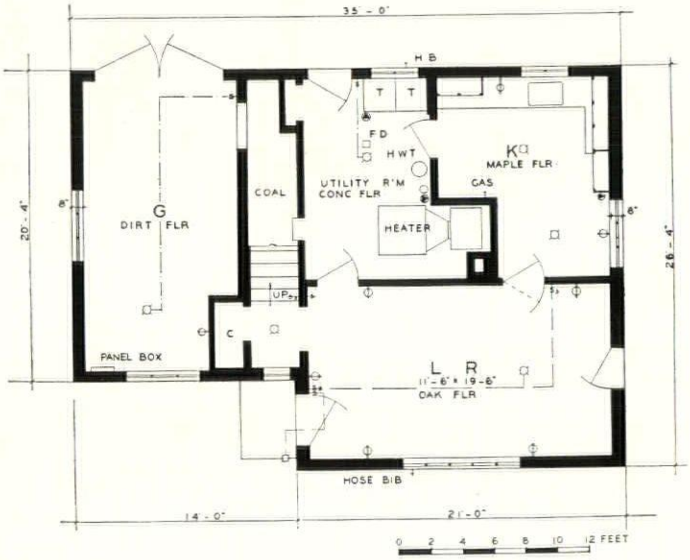
2

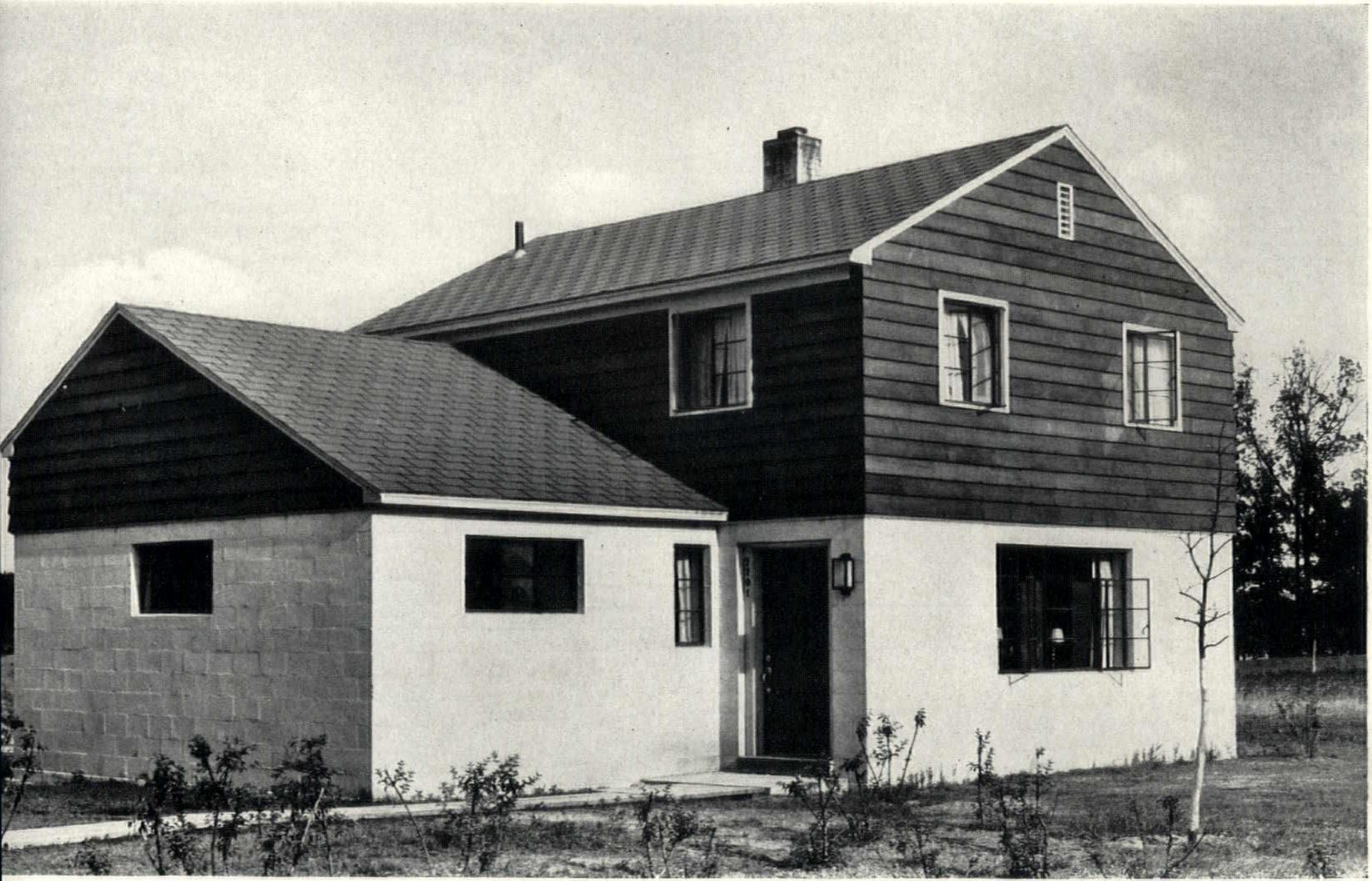


Photographs by F. S. Lincoln

7624 LILAC COURT

PROJECT MANAGER AND SUPERVISING ARCHITECT—BARTON P. JENKS, JR.

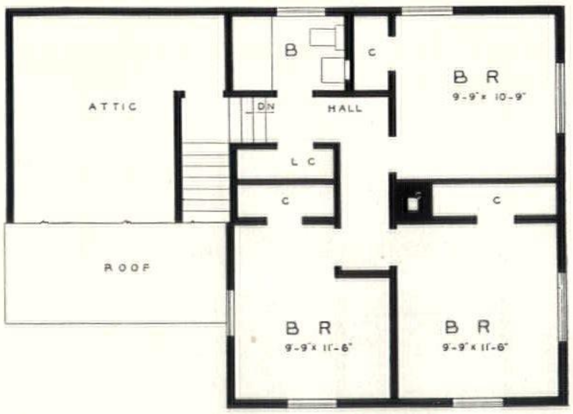




7701 SWEETBRIAR ROAD

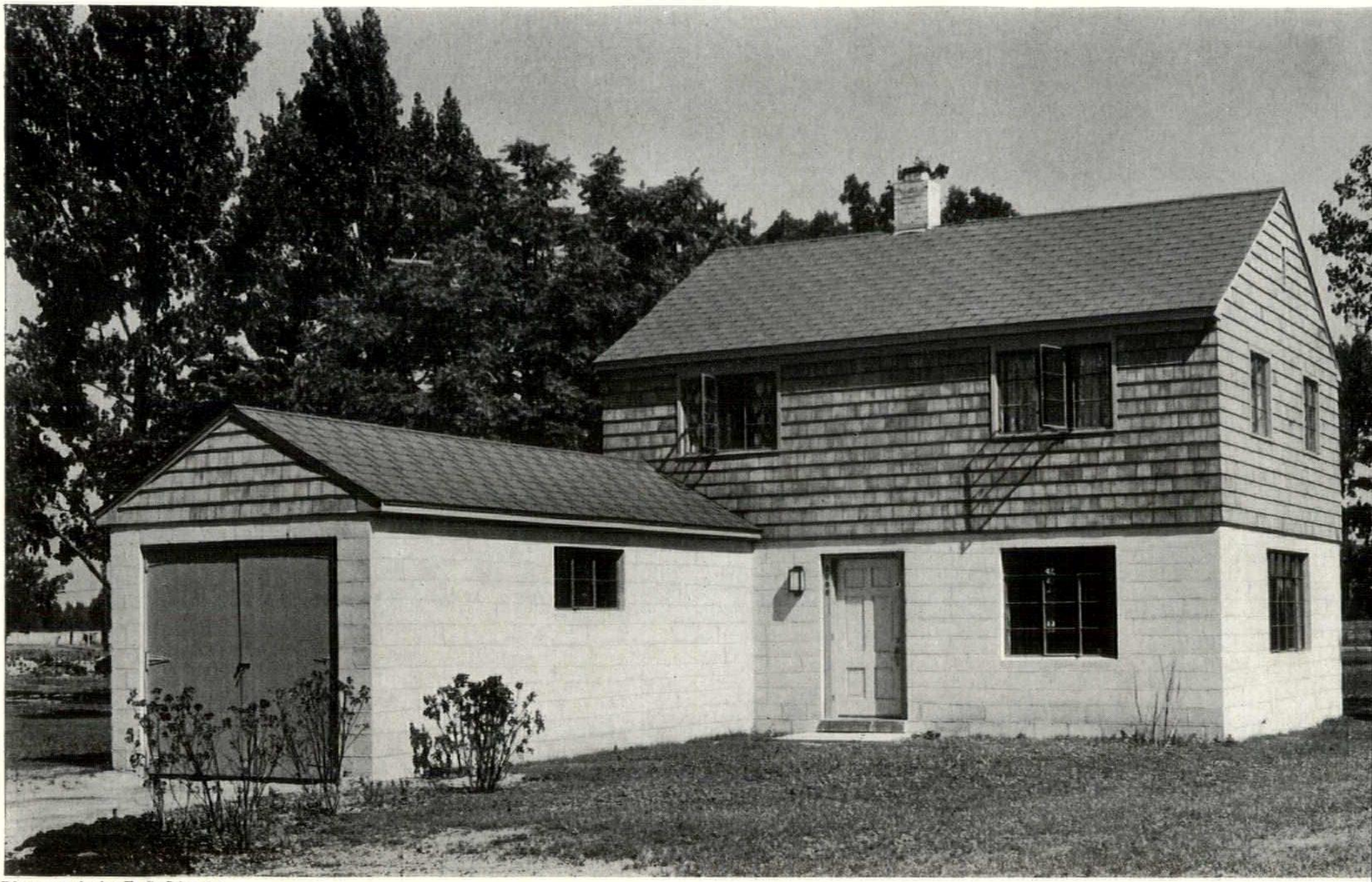
ARCHITECTURAL WORK by

EARL G. VON STORCH

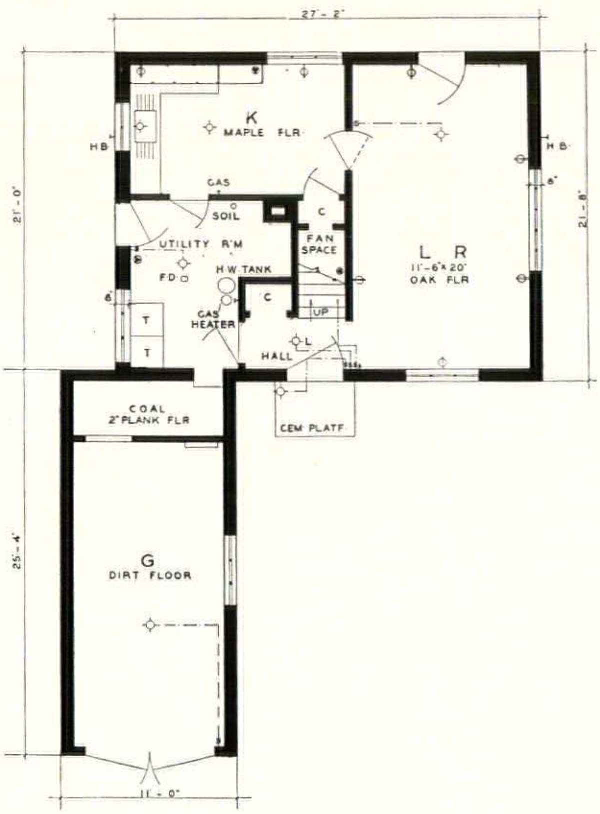


HOUSE
PLAN

2



Photographs by F. S. Lincoln

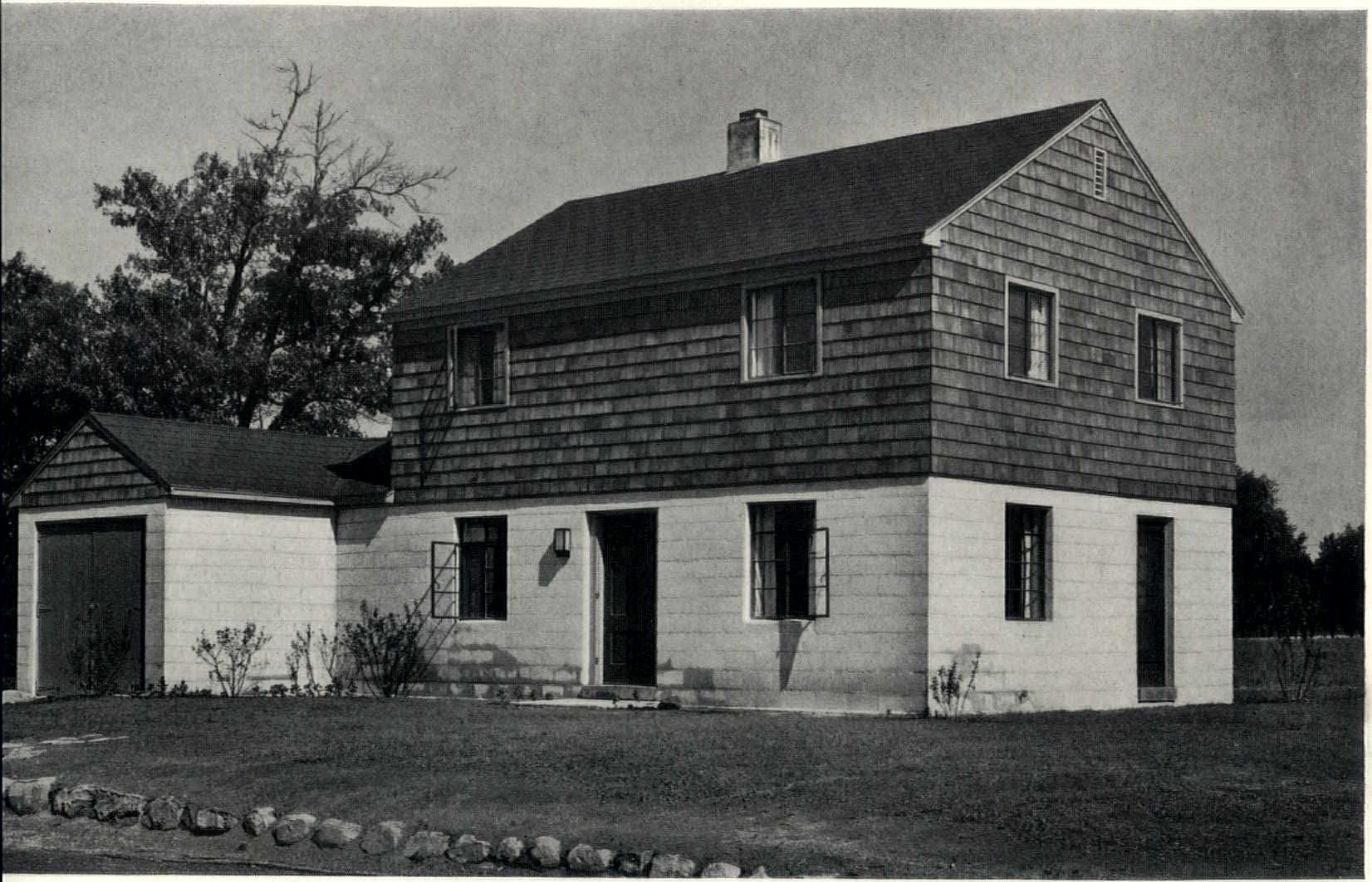


3096 POPLAR DRIVE

PROJECT MANAGER AND SUPERVISING ARCHITECT—BARTON P. JENKS, JR.

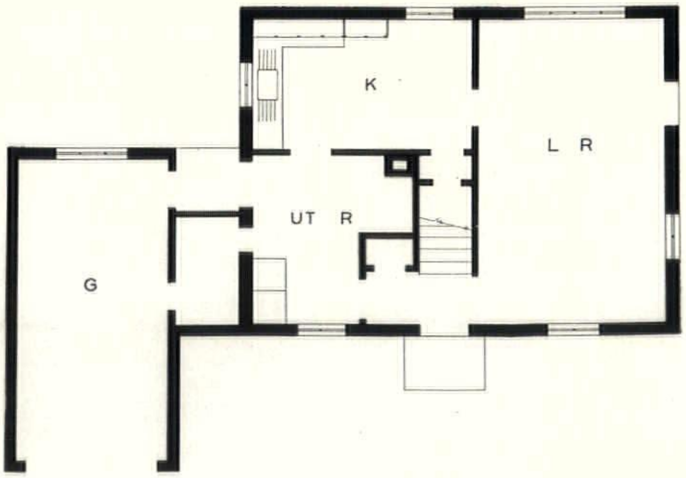
HOUSE PLAN

3



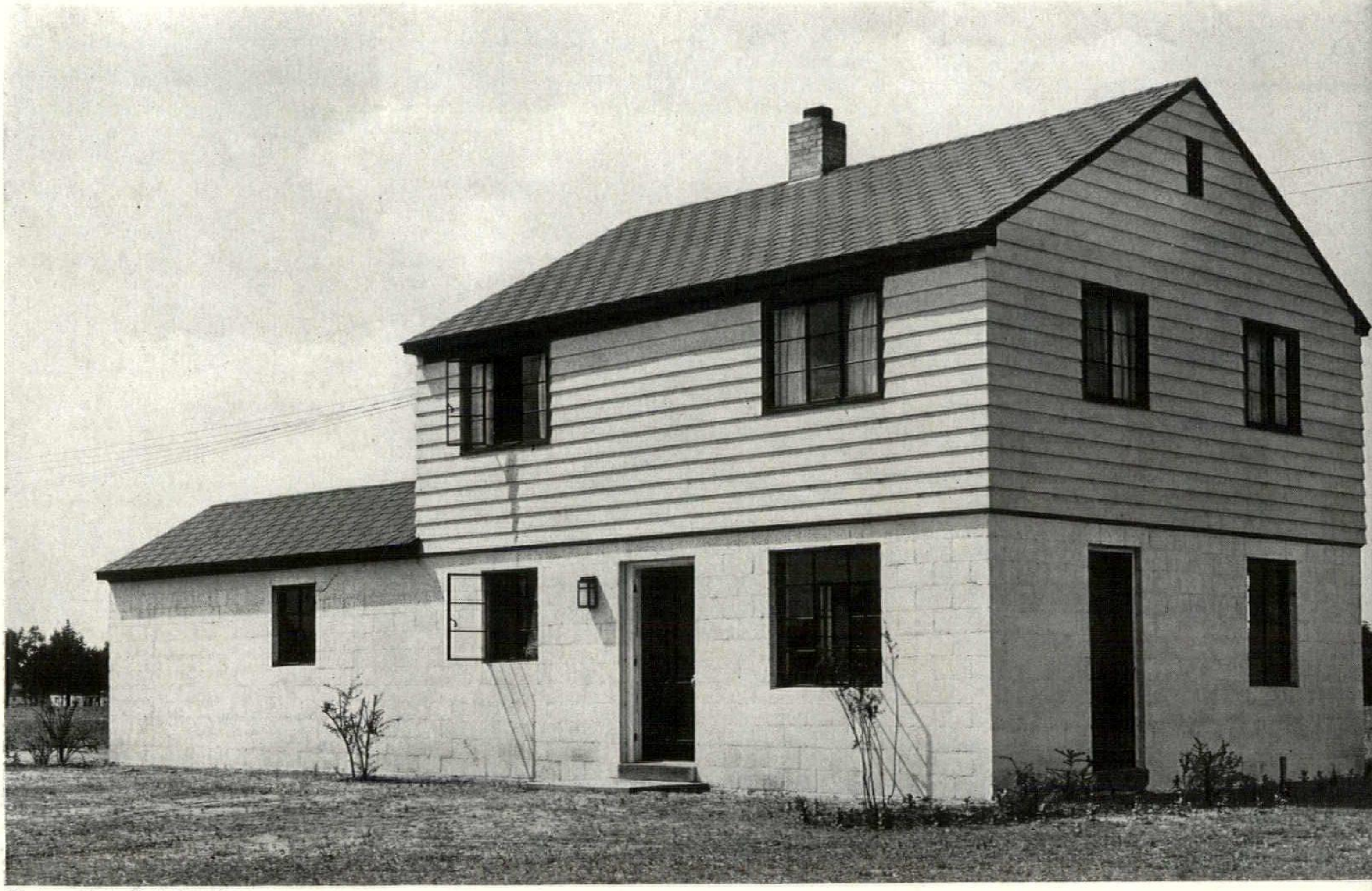
3158 CRANBERRY ROAD

ARCHITECTURAL WORK by
EARL G. VON STORCH



HOUSE PLAN

3

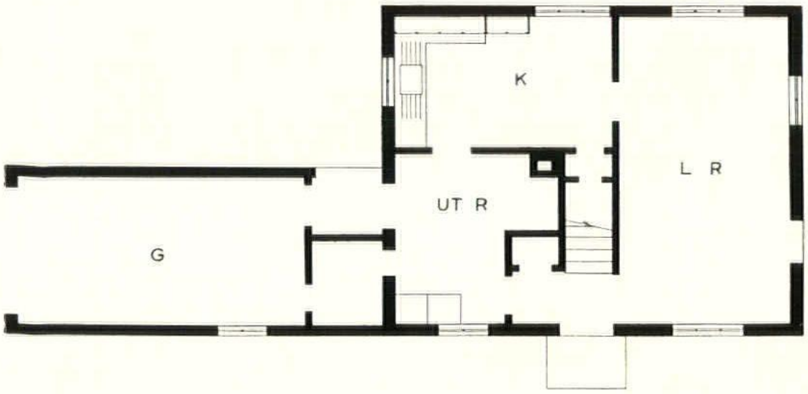


Photographs by F. S. Lincoln

7102 BUCKTHORN

PROJECT MANAGER AND
SUPERVISING ARCHITECT—
BARTON P. JENKS, JR.

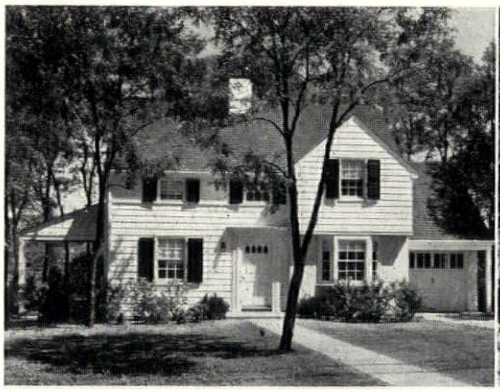
ARCHITECTURAL WORK by
EARL G. VON STORCH



HOUSE
PLAN

3

PORTFOLIO



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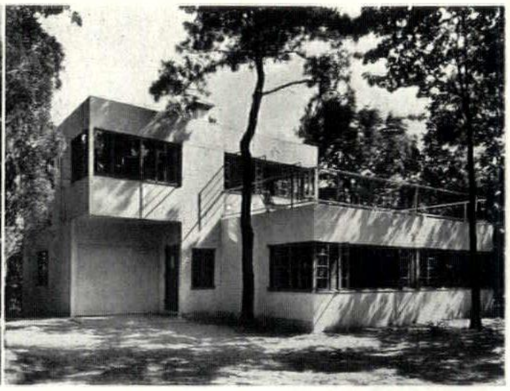
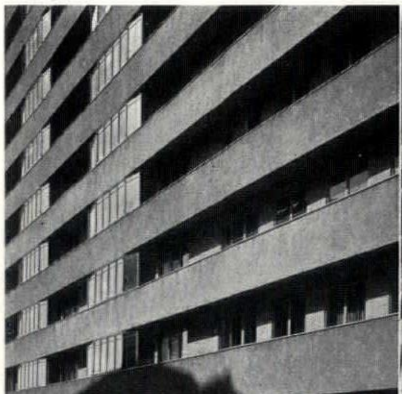


SMALL HOUSES AND

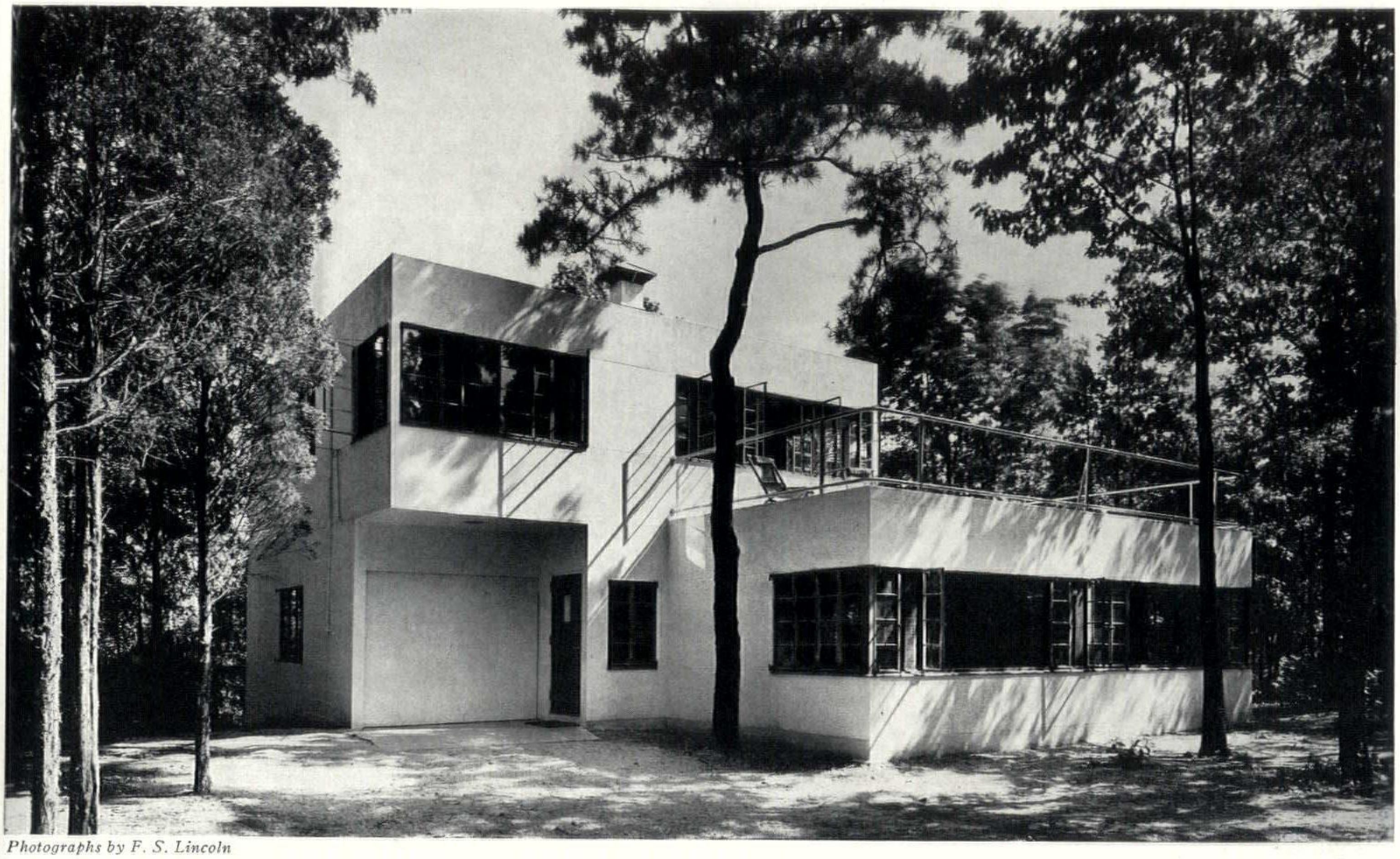
Dell and Wainwright



Van Anda

Van Anda

APARTMENT BUILDINGS



Photographs by F. S. Lincoln

HOUSE OF ROBERT L. DAVISON

NORTHPORT, LONG ISLAND

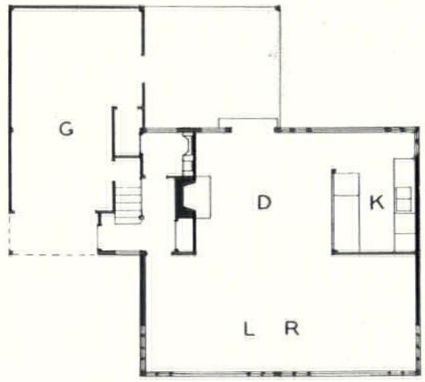
DESIGNED BY ROBERT L. DAVISON
AND JOHN CALLENDER

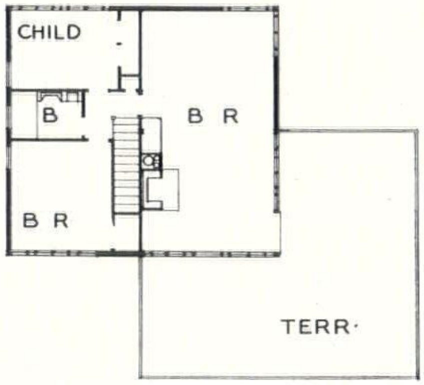
The house of R. L. Davison, Director of Housing Research of the John B. Pierce Foundation, is constructed from two four-room experimental houses, one in plywood previously erected in Grand Central Palace and the other of Microporite, previously erected in Long Island City. After these houses had been used for a period for experimental purposes, they were taken down and later shipped to the present site. Here they were reassembled into this single-family house of entirely different floor plan from the original two houses. (In August 1935 The Architectural Record published floor plans and photographs of the original Microporite house. The original plywood house may be said to be almost identical in design with the Microporite house.)

In planning the house the owner wished to have the living room, dining room, and kitchen arrangement such that it would be easy to entertain 6 to 8 friends with a minimum of effort and formality. Thus the dining room is not separated from the living room and a buffet between kitchen and dining room permits service of meals from kitchen over the open buffet directly to the dining room table.

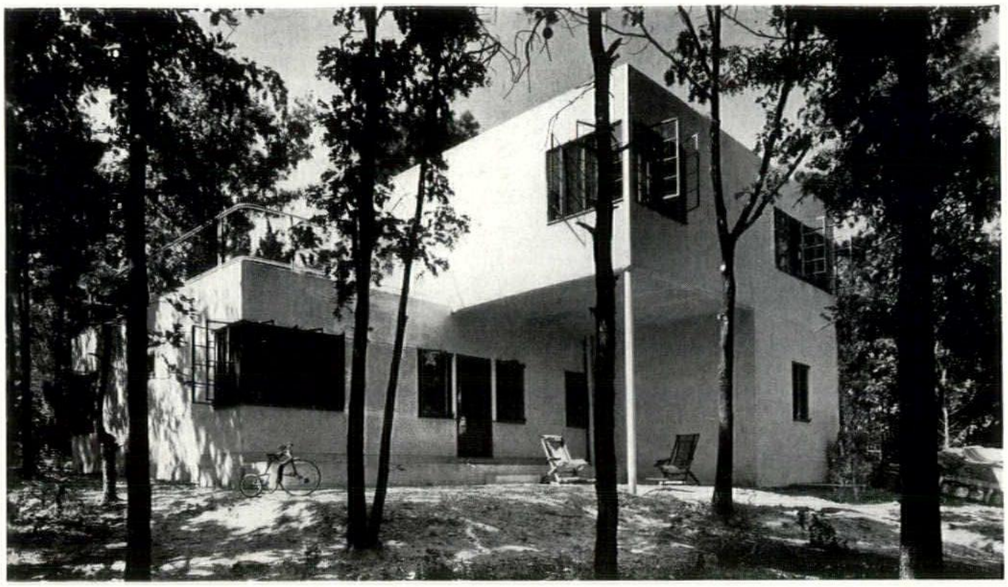
Special attention was given to orientation of the house. Windows are placed to get maximum sunlight in winter for supplementary heating, also to get as intimate a connection with the surrounding woods as possible.

FIRST FLOOR PLAN





SECOND FLOOR PLAN

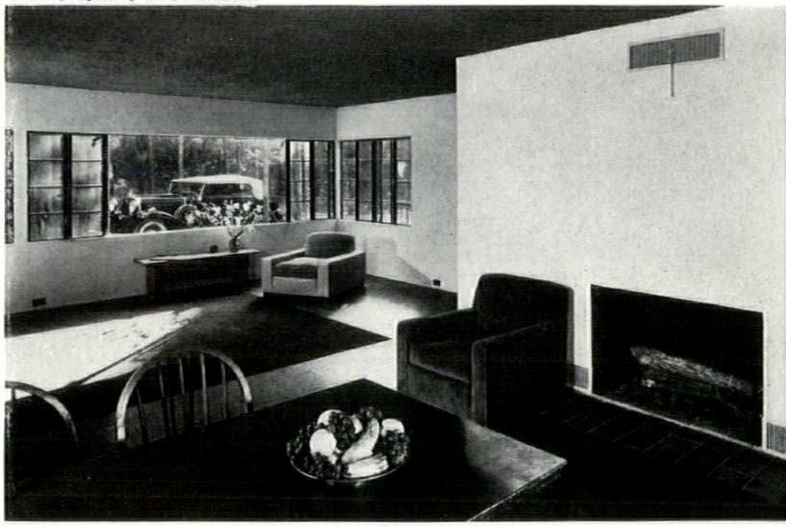


Photographs by F. S. Lincoln

HOUSE OF ROBERT L. DAVISON

NORTHPORT, LONG ISLAND

DESIGNED BY ROBERT L. DAVISON AND JOHN CALLENDER

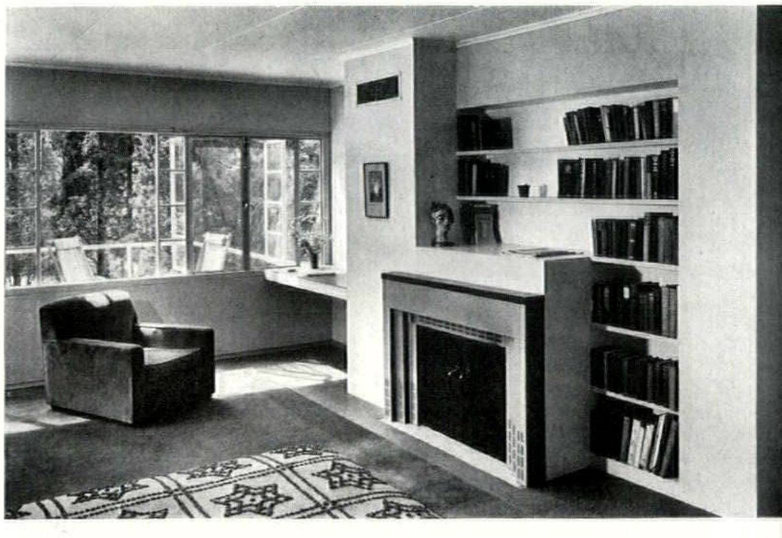


LIVING - DINING ROOM

The prefabricated units used in this house differ from those generally found in prefabricated houses in that the units are placed horizontally, transferring the load to columns, instead of being vertical and carrying the loads as a load-bearing wall unit. The horizontal wall units are, in effect, a deep girder which carries the floor-roof load, much the same way as a steel girder in skyscraper transmits the load to a steel column.

The wall units of the first floor are of 4" thick Microporite with an over-all heat loss of approximately 0.17 B.t.u. The floors are of hollow Microporite having a heat loss of less than 0.103 B.t.u. The second floor walls consist of 1/4" plywood outer finish with 3 1/2" space between filled with Kimbatts, a new insulating material made from creped wood fiber in bat form. The heat loss through this wall is approximately 0.05 B.t.u. Kimbatts are also used in roof and floor panels of the plywood second story.

Since the plywood house as originally built was merely a study model with no intention of having it exposed to the weather, it was constructed of plywood made with non-waterproof glue. As a result it was decided advisable to cover the exterior with canvas to give the required protection. (If phenol formaldehyde resin glue had been used, it would not have been necessary to use the canvas.) The canvas is cemented to the exterior face of the building with a latex cement. The surface of walls and roof decks are painted with Tornisite, a chlorinated rubber.



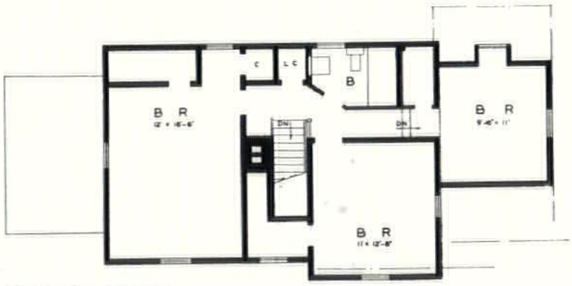
BEDROOM

Photograph by Gustav Anderson

HOUSE FOR HARMON NATIONAL REALTY COMPANY

ORCHARD HILL, WESTCHESTER, N. Y.

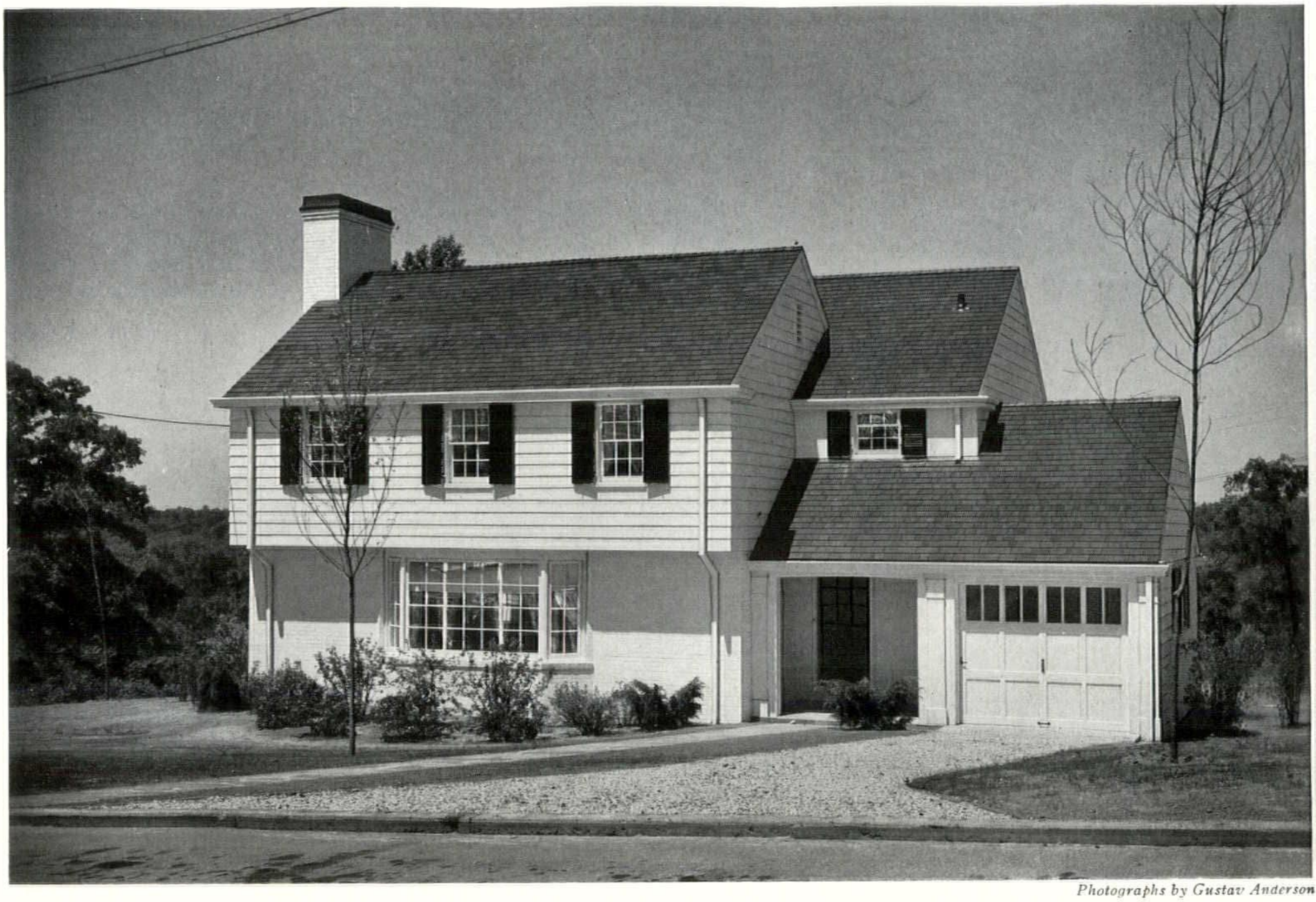
RANDOLPH EVANS, ARCHITECT



SECOND FLOOR

FOUNDATION: poured concrete in excavated portion; concrete block elsewhere. STRUCTURE: wood-framed; exterior walls shingle and stucco; interior walls plaster with tile wainscot in bath. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak in all rooms except bath (tile) and kitchen (linoleum). HEATING: steam system with A.B.C. oil burner and Pierce boiler. INSULATION: blanket-type Rockwool walls and roof. COST: $8,260.

FIRST FLOOR

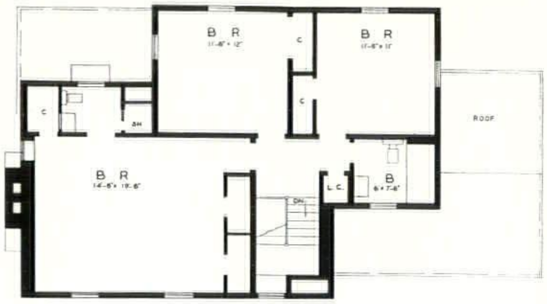


Photographs by Gustav Anderson

HOUSE FOR HARMON NATIONAL REALTY COMPANY

ORCHARD HILL, WESTCHESTER, N. Y.

RANDOLPH EVANS, ARCHITECT

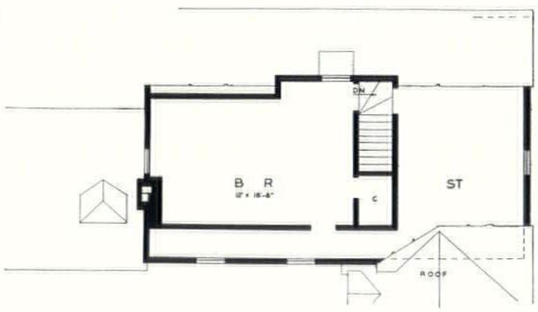


SECOND FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; 4" brick veneer on first floor and chimney end, shingle elsewhere; interior walls plaster; tile wainscot in baths. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement, porch, entry and garage; oak elsewhere except baths (tile) and kitchen (linoleum). HEATING: steam system with A.B.C. oil burner and Pierce boiler. EQUIPMENT: bookcases in living room; kitchen cases. INSULATION: blanket-type Rockwool walls and roof. COST: $10,970.

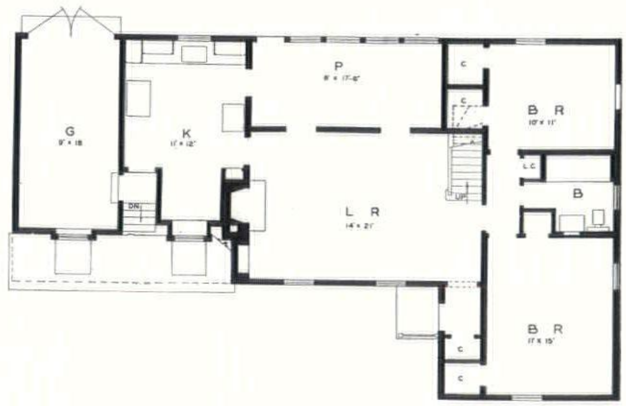
FIRST FLOOR

HOUSE OF THE MISSES E. B. STEVENS AND E. P. CAMPBELL
HARBOUR GREEN, L. I.
RANDOLPH EVANS, ARCHITECT



SECOND FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; shingle and shiplap siding; interior walls plaster; tile wainscot in bath. ROOF: random wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; brick in entry; oak elsewhere except kitchen and porch (linoleum) and bath (tile). HEATING: steam system with Silent-Glow oil burner and Richardson and Boynton boiler. EQUIPMENT: china, book, and kitchen cases. INSULATION: ½″ rigid insulation board. Cost: $6,500.



FIRST FLOOR

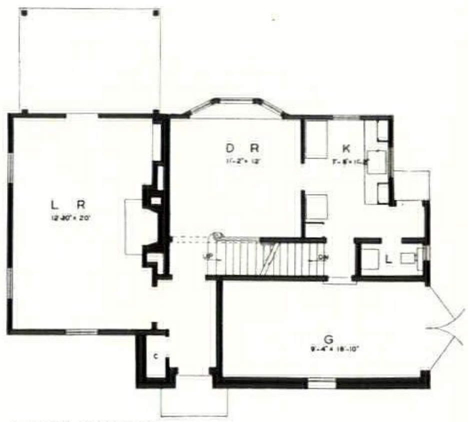
Photographs by Gustav Anderson

HOUSE OF BRUCE NEWMAN

ORCHARD HILL, WESTCHESTER, N. Y.

RANDOLPH EVANS, ARCHITECT

SECOND FLOOR



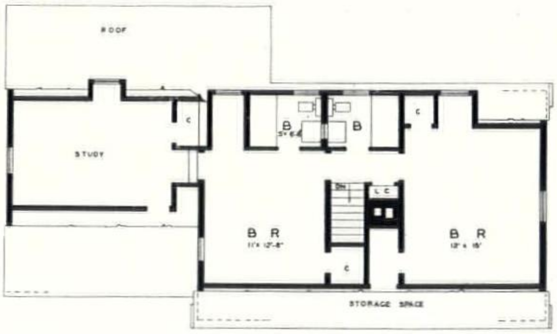
FIRST FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; stone veneer on garage and entry; shingle facing elsewhere; interior walls plaster; tile wainscot in bath and lavatory. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak elsewhere except kitchen (linoleum) and bath (tile). HEATING: steam system with A.B.C. oil burner and Pierce boiler. INSULATION: blanket-type Rockwool walls and roof. COST: $9,620.

HOUSE OF EDMUND S. DAVENPORT

CHATHAM MANOR, N. J.

RANDOLPH EVANS, ARCHITECT



SECOND FLOOR

FIRST FLOOR

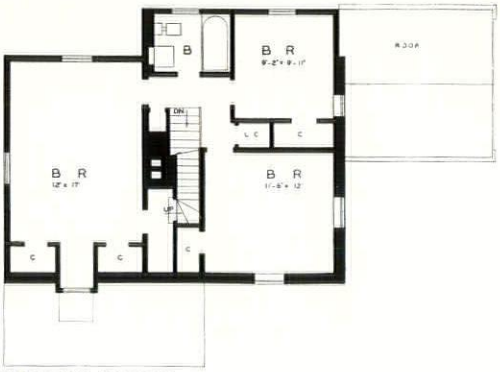
FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; shingle facing; interior walls plaster; paneled wall in living room; tile wainscot in bath. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak elsewhere except kitchen (linoleum) and bath (tile). HEATING; steam system with Delco oil burner. INSULATION: Cabot Quilt walls and roof. EQUIPMENT: book, china, and kitchen cases; ironing board. COST: $7,600.

Photographs by Gustav Anderson

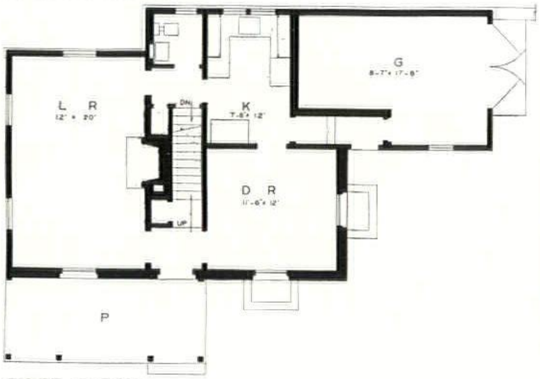
HOUSE FOR HARMON NATIONAL REALTY COMPANY

ORCHARD HILL, WESTCHESTER, N. Y.

RANDOLPH EVANS, ARCHITECT

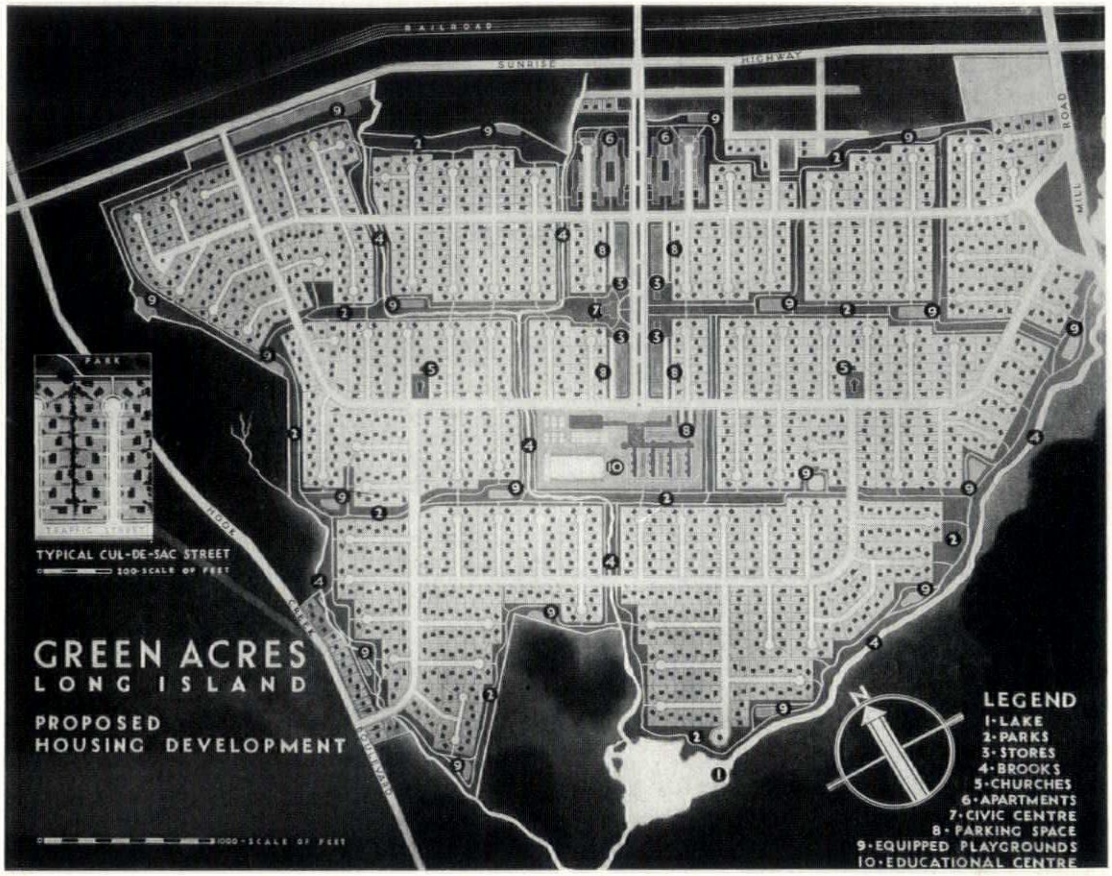


SECOND FLOOR



FIRST FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; stone veneer on front and right sides; shingle elsewhere; interior walls plaster; tile wainscot in bath. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak elsewhere except kitchen (linoleum) and bath (tile). HEATING: steam system with A.B.C. oil burner and Pierce boiler. INSULATION: blanket-type Rockwool walls and roof. COST: $9,870.



GREEN ACRES, A RESIDENTIAL PARK COMMUNITY

NEAR VALLEY STREAM, LONG ISLAND

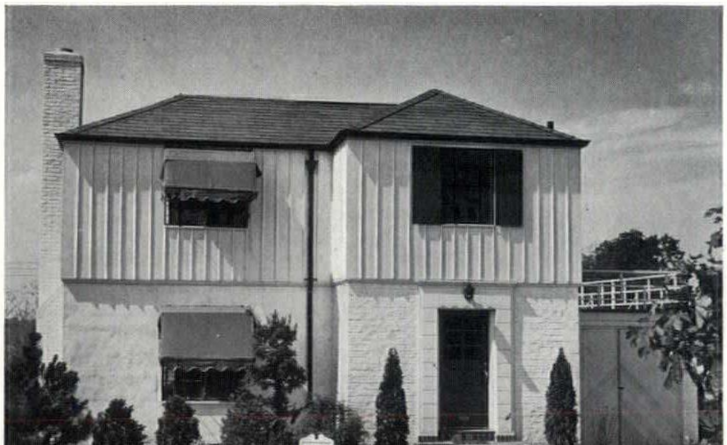
DESIGNED BY IRWIN S. CHANIN

A COMMUNITY FOR THE MOTOR AGE

In Green Acres — a "residential park community" of 1,800 homes located on the Sunrise Highway at Valley Stream, Nassau County, Long Island — Irwin S. Chanin, architect, engineer and sponsor, has sought, through the principle of traffic separation and the use of a park system, to deliver the future residents of his project from the menace of the automobile.

Automobile traffic from connecting public highways is carried into the 335-acre site (formerly an airport) by five streets, so routed that while they serve the community itself, they are of no value to through traffic. In general, this is accomplished by feeding each street back into the public highway of origin, thereby eliminating use for short cuts.

About 90 per cent of all homes in the community will front on about 85 private cul-de-sac lanes opening off these five principal streets. Each cul-de-sac group contains at most 18 dwellings. From the head of each cul-de-sac a short concrete footpath leads into the general park system whose walks have a combined length of more than 7 miles.



Photograph by Gustav Anderson

Photograph by Gustav Anderson

GREEN ACRES, A RESIDENTIAL PARK COMMUNITY

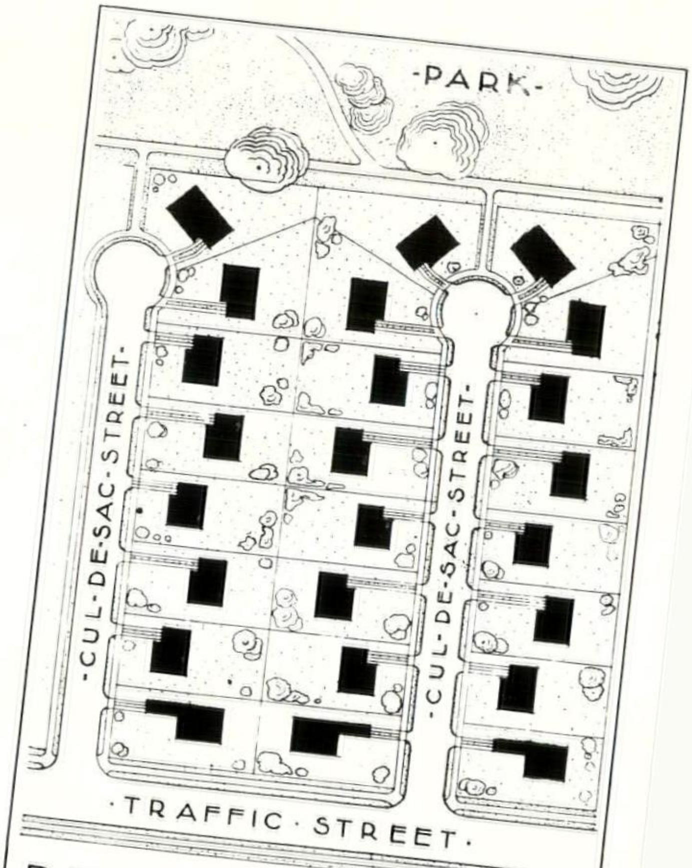
NEAR VALLEY STREAM, LONG ISLAND

DESIGNED BY IRWIN S. CHANIN

These footways are so arranged, in turn, that the shortest and most direct route between points on its borders is by way of the footways. Playgrounds for children, of which there is one for each group of 50 to 75 houses, are so situated in the park system that they are entirely unapproachable by automobile. From about 90 per cent of all homes in the project, a child may pass from its home to the centrally-situated school site without necessity for crossing more than one traffic street.

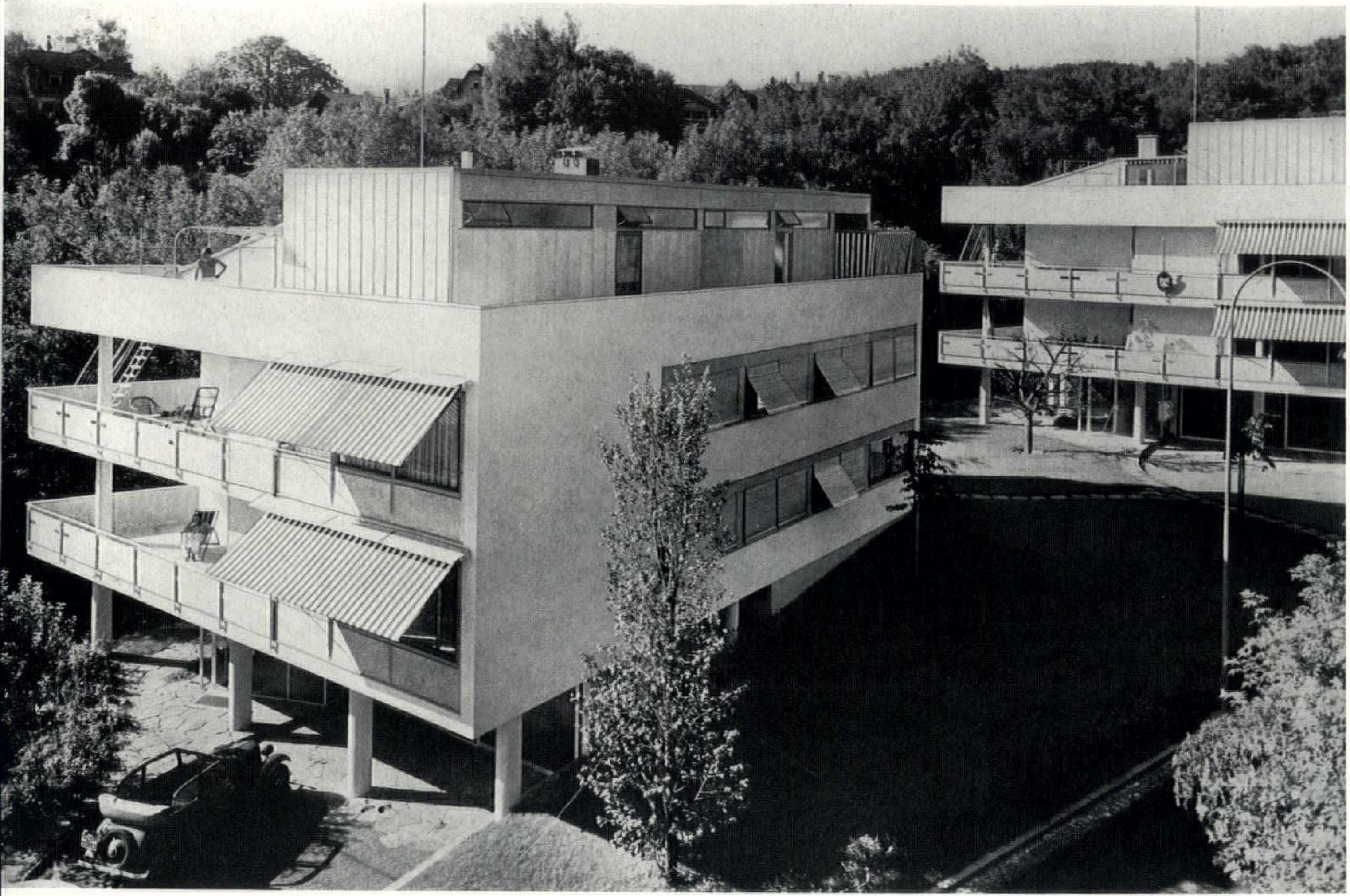
In the general scheme for Green Acres, Mr. Chanin has sought permanent isolation by widening and deepening the streams which form natural boundaries on two sides of the site. Other streams are being developed into features of the park system. Green Acres is planned as a self-contained community with sites for educational, civic and business centers and churches. It will be a community devoid of rows of houses, detached garages, clotheslines and backyards. Houses are set upon the building plots at varying distances from the street line.

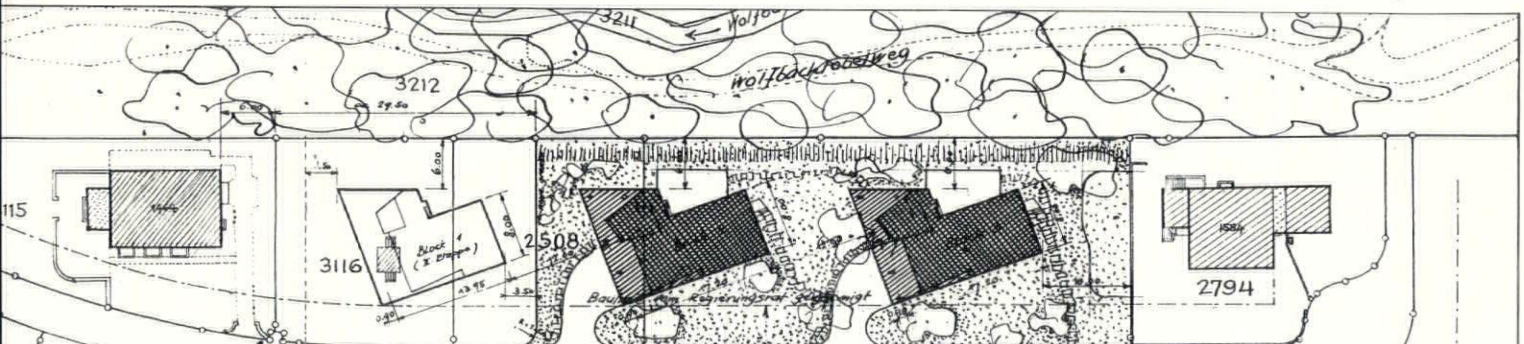
Houses in Green Acres, consisting of five to eight rooms, are priced at $6,490 to $10,000, including garages, wood-burning fireplaces, complete insulation, oil burners, scientific kitchens, and landscaping. The first group of houses, containing 24 adaptations of Cape Cod, Colonial, English and French Manor design, was opened to the public September 5, 1936.



DETAIL-OF-TYPICAL CUL-DE-SAC-STREET

Photograph by Finsler





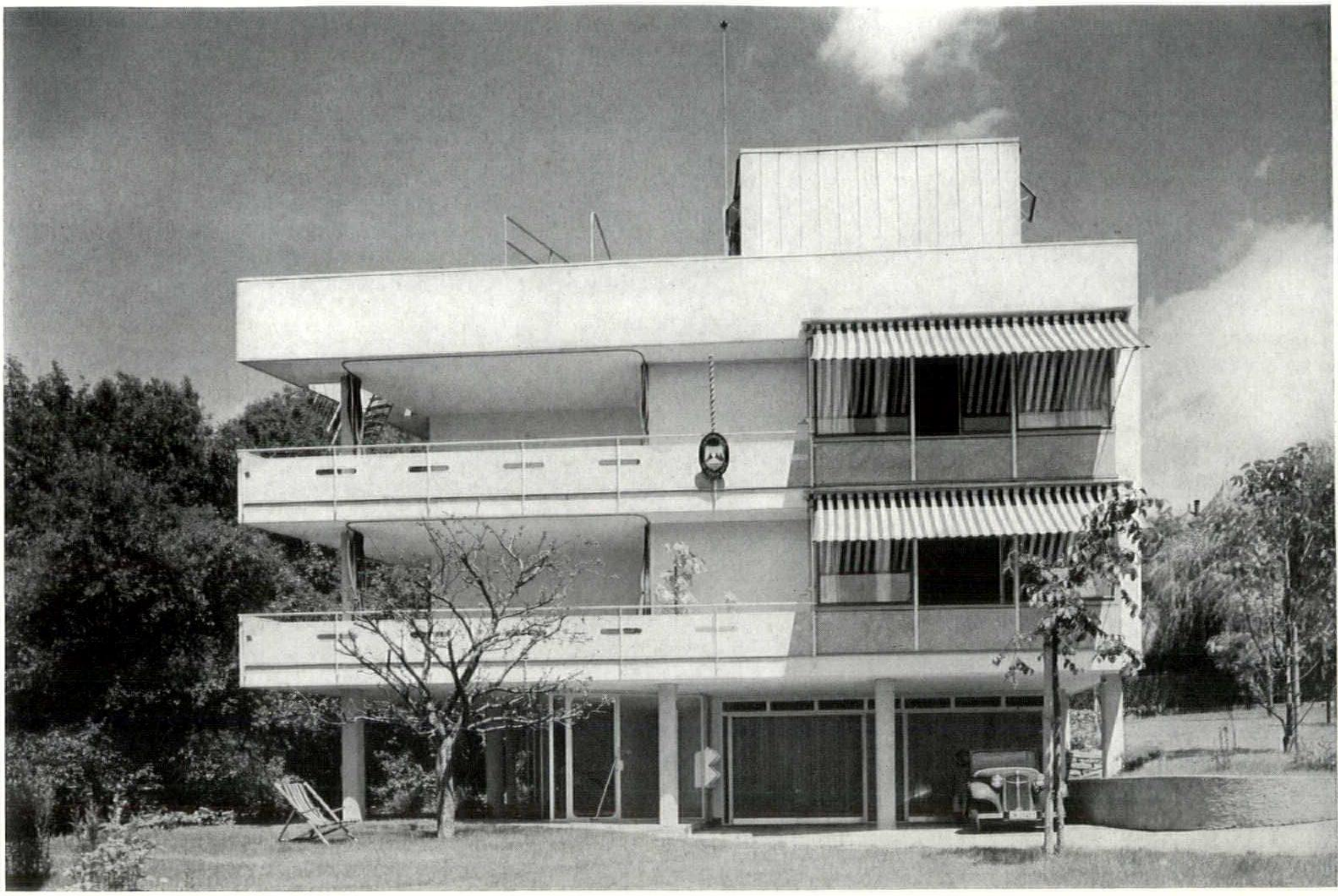
PARTMENT HOUSES FOR SIMPLIFIED AND PLEASANT LIVING

URICH, SWITZERLAND

LFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

The apartment houses are grouped with plans placed diagonally. This permits unobstructed views in all directions; also, main façade with its living rooms is toward south. The two apartment buildings will be supplemented later by a third unit. The plot faces on a park.

Photographs by Finsler

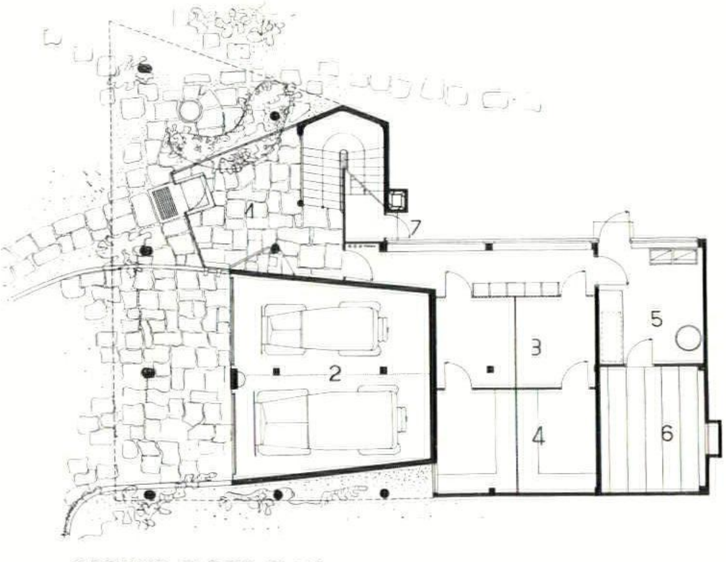


There are two apartment floors and penthouse apartment on roof

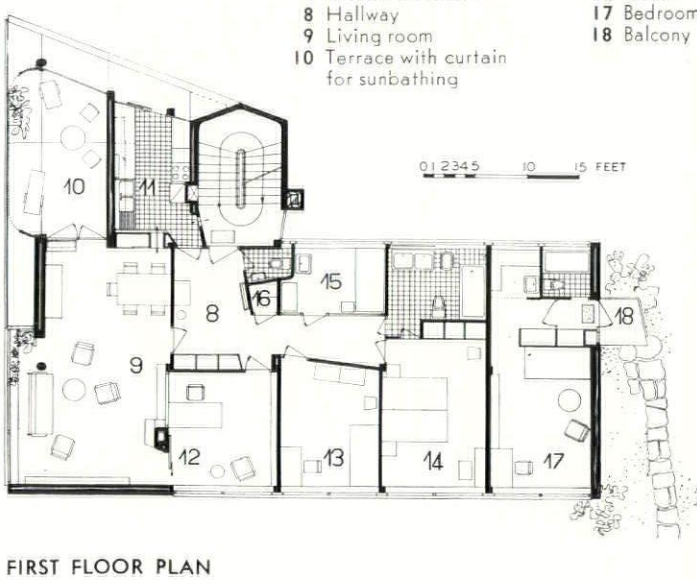
APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

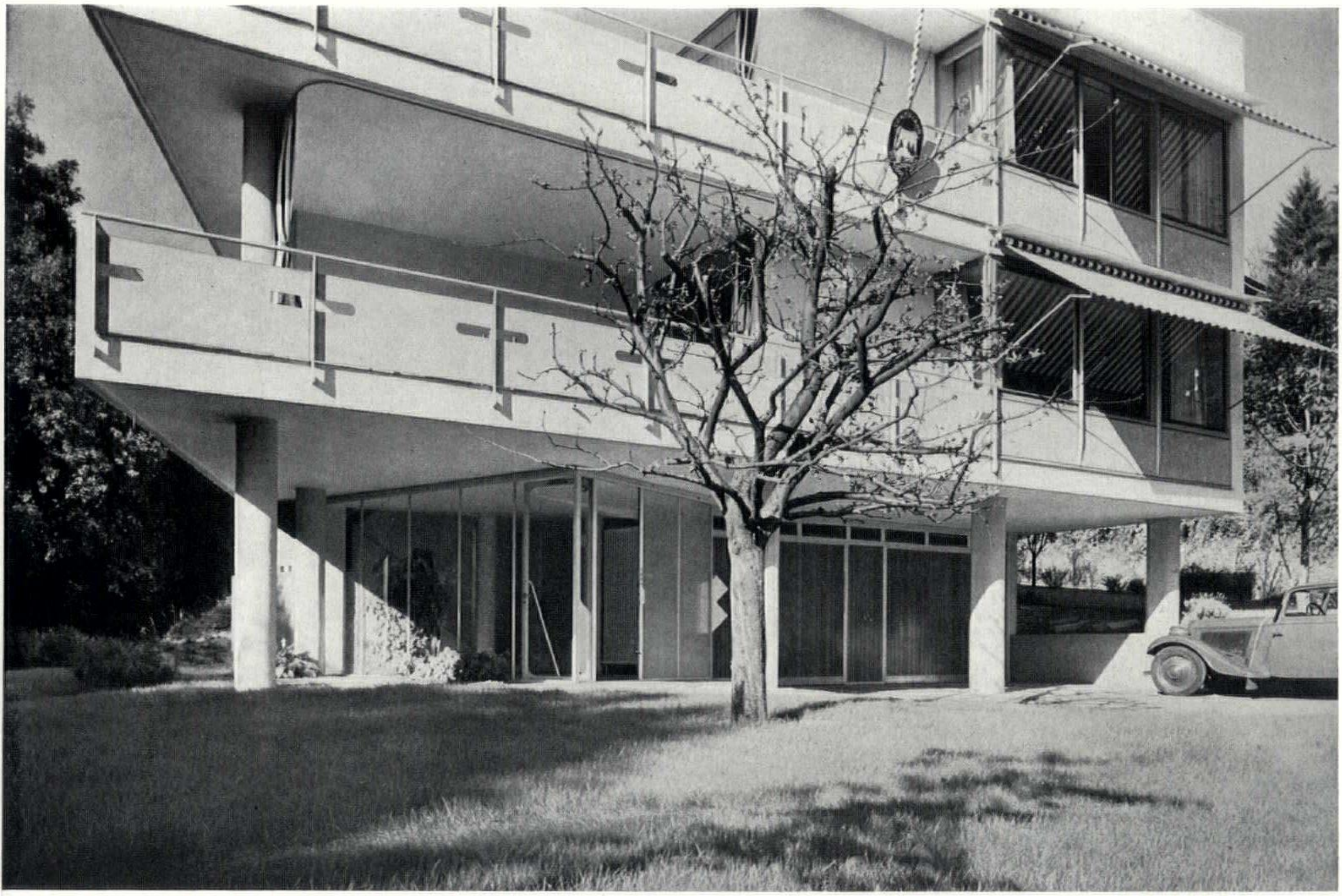
1 Glazed lobby
2 Garage
3, 4 Storage
5 Laundry
6 Drying
7 Service entrance
8 Hallway
9 Living room
10 Terrace with curtain for sunbathing
11 Kitchen
12 Library
13 Bedroom
14 Bedroom
15 Bath
16 Linen
17 Bedroom
18 Balcony



GROUND FLOOR PLAN



FIRST FLOOR PLAN

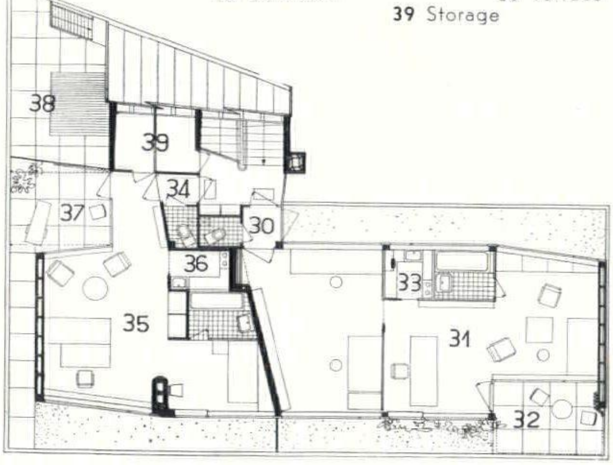


South elevation showing glazed entrance hall, garage at right, also outdoor porches.

ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

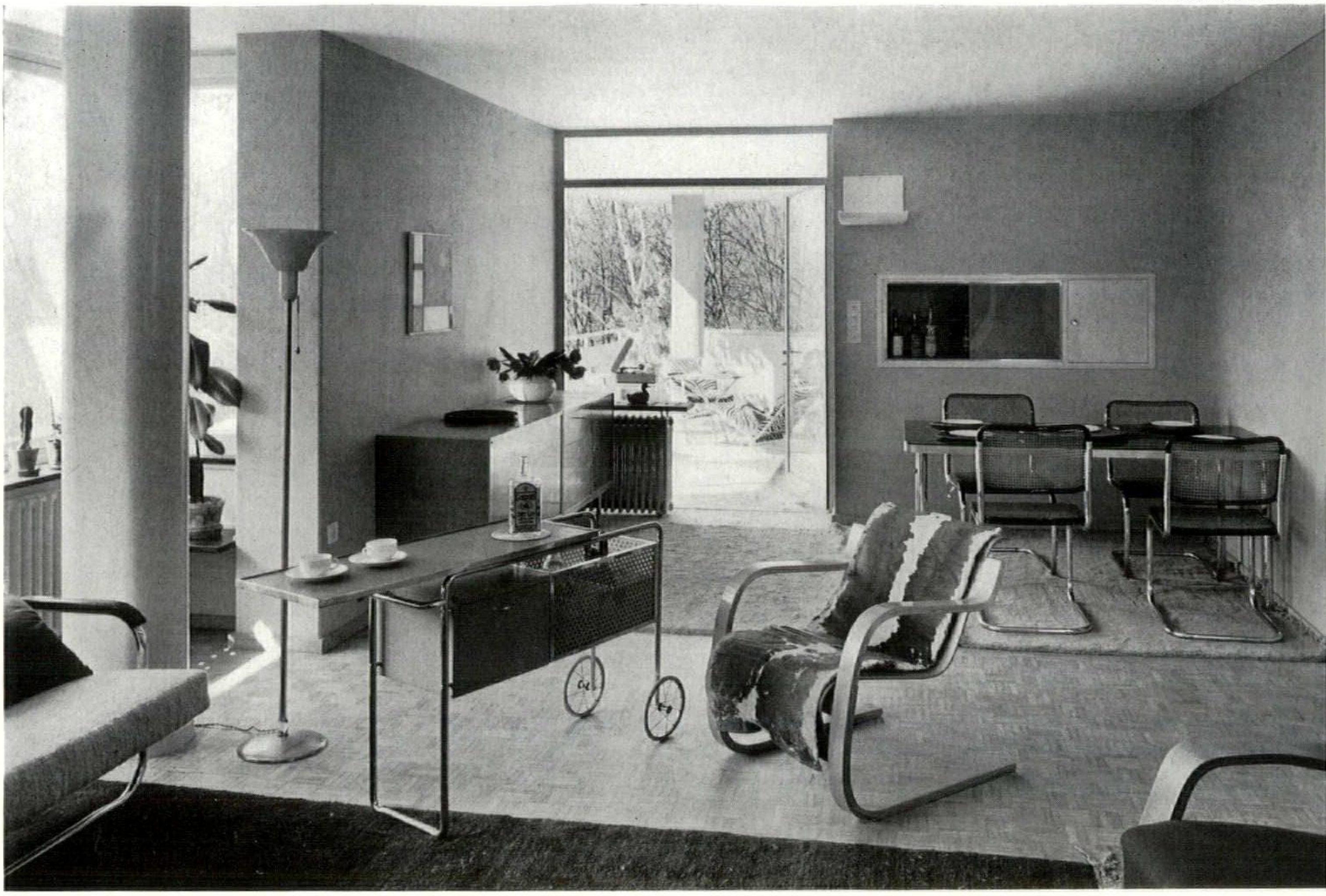
19 Hall
20 Sun terrace
21 Kitchen
22 Living room
23 Music room
24 Bedroom
25 Bedroom
26 Bedroom
27 Dressing room
28 Bathroom
29 Servants' room
30 Foyer
31 Atelier
32 Porch
33 Kitchenette
34 Hall
35 Living room
36 Kitchenette
37 Sun terrace
38 Terrace
39 Storage

SECOND FLOOR PLAN



PENTHOUSE FLOOR PLAN

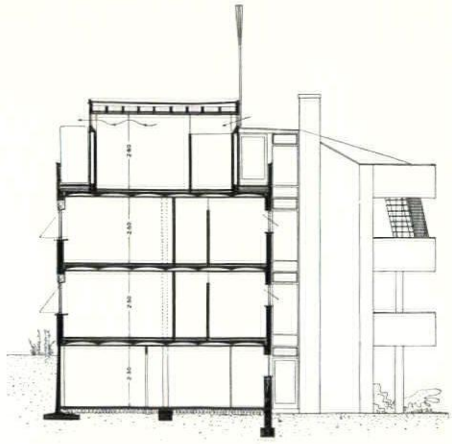
Photographs by Finsler



APARTMENT HOUSE GROUP

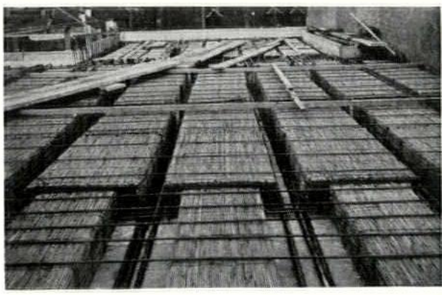
ZURICH, SWITZERLAND

1



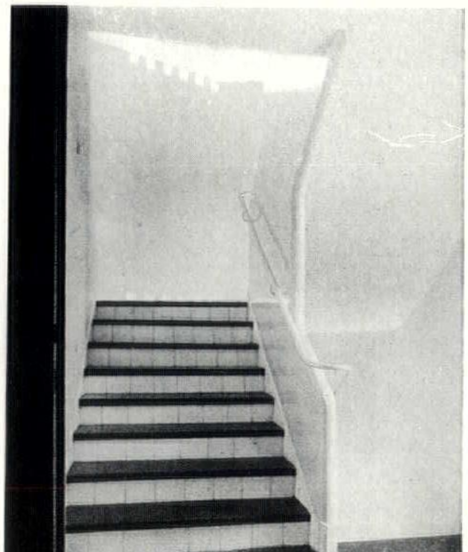
Above: LIVING ROOM OF ALFRED ROTH. Furniture designed by Alfred Roth and Marcel Breuer. Right: 1 SECTION OF BUILDING; 2 FLOOR SYSTEM READY FOR POURING CONCRETE, showing reed forms.

2



ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

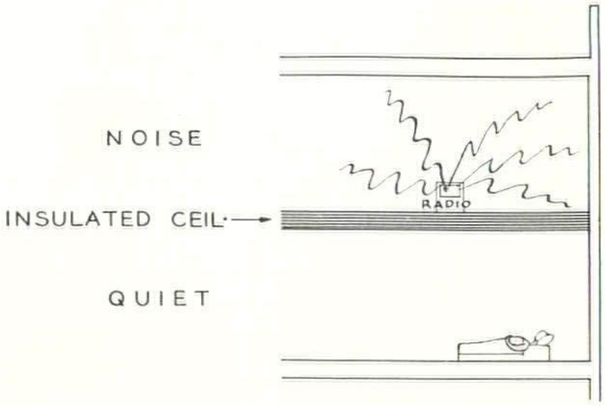
Above: DRAFTING ROOM OF ALFRED ROTH.
Right: STAIRWAY.



APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

ALFRED AND EMIL ROTH, MARCEL BREUER,
ARCHITECTS

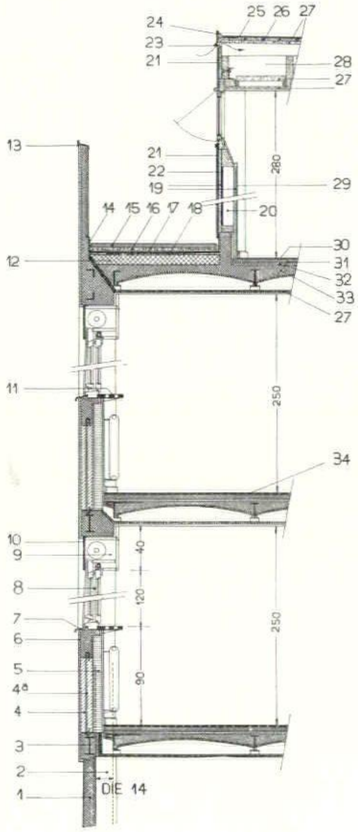


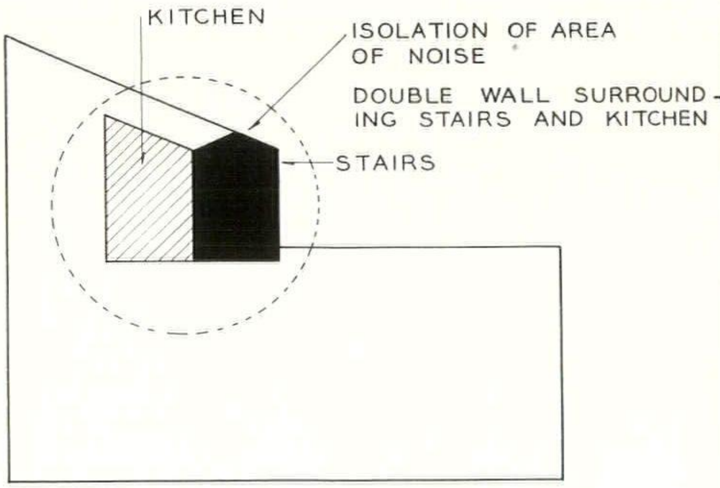
The architects endeavored to create apartments in a partly wooded section which would offer the more familiar advantages of the one-family house. Rooms were so arranged in conjunction with terraces as to permit enjoyment of surrounding trees and scenery.

THE PLAN

Houses were grouped with plans placed diagonally. This method of placing the apartment buildings resulted in no façade facing another and the main front is toward the south. The living room fronts toward the sun and view and bedrooms are away from the street.

The stairs and kitchen are grouped so that the two units can be insulated against passage of noise to the apartments. At the same time the kitchen is centrally placed. Its entrance is next to the living room entrance and has a serving window to dining room and a window to receive delivered packages.





EXPLANATION:

1 FOUNDATION WALL
2 STEEL COLUMNS
3 GIRDER
4 HOLLOW TILE, 4"
5 GYPSUM BLOCK, 2¾"
6 STUCCO
7 ZINC-COATED SILL
8 SIDE SLIDING WINDOWS
9 AWNING WITH SLATS
10 TRANSITE PLATE COVER
11 WINDOW SILL (PERFORATED SLATE)
12 CONCRETE
13 COPPER
14 FLASHING
15 CONCRETE, 2"
16 SAND AND GRAVEL
17 BUILDING PAPER AND GRAVEL
18 CORK INSULATION, ¾"
19 SHEATHING
20 AIR SPACE
21 SPUN GLASS INSULATION
22 TRANSITE FACING
23 VENTILATION
24 COPPER CAP
25 TAR AND GRAVEL
26 SHEATHING
27 SLAB ROOF
28 AIR SPACE
29 BIRCH VENEER
30 LINOLEUM
31 FLOATING CONCRETE, 2"
32 CORK
33 AERATED CONCRETE
34 WOOD FLOORING

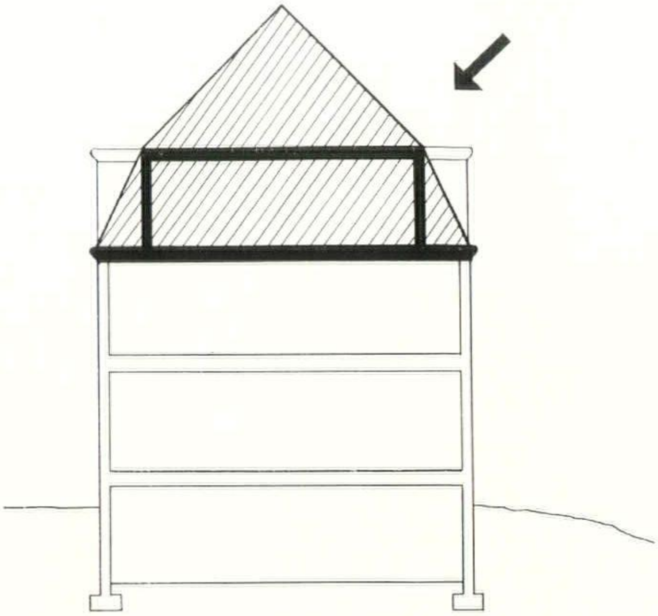
LIGHTING

Day lighting. All rooms have a maximum source of daylight by means of large planes of glass. There is provision, by operating windows, for rapid ventilation. The large glass areas require curtains for control of heat and light. During sunny days of winter the extensive windows permit heating of rooms by the sun with a consequent reduction of artificial heating.

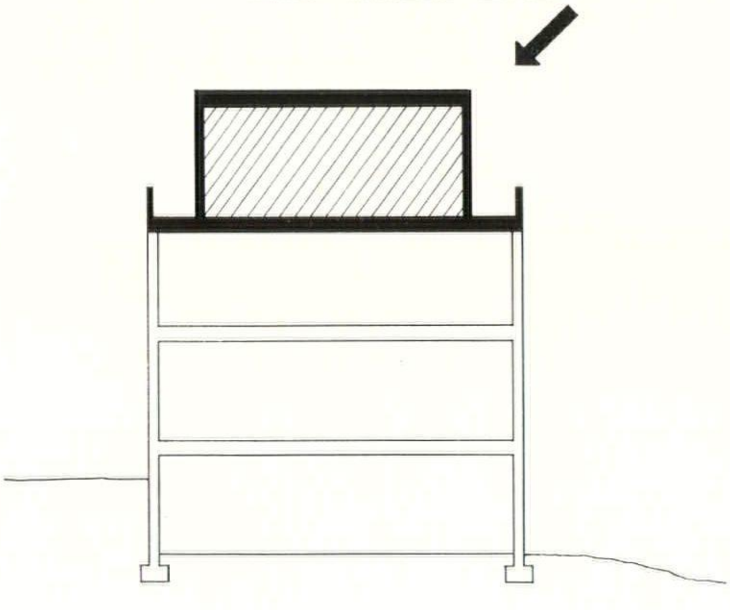
Night lighting. It is possible at night to have indirect illumination in all bedrooms, living rooms and working areas by means of specially designed wall and ceiling fixtures. The general lighting of the room is by adjustable wall lamps placed 6 feet from the floor.

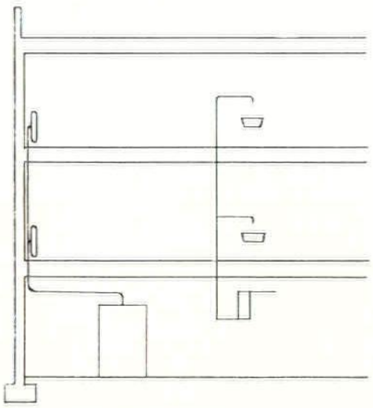
LIVING ROOM FIREPLACE

otograph by Finsler



MORE USABLE SPACE





PLUMBING & HEATING PIPES GROUPED & INSULATED TO PREVENT HEAT LOSS, NOISE & AGAINST COLD

APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECT

CONSTRUCTIONAL AND TECHNICAL APPLICATIONS

Skeleton steel frame permitted a curtain wall constructio Outside wall is nonbearing, attached to steel floor system.

The following possibilities for cracks in wall and ceilin surfaces were considered: (a) uneven settling of building (b) strains inside the framework through differences in ou side and inside temperatures; (c) deformation of ceilin through changing deflection.

Point (a) was solved by placing the steel framework on steel girder grillage. One wall of the building extends int the ground on one side and has a reinforced concrete fou dation wall which is independent of the framework. The stai way is treated as a tower and a free-standing concre inclosure.

Point (b). Façades are outside the columns. This preven deformation inside the framework due to differences in te perature. Columns are not connected with the façade an are insulated.

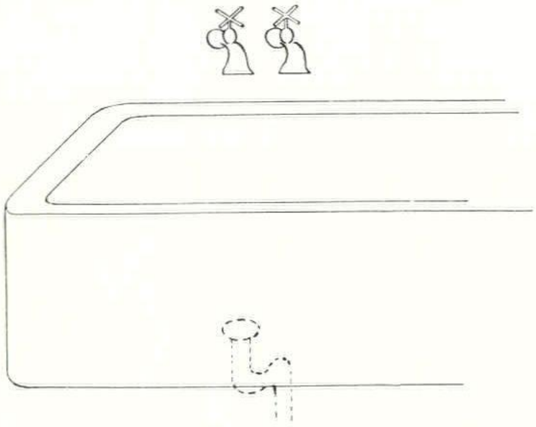
Point (c). Ceilings were systematically cut off from th façade, thereby preventing cracks. The penthouse has a ligh weight construction for the outside wall (see section). It co sists of wood framing faced with builders' felt as a linin and faced outside with Transite for finish. Transite has prove itself completely satisfactory as an exterior surface. In th penthouse wall use was made of spun glass as an insulati material. This is not affected by dampness or chemical infl ences. It also does not corrode in conduits. Spun glass w also used for insulation of pipes in walls.

THE UPKEEP OF THE EXTERIOR

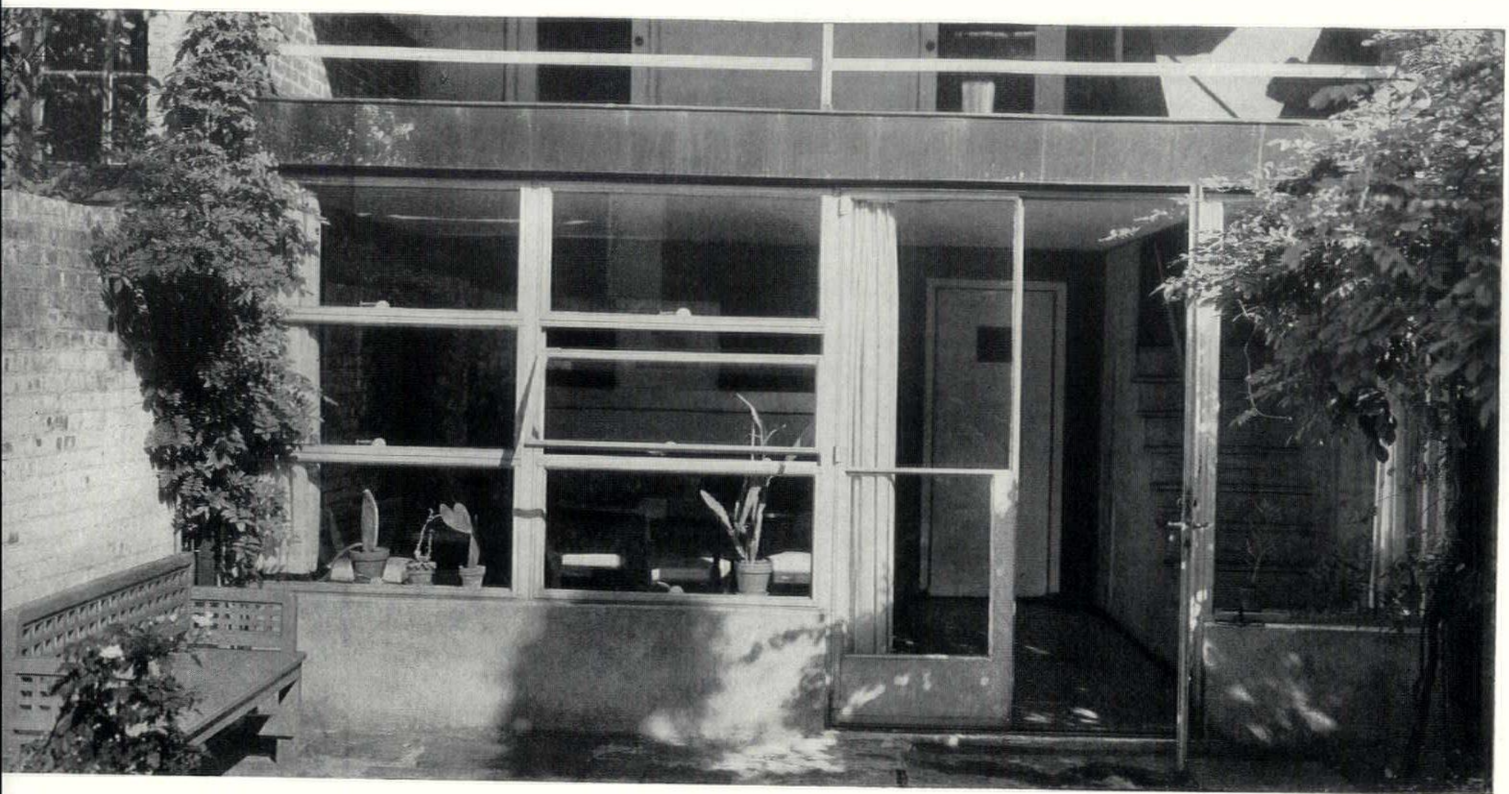
Materials requiring minimum cost upkeep were used. The included Transite, stucco and copper.

HEATING AND HOT WATER

The heating of each apartment is by hot water with separa boilers for each apartment.



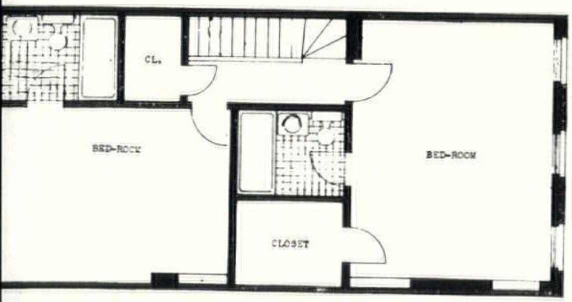
SILENT FAUCETS AND QUIET, NON WHIRLPOOL DRAINS



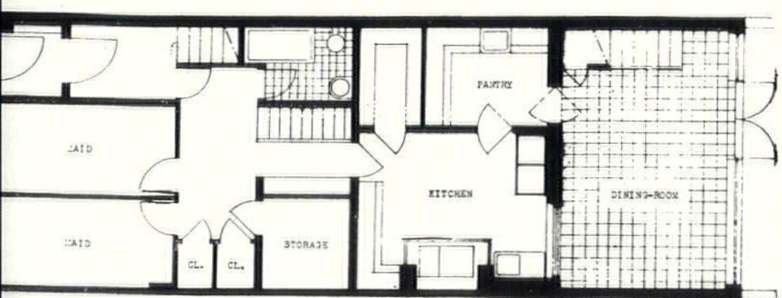
REMODELED APARTMENT OF W. H. LABROT

NEW YORK CITY

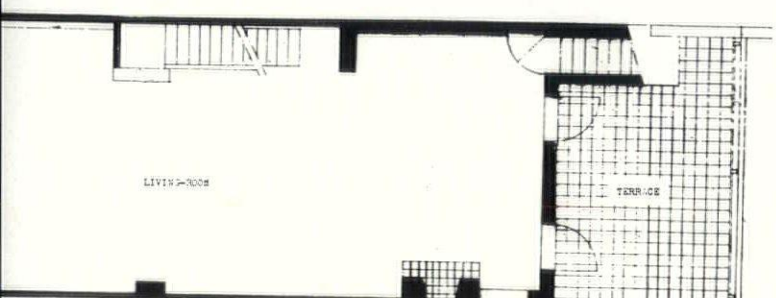
WILLIAM MUSCHENHEIM, ARCHITECT



BEDROOM FLOOR



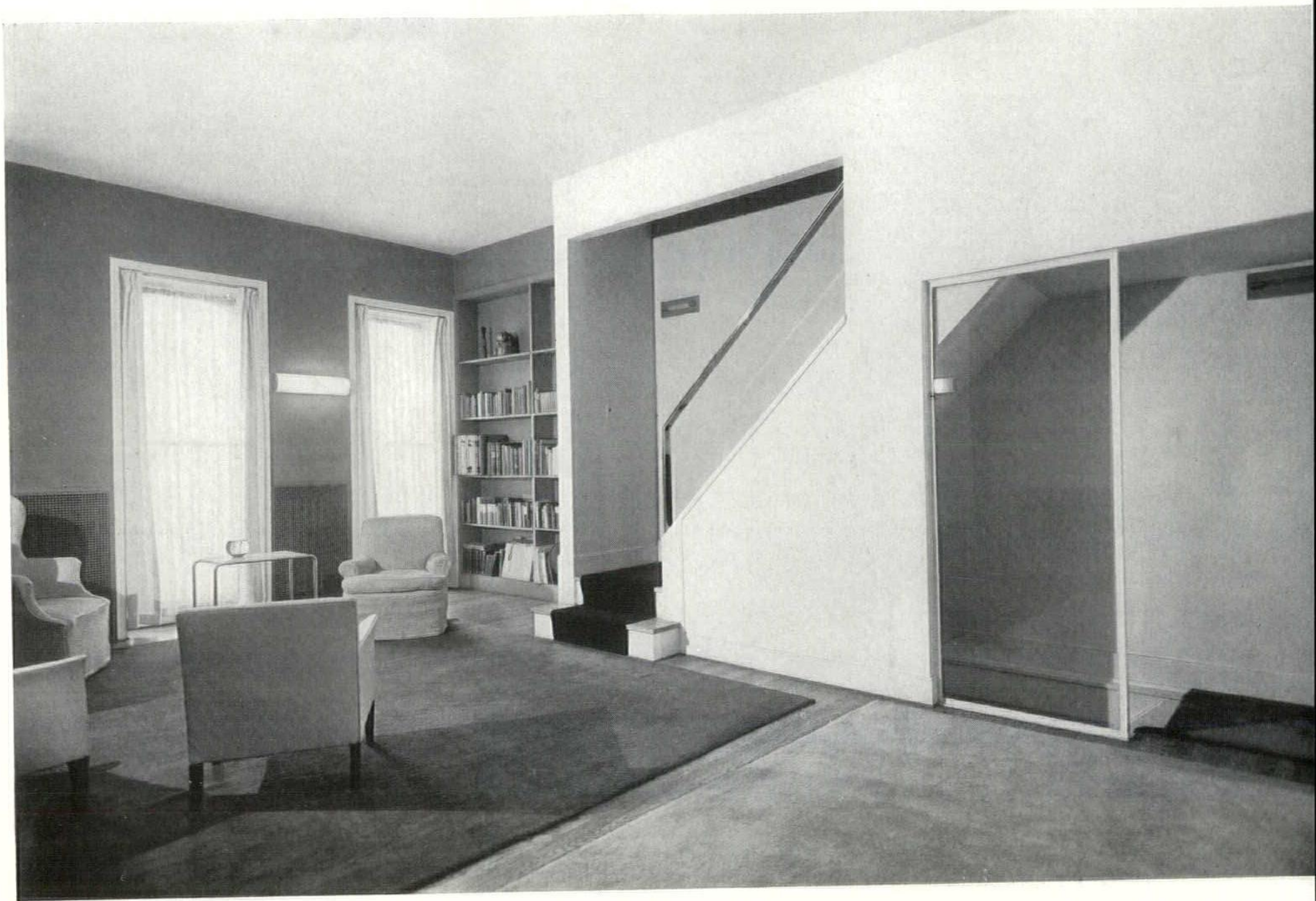
GROUND FLOOR



MAIN FLOOR

In altering this house the high stoop was removed, which created an English basement entrance with the service entrance off the vestibule (see plan 2). The dining room with terrace above, added to the rear of the house, was designed with the idea that it would become a part of the garden. Stock factory sash were used. The kitchen has forced ventilation. The terrace over the dining room leads off the large living room which takes up an entire floor without any dividing partitions (see plan 3). This necessitated the boxing in of the staircase in order to support the floor beams above.

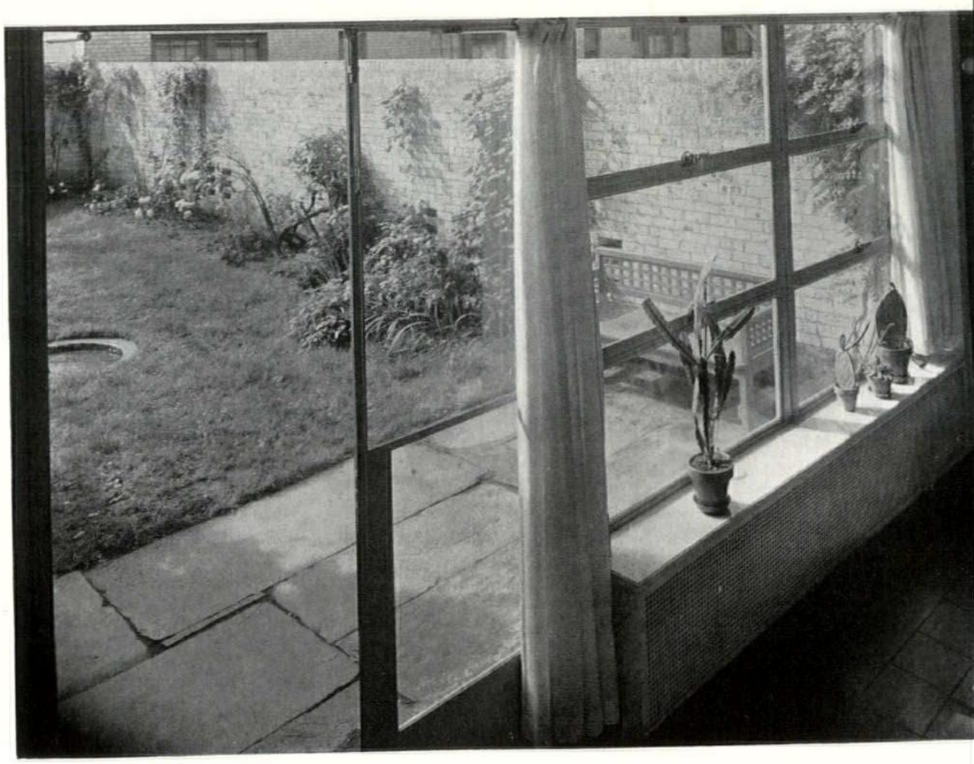
The bedroom floor was rearranged so as to procure a large master's bedroom overlooking the garden (see plan 1).



REMODELED APARTMENT OF W. H. LABROT

NEW YORK CITY

WILLIAM MUSCHENHEIM, ARCHITECT



Above: LIVING ROOM
Right: DINING ROOM WINDOW

Photograph by Dell and Wainwright

Frontage of building facing the sea and showing main entrance.

EMBASSY COURT APARTMENTS

BRIGHTON, ENGLAND

WELLS COATES, ARCHITECT

CHARACTER OF BUILDING. Apartments to provide vacation and all-year accommodations at England's swankiest seaside resort. There are nine types of flats ranging from single-room to multiple-room suites renting for from \$750 to \$2,500 per year.

PLAN. The building is on a corner plot with frontage toward the sea. The L-shaped building has a free area at the rear with accommodation for a series of private lock-up garages. Floors 1 to 8 include seven flats each. The largest is at angle of building and contains a living room of large size with a recessed drawing room separated by a sliding partition. In addition, there are three bedrooms, kitchen, baths, etc.

The ground floor is planned with a lounge, foyer and small-size apartments. A banking room occupies the corner of the L at ground floor.

The basement provides space for storage, heating plant, and a garage.

"The site on a sea-front," writes the architect, Wells Coates, "is not the most propitious parade-ground for the conscientious exponent of modernism, for his building is apt to be judged at once by its elevation, especially when its neighbors are emphatically façade-ridden."

The apartments between the ground and ninth floor all have balconies, either open or inclosed in a sun-bay. There are galleries at rear used for service and also providing stairway access to upper apartments. Elevators serve for normal access.

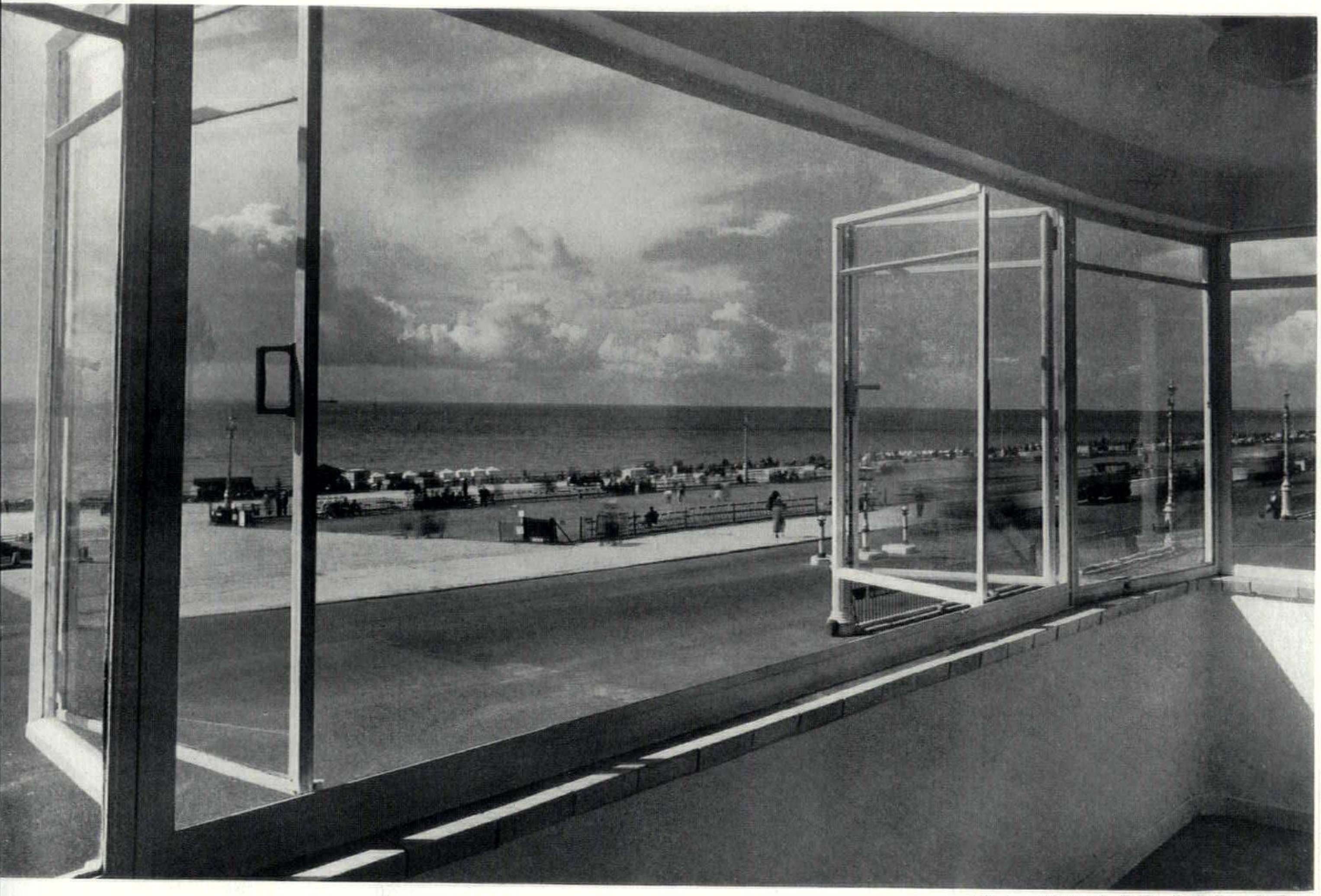
STRUCTURE. The building loads for Embassy Court are taken on three rows of reinforced concrete piers, spaced to suit the typical floor plan. There are continuous balconies on both sides of the building, cantilevered to the concrete floor slabs.

The floors are of hollow tile obviating need for cross floor beams. Three projecting staircases at rear are used as stiffeners to the structure. The exterior wall facing is of 4½" reinforced concrete, backed with cork and finished with a ¼" facing of plaster. Outside the surface finish is of waterproof cement, light cream in color.

INTERIOR TREATMENT. The floors in apartments are of ⅜" cork squares. The landing space for elevators has a composition floor, also laid out in squares.

The furniture for foyer and in exhibition apartments was designed by the architect.

Photograph by Dell and Wainwright



Photograph by J. J. G. Saunders & Sons

EMBASSY COURT APARTMENTS

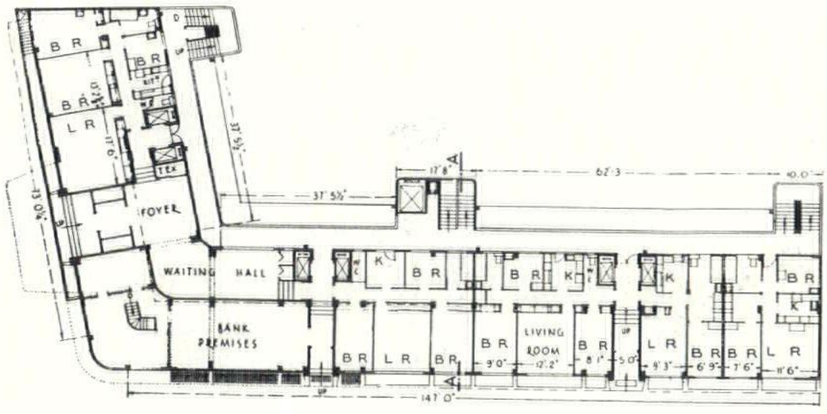
BRIGHTON, ENGLAND

WELLS COATES, ARCHITECT

LEFT: View of building from side street, looking toward sea. All apartments have balconies, either glazed or open.

ABOVE: Detail of sun-bay with windows that slide, affording unobstructed opening.

RIGHT: The ground floor plan provides a foyer, waiting room, banking room and apartments of lesser size. The three outside stairways serve as stiffeners to the structure.



Photographs by Dell and Wainwright

EMBASSY COURT APARTMENTS

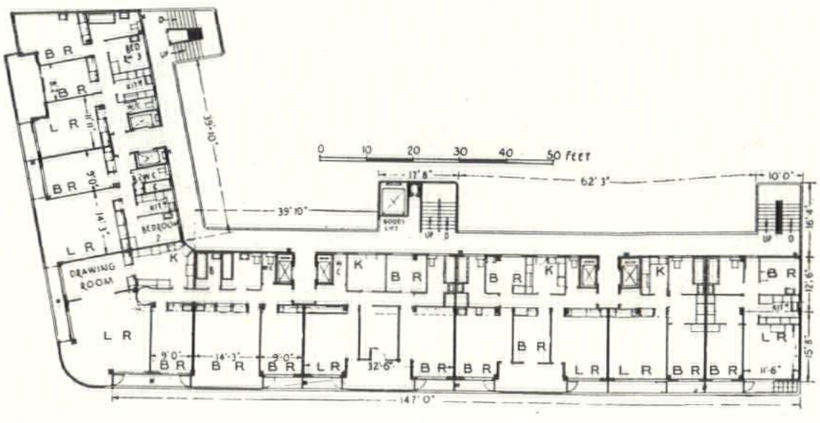
BRIGHTON, ENGLAND

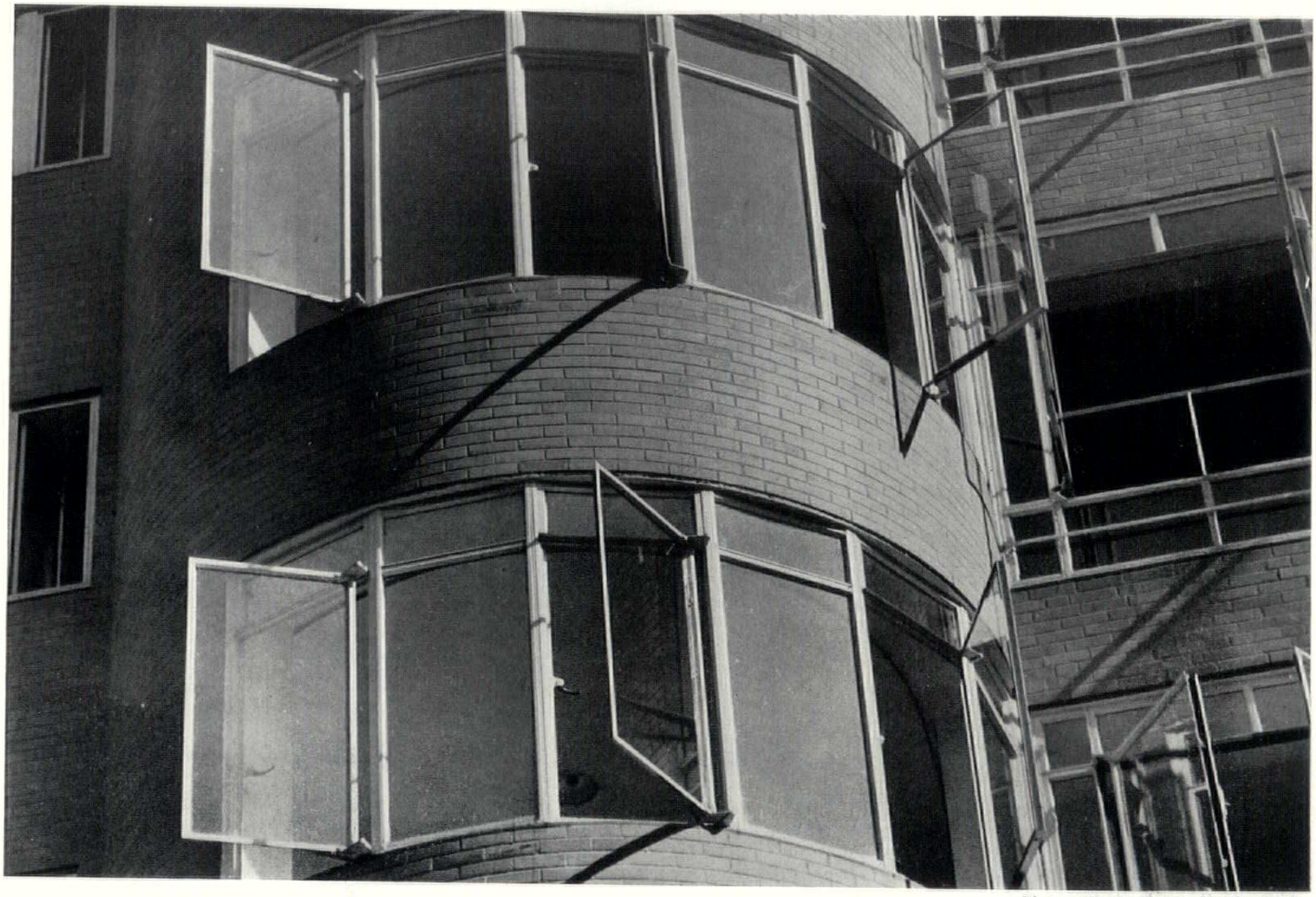
WELLS COATES, ARCHITECT

LEFT: Court with inclosed stair towers.

ABOVE: Sun balcony, from living room.

RIGHT: Typical floor plan with apartments ranging in size from single rooms to nine rooms.





Photographs by George H. Van Anda

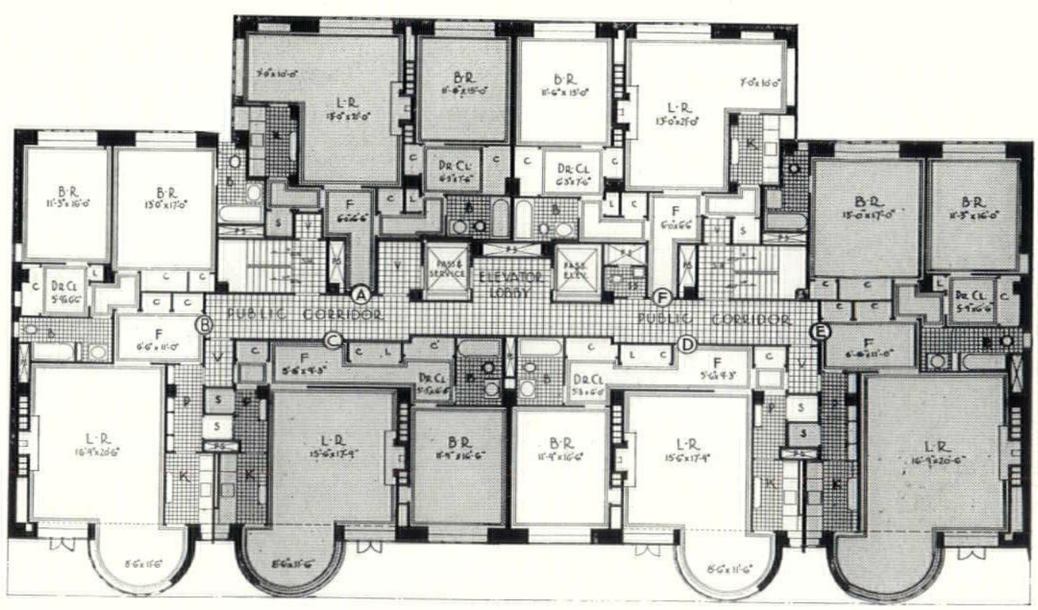
ROCKEFELLER APARTMENTS

NEW YORK CITY

HARRISON AND FOUILHOUX, ARCHITECTS

The new Rockefeller Apartments comprise two structures on a plot 125 feet wide running through the block from 54th to 55th Streets. A garden, varying in width from 43 to 78 feet, will connect the two buildings at ground level. They will also be joined by an underground passage. The lower nine stories will be full floors, the tenth floor will have a setback on east and west sides. The top stories will be set back on all four sides. Here there are several penthouse apartments and also sun decks. Within the building there is space for a restaurant, playrooms, storage, and a drug store.

Rents range from $1,000 to $3,000 per year, excepting that penthouse apartments of three and four rooms rent from $2,700 to $3,500.

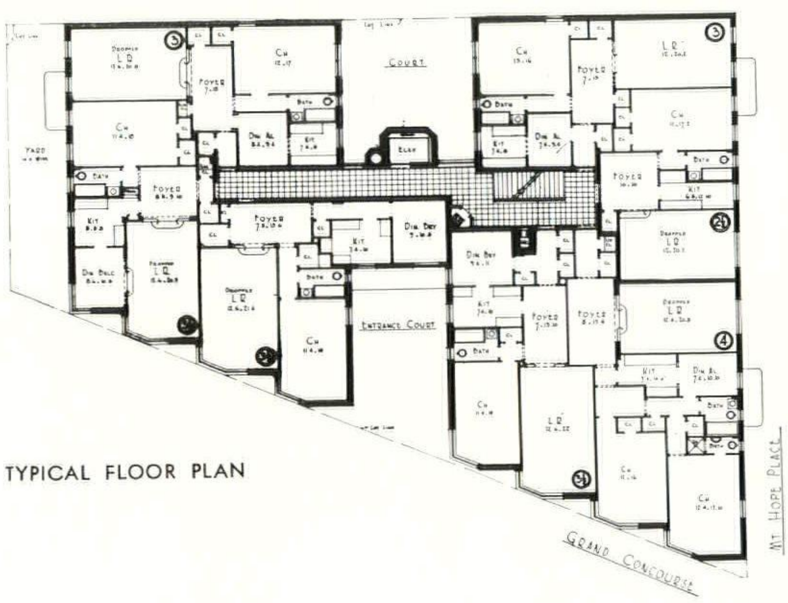


Photograph by George Van Anda

APARTMENT BUILDING AT GRAND CONCOURSE AND MT. HOPE PLACE

NEW YORK CITY

CHARLES KREYMBORG, ARCHITECT



TYPICAL FLOOR PLAN

APARTMENT BUILDING

BASEL, SWITZERLAND

OTTO SENN AND RUDOLF MOCK, ARCHITECTS

ROOF TERRACE

Furniture Types, left to right: **1** reading lamp, Frederick Kiesler, Architect; chairs of plywood by Alvar Aalto, Architect; upholstered chair wit metal frame by Le Corbusier and Charlotte Perriand; desk and chair by Heinrich Lauterbach, Architect; **2** upholstered chair by Adolf Schneck, Archi tect; metal chair and seat with upholstered cushions by Marcel Breuer, Architect; wardrobe, Japanese; upholstered chair, Bock & Feil; **3** metal chai with leather seat and arm rests, Le Corbusier and Charlotte Perriand; nest of plant stands, Wohnbedarf; P-H lamp; metal chair, canvas seat, Marce

THE APARTMENT INTERIOR

ITS PLANNING AND FURNISHING

BY WILLIAM MUSCHENHEIM

The old affinities of traditional design having been lost, how is the architect to create the interiors of apartments and houses so as to be in character with new standards of living?

The urban apartment will, perhaps, be first to respond to the new affinities. The demand of clients for increasing conveniences and comforts has gradually changed the purposes and character of rooms and given a totally new appearance to furniture and furnishings. Among the changed prerequisites of apartments that have influenced or dictated change must be mentioned a need for natural cross ventilation, regard for orientation so as to gain utmost advantage of sun, light, cool summer breezes and even shade. A pleasant outlook is also one of the dominating factors in arrangement of rooms and windows. The advantageous outlook is frequently combined with possible open terraces. All of these considerations are, in a large degree, dependent on municipal plan and, therefore, are not in reality within the scope of this article.

Modern methods of skeleton construction have made possible, to the architect, a far greater flexibility of plan arrangement. Solid masonry walls are no longer essential as supports to floor so that light walls, penetrated at will by windows, have become the logical procedure. Apartments have become more open with fewer separating partitions, excepting soundproof barriers between one apartment and another and adjoining hallways. Solid walls also surround such permanent installations as baths, toilets, kitchens and laundry. Bedrooms, as a rule, require a complete separation from the rest of the apartment, but this need not necessarily be accomplished by means of a masonry wall or other kind of permanent partition. It can, for example, be accomplished successfully by the placing of a shallow wardrobe to obtain separation and privacy.

The object of eliminating partitions that are not urgently needed is, primarily, to actually increase usable space and at the same time to add an appearance of roominess.

Economy in arrangement of space is imperative because of the prevailing high cost of construction. Economy and efficiency are desirable also from the point of view of maintenance for both apartments of luxury and low-cost type.

With these factors in mind, it will be obvious that small hallways and many doors are to be avoided, but with careful attention applied to the main living space that can be subdivided to suit various functions by means of movable partitions or curtains. A further saving in space may be accomplished by the careful planning of built-in wardrobes, sectional cabinets, and mechanical equipment.

Since the exterior walls can, if desirable, be entirely of glass, either in the form of long horizontal ranges of windows, large fixed panes of plate glass (clear, obscure or light-projecting) or of glass brick, the interior spaces can be much more efficiently lighted in the daytime and the general interior arrangement and grouping of furniture will accordingly suit the sources of daylight. An informal arrangement of furniture with accompanying eliminations of all unnecessary adjuncts will insure maximum comfort through a minimum of means. The final result can be made most pleasing by the correct selection of materials and colors having differences in shading, determined by location, personal preference and individual means. For the few who happen to own authentic pieces of old furniture they do not wish to part with, discretion and taste must be exercised. In reality the modern apartment should not be so formal that personal objects cannot be admitted to the scheme of furnishing. The following pages of illustrations show some examples of the judicious combination of old furniture in a modern setting and also a combination of traditional and new furniture.

The successful apartment should be a background or space for living. The purpose of the apartment is to facilitate pleasant and convenient living and consequently it would be a mistake to lay too much emphasis on a decorative result. Cleanliness of design of the various parts is of first importance, followed by due attention given to a right use of materials and a scrupulous selection of each material for its particular use. The process

Breuer, Architect; **4** box spring on metal frame with loose cushions, Adolf Schneck, Architect; metal frame chair, slung reed seat and back, Erich Dieckmann; chair with seat, back and arms from single piece of plywood, metal base, Alvar Aalto, Architect; reclining chair and footrest of wicker, Erich Dieckmann; **5** chair of bentwood, plywood seat, Ferdinand Kramer; terrace chairs of aluminum, Marcel Breuer, Architect; chair with aluminum frame, seat and back, Alfred Roth, Architect; chairs of flat bar, noncorroding metal, seats and backs upholstered, Marcel Breuer, Architect.

for combining one material or object of furniture with another must be studied to obtain the best result. There are three kinds of furniture to be considered by the architect: (1) built-in, (2) standardized or mass-produced, (3) furniture that is specially designed. The actual selection will be dictated by specific needs, budget and what is obtainable on the market. The illustrations on page 306 are examples of different kinds of furniture that have recently been on the market in various localities. It might be noted that nearly every one of these was designed by a well-known architect. Although standardization of furniture or fabrics is desirable, yet the purpose is to attain reasonable variety. We can very well learn a lesson from the Japanese who achieve variety in the use of units of matting of similar size as a basis for determining room shapes and for placing furniture.

Hardware is available that is good in form and at the same time appropriate for use. Such hardware assures a shipshape appearance that is pleasant to eyes that have become accustomed to airplanes and streamlined trains. Technical perfection has set new standards of finishes and appointments. This does not mean that our homes should take on the atmosphere of the hospital. Whatever degree of warmth, richness or coziness is desired, can still be produced through the correct disposition of furniture, colors, textures and surfaces.

Aside from consideration of such practical items as arrangements of furniture, the adept use of artificial lighting can intensify and improve colors and textures and identify areas. The same principles of restrained design apply to lighting fixtures as to hardware. These fixtures would, naturally, not follow such outmoded prototypes as Colonial lanterns or classical candelabra.

Fine hand craftsmanship, which flowered in a different age, is being replaced by the machine. It was found by experience that "imitative crafts design" incurred waste in cost of production. The machine, it was discovered, could invest its product with a new idiomatic aesthetic quality. For many years now, architects and other designers both in this country and abroad have shared the common purpose of designing exclusively for the potentialities of the machine in aesthetic merit and economy. Both objectives—economy and appearance—demand simplicity of form and fine finish. Accordingly an idiom of artistic expression is arising in the industrial arts which the architect may use to harmonize new buildings with their contents. This means a new wealth of materials for use by the architect including plywood, plastics, noncorroding and polished metals, glass, fabrics, and a variety of wallboards.

The selection of flooring is an important influence in producing a desired quality or atmosphere. An arrangement of interlocking spaces can be helped by distributing different flooring materials and differing floor coverings. This can be further heightened by change in color. Apart from the usual narrow strip flooring which can be covered with rugs or carpets, there are many other kinds obtainable, such as rubber, cork, linoleum, pressed wood fiber, quarry tile, and magnesite. The selection will depend entirely on use, the general arrangement of spaces, furniture, and the degree of warmth, coolness or richness desired.

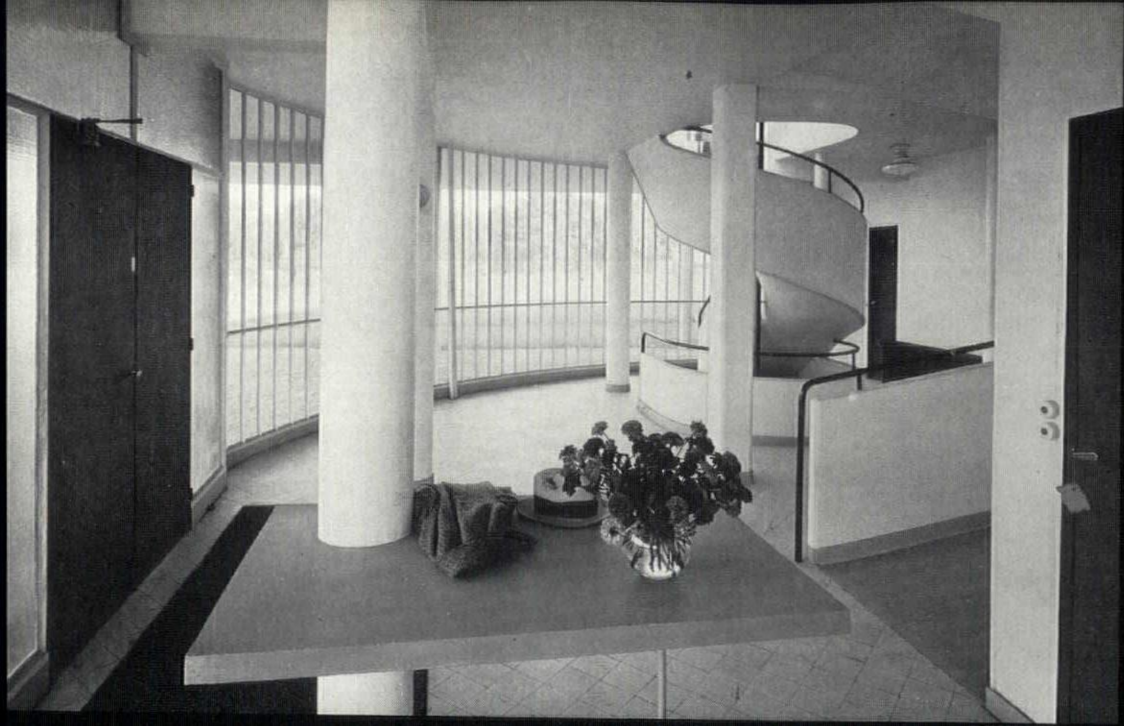
Since ceilings usually comprise the largest unbroken area of a room or rooms, they are particularly adapted to acoustical treatment either by use of special sound-absorptive plaster or by the application of acoustical tile. The ceiling finish must also be suited to effective distribution of artificial light that is either by direct or indirect means.

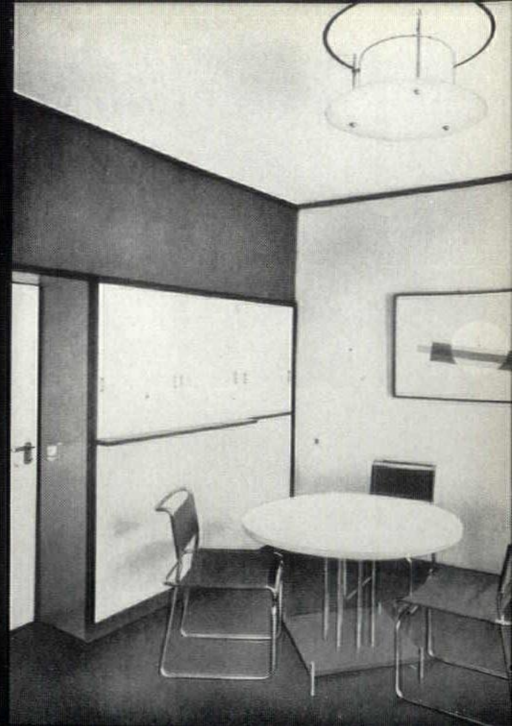
Aside from plaster, there are many different kinds of wall finishes. Large wallboards, newly developed by industry, frequently fit particular requirements. These are readily installed and are frequently advantageous because of their sound-absorptive quality. The unit width of four feet often has a desired influence on room design.

Doors and trim should be flush, warm to the touch and with a smooth surface. The door is no longer a feature to be decorated either with molds or other pattern. It can, however, be given interest by application of color and made to relate to the color scheme of the room.

Horizontal window areas are more efficient and conform to line of vision. Daylight that is excessive can be controlled by use of curtains and blinds. Where there are terraces, folding or sliding doors join the interior living space with the outside and thus appreciably augment the feeling of size.

The selection of illustrations which accompanies this text was dictated by a desire to comprehend work done in recent years by architects in the United States and other countries. It was deemed unwise to follow a strictly chronological sequence. The work represented covers approximately the past twelve years.





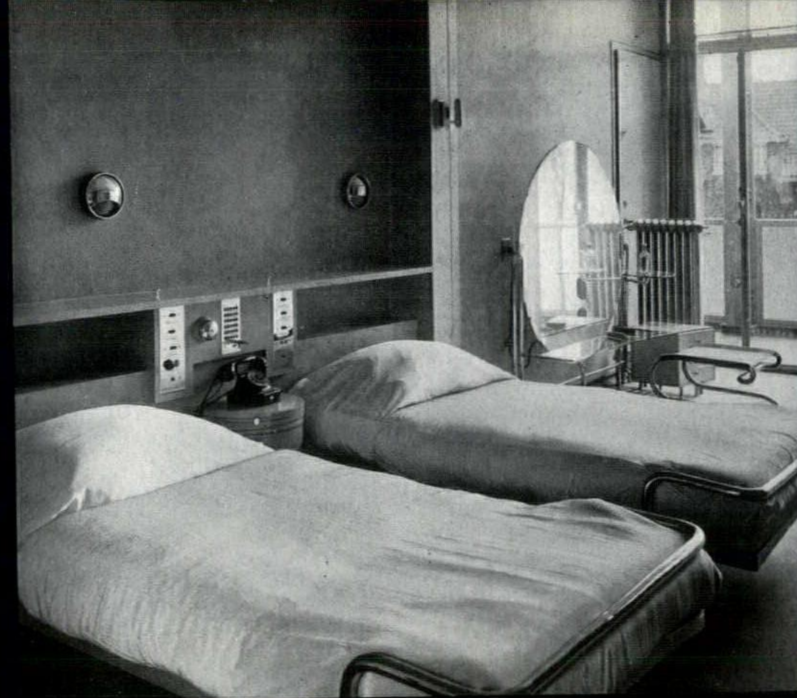
STAIR HALL, VILLA SAVOYE, POISSY, FRANCE. LE ORBUSIER AND P. JEANNERET, ARCHITECTS.
EE-STANDING REINFORCED CONCRETE COLUMNS ND SPIRAL STAIRS AS ELEMENTS OF DESIGN IN HEMSELVES, WHEREVER THEY OCCUR NATURALLY. TERIOR WALL BECOMES MERELY A GLASS SCREEN ITHOUT RELATION TO STRUCTURAL MEMBERS.

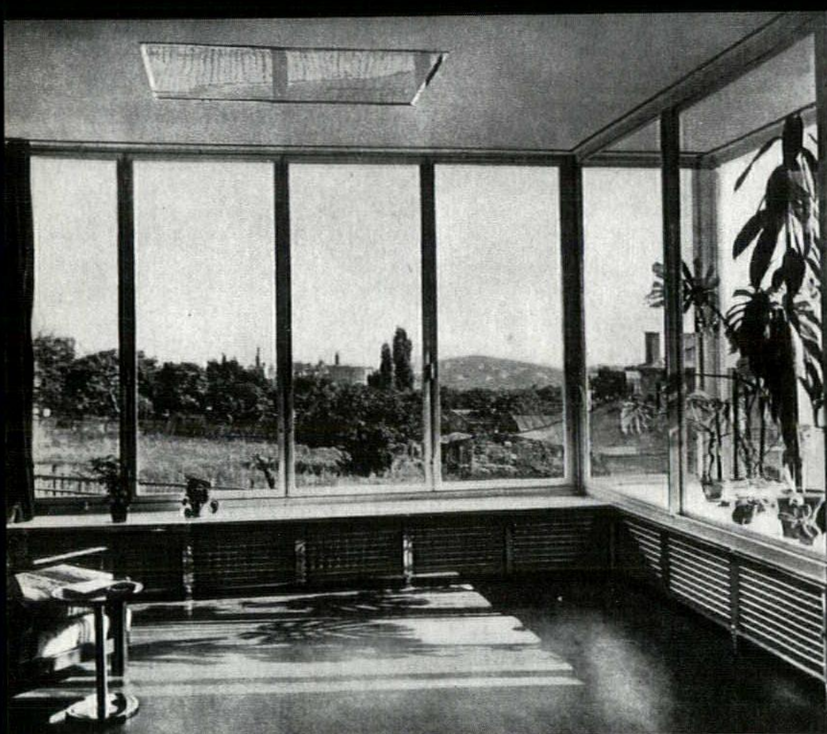
CORNER OF LIVING ROOM IN VIENNA. ERNST ISCHKE, ARCHITECT.
OLUTION OF BUILT-IN CUPBOARDS AND RADIATOR CLOSURES THROUGH THE USE OF LARGE PLY-OOD PANELS, VERY CAREFULLY PROPORTIONED. LABASTER SHEET IN FRONT OF RADIATOR.

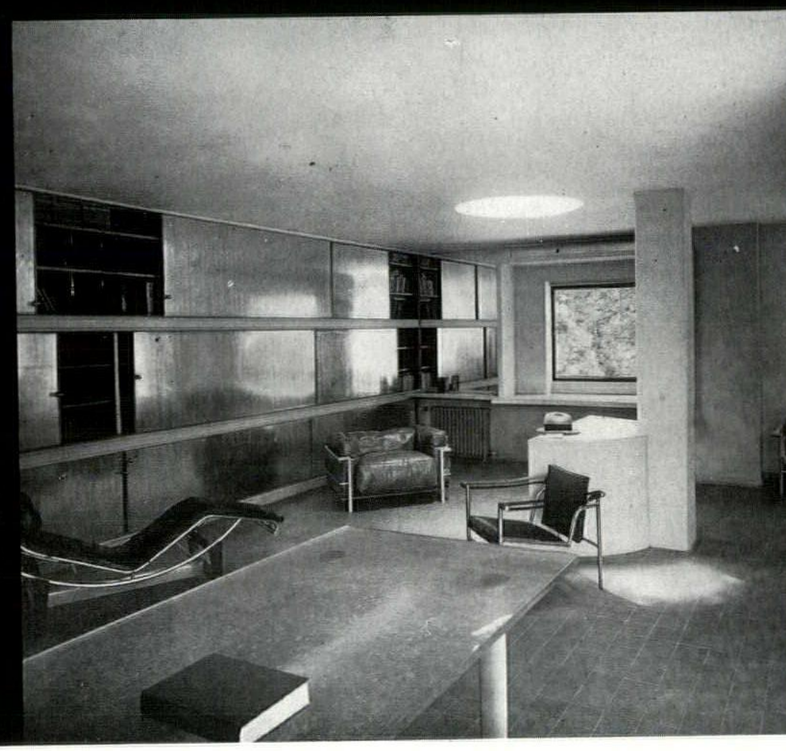
2 DINING ROOM IN HOUSE OF MOHOLY-NAGY, DESSAU. WALTER GROPIUS, ARCHITECT.
AN EXAMPLE OF VERY SHARP DEFINITIONS AND ACCENTUATION OF CHANGES IN PLANES AND MATERIALS.

Photo, courtesy of Wohnraume der Gegenwart.

4 BEAUX-ARTS APARTMENTS, NEW YORK CITY. KENNETH M. MURCHISON AND RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS.
STOCK WINDOWS IN HORIZONTAL STRIPS AND AROUND CORNERS.





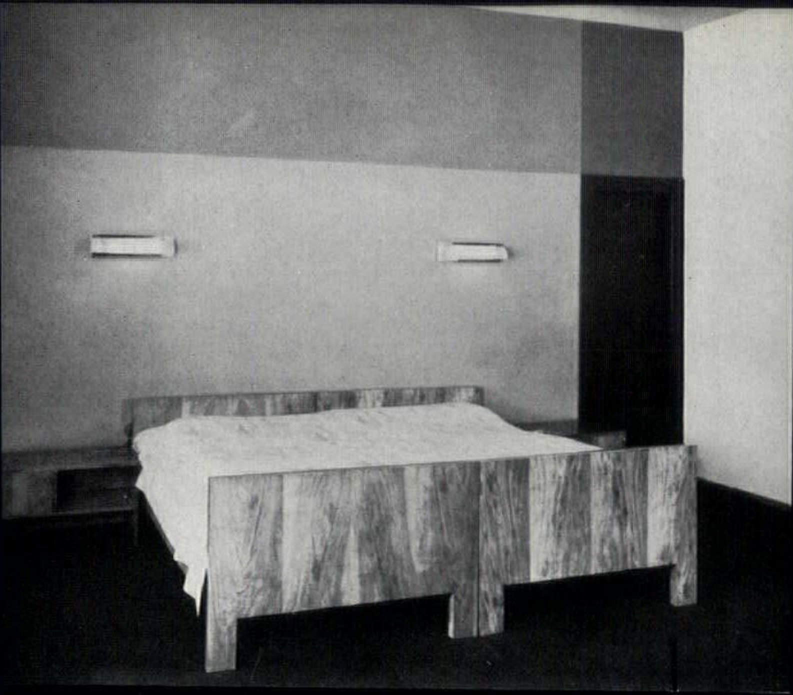


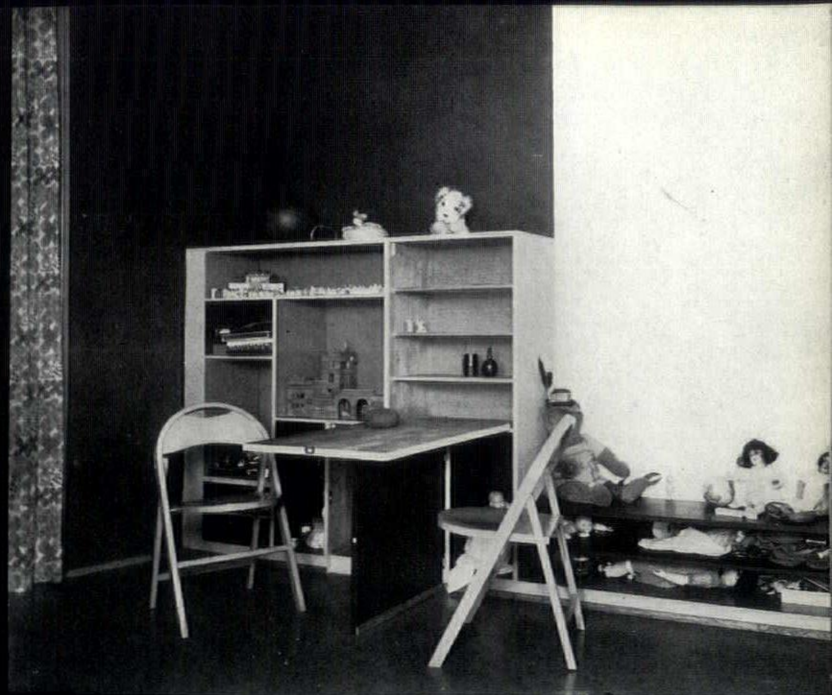
1 BEDROOM, APARTMENT HOUSE IN BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
ALL THE ESSENTIALS—LIGHT, OUTLOOK, AIR, HEAT. NO SUPERFLUITY OF OBJECTS OR DETAIL.

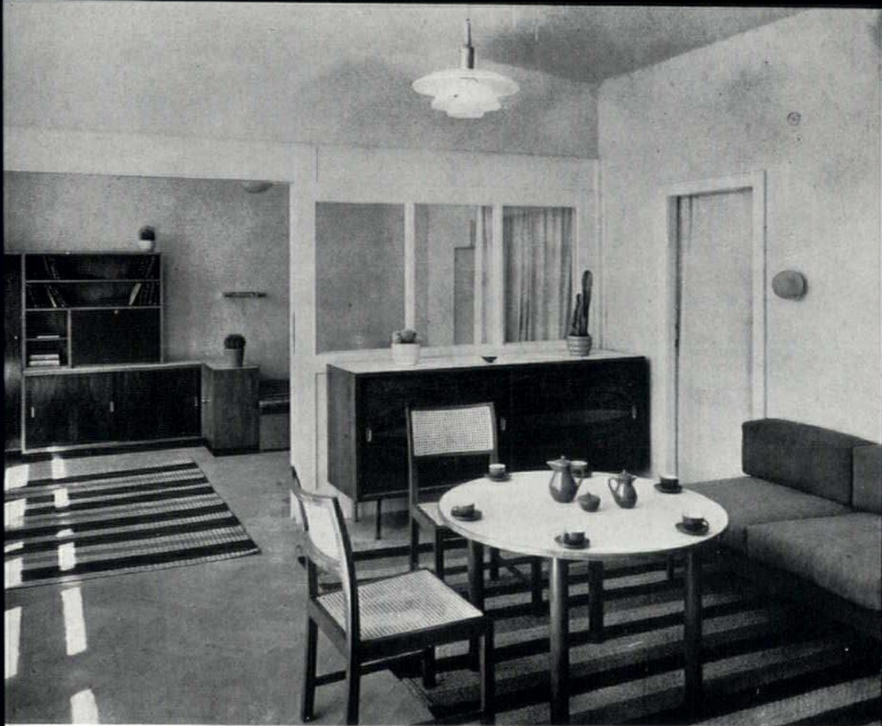
2 BEDROOM IN VAN DER LEEUW HOUSE, ROTTEF DAM. BRINKMAN AND VAN DER VLUGT, ARCHITECT
MECHANICAL EQUIPMENT IS CONTROLLED FRO BEDSIDE WITH NEATLY DESIGNED HARDWARE AN DETAILS.

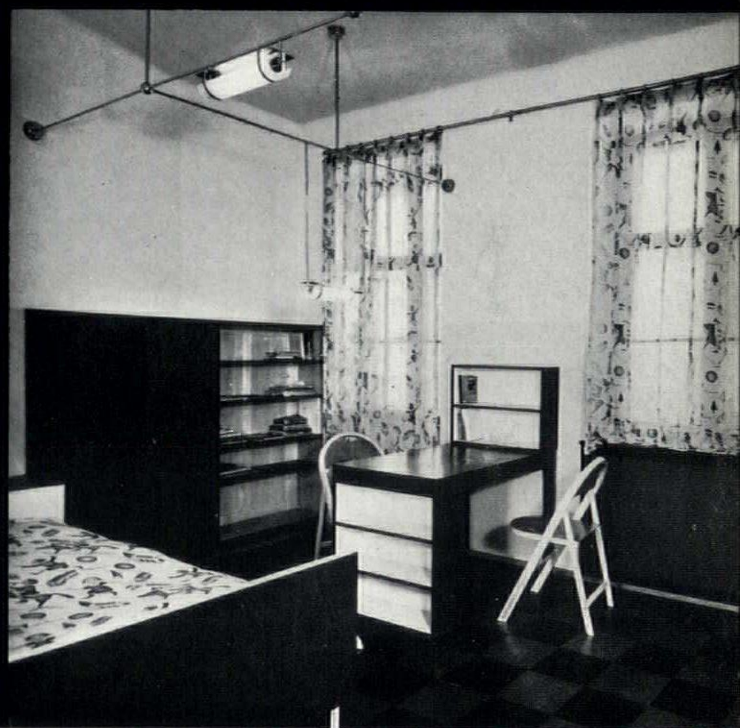
3 SUN PORCH AND CONSERVATORY, HOUSE IN HUNGARY. PAUL LASZLO, ARCHITECT.
DOUBLE GLAZING CREATES EXCELLENT SPACE FOR PLANTS.
Photo, courtesy of L'Architecte.

4 LIVING ROOM, HOUSE AT VILLE D'AVRAY, FRANC LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
HORIZONTAL SLIDING PLYWOOD PANELS IN FRON OF BOOKS MAKE AN INTERESTING WALL TREATMEN FREE-STANDING FIREPLACE IN CENTER OF ROOM.







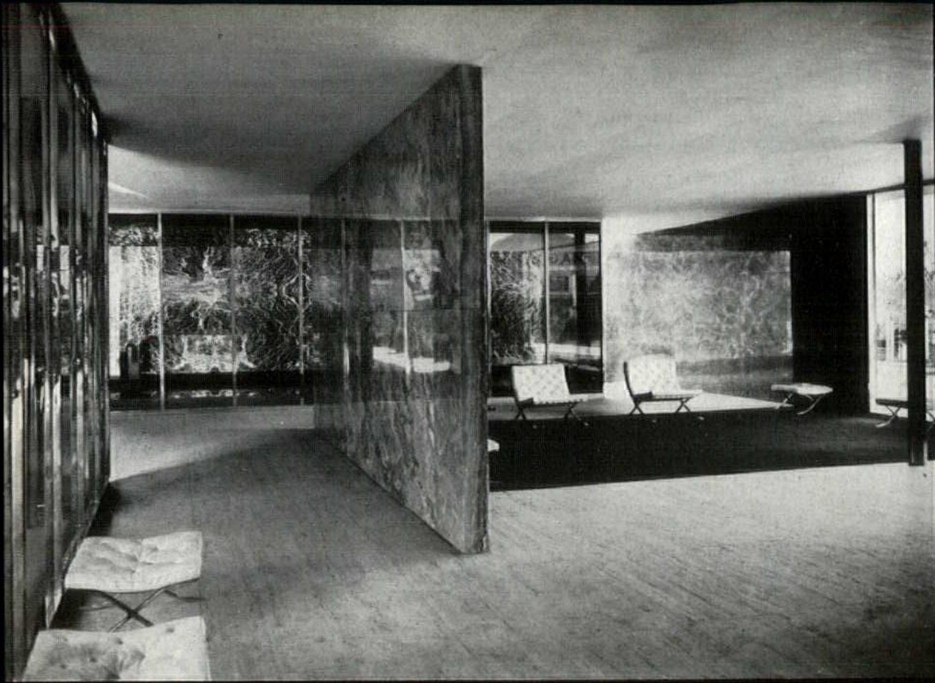


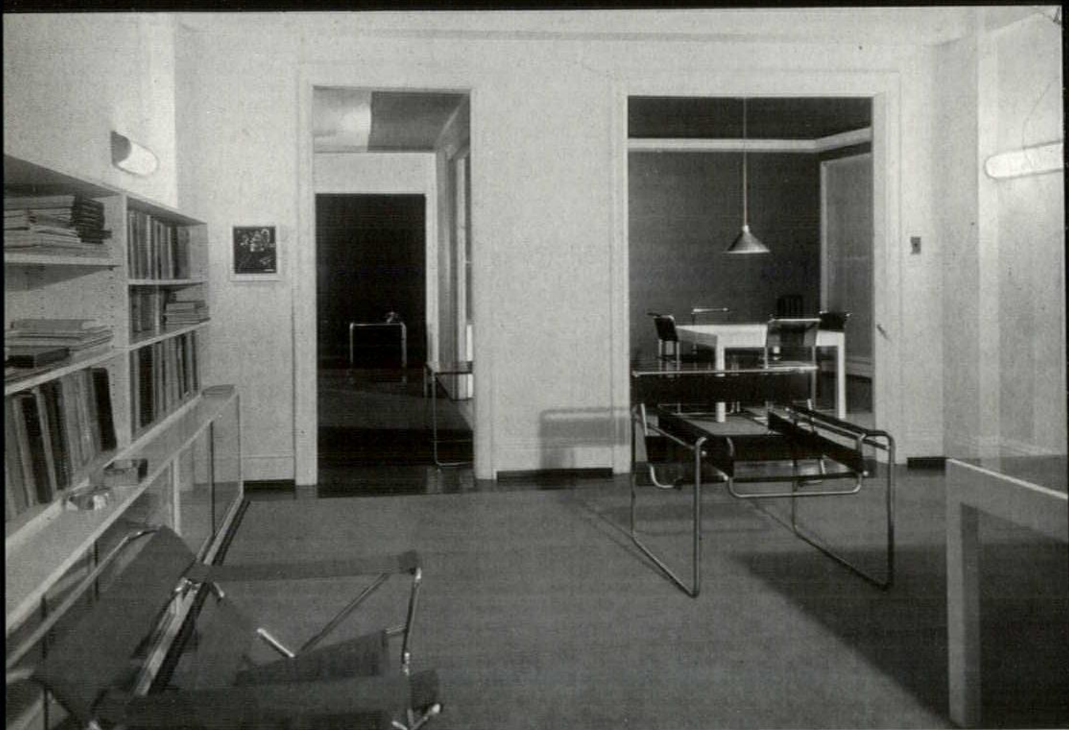
BEDROOM, APARTMENT IN VIENNA. ERICH KURT ICHTER, ARCHITECT.
IVISION OF WALL INTO VARIOUS FIELDS OF COLOR CHIEVES AN UNUSUAL BACKGROUND FOR TWIN EDS.

2 CORNER OF PLAYROOM, APARTMENT IN VIENNA. ERICH KURT RICHTER, ARCHITECT.
SHELVES PAINTED MANY BRIGHT COLORS AND TREATED LIKE BUILDING BLOCKS MAKE A GOOD SETTING FOR TOYS.
Photo copyrighted by Blumberger-Schulz.

DINING ROOM AND LIVING ROOM, VIENNA. EONIE PILEWSKI, ARCHITECT.
ESTRAINED SIMPLICITY CREATES LIVABLENESS WITH CONOMICAL MEANS.

4 CORNER OF BEDROOM, APARTMENT IN VIENNA. ERICH KURT RICHTER, ARCHITECT.
SHARP CONTRASTS OF SIMPLE ELEMENTS PRODUCE FRESH INTEREST.





I EXHIBITION HALL, BARCELONA. MIES VAN DER ROHE, ARCHITECT.
GLASS IN CHROMIUM FRAMES AND SLABS OF FINE MARBLE USED AS FREE-STANDING PARTITIONS AFFORD AN INTERPLAY OF SURFACES AND COSTLY MATERIALS.

2 LIVING ROOM, APARTMENT HOUSE IN STUTTGAR
MIES VAN DER ROHE, ARCHITECT.
LARGE PROPORTIONS AS APPLIED TO MINIMU
REQUIREMENTS.

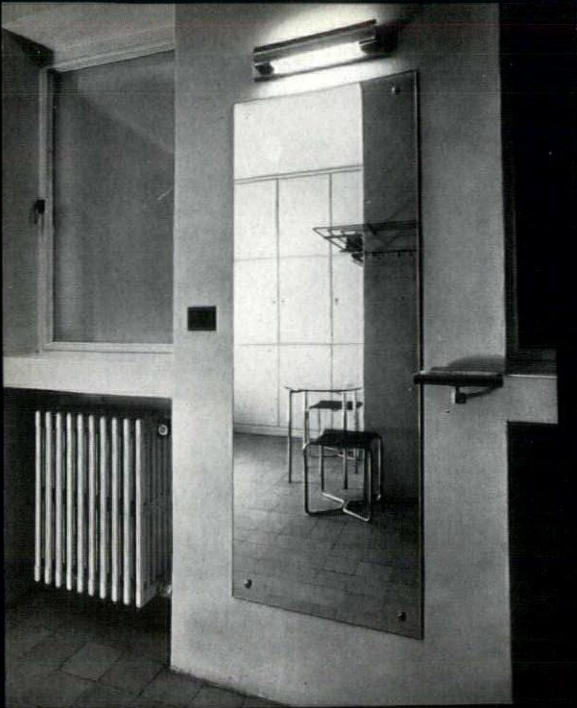
3 LIVING ROOM AND DINING ROOM, APARTMENT IN NEW YORK CITY. WILLIAM MUSCHENHEIM, ARCHITECT.
WALL SURFACES HAVING PLANES OF COLOR GIVE ILLUSION OF SPACE IN USUAL CITY APARTMENT LAYOUT.

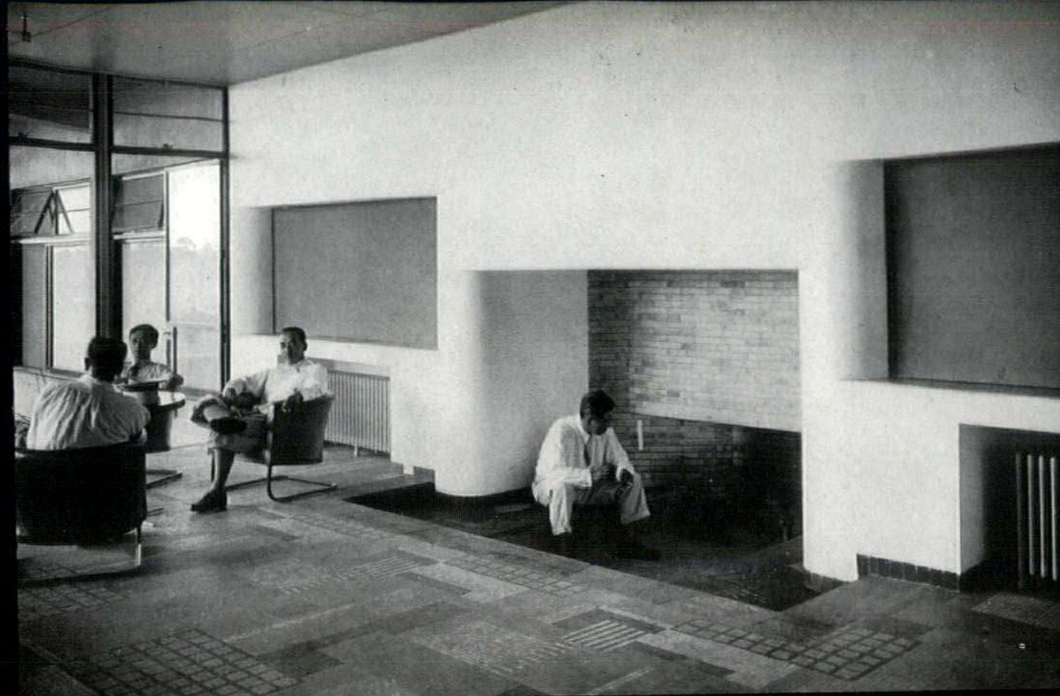
4 DINING ROOM, APARTMENT IN VIENNA. ERNS
PLISCHKE, ARCHITECT.
SMOOTH GRASS CLOTH WALLS WITH BLACK GLAS
BUILT-IN SIDEBOARD. DOWN LIGHTS SET IN HUN
CEILING EFFECTIVELY ILLUMINATE TABLE.

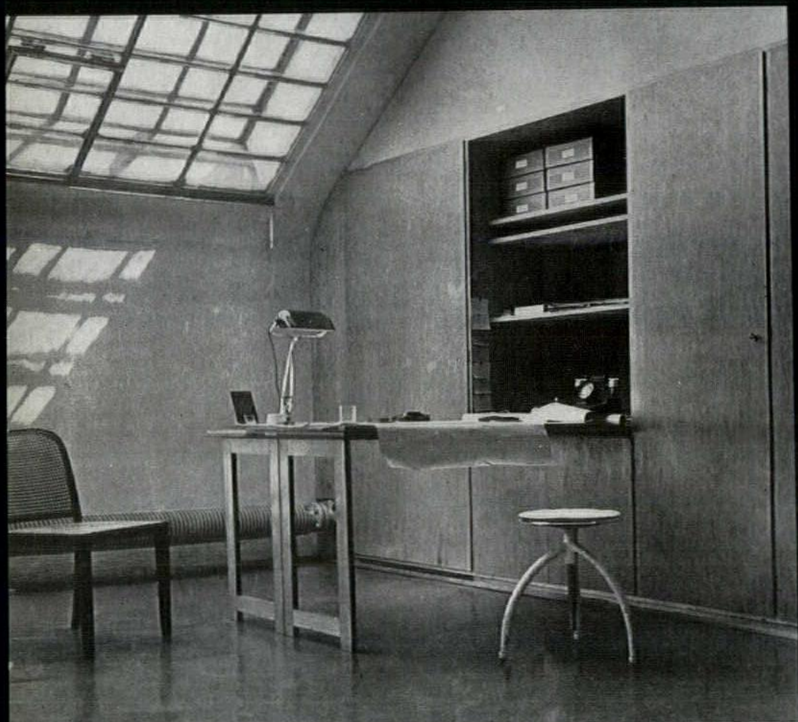
1 APARTMENT HOUSE AT PARC DES PRINCES, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
AN EXAMPLE OF AN ENTIRE FRONT IN GLASS AND GLASS BRICK. TENANTS IN THIS BUILDING WERE INVITED TO CHOOSE FROM SEVERAL DIFFERENT ARRANGEMENTS FOR THEIR FLATS, VERY MUCH AS THOUGH EACH WAS SO MUCH OFFICE SPACE. THIS METHOD RESULTED IN ROOM DISPOSITIONS WITHIN THE FLATS THAT WERE ALMOST COMPLETELY FREE OF SEPARATING WALLS.

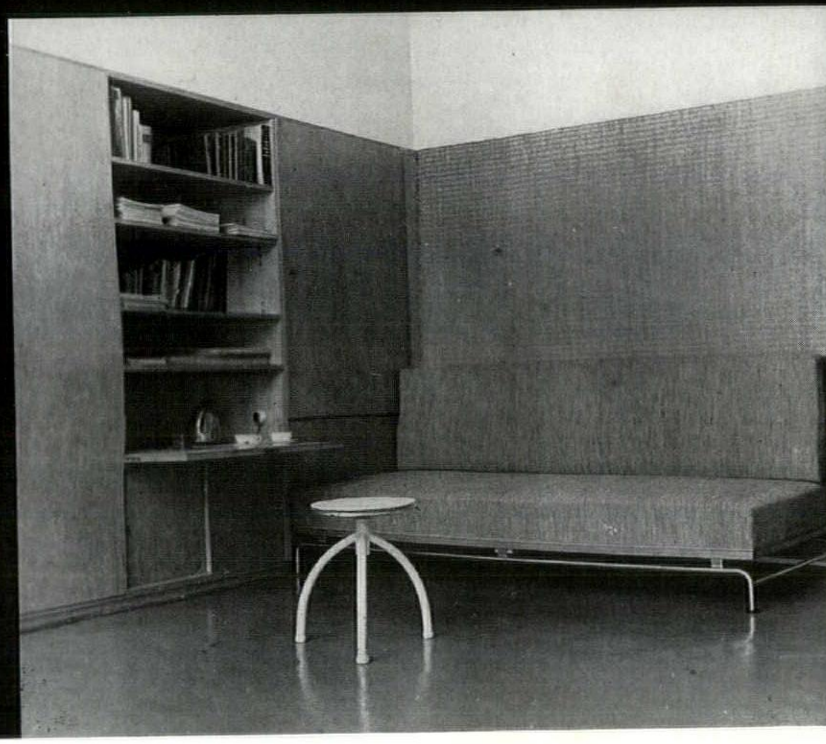
2 LIVING ROOM AND TERRACE, APARTMENT, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
LARGE SLIDING GLASS PANELS OPENING ON TO THE TERRACE MORE INTIMATELY CONNECT THE SKY AND LANDSCAPE WITH THE LIVING SPACE. AN INTERESTING USE OF CLEAR AND OBSCURE GLASS IN THE SAME PANEL.

3 DINING ROOM, APARTMENT OF LE CORBUSIER, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
FINE RELATION OF PAINTINGS TO WALL AREAS. ACCENTUATION OF DOOR BY COLOR. MARBLE SLAB TABLE TOP, EFFECTIVE USE OF MATERIAL IN CONNECTION WITH TILE FLOOR.







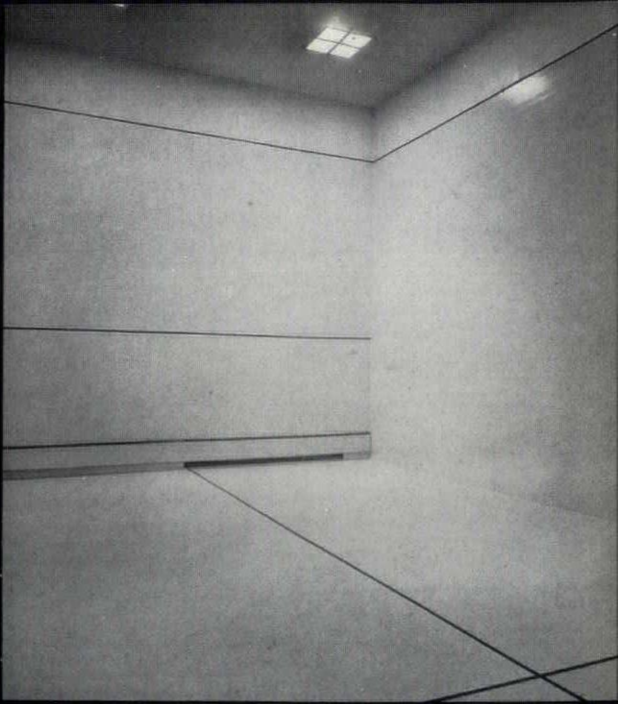


1 ENTRANCE HALL, APARTMENT IN VIENNA. ERNST PLISCHKE, ARCHITECT.
A CAREFUL SOLUTION OF SIMPLE DETAILS.

2 CLUBROOM, TOKYO, JAPAN. ANTONIN RAYMOND, ARCHITECT.
A SUNKEN FIREPLACE FEATURE COMBINED WITH FINE WORKMANSHIP IN USE OF PLASTER, BRICK, TILE AND MOSAIC.

3 AN ARCHITECT'S STUDY, VIENNA. ERNST PLISCHKE, ARCHITECT.
A DRAFTING BOARD INCORPORATED IN A WALL CONTAINING FILES, TELEPHONE AND MATERIALS.

4 AN ARCHITECT'S STUDY, VIENNA. ERNST PLISCHKE, ARCHITECT.
LARGE PLANES GIVE AN ATMOSPHERE OF REPOSE.

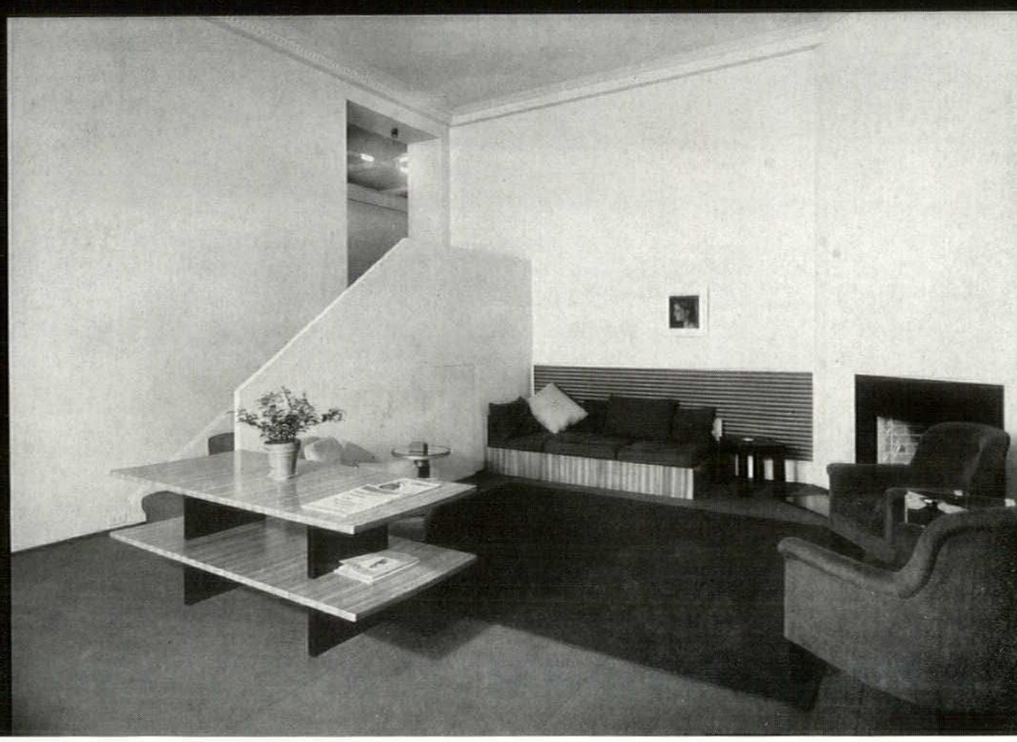


1 LIVING ROOM, HOUSE OF F. V. FIELD, HARTFORD, CONNECTICUT. HOWE AND LESCAZE, ARCHITECTS.
A COMBINATION OF ALTERNATING FIXED SASH AND VENTILATING SASH. CORRECT RELATION OF SEAT AND DINING TABLE TO LIGHT.
Photo by Ralph Steiner.

2 HANDBALL COURT. OFFICE OF JOHN RUSSELL POPE, ARCHITECTS.
AESTHETIC RESULT WITH A PURELY UTILITARIAN SOLUTION.
Photo by R. M. Glasgow.

3 DINING ROOM, HOUSE OF ROBERT BROWN, CHESTNUT HILL, PHILADELPHIA. ROBERT BROWN, DESIGNER.
CAREFUL WORKMANSHIP IN THE USE OF WOOD SIDING AND METAL ACCESSORIES.
Photo by F. S. Lincoln.

4 LIVING ROOM, V. D. L. RESEARCH HOUSE, LOS ANGELES. RICHARD J. NEUTRA, ARCHITECT.
CLOSE CONNECTION BETWEEN EXTERIOR AND INTERIOR DEVELOPS NEW SENSE OF FREEDOM IN LIVING SPACE.

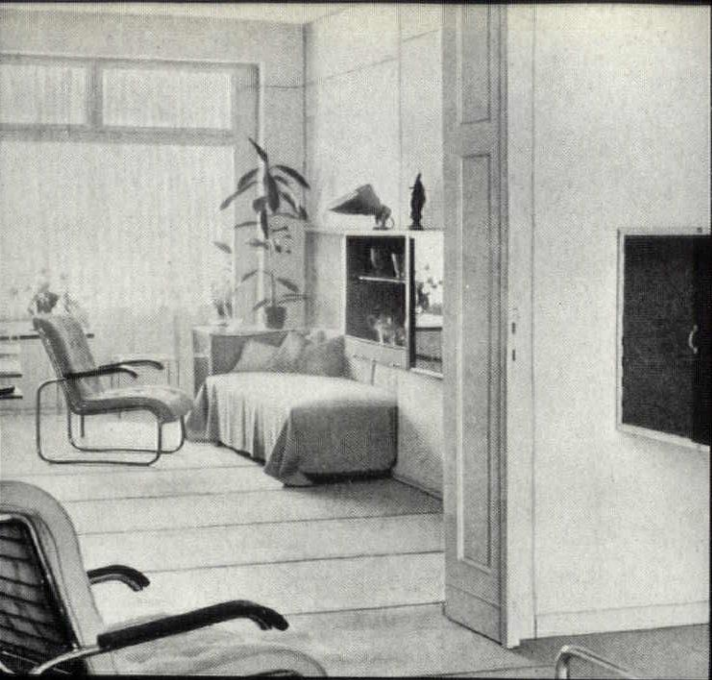


1 DINING ROOM, APARTMENT IN BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
A HARMONIOUS RESULT HAS BEEN ACHIEVED THROUGH THE USE OF OLD FURNITURE IN MODERN ARCHITECTURAL SURROUNDINGS.

2 APARTMENT FACADE, BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
THE ARCHITECTURAL TREATMENT OF AN APARTMENT HOUSE WITH UNBROKEN HORIZONTAL STRETCHES OF GLASS AND OPEN TERRACES FACING A PARK.

3 TERRACE, APARTMENT IN BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
TERRACE AND LIVING ROOM BECOME ONE.

4 LIVING ROOM, APARTMENT OF J. A. DUNBAR, NEW YORK CITY. WILLIAM MUSCHENHEIM, ARCHITECT.
LARGE UNBROKEN SURFACES ACCENTUATE THE SENSE OF WARMTH IN UPHOLSTERED FURNITURE AND CARPETING.

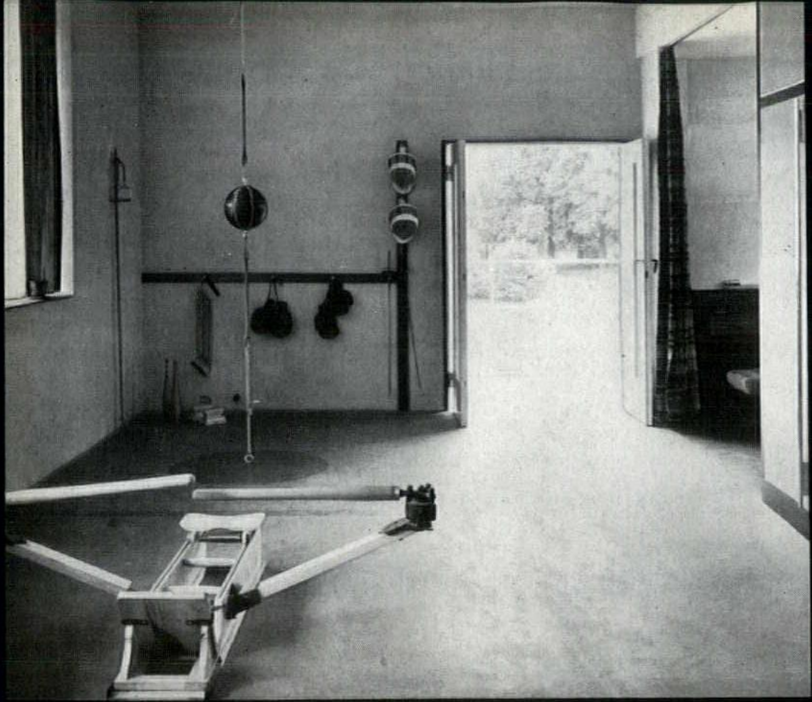


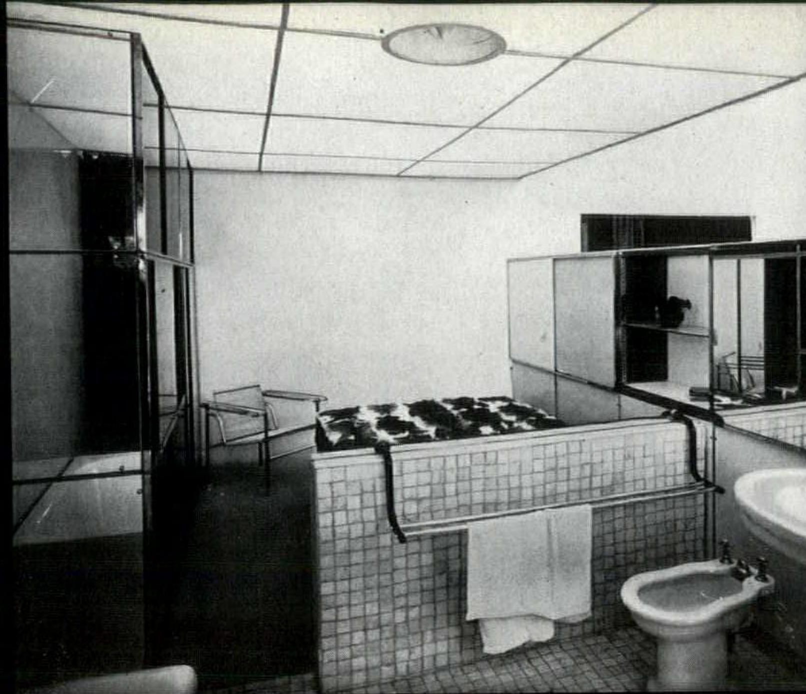
I LIVING ROOM, APARTMENT IN BERLIN. MARCEL BREUER, ARCHITECT.
AN INTERIOR OF GREAT REFINEMENT BUT AT THE SAME TIME OF UTMOST RESTRAINT.
Photo, courtesy of Wohnraume der Gegenwart.

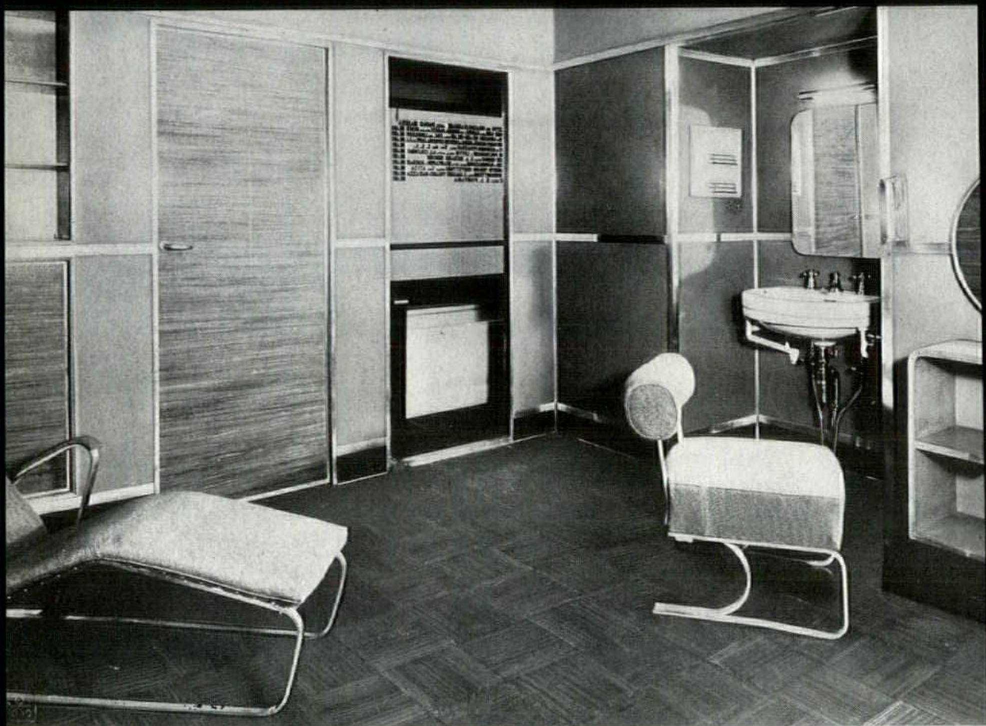
2 LIVING ROOM, HOUSE IN HAMBURG. KARL SCHNEIDER, ARCHITECT.
WELL-DESIGNED WOOD FRAMES WITH SLUNG SEATS.
Photo, courtesy of Wohnraume der Gegenwart.

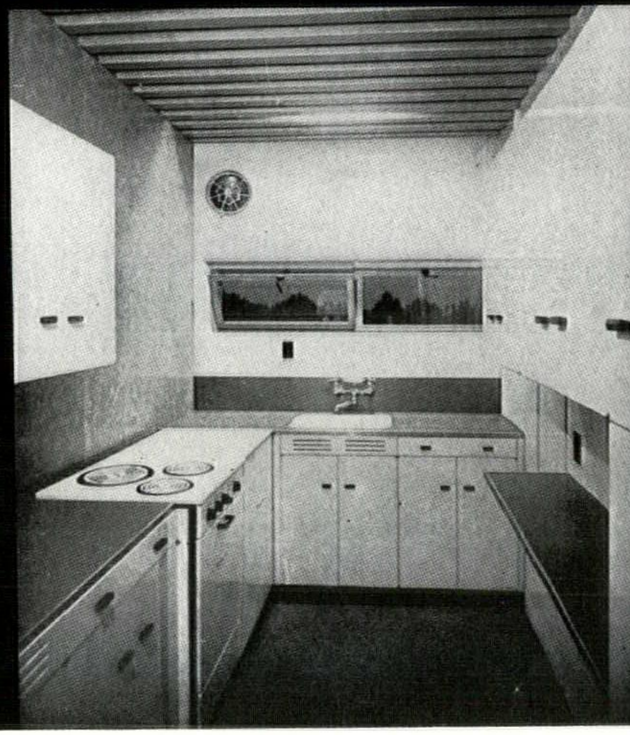
3 DINING ROOM AND LIVING ROOM, HOUSE IN BERLIN. MIES VAN DER ROHE, ARCHITECT.
THE SUCCESSFUL MERGING OF ONE SPACE INTO THE OTHER THROUGH WALLS USED AS SCREENS AND AN ELIMINATION OF DOORS. THE STRUCTURAL SUPPORTS ARE FREE-STANDING AND NOT CONNECTED WITH THE WALLS. WALLS WERE ARRANGED TO FIT FURNITURE LAYOUT.
Photo, courtesy of Wohnraume der Gegenwart.

4 TERRACE, VAN DER LEEUW HOUSE, ROTTERDAM. BRINKMAN AND VAN DER VLUGT, ARCHITECTS.
HOUSE, TERRACE AND GARDEN BECOME ONE THROUGH USE OF MODERN STEEL FRAME CONSTRUCTION AND GLASS WALLS.







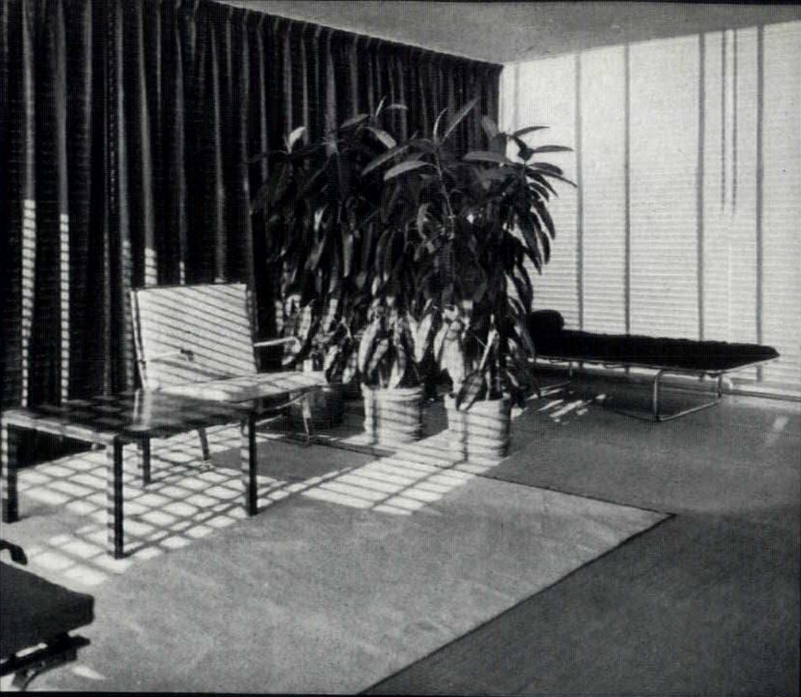


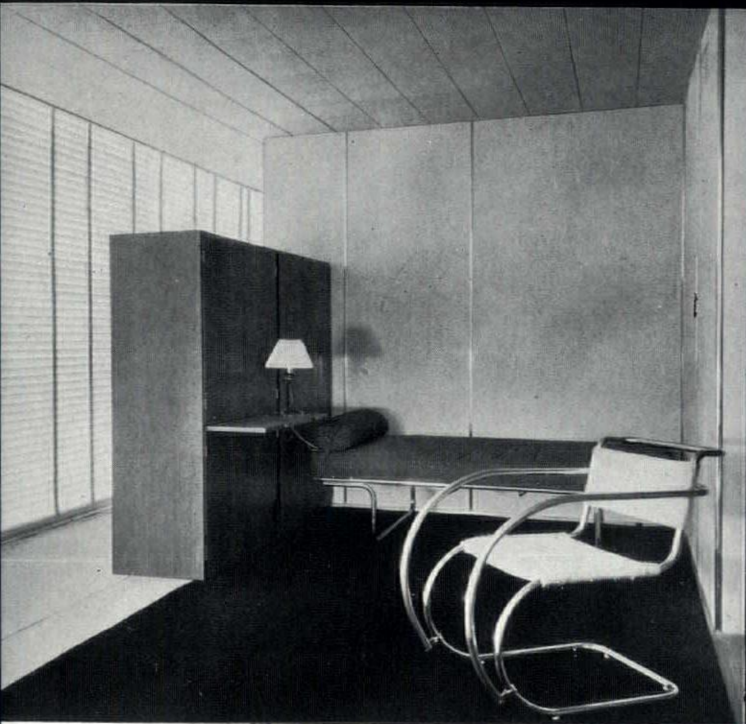
1 GYMNASIUM, HOUSE FOR AN AVIATOR.
PHYSICAL CULTURE APPARATUS IN THE DRESSING ROOM BECOMES PART OF THE EQUIPMENT OF THE MODERN HOME AND IS IN PLACE BECAUSE OF ITS INTRINSICALLY FUNCTIONAL DESIGN.

2 BATHROOM, SALON D'AUTOMNE, PARIS. LE CORBUSIER, P. JEANNERET AND CHARLOTTE PERRIAND, ARCHITECTS.
A LUXURIOUS ARRANGEMENT OF BATHROOM AND DRESSING ROOM WITH SPECIAL ATTENTION DEVOTED TO THE CONTRASTS OF MATERIALS SUCH AS TILE AND FUR, ALSO MIRRORS AND CHROMIUM.

3 SHIP'S CABIN. PAOLO MASERA, ARCHITECT.
A CABIN DESIGNED ENTIRELY WITH THE USE OF NONINFLAMMABLE MATERIALS.

4 KITCHEN, APARTMENT AT PALM SPRINGS, CALIFORNIA. A. LAWRENCE KOCHER AND ALBERT FREY.
A NEAT ARRANGEMENT OF SECTIONAL KITCHEN EQUIPMENT WITH NICE PLACEMENT OF WINDOWS AND VENTILATOR. CABINETS OF ENAMELED STEEL. WALLS OF COLORED TRANSITE.



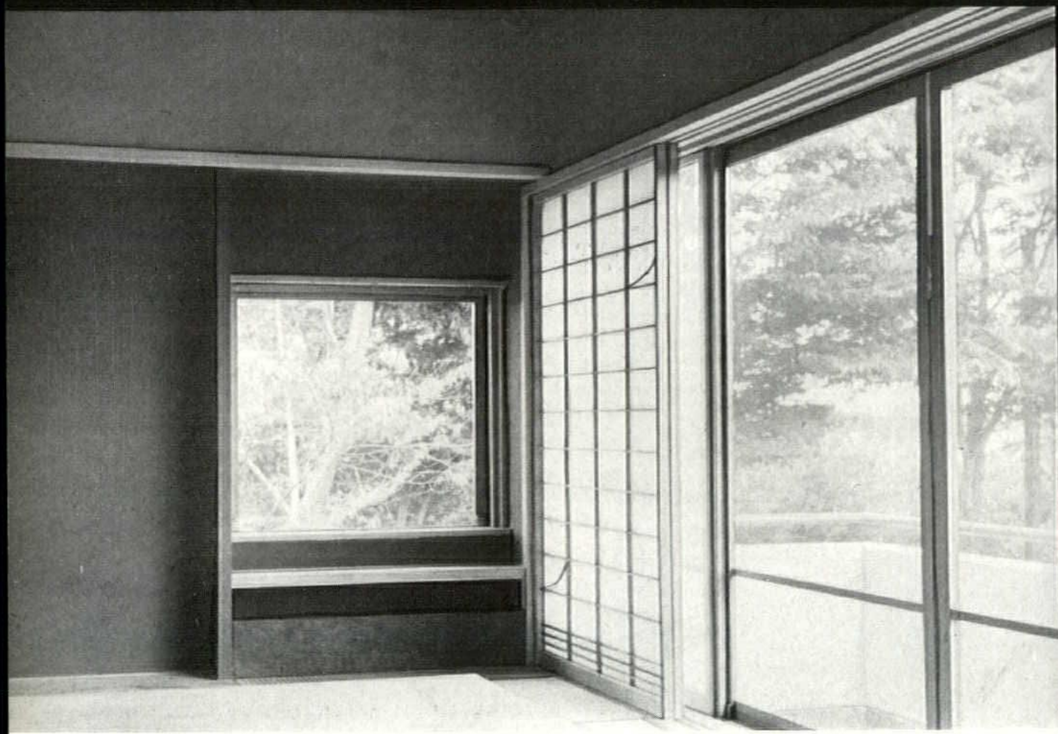


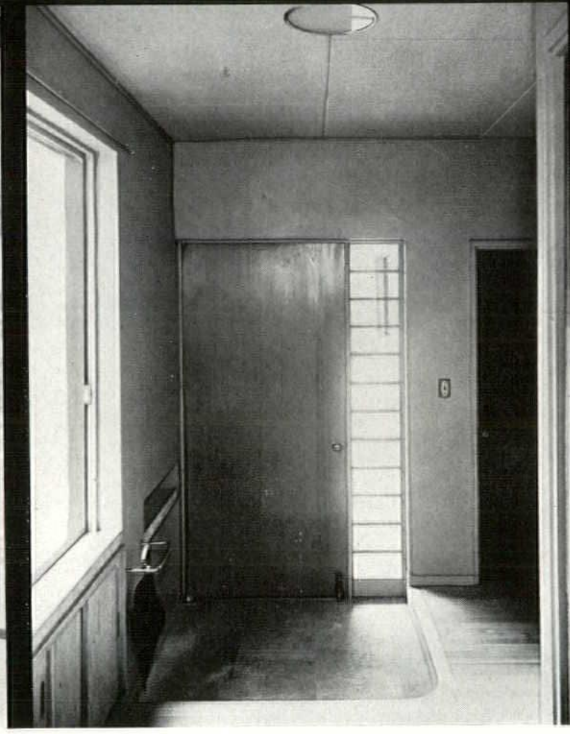
1 CRYSTAL HOUSE, CHICAGO. GEORGE F. KECK AND LELAND T. ATWOOD, ARCHITECTS.
PLANTS HAVE A NECESSARY PLACE IN THE SUNNY HOUSE.

2 CRYSTAL HOUSE, CHICAGO. GEORGE F. KECK AND LELAND T. ATWOOD, ARCHITECTS.
EXTERIOR WALLS ENTIRELY OF GLASS, ADJUSTABLE BLINDS TO CONTROL LIGHT. THERE ARE LARGE WOOD VENEER PANELS.

3 CRYSTAL HOUSE, CHICAGO. GEORGE F. KECK AND LELAND T. ATWOOD, ARCHITECTS.
WARDROBE USED AS PARTITION; ACOUSTICAL TILE CEILING.

4 SWIMMING POOL, FRANCE. MALLET - STEVENS, ARCHITECT.
RECREATIONAL FACILITIES CAN BE INCORPORATED IN THE MODERN APARTMENT HOUSE AND MADE TO HARMONIZE WITH THE GENERAL ARCHITECTURE.
Photo by Bonney.





1 BATHROOM, JAPAN. ANTONIN RAYMOND, ARCHITECT.
A VARIATION FROM THE CUSTOMARY USE OF TILE.

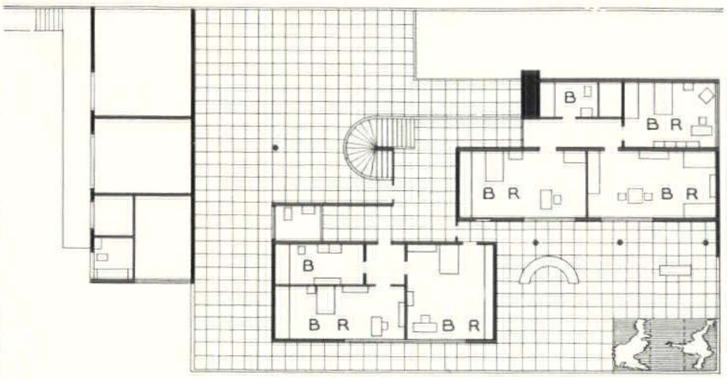
2 INTERIOR, JAPAN. ANTONIN RAYMOND, ARCHITECT.
BUILT-IN CUPBOARDS AND THEIR RELATION TO WALL. USE WAS MADE OF RARE WOOD VENEERS.

3 INTERIOR, JAPAN. ANTONIN RAYMOND, ARCHITECT.
TRADITIONAL JAPANESE INFLUENCE ON MODERN USE OF SLIDING SCREENS.

4 ENTRANCE HALL, JAPAN. ANTONIN RAYMOND, ARCHITECT.
METICULOUS APPLICATION OF SIMPLEST DESIGN ELEMENTS.

SOME APARTMENT FLOOR PLAN TYPES

1



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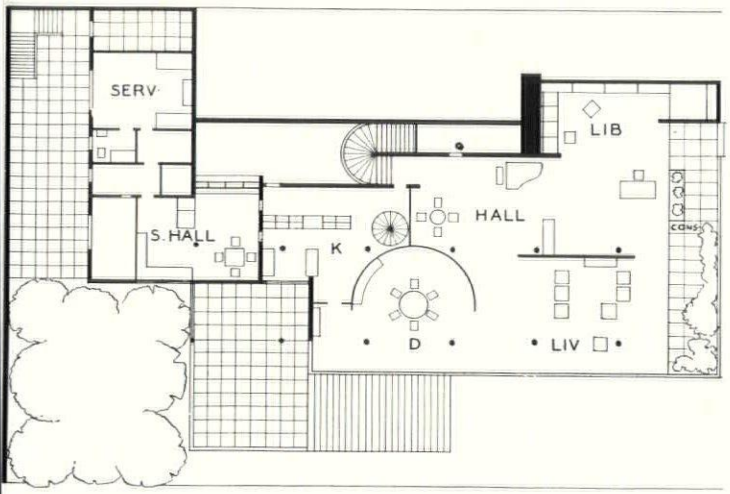

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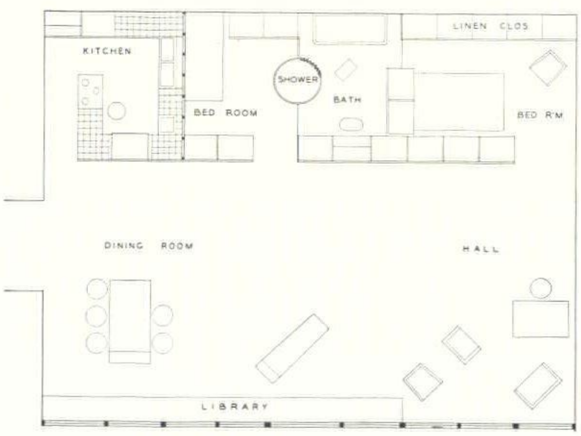


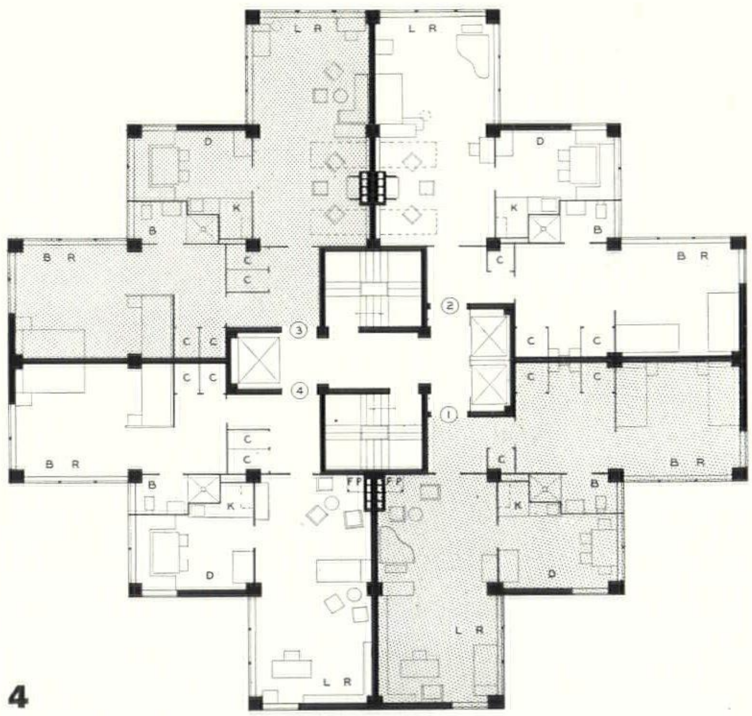
1. **ENTRANCE FLOOR, TUGENDHAT HOUSE, BRUNN, CZECHOSLOVAKIA. MIES VAN DER ROHE, ARCHITECT.** Easy grouping of rooms on roof terrace with respect to privacy, orientation, and furniture layout.

2. **MAIN LIVING FLOOR, TUGENDHAT HOUSE, BRUNN, CZECHOSLOVAKIA. MIES VAN DER ROHE, ARCHITECT.** Large open living space subdivided for the purpose of its various functions by means of screen walls which are not connected with the structural columns. The two exterior walls facing the garden are entirely large sheets of plate glass.

3. **APARTMENT, SALON D'AUTOMNE, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.** All equipment and storage space on one side leaves a large unobstructed space as a living hall. Construction units and equipment standardized.

4. **SUNLIGHT TOWERS APARTMENT, NEW YORK. A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS.** The step-back plan affords maximum exposure to each room with minimum hall space in relation to room area. The plan is intended for separate towers or adjoining units.

5. **WALK-UP APARTMENT, WEISSENHOF SIEDLUNG, STUTTGART. MIES VAN DER ROHE, ARCHITECT.** Diversity of apartment layouts through different dispositions of light separating partitions. These are entirely independent of structure and can be readily changed.



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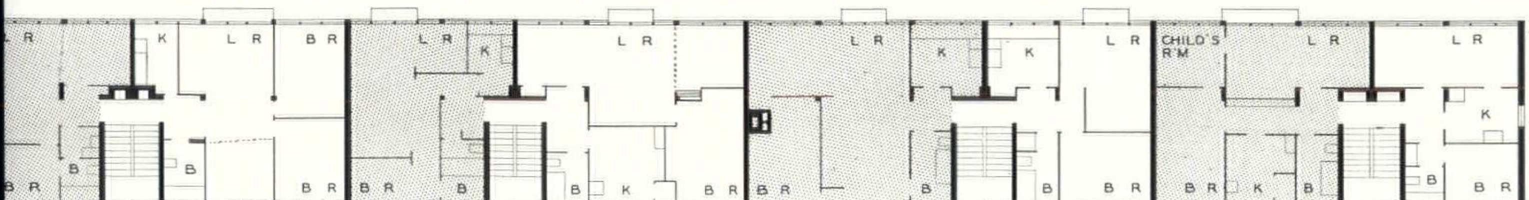
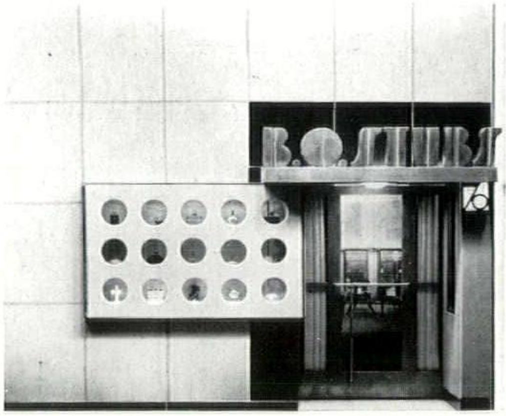
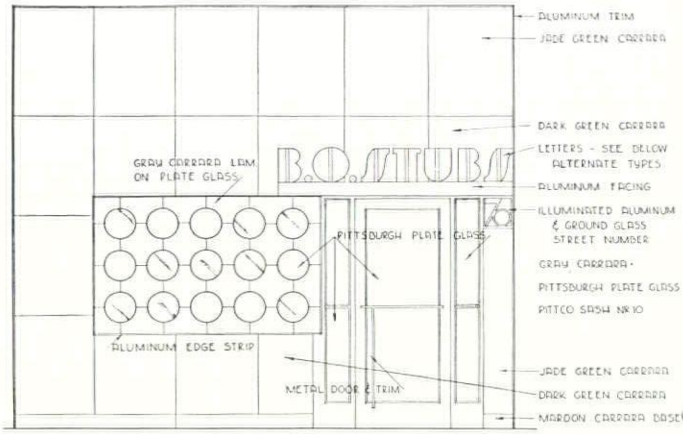
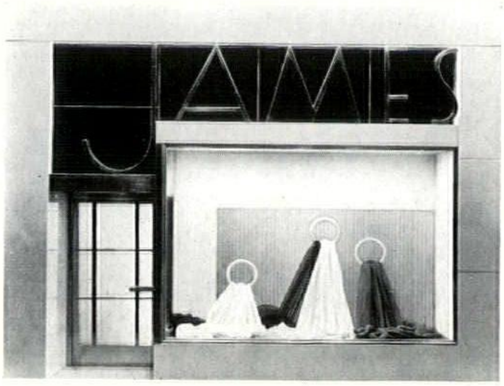


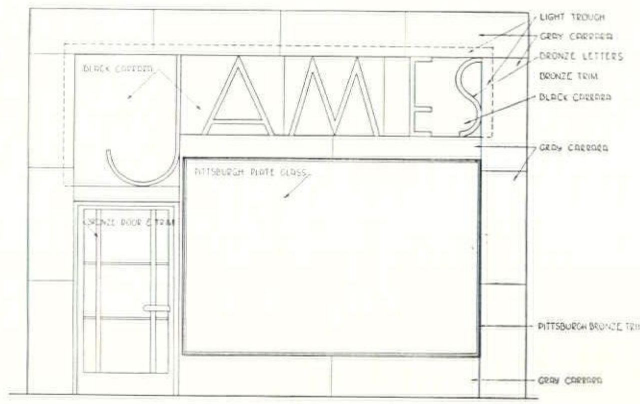
STORE FRONTS

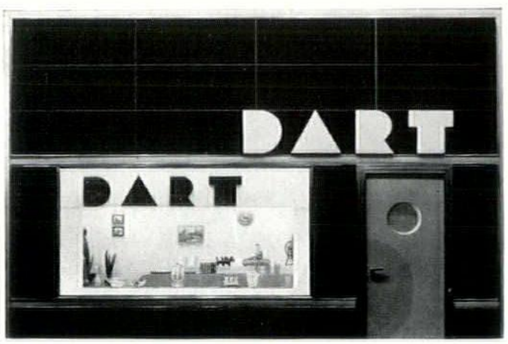
DEVELOPED AS MODELS BY PITTSBURGH PLATE GLASS COMPANY

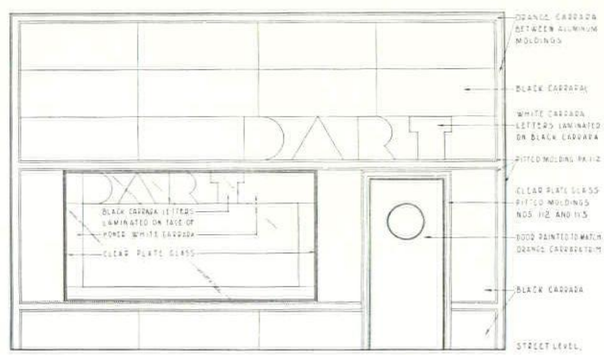


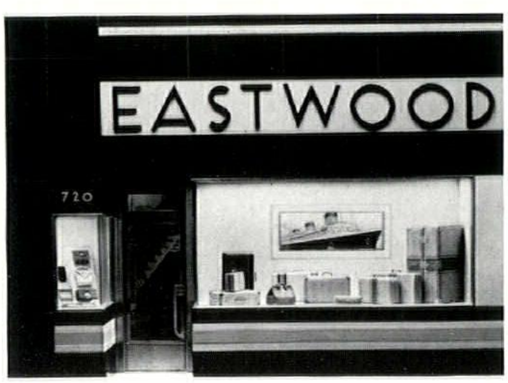


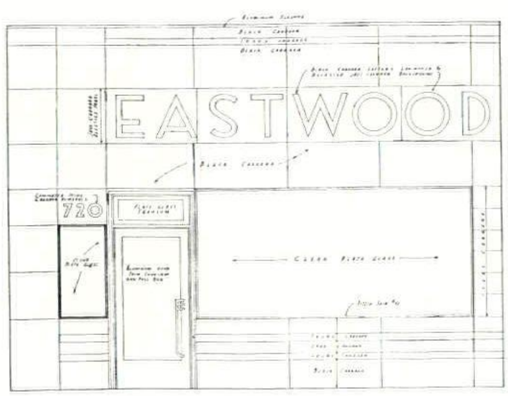




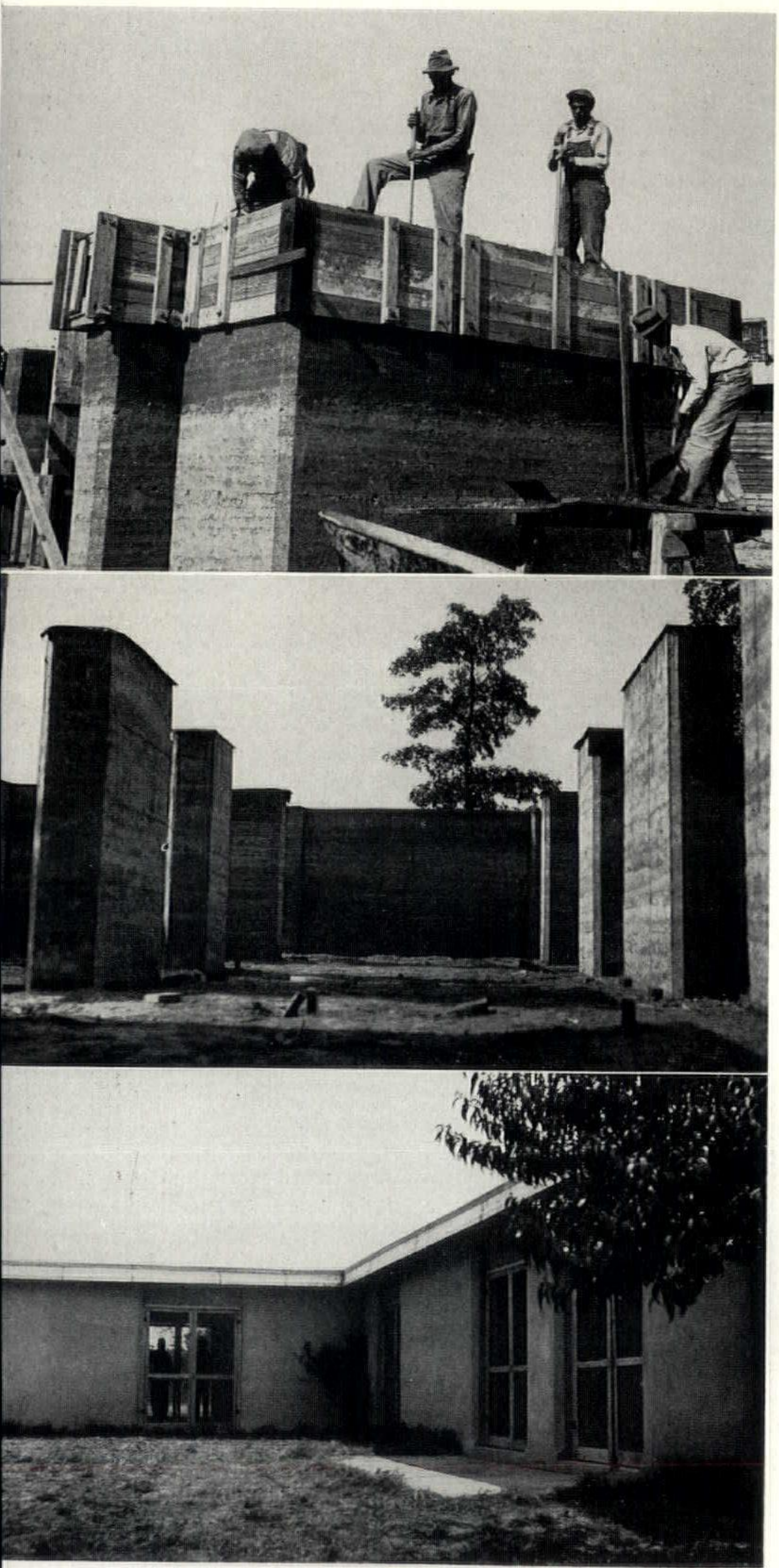








TECHNICAL NEWS AND RESEARCH



rammed earth houses — high cost ratio for labor, low for materials

HOUSES BUILT OF EARTH

Rammed earth construction has been used in all parts of the world since early Roman times; more recently in Germany, England, France and the Scandinavian countries. In this country considerable work has been done by Karl J. Ellington of Port Angeles, Washington; by W. E. Coffin and H. P. Humphrey of the U. S. Department of Agriculture, and by the State Agricultural College at Brookings, S. D. A number of buildings of rammed earth construction standing today in the United States were built in the pre-Revolution period.

At present the Resettlement Administration is building a group of rammed earth houses near Birmingham, Alabama. If the employment objective is to be reached with the limited funds available under the work relief appropriation, it is apparent that a maximum expenditure must be made for wages and a minimum for building materials. Investigation indicated that rammed earth construction would accomplish this, and at the same time provide low-cost housing units for rural or semi-urban areas. While the use of this type of construction is definitely limited, the assumption appears justified for experience to date shows a cost ratio approximately 65% for wages and 35% for materials. With more advanced building methods, approximately 70c of the construction dollar goes for material and equipment and only 30c for wages.

This new work in rammed earth construction—or pisé, as it is sometimes called—is under the direction of Thomas Hibben, architect and author of The Carpenter's Tool Chest (published 1933 by J. B. Lippincott Company, Philadelphia). The experimental houses and their mode of erection are described in a report on the following page.

•

Bibliography: (1) *Journal of the British Ministry of Agriculture, London,* 1920. (2) *Special Report of the Building Research Board, Department of Scientific and Industrial Research, London.* (3) *Cottage Building in Cobb, Pisé Chalk and Clay, by Clough Williams-Ellis.* (4) *Modern Pisé Building, by Karl J. Ellington.* (5) *Lower Cost Buildings, by E. W. Coffin and H. B. Humphrey.* (6) *Bulletin 1500, U. S. Department of Agriculture.*

Materials: Three parts sand, two parts clay, one part coarse aggregate, 8 to 12 per cent water by weight. Aggregate may be slag, gravel, shale or crushed rock and should not exceed ¾″. Test blocks of varying compositions, 30 days old and all containing 11% water, failed under the loads recorded below. The area under compression was 140 square inches in each case.

(1)	3 sand,	2 clay,	1	shale	...76,000 lb.
(2)	3 "	2 "	1	"	...56,000 lb.
(3)	3 "	2 "	1	"	...41,000 lb.
(4)	3 "	2 "	1	"	...96,000 lb.
(5)	3 "	2 "	1½	"	...76,500 lb.
(6)	6 "	4 "	1	"	...69,700 lb.
(7)	1 "	1 "	0	"	...27,400 lb.

The composition used averaged 480 lb. per square inch. A tougher and a more impervious wall can be made by the admixture of 8 gal. of emulsified asphalt per cubic yard of loose material. (This is equal to 15% of the weight of the 200 mesh material present in the mixture.)

Forms: These are made up of side panels and end gates, all of 2″ lumber, well dried and straight. They may be lined with masonite or other hard-surfaced material if a perfectly smooth wall is desired but this is not necessary. Side panels are 30″ high with vertical 2″ x 4″ braces 3′ on center, and are held together by ½″ W.I. bolts extending through the form at the top and bottom of each vertical brace; 2″ x 4″ loose spreaders are used to hold the panels apart until sufficient earth has been tamped in, after which they are removed. End gates are made the width of the desired wall and its full height from floor to plate, and are set between the side panel ends and strongly braced; these form the jambs and must be true and straight. When a single type of building is to be repeated it is advantageous to make a sufficient number of forms so that the entire wall can be raised simultaneously; on single unit construction a straight wall section, a tee, a right hand and a left hand corner ell are sufficient. Tampers are made from 15″ long blocks of 4″ x 10″ long leaf yellow pine, one of the 10″ faces being beveled so as to leave a tamping edge 10″ x 1½″; the handle is ¾″ W.I. pipe and the total weight approximately 18 lb.

Wall erection: Forms are set in place on concrete floor slab or footing courses checked for alignment and braced, and filled with 5″ of mixed earth spread evenly. The tamper stands in the form and kneads the earth with the tamping tool into a solid mass, the fill being compressed in the process approximately 50 per cent. It should then present a dry hard upper surface which will ring when struck with a flat metal tamp. When the form has been filled by the tamping of successive 5″ layers the bolts are drifted out and the side panels raised. Since the lower row of bolt holes is 6″ above the bottom, the forms have a 6″ apron extending down over the new wall, protecting it when tamping is resumed. The end gates remain in place throughout. Filling, tamping and raising of forms is continued until the wall has reached the desired height. After all forms are removed the upper surface of the wall is protected with a layer of tar and felt until the roof can be put in place.

Wall width: Although a 12″ wall is satisfactory both for insulation and strength, not less than 15″ is recommended as the smaller dimension cramps the workmen and reduces the working speed. The average rate of production is 2/3 cubic yards per man per day, counting all workmen engaged, whether tamping, mixing or raising forms.

Wall heights: Rammed earth has adequate bearing strength in direct compression (in excess of 30 tons per square foot) for any type of low building. The value of the material in tension or in bending is so small that all walls must be designed to receive direct compressing loads only. This controls the dimensions of columns as well as wall heights. Buildings can be raised to three or even four stories. There is no economic justification, however, for erecting walls above one story since the extra cost of raising the earth into forms at a greater height would more than offset the gains made in the use of the material.

Exterior finish: After the wall has dried about 30 days, exterior finish may be applied although a greater drying time is desirable. Any of the following finishes is satisfactory; all will require maintenance but such maintenance is inexpensive both as to material and labor costs. (1) Boiled linseed oil, with or without pigment. (2) Tung oil paint. (3) Sodium silicate. (4) Rough cast lime and cement mortar. (5) Casein whitewash consisting of 5 lb. casein, 3 lb. trisodium phosphate, one sack hydrated lime, 3 pints formaldehyde and 13 gallons of water, mixed in accordance with the directions of the National Lime Association. This whitewash should be applied to the shady side of the building and should be kept wet until set. When thoroughly dry, paint with cement in oil paint, also applied only on the shady side and kept wet. (There has not yet been time to test the permanence of this finish, but so far it appears satisfactory.)

Floor finishes: (1) Wood on sleepers o wood in mastic. (2) Quarry or othe tile. (3) Linoleum or asbestos tile ma be used over asphalt fill for the finishe floor. (4) The concrete slab may b rubbed reasonably smooth with carbor undum blocks and one coat of asphal primer applied, followed by a coat o cold asphalt solution mixed with 50% screened sand. When dry cover wit 28 x 32 count 5-ounce cotton cloth an finish with a coat of cold asphalt past (This finish likewise has not been full tested as yet, but appears satisfactory.)

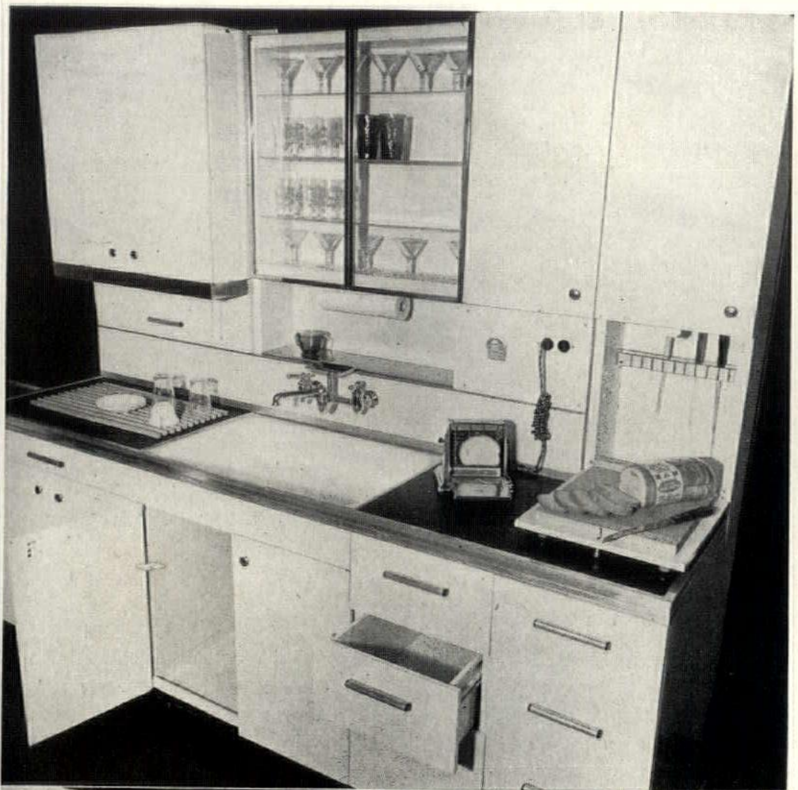
Roof construction: A wood plate on ta and felt sheet covers the whole width c the wall and is spiked into it with 3C penny nails. The joists are set fla spaced according to the span and shoul extend beyond the face of the wall 18′ Above they are covered with wood deck ing on which is laid dead level built-u tar and slag roof. Below they are strippe with 2″ x 2″ furring 16″ on center, t which is attached gypsum plaster boar or wire lath for a plastered ceiling. Th exterior soffit is lathed with galvanize iron wire lath and finished with ceme plaster. The facia may be either wo or sheet metal. Because of the stri ping of the roof structure the inclos space is entirely ventilated. Vent ope ings are provided in each room in the space and vent outlets under the so fit and above the roof; these are co trolled with spring shutters. It has bee found that by coloring the area arou and over vent outlets black and the r maining roof white, the increased co centration of absorbed heat below t black area causes the air to rise in th portion, thus setting up a flow of a within the roof structure, which has tendency to decrease the temperature the ceiling.

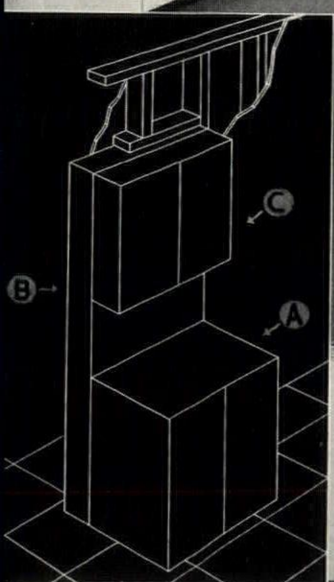
Interior walls: Plaster direct to ear wall, any good interior plaster sand fi ish or white finish for paper.

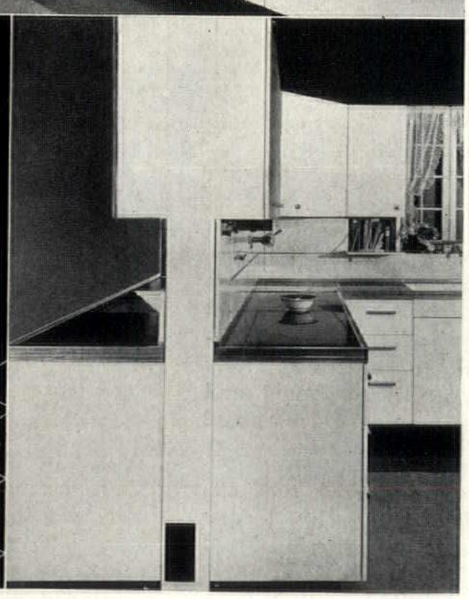
Advantages: Extreme low thermal co ductivity; the heat gain or loss throu the wall is so negligible that it may considered zero. Fire resistance. Te mite resistance. Permanence. The c does not exceed that for comparab wood construction.

Disadvantages: Slowness of constructic

House designs: Buildings of ramm earth must be simple, straight line. Si the material is crude, attempts at refi ment or detail will be both costly a ineffective. In the experimental hous all openings except the bathroom wind are the full height of the wall and provided with French doors to give ma imum circulation of air.







otographs by Ben Schnall
ackaged kitchens" — the wall is an integral part of the assembly

INTEGRATED KITCHENS

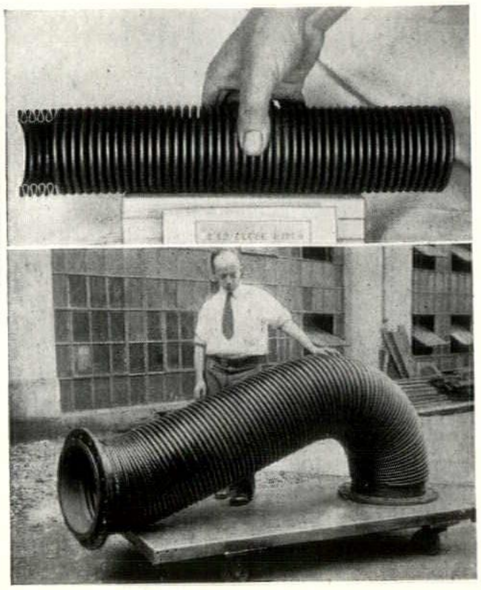
A system of kitchen units—standardized assemblies which can be framed into the wall construction to become an integral part of the building—has been developed by the Accessories Company, Inc., a division of American Radiator Company, 40 West 40 Street, New York, N. Y. They are the result of 7 years of research and experimentation by George Sakier, industrial designer, and are intended to round out a previously introduced line of bathroom units which combine fixtures and conveniences into interlocking wall panels. The units are now in production under the trade name of "Arcode Sectional Bathrooms and Kitchens."

The basic elements in the new kitchen units are shown in the diagram: in addition to the usual wall and base cabinets (A and C) the Arcode system provides a steel wall section (B), 7 feet high and capable of sustaining a bearing load of 7,000 pounds. The wall sections are assembled and framed into the house construction to form a solid armature for the rest of the kitchen assembly. Cabinets and equipment are then mounted direct on the wall sections. The rigidity of assembly gives an even alignment and prevents any distortion that might cause doors and drawers to become stuck. Not only do the wall sections carry their own load as well as the superimposed wall loads, they also provide cabinet space to a useful depth of 6½ inches. By adding one or more hanging units of the C type, cabinet depths of 13, 19½ and 26 inches are obtainable. The space is also utilized for pipe inclosures, wiring, heating and ventilating ducts.

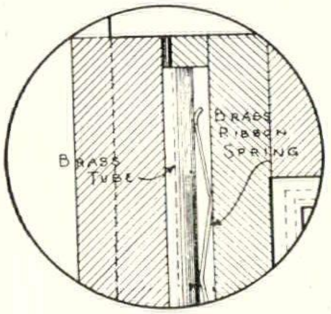
Assemblies: The use of a module system—15, 20 and 35-inch spacings—permits considerable flexibility in arrangement with an essential simplicity in parts. Almost any desired combination of units and fixtures can be provided. The rear sides of the wall sections need only to be suitably finished (e.g., wall paper or a coat of paint applied directly to the steel) to form the wall of an adjacent room. Panels can even be reversed so as to open into an adjoining dinette.

Cost range: The large L-shaped kitchen with pantry back-up (see illustration) will retail about $500, the smaller straight-line assembly about $275. For houses costing $15,000 or more a "flush" cabinet construction is being marketed. For houses between $8,000 and $15,000 there is a less expensive type known as "stile" construction. For houses less than $8.000, several fixed combinations or "packages" will be sold through department stores at prices approximately a third more expensive than a comparable construction in wood.

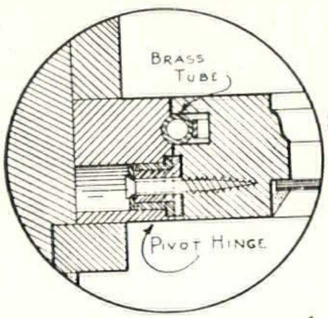
NEW MATERIALS, EQUIPMENT AND CONTROLS



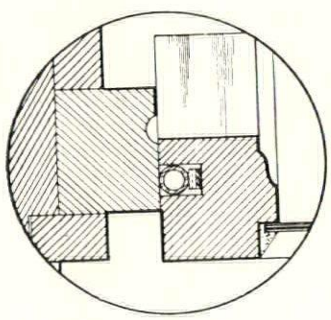
flexible tubes of metal—1/8" to 40" diameters



VERTICAL SECTION THROUGH STILE



SECTIONAL PLAN OF STILE AT CENTER



SEPARATION IN STILE WHEN SASH IS TILTED

tilting window sash

metal tubing like rubber

Produced by Metal Hose Division, Eclipse Aviation Corporation, 545 North Arlington Avenue, East Orange, N. J.

A flexible metal tubing has been developed which combines the useful characteristics of metal with the pliability of rubber. It can be made to resist pressures, temperatures and similar conditions against which rubber—even when reinforced—would prove of little value. It is made from conventional seamless tubing corrugated into bellows-like form with adjacent corrugations parallel to each other and rounded at the top and bottom. The hose derives its flexibility from these corrugations with their deep side walls, the degree of flexibility being controlled by the number of corrugations for each inch of hose and also by the wall thickness.

Sizes: In monel metal tubing it is produced in a variety of sizes from one-eighth of an inch to two inches in inside diameter. In steel it has been produced with inside diameters up to 40 inches. In some of the smaller sizes, it has been tested against pressures up to 3,000 pounds. The tubing is available also in nickel, 3 per cent silicon bronze and other corrosion-resistant materials.

Applications: The tubing has been found useful for carrying corrosive liquids and gases under pressure as well as for carriers for control wires in airplanes, motor boats and the like. In the building field it offers flexible connections for oil burner installations; air conditioning piping, pump and other hydraulic connections where it is desirable to absorb vibration and to prevent passage of noise; exhaust and other connections for diesel power plants.

tilting double-hung windows

Developed by Jiffy-Kleen Corp. Produced by Carr, Ryder & Adams Co., Dubuque, Iowa.

By means of a pivoting device, the sash in ordinary double-hung windows can be tilted for indirect ventilation in any kind of weather and for easy cleaning of outside pane surfaces. When sash is not tilted, the window has its traditional appearance. The pivoting device is installed in the sash at the factory; it is adaptable to any standard frame and operates with any balancing device and any standard weatherstripping.

Mechanism: A seamless brass tube extends the entire height of sash. It rests in a slot in the stile. A concealed brass ribbon spring makes positive contact with a groove in upright pivot strip when window is closed, thus insuring weathertightness. The pivot hinge operates in conjunction with brass tube and spring. When sash is tilted, the tube rolls, acting the same as a roller bearing without wear on wood.

plywood without battens

Produced by Vancouver Plywood and Veneer Co., Vancouver, Washington.

A new plywood, known as Art-Ply, has been designed to do away with battens for covering joints between panels. Surfaces of the panels, which measure 4 x 8 feet, are grooved by special machinery. Into these grooves simple moldings are inlaid flush with the panel surface and are held fast with a water-resisting glue. Random plank, standard plank, rectangular plank and square tile patterns are thus obtainable in standardized 3-ply panels. The panels themselves are joined together by means of rabbetted edges; the joint is then concealed by a separate piece of molding.

air conditioning fan

Developed by General Electric Company, Air Conditioning Department (Sweet's Catalog File 26/9), Bloomfield, N. J. Designed and manufactured as integral parts of a line of air conditioners; not available as separate fan units.

A new fan, known as the "Aphonic Radial Flow Fan," creates the higher pressures required in central plant air conditioners by rotating the air so that each particle of it is subjected to centrifugal force. Although this principle is not new, it has been impractical heretofore to impart the required velocity to the air and to turn it at the same time through the required angles, without creating innumerable eddy currents and conflicts with the air stream; this turbulence causes unnecessary noise. To avoid turbulence, the air must be speeded up and turned at a uniform rate.

Mechanism: The air traverses the fan blades in a radial direction. This construction is distinguished from a propeller fan in that the blades are parallel to the shaft instead of at right angles and because a "snail shaped" stationary housing, known as a scroll, is required. Die-cast aluminum blades are used. Air is drawn in at the center of the open end of the wheel and discharged tangentially into the scroll, which terminates in a rectangular discharge opening which connects to the supply duct system. Produced at present in two nominal diameters, 7" and 12", the wheels may be used singly or in pairs.

Walls of Beauty— YET THEY PROVIDE INSULATION AND CORRECT ACOUSTICS!

Insulite Tile and Plank enable you to create walls of exceptional beauty; with the hidden but important values of efficient insulation and sound absorption.

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For new construction, or for remodeling, you'll find Insulite Tile and Plank an extremely flexible medium for expressing modern trends in decoration. The Insulite Company, Dept. AR66, Minneapolis, Minnesota.

INSULITE TILE AND PLANK

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REVIEWS OF CURRENT BOOKS

ALBERTO SARTORIS, GLI ELEMENTI DELL'ARCHITETTURA FUNZIONALE, *Second Revised Edition, 687 Reproductions. Milano: Ulrico Hoepli.*

Alberto Sartoris is not only an architect of talent and an author of merit, he is above all a man of firm conviction. The architectural idea taking life in space, this sense of intellectual order which we attribute to the new architecture, stimulates him. Therefore to give a "panoramic view" of the construction activities of about thirty countries is for him more than a mere duty, it is an act of devotion.

Sartoris, like most of the young architects, has allied himself closely with the new plastic arts derived from impressionism. Consequently he is familiar with the development of this sensibility which is characteristic of our period, as exemplified in the various creations of contemporary painters and sculptors. This new machine tradition, manifesting itself more and more in our everyday life, finds a definite form in the works of art, thanks to the artists who are in tune with their time. The coming of the machine and the integration of the tool in our life created entirely new sources of art as an expression of a new consciousness and of a content that has become legitimately human. Now this sensibility which contrasts definitely with the past is brilliantly illustrated in this book. The choice of the plates is that of a discriminating collector, and it is a remarkable achievement of patience to assemble documentary data from such distant points—from the Argentine to Finland, from Los Angeles to Zagreb. But we should not be surprised to find a striking similarity between the creations of the new architecture and the other plastic arts. A work of Le Corbusier (page 164) will certainly recall a picture of Amedee Ozenfant; Rietveld (page 396) has many things in common with Piet Mondrian and the neoplastic movement.

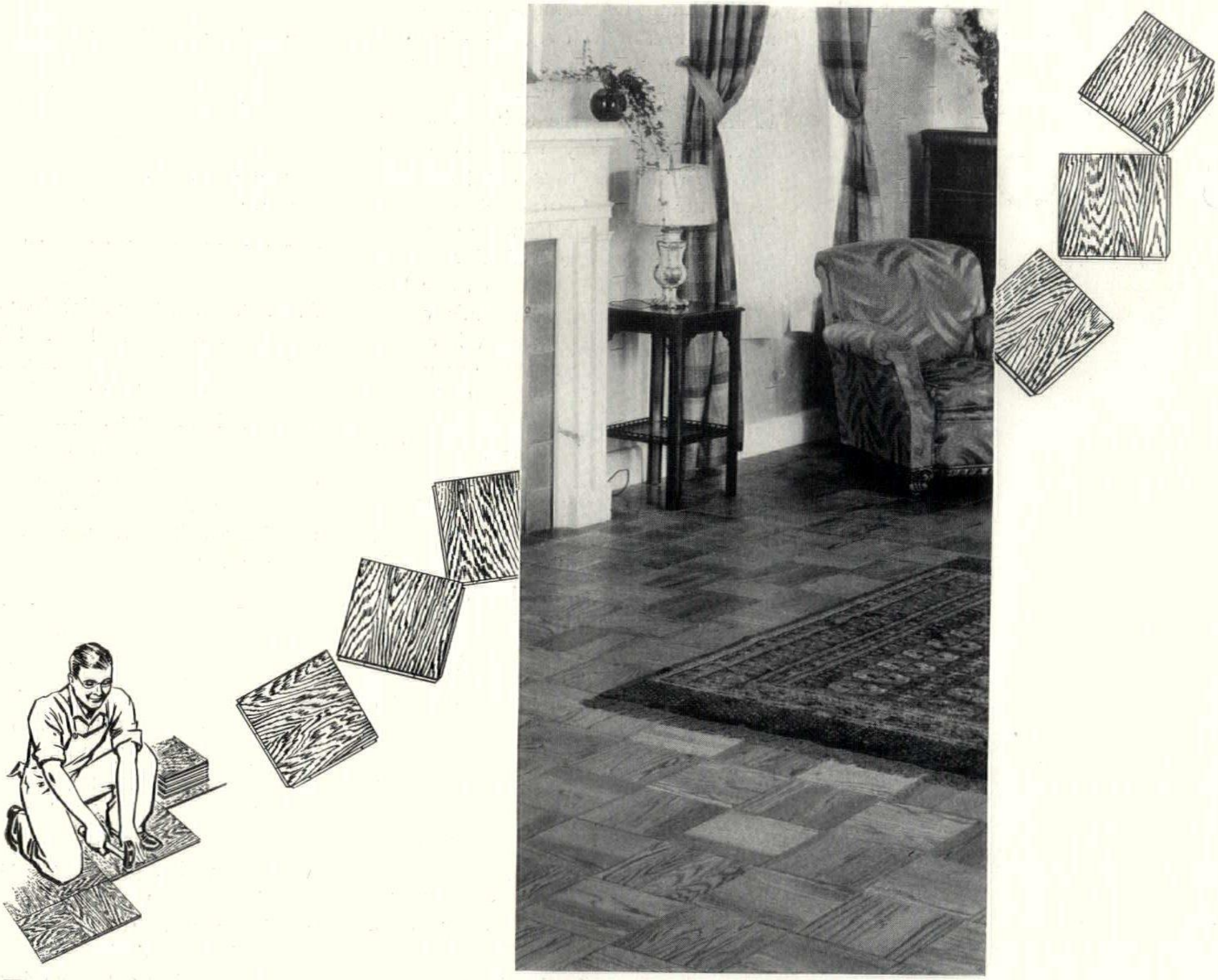
There has been much discussion about the term "functional architecture" as opposed to a free spiritual creation. For those who can read the Italian text of this book, especially the chapters "The Formula of Functionalism" and "Mediums and Materials of the New Architecture," there will remain no doubt as to the high intellectual quality of this architectural movement. Functional architecture! Yes, very human functions as the man's right to be free to feel, to enthuse, to make full use of his spiritual faculties, to give free way to the aspiration of his heart. Would this be sufficient guaranty for a genuine culture? We have always thought that under the term of functional architecture are known all those creations which have evolved beyond academic barbarism. (How deceiving is the fact that the Humanities have always had a nefarious influence upon the plastic arts, demonstrating the very absence of all culture!)

Since the first edition of this book, about three years ago, an imposing number of projects, then examples of paper architecture, are now presented in reality. We see that the construction activity of today is determined by a minority of "aesthetes" of yesterday who made no pretensions to do otherwise than to think, to feel, to breathe the atmosphere of their time and to work out solutions of contemporary problems. It is unexpected indeed to find in the pages of this book so vast a quantity of posthumous works. Sant Elia, Theo Van Doesburg, Adolf Loos, Karl Moser, Brinkman are no longer with us.

Sartoris has made an attempt at an epic and at the same time a comprehensive survey of the most worthy specimens of the new architecture. In his effort to remain, above all, orthodox, he has excluded the works of important pioneers. It is regrettable that Berlage, Behrens, Van der Velde, Perret do not figure in this book. Frank Lloyd Wright is the single exception.

Perhaps we should say a word on the omissions of obvious technicalities which so often appear in architectural books to impress the layman. Nevertheless we believe that this book is primarily addressed to architects rather than to the general public; for those at least who are not seeking novelties nor the superficialities of certain forms but who can be moved by the sincer

(Turn to page 22 adv.)



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—And That's Not All!

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Furthermore, each Bruce Finished Block is completely finished at the Bruce Plants—even to waxing and polishing. Thus a perfect finish is assured and the floor is ready to use the minute the last Block is in place. More than 20,000,000 feet of Bruce Blocks are now in use in structures of all types.

Illustrated literature and A.I.A. File may be obtained by writing E. L. Bruce Co., Memphis, Tenn.—"World's Largest Maker of Hardwood Floorings"

BRUCE

Bruce Finished Block
HARDWOOD FLOORING

REVIEWS OF CURRENT BOOKS

Continued from page 20 adv.

attempt of various creators in different countries and by mediums which differ more or less in each region: a wooden dwelling in Sweden, a glass house in Paris, a reinforced concrete building in London. Among the technical literature, or apparently technical, which has been all the rage the past few years, the Elements of Functional Architecture have the advantage of offering us a more esoteric significance of this movement about which there has been so much debate. Technic varies from one day to another—it is conditioned by the climate and the economic system of each country. Only the human side, can we say, remains unchangeable. **Stamo Papadaki**

MODERN FURNISHING AND DECORATION. *By Derek Patmore. New and Revised Edition. The Studio Publications, London.* 1936. $4.50.

Mr. Derek Patmore is an interior decorator and critic. The selected illustrations suggest that the author is partial to decoration rather than to an interior result that follows rational planning. In the text he records "a growing popular desire for decorative detail."

New tendencies perceived on the horizon, since the first edition was printed in 1934, include:

"A definite return to the use of color as opposed to the all-white and monotone color scheme.

"Square-shaped furniture is no longer quite so popular.

"Textures are becoming more elaborate, and fabrics—whilst many of them still rely on their interesting weave and texture for their effect—are returning more and more to colored decorative patterns."

The interior decorator will find interest in the excellently printed plates, many of them in color.

THE LESSON OF JAPANESE ARCHITECTURE. *By Jiro Harada. Edited by C. G. Holme. The Studio Ltd., London.* 1936. $10.

The idea underlying contemporary architecture and interior design—the light, space and convenience, the reliance upon strength of form and beauty of materials for a design result—has for centuries been an essential part of the slowly developing Japanese tradition. Japan is the fortunate possessor of an architectural tradition which, securely founded, has not lost its validity with the passage of years. The tradition is today being translated into new and modern forms for Japanese life. The principles are equally applicable to this country.

THE CHARM OF THE TIMBER HOUSE. *With an introduction by S. P. B. Mais. Ivor Nicholson & Watson, Ltd., London.* 1936. $1.

This brochure illustrates recent use of lumber as a building material in England and America. There are examples also of 17th, 18th and 19th century timber-built houses selected to show how this material has been used to solve architectural problems on both large and small scales.

VENTILATION MANUAL FOR SHEET METAL CONTRACTORS. *By Paul R. Jordan. A treatise on the type of ventilation which sheet metal contractors are called upon to plan and install. Edwin A. Scott, Publishers, New York.* 1936. $3.

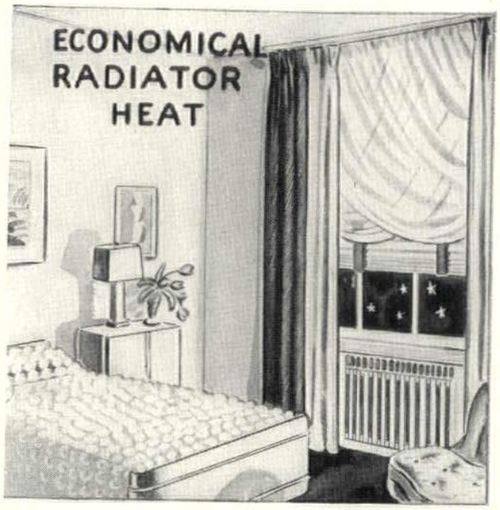
The book deals with what might be termed ductless ventilation, the class of work in which propeller fans or roof ventilators are used, with but little or no duct work. It is not intended for the engineer or designer of central systems employing extensive duct work.

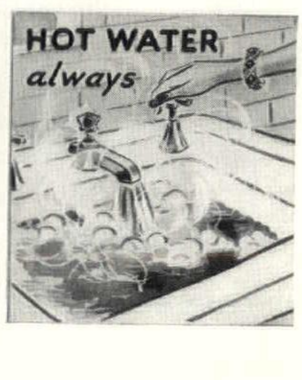
COPPER DATA; *Brasses and Other Copper - Zinc Alloys, I; Bearing Bronzes; Copper - Steels to Resist Corrosion; Brass and Other Copper Alloy Wire and Wire Products; Copper Alloy Extruded and Drawn Sections; Sheet Copper-Work for Building; The Use of Copper for Domestic Water Services; Copper for Architecture in Sweden and Denmark.*

The above listings comprise a series of books about copper and brasses prepared for architects and engineers. These books are published by the Copper Development Association, Thames House, Millbank, London, S.W.1, from whom further information may be obtained. The Association is a noncommercial organization representing the British copper industry as a whole.

FITZGIBBONS

Boiler-Air Conditioner for *"Split Systems"*





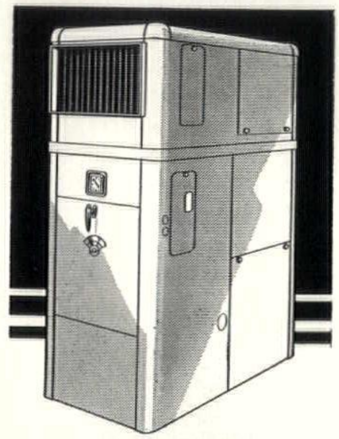
Right in line with the up-to-the-minute view of air conditioning, this versatile unit permits the placing of radiation in those rooms where it is undesirable or unnecessary to supply conditioned air. To all other rooms it will supply cleaned, tempered, humidified, circulated air in the volume desired.

In addition to all this, the Fitzgibbons Boiler-Air Conditioner supplies HOT WATER for kitchen, laundry and bath, ALL YEAR 'ROUND, with no tank or other equipment to mar the appearance of the basement recreation room.

In short, from a single compact and tastefully designed unit, you get CONDITIONED AIR, economical STEEL BOILER HEAT, and automatic, year-'round HOT WATER SUPPLY with no outside equipment. This unique combination of essential functions is proving of tremendous value in the establishing of air conditioning as a normal service in the modern American home.

•

Every architect will want the complete story of this unit. Write us direct, or our representative near you for the new bulletin just off the press.



ANY OIL BURNER is at home in this unit. The jacket has not been enlarged a single inch to provide the required space. When desired, however, the burner can be placed outside the unit.

Every advantage affecting burner performance of the famous OIL-EIGHTY boiler has been retained in this unit.

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In addition to the unit pictured above, we can supply the FITZGIBBONS-AIRE — an individual air conditioning floor unit for use in connection with a Fitzgibbons boiler.

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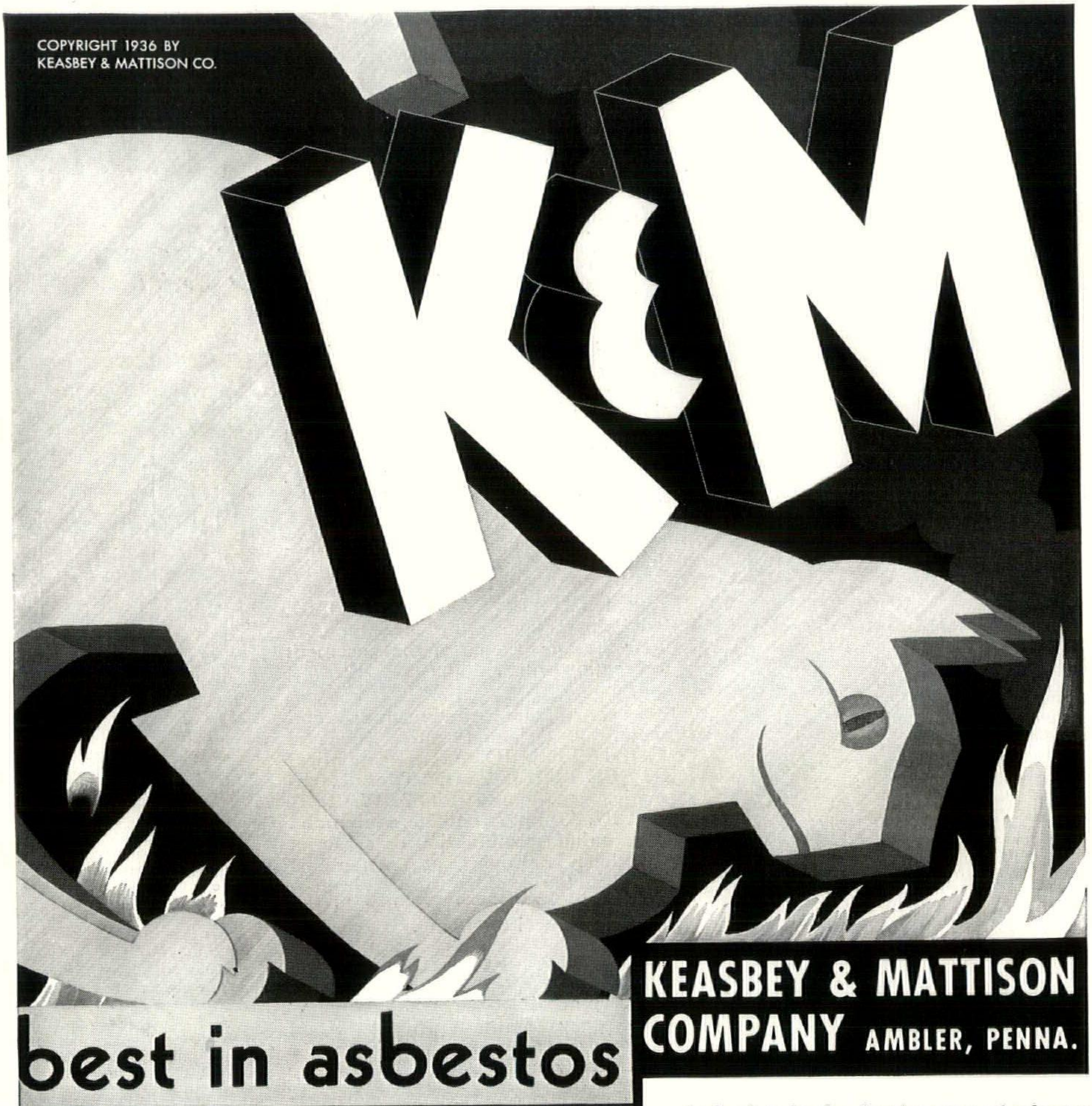

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Amroc (Mineral Wool) Insulations for the home

The K&M representative who calls on you is trained to work with the profession.

THE ARCHITECTURAL RECORD

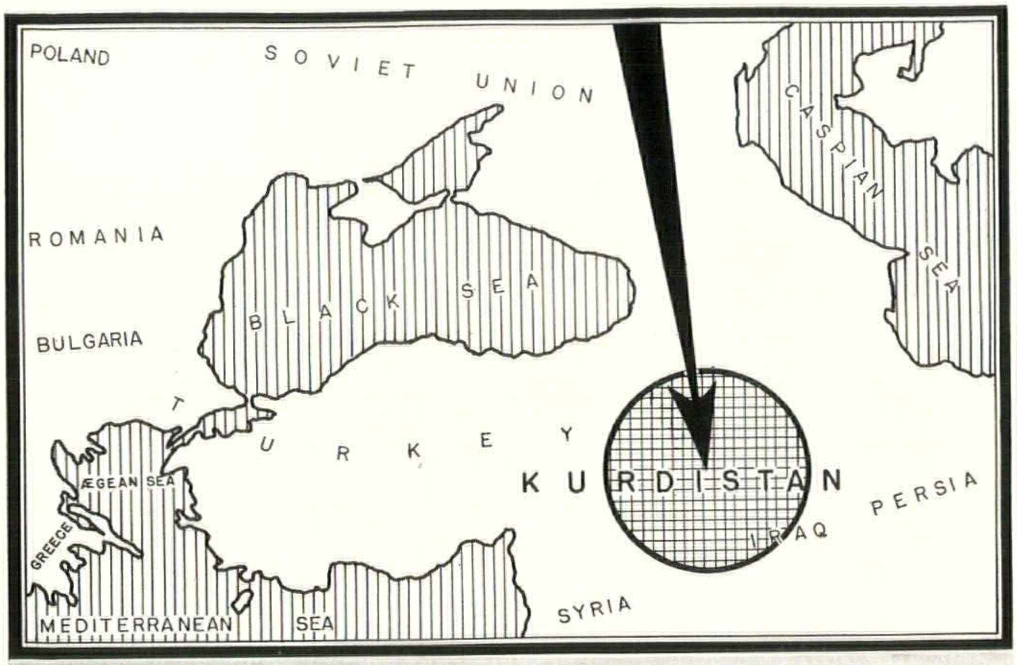
VOLUME 80 • NUMBER 5 • NOVEMBER 1936

• NEXT MONTH •

MUSEUM PLANNING. By Philip N. Youtz, Director, Brooklyn Museums. **JACKSON COUNTY COURT HOUSE,** Kansas City, Missouri. Keene and Simpson, Wight and Wight, Edward F. Nield, Associate Architects. **WWJ BROADCASTING STATION,** Detroit, Michigan. Albert Kahn, Inc., Architects. **PLANNING NEIGHBORHOODS FOR SMALL HOMES.** By A. F. Kamstra, Committee for Economic Recovery. **TECHNICAL NEWS AND RESEARCH. NEWS OF THE MONTH. OTHER FEATURES.**

NEWS OF THE MONTH

KURDISH EXPEDITION FINDS OLD CULT, NEW DESIGN, SAME MEN



These friendly peasants were the architects and builders of exotic temples. Equipped with claws and scythes, they were glad to stop their harvesting and pose for the camera.

All the elements of a black magic pulp story attended a recent expedition into the Kurdish mountains led by the Austrian archaeologist Von Kummer. By no means an unknown land, the expedition nevertheless stumbled on something new in the way of (a) religion and (b) architecture. These Kurdish peasants, while of Arabic origin, are not Moslem; they have given up the nomad's life to farm the plateau region south of the mountain range which runs east-west between modernized Turkey and British-owned Arabia.

Von Kummer found the peasants likable enough—"honest farmers by day who wore long claws which they claim aid them in farming." Their villages of rude clay huts left archaeologist Von Kummer cold—it was not until he began to ask questions about the gleaming spires in the foothills that he "was greeted coldly by the peasants." And when he learned that these cones were not tombstones but shrines to which the peasants retired for nightly worship, he determined to see them.

Warned to turn back, the expedition nevertheless secured a guide who led them into the hills. Climbing, the air grew cool and the vegetation heavy. At first singly, then in increasing numbers, they saw the fluted white cones; they symbolized flames, the guide told them. Finally they reached the temple itself, a square stone building topped with the now-ubiquitous cones and guarded by a horrific high priest, in black and red. He refused them entrance; and while they argued with him, they photographed the entrance, with its Arabic carving, stone serpents and devils' horns above it.

The argument—in Arabic and German—reached such a pitch that the cameraman slipped into the sanctuary unnoticed; saw "a red-draped sarcophagus"; took a picture of it which was no good when developed. Returning, the expedition studied the numerous shrines amazed at the contrast between them and the houses in which the worshippers dwelt. But it was not, according to Von Kummer, until they were resting in the shade of a village wall, "that they saw a devil's hand on a house wall and realized they were in a village of devil worshippers."

*Startling in their purity of form, these Kurdish temples illustrate a truism—that there is no essential connection between highly refined building forms and a socially progressive culture. The basic design of these structures is a geometric concept of a high degree of sophistication—the formalization of fire: and the execution of such a design by unlettered workmen indicates a highly developed craftsmanship. Yet these structures are built for a most primitive religion—the appeasement of the devil—by men whose living quarters are "rude and unadorned," whose general standard of life is quite low.**

The temples and shrines are concentrated in the hills, presumably for protection, though occasional shrines dot the plains. The conical towers are put to several uses—as spires for the main temple (Fig. 1); as markers for the temple grounds (Fig. 2); and as isolated shrines (Fig. 3). In each case they follow a definite pattern which is the symbol of the cult—a fluted cone-shaped tower atop a series of circular bases which in turn rest upon a square plinth of hewn stone: all the towers are plastered. Where they are used as shrines vaulting over the square plinth supports the conical tower. Each shrine boasts a pair of "devil horns" over its entrance (Fig. 4) and a metal finial with horsehair tassel. They are surrounded by stone walls which, serving merely to keep out cattle in the plains, reach monumental proportions at the temples.

Built as they are by peasant craftsmen without the benefit of plan, T-square or handbook, these structures show an astonishing degree of accuracy. The cone, which in plan is star-shaped, varies from building to building. In the smaller structures as low as 8 flutes are used, rising to as many as 18 or 20 in the temple spires. Where or when this form was first evolved the peasants could not say. The manner of building they could not describe. Although still active, the cult builds no new temples. Here, as elsewhere, temple building has slumped.

* No new note in archaeology, this; in "Rameses to Rockefeller," C. H. Whitaker points out that history affords one example after another of the productive forces of a nation being channelized into temple-, tomb- and palace-building, viz.: India, Egypt, Greece, Rome.

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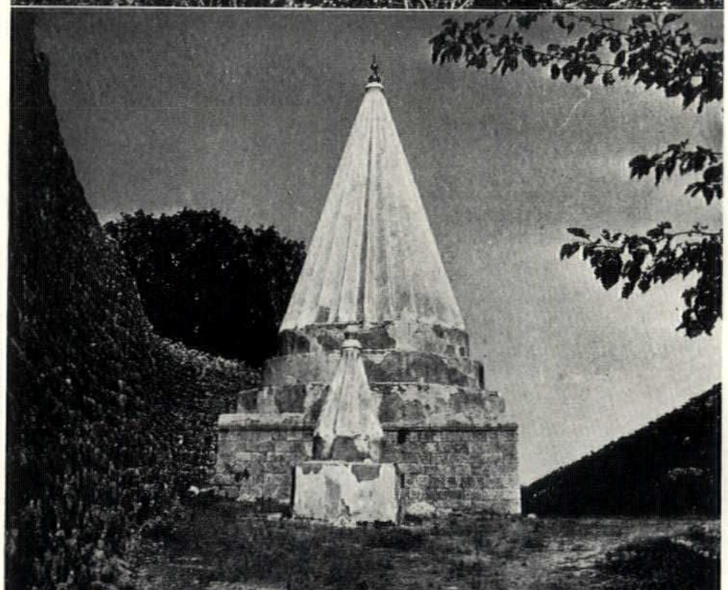

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Globe Photos

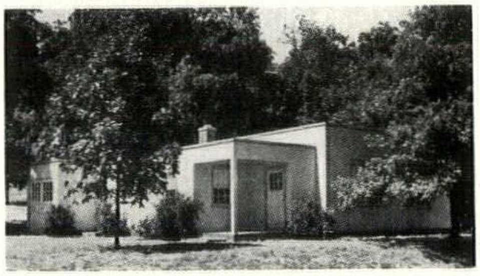
NEWS OF THE MONTH

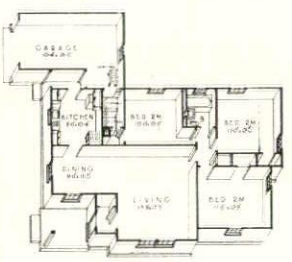
HOUSING, YES: BUT HOW, WHEN, WHERE, FOR WHOM?

● *Attacking the Gordian knot in the nation's largest industry, architects, manufacturers, realtors, professors and Federal housers last month offered their solution for what they admitted was a mess. Housing we must have, they admitted—but should it be rented or sold, detached or multiple, individually or industrially designed and fabricated? There they differed.*

● *Speaking before the 44th Convention of the U. S. Building and Loan League, Allie S. Freed of the Committee for Economic Recovery said, "Your job and mine is the liberation of America from the slavery of disgraceful housing conditions." And Prof. C. E. A. Winslow, director of Yale's School of Public Health, estimated that 6,000,000 families are housed "at a level lower than that which obtains in the leading countries of Europe and inferior to that used for cattle." Here Messrs. Freed and Winslow parted. While admitting that all those whose income was under $1,000 per year must be government-housed, Freed maintained that the larger field should be reserved for private initiative and that these should be rented, not sold. But Prof. Winslow points out that the largest block of potential demand lies below Mr. Freed's minimum and that the "magnitude of the problem is beyond the scope of private enterprise." Both agreed on one point: the houses should be rented.*

● *Also for multiple dwellings were H. A. Gray, PWA Housing Division, and Langdon Post, New York City Housing Authority, but for different reasons. Speaking at the cornerstone-laying of Williamsburg Houses, largest PWA project, Mr. Gray pointed out that only*

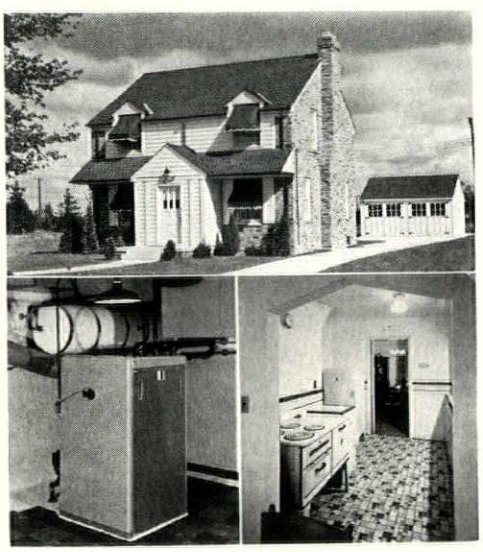




PURDUE UNIVERSITY PROPOSES RESEARCH INTO STRUCTURE

"For the development of information of interest to the small house building industry of the country," Purdue University collaborates with various materials and equipment industries in joint sponsorship of research projects. Last month, in conjunction with the Insulated Steel Construction Company, it opened its House No. 4—built of sheet steel and concrete at a cost of less than $5,000 in a construction period of 75 days. While striving for maximum efficiency in planning, House No. 4 offered no significant advance from traditional room arrangements. But it did present a design and detailed analysis of structural members specifically designed for steel.

Other materials and structural methods are being studied in several houses now under construction by the University. The results of these projects will be similarly analyzed and published. By the dissemination of such data Purdue hopes to at once raise the general level of performance and reduce the cost of the average small, detached house.



ARCHITECTS OFFER CATALOG, STANDARDIZED SERVICES AND FEES

The Detroit Kelvinator Corporation invited a long list of notables to attend the opening of "Kelvin Home." Widely hailed as a daring departure, it proved to be a small house of Colonial design whose chief interest lay in a heating and cooling system specifically designed for the small house. Although Ivan Dise, Detroit architect, was engaged to design a series of 30 small houses whose dimensions are suitable to the typical lot, whose plan is suitable to the air conditioning system, Kelvinator made it clear that "it is not entering the building construction field." The plans it developed will merely serve as guides to "a series of homes which will be erected by local construction firms throughout the country, employing local labor and capital, and making principal use of local material and supplies." Besides the new air conditioning system, Kelvin Home introduced new equipment for the kitchen, including stoves and refrigeration.

public housing would give the immediate employment needed for building recovery. Mr. Post, at a new and mildly educational exhibit at the Museum of Science and Industry, was mainly interested in the economies of large-scale planning over conditions now existing.

● *But defense of the detached dwelling was not lacking. Believing that the largest field of activity still lay in the traditional form, Purdue University went ahead with its research into improved structural systems, announcing an all-steel 5-room house for $5,000. Collaborating with the University in this project was the Insulated Steel Construction Company, whose interest was obviously the evolution of structural elements especially designed for the use of steel. And indicative of the manufacturer's increasing interest in the finished structure was the opening of the Kelvin Home in Detroit, first of a series of small houses throughout the country to demonstrate the practicality of a new line of air conditioning and kitchen equipment. Kelvinator emphasized the fact that it planned to work with architects and would not enter the construction field.*

● *Much more far-reaching was the program of Arcy Corporation, which announced that it would enter the $5,000 field not only with a new structural system, but with a new merchandising system which will offer design, fabrication, assembly and finance in one service. Arcy's success should prove a boon to a harried steel industry, faced with a 1936 surplus production capacity of some 9,000,000 tons.*

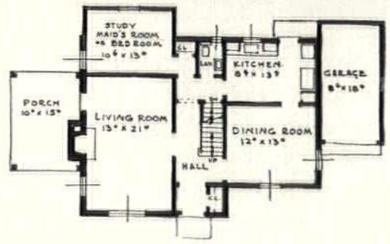
● *But the American Society for Better Housing, Inc., answered this challenge in its own fashion. Composed of 21 architects, the Society published a Handbook of a number of houses, many of which it has actually built, to demonstrate the architect's usefulness.*

INDUSTRY WANTS BETTER PLANNING FOR BETTER EQUIPMENT

Meanwhile, 21 architects intent upon reorganizing their services to win a share of the expanding small house field, formed the American Society of Better Housing, Inc. The Society's *Handbook*, just off the press, lists plans, elevations, and brief descriptions of 32 houses in the $5,000-$15,000 class which its members have designed. Fifteen of these have been constructed in commuting distance of New York with the cooperation of manufacturers, decorators, and landscape architects.

Although the Society claims to have "taken a leaf from the pages of the automobile industry," its Handbook is more plan book than catalog, its purpose remains fundamentally the same as the A.I.A. Small House Bureau out of which the Society grew. Architect-client relations remain the same: "there will be no retainers paid to any member by the Society. Only such business as is developed by members through their individual clients will serve as remuneration," the Society announced.

Photo by Newspaper Feature News



STEEL MAKES ITS BOW IN NEW STRUCTURAL SYSTEM

In Cleveland's Shaker Heights the Arcy Corporation is building these five houses to demonstrate a new structural and merchandising system by which it hopes to produce houses "at a set price with a single contract." This means that a single merchandising organization will offer the prospective home owner the economies of a unified building procedure—architectural design, engineering, fabrication, and field assembly combined. Plans have been made for the production of houses costing $5,000 or less which will have the same structural system as in the higher priced custom-built types. Some 50 standardized layouts have been prepared for the buyers' selection and already, through arrangements with a life insurance company, mortgage money will be available up to 2/3 of the combined value of house and ground. (*Technical News, pages* 401-3.)

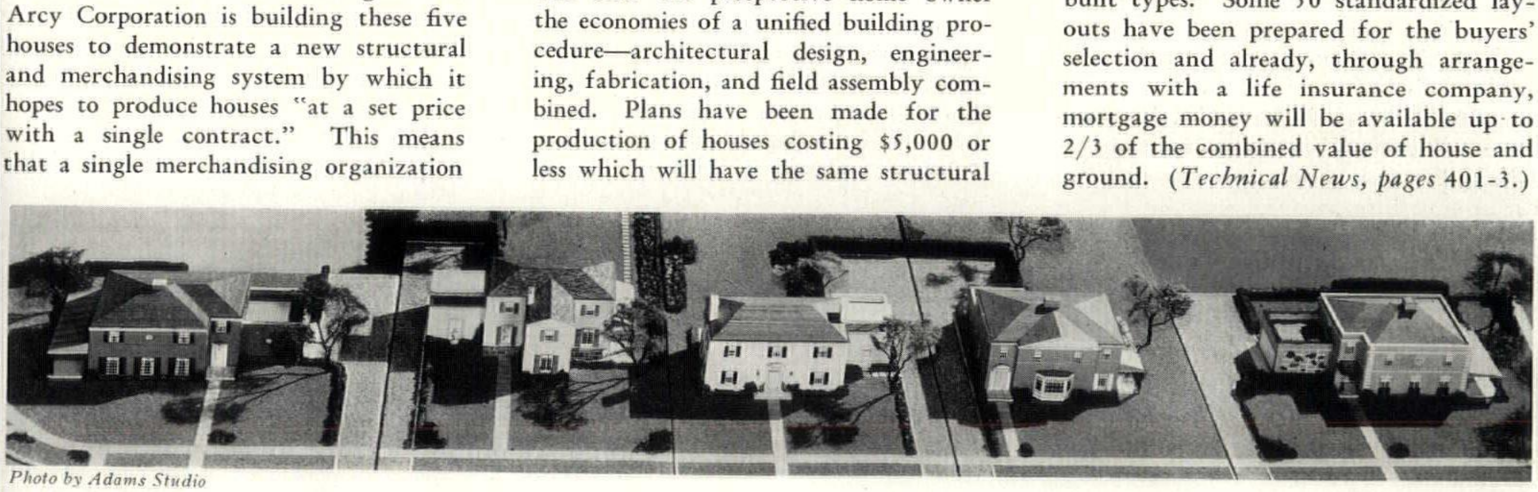


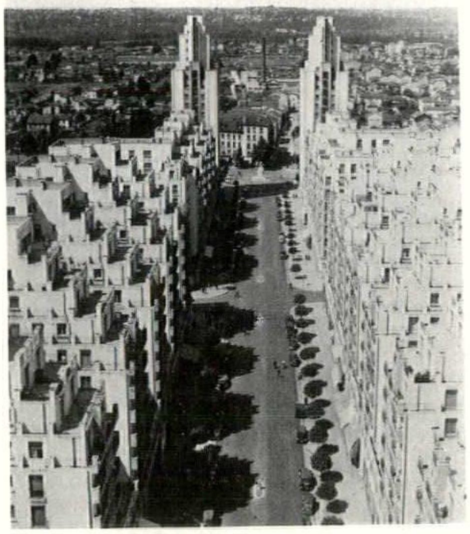
Photo by Adams Studio

NEWS OF THE MONTH

Photo by Acme

LIGHT IN THE CITY OF ANGELS

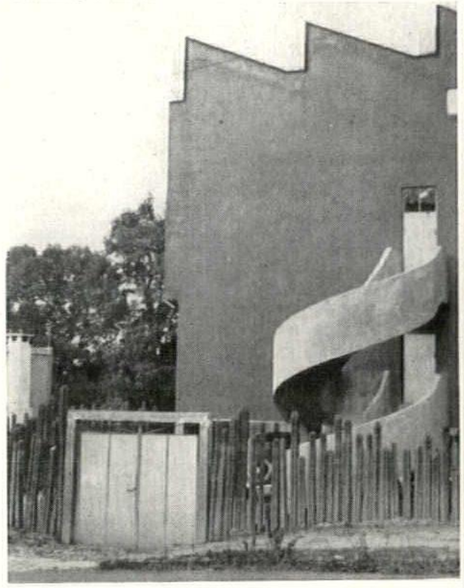
To celebrate the arrival of power from Boulder Dam, Los Angeles lighted her city hall and three miles of her streets in one of the most lavish electrical shows in her lavish record. Beside power from the muddy Colorado, the City of Angels will next year import water via a 250-mile aqueduct; the world's largest pumps will boost the water over the Sierras.



CITE AMERICAINE

"This amusing photo," says a French report, "shows a strange resemblance to the great American cities." Not quite accurate, the report overlooks the fact that this view of the famous Villeurbanne project outside Lyons shows workers' housing; only American counterpart is wealthy Park Avenue.

Photo by Fischer



FENCED OFF WITH CACTI

The San Angel studio of Diego Rivera, Mexican artist whose murals were removed from Rockefeller Center several years ago, is protected from peeping Toms by a stockade of organ cacti. The structure is fireproof, raised one story off the ground, and skylighted in true factory style.

A.I.A. ADOPTS ACCOUNTING SYSTEM

A.I.A. has officially adopted a standard accounting system for architects, developed by Edwin Bergstrom of Los Angeles, treasurer of the Institute, and described as "pioneer work in the field of architectural practice."

"The issuance of this accounting system by the Institute indicates the architect's intention to maintain his proper position of dominance in the building operation," says an A.I.A. announcement. "At present, uniform and accurate data for intelligent comparisons of the costs of rendering the various architectural services do not exist. The system, which has been in preparation for the past five years, will produce an accurate, informative, and intelligible statement of the financial condition of a business at any date."

The system covers the principles of accounting—the account, bookkeeping records, and financial statements; schedule of accounts; asset accounts; liabilities and net worth accounts; income accounts; expense accounts; cost accounting; journalizing and other recording; bank deposits and checks; and construction accounts.

CHURCHMEN DODGE "EXPERIMENTAL" DESIGN

Since theological seminaries "offer courses in everything but church architecture—even animal husbandry," the North American Conference on Church Architecture, assembled in New York City last month, was not surprised that most American churches are "total artistic losses . . . pathetic financial wastes." The Rev. Prof. Luther D. Reed, presiding at the Conference, estimated his church—the United Lutheran—had spent $50,000,000 on new buildings in the decade ending 1929; out of that he doubted "if we got just $5,000,000 worth of really good architecture."

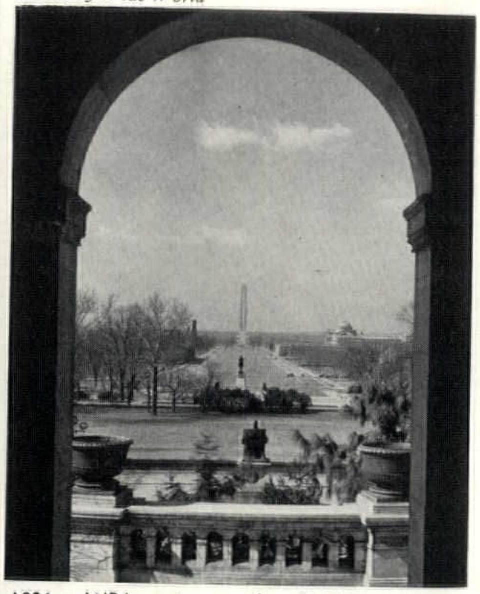
A schism developed in the Conference. Columbia's Dean of Architecture, Leopold Arnaud, traced the development of church architecture to prove "that it had been constantly creative and dynamic . . . should not be stifled by the traditions of these 2,000 years." The architects felt that "twentieth century church architecture should be natural, dynamic and expressive of the times." The clergymen found the thought "interesting" but warned that the church could not dabble in "intellectual experiments."

NEW YORK ARCHITECTS ASK HOME-RULE

"Bureaucratic domination of the arts" in the State of New York was charged by a group of architects in a recent letter to Governor Herbert H. Lehman. The letter grew out of the recent selection of the State Architectural Bureau in the Department of Public Works to design the proposed New York State War Memorial Building in Albany. "The state is being deprived of the service of its greatest creative artists," the letter charged, and is guilty of a resentful, even an arbitrary and unenlightened attitude.

A request for a conference with Governor Lehman met with a curt response from the Governor's office and from Edward N. Scheiberling, chairman of the New York State World War Memorial Authority. "It has been known for some time," says the letter, "that it is the policy of the Department of Public Works to oppose the services of private architects and engineers on public work connected with the State. We submit to you that this Department as the servant of the public has no moral right to ignore the entire profession of architecture in this State."

Photos by Wide World



1936 — WPA puts on the finishing touches.

1890 — Railroad tracks once bisected it.

L'ENFANT SHOULD SEE IT

After more than a century the Mall in Washington is assuming the character that the French engineer L'Enfant envisioned. For decades on end the subject of misplanning and short-sighted construction, the Mall now stretches unobstructed from the Capitol to the Potomac. The principal work has been the opening of the Vista between the United States Capitol and the Washington Monument, and to the Lincoln Memorial beyond; development of Union Square at the foot of the Capitol grounds; construction of roads and walks; the planting of ornamental trees and shrubs; and the development of lawn areas.

BRICK MAKERS TO WORSHIP AT BRICK SHRINE

"Thanks to the generosity of its patriotic donor and to the genius of the architects who have recreated this incomparable monument," the National Brick Manufacturers Association will play host to the nation's architects at Williamsburg, Virginia, next year. The convention will "study those glorious decades in which brick made its earliest contributions . . . will inspire a new faith in the future of brick."

C.I.A.M. MEETS TO PLAN PARIS CONGRESS

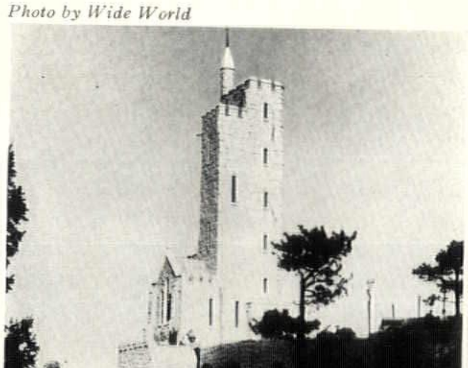
These were the people . . .

and this the place

Meeting in September at the ancient castle of La Sarraz, Switzerland, delegates to the International Congress of Modern Architecture (C.I.A.M.) laid plans for participation in next year's Paris Fair. C.I.A.M. was formed in 1928 as a loose international agency for integrating architectural research. In the Frankfurt convention of 1929 it adopted a constitution which set forth its objects: "1. To formulate the contemporary architectural problem. 2. To present the modern architectural concept. 3. To circularize this concept in technical, economic and social circles. 4. To struggle for the concrete realization of this architectural concept."

Composed as it is of national "groups," C.I.A.M. works on a common program of research as it applies to each group's specific problems. The results of this research are presented at the conventions, where plans are laid for extension and refinement. Thus the minimum house was the subject of the 1929 convention; but discussion showed that the house could not be studied independent of the community. The 1931 meeting then at Brussels concentrated upon the community (neighborhood); but here again C.I.A.M. found that the neighborhood was only part of the city and could not be analyzed otherwise. In 1933 the congress sessions took the form of a Mediterranean cruise; here the city was analyzed and plans laid for the next convention which, delayed by circumstances, will meet in Paris next year to concentrate upon national and regional planning. Although confining itself "to the presentation of the whole data of architecture and urbanism," C.I.A.M.'s steadily expanding scrutiny of the social and economic bases of architecture has inevitably led to a political orientation, until today it is recognized as one of the most progressive forces in European architecture.

Photo by Wide World



HE NEVER SAW THIS IN THE PAPERS

Mixed metaphors abound in this "Will Rogers Shrine of the Sun" recently built near Colorado Springs by Spencer Penrose as a memorial to the famous cowboy humorist. Why a "shrine of the sun," in Norman style atop a Colorado mountain, should memorialize the dry Oklahoman, builder Penrose has not explained.

Photo by Wide World

NEW USE FOR CASTLES IN SCOTLAND

That all Scottish castles need not be "hunting boxes" for roving millionaires is proved by the use to which Lennox Castle has been put by the City of Glasgow. Using the castle as an administration building, a complete and self-sustaining institution for the mentally defective has been designed around it. Notice the repetition of one basic plan in the housing units.

NEWS OF THE MONTH

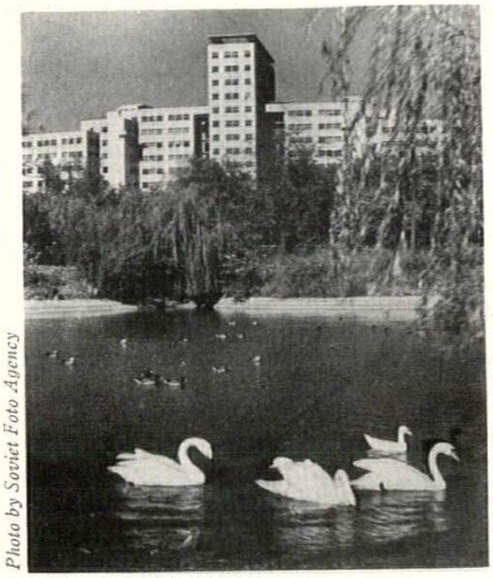


Photo by Soviet Foto Agency

UKRAINIAN IDYLL

Far different from the notorious famine pictures of the Ukraine is this scene in the zoo at Kharkov, capital of the Soviet Republic. In the background is the new House of Projects, home office of Ukraine's Planning Commission.

Photo by Fischer

ESCOLAR REVOLUCION

Named for the revolution which made it possible, this new school in Mexico City is part of the extensive reconstruction program which is rapidly giving the Mexican Republic one of the most progressive educational systems in the western hemisphere.

Photo by Acme

READY FOR THE JAPANESE PARLIAMENT

After 17 years, and at a cost of 22,500,000 yen, Japan's new Diet Building now stands near the Imperial Palace, ready for the next month's ceremonial opening. Although designed in the best Occidental-Academic tradition, the structure is a nationalistic gesture—the builders boast that only Japanese materials were used. Like its navy, the Japanese capitol is only exceeded in size by those of Great Britain and U. S.

TECHNICIANS STUDY THEIR FUTURE

In an attempt to present an integrated picture of the revolution taking place in the building industry and its effect on the building technician, Washington Chapter, F.A.E.C.T. last month began a two-months' symposium, *Trends — What Do They Mean To The Technician?* The symposium, which meets weekly, opened October 5 with a three-point discussion of new developments in metallurgy, plastics, and wood products, by J. R. Cain, Division of Metallurgy, and G. M. Kline, Chief of Organic Plastics, National Bureau of Standards, and G. W. Trayer, Chief of U. S. Forest Products Laboratory.

The October 12 meeting heard Walter Polakov, Progress Engineer, WPA, give a detailed outline of "our construction needs and relative capacity to produce them." $142,000,000,000 would be required, said Mr. Polakov, to fill our national need in terms of housing, schools, sanatoriums, recreational services, etc. He was followed, on October 19, by David Cushman Coyle, famous engineer-economist, who advocated a planned public works program to supplement private enterprise. James S. Taylor, FHA statistician, analyzed private and public aid to housing on October 26.

The symposium, which continues this month, will discuss public works, its political implications, and the position of the technician in relation to these developments.

FIREPROOF GYM FOR BURNED ATHLETES

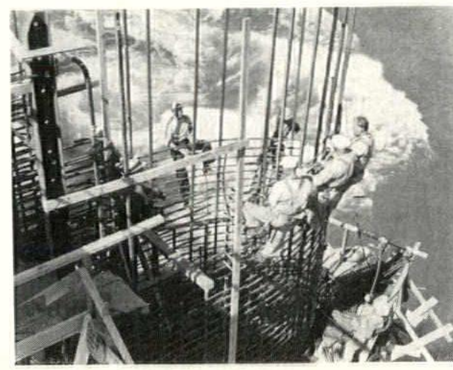
A new field house for Purdue University, at Lafayette, Indiana, will shortly replace the house destroyed by fire early in September with the loss of the lives of three of Purdue's football players. More than a dozen players were burned when gasoline they used to remove tape from their bodies was ignited. The explosion sent a sheet of flame through the shower and dressing rooms, igniting the structure. Carl Dahlbeck, Lowell Decker and Tommy McGannon died from the burns they suffered: several others have not yet fully recovered from their injuries.

The new building, of reinforced concrete and brick and limestone, will cost $652,000.

Photo courtesy P.W.A.

MOVIES IN MONTANA

To amuse the 7,000 workers in the government-owned construction town of Fort Peck, Montana, this Alpinesque movie palace has been erected. At Fort Peck, PWA is building the world's largest earthen dam to control the floodwaters of the Missouri River.



THIS IS THE WAY THAT DAMS ARE MADE

Bar by bar, these workmen are weaving the reinforcing for the great Bonneville Dam, PWA'S power, navigation and flood control project on the Columbia River. Supported, like window cleaners, with one leather strap, they pay no mind to the whitecaps below them.

ICKES' NEW HOME NEARS COMPLETION

Although simpler in design than earlier governmental buildings in Washington, the new Interior Building staunchly supports one of the capital's oldest traditions — that the floor at the cornice line be windowless. (It was this tradition which last year enabled a fire to damage seriously the brand-new Post Office Building before firemen could get at it.) The new Interior Building will be finished early next year.

COMPETITIONS FOR THE PRIZES OF ROME

The American Academy in Rome has announced its annual competitions for fellowships in architecture, landscape architecture, painting, sculpture, musical composition and classical studies.

The competitions are open to unmarried men (in classical studies to men and women) not over 30 years of age who are citizens of the United States. The total estimated value of each fellowship is about $2,000 a year and the term of the fellowship in each subject is two years. All fellows have opportunity for extensive travel and for making contacts with leading European artists and scholars. Fellows in musical composition also have opportunities to conduct and hear renditions of their own works, and the Academy has a fund for publishing some of their compositions.

Entries for competitions will be received until February 1, 1937. Information and application blanks may be obtained from Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York.

U.S.S.R. ENGINEERS EXPLORE U.S. METHODS

To study American construction methods, a group of Soviet engineers is now making a tour of the nation's largest current projects. The group, under the leadership of A. L. Novikov, vice-president of the Committee for the Reconstruction of Moscow, consists of technicians employed in the huge ten-year plan for rebuilding the Soviet capital, plans of which were completed and displayed at the recent All-Union Construction Exhibit (*News of the Month, September*, 1936).

CALENDAR OF EXHIBITIONS AND EVENTS

- **November 18–20**—Thirty-seventh Annual Convention, International Acetylene Association, St. Louis, Mo.
- **November 29**—Closing date: Special Exhibition of Glass, 1500 B.C. to 1935 A.D.; Metropolitan Museum, New York City.
- **November 30 – December 4** — American Society of Mechanical Engineers Annual Meeting, New York City.
- **November 30 – December 5** — Twelfth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City.
- **December 4, 5** — Annual Meeting, National Association Housing Officials, Philadelphia, Pa.

DIRECTORS VIEW MODEL OF 1939 WORLD'S FAIR

Photo by Wide World

Grover Whalen, president of the World's Fair Corporation, points out to the directors the "theme tower" of the proposed Fair. From this tower, only multi-story building in the Fair, visitors will be able to view the world's largest exposition with proposed exhibition space of 2½ million square feet.

LEAGUE ADVOCATES WAR-CONDITIONED MUSEUMS

More and more European architecture and town planning is reflecting the threat of European war. Recently the Royal Institute of British Architects was warned to design bombproof structures wherever possible and to decentralize its hospitals, factories and schools to make them less vulnerable from the air. And London last month opened its first "war-conditioned" building—a three-story structure of bombproof construction, with complete air conditioning, gas- and shrapnel-proof windows. In addition, there is a sub-basement where ten persons can live indefinitely; it is completely equipped with "radio, telephone, running water, emergency lights, canned food, and even mustard-gas ointment."

Recognizing the war threat, the international museums office of the League of Nations last month issued a memorandum on "putting the national art on a war footing."

"For movable art works, the building of reliable shelters within museums offering the same efficacy as those designed, for example, for protection of the civil population against aerial bombardments.

"Equipment of museums with a view to the removal of art works to these shelters in cases of impending danger.

"Drawing up drilling instructions for training museum staffs in these delicate operations.

"Acquisition of material that can be rapidly utilized for protection against effects of bombardment of art works difficult to remove.

"For architectural monuments, adoption of the same protection measures by competent departments with a view to insuring, in the event of aerial bombardment, the safety of more fragile parts (stained glass windows, bas-reliefs and other sculptural features) both inside and outside monuments.

"Steps to be taken with public authorities with a view to clearing in peace time certain artistic monuments of outstanding artistic or historic value of all surrounding buildings, works, airdromes, lines of communication, etc., used or capable of being used for military purposes.

"Construction outside urban centers and in places that give rise to no misunderstanding from a military or from a strategical viewpoint of shelters and depositories to which movable objects to be protected can be transported wherever possible; or appointment of a town or center in each country to be declared strictly neutral and to serve as a last asylum for humanity's laws."

Photograph by M. Zimmerman

T E R R A C E

PROGRESS IN THE RESTORATION OF COLONIAL WILLIAMSBURG

By KENNETH CHORLEY
President of Colonial Williamsburg, Incorporated

¶ NINE YEARS of intensive and varied activity have brought the restoration of Colonial Williamsburg to a point where its major architectural aspects may be considered virtually completed. In an effort that has so many ramifications it is difficult to apply the usual yardstick and make a sweeping statement concerning the completion of this work in Williamsburg.

The major architectural activity of the Restoration this year has been concentrated on the plans and construction of the new Williamsburg Inn. In April ground was broken for this new structure which is now being built just outside the area included in the Restoration. The construction schedule calls for the completion of the building during the early part of 1937 so that it may be open and in operation early next spring. It will be approximately three city blocks from the present Williamsburg Inn—overlooking the Court House Green—which is to be abandoned and removed.

In style the new Williamsburg Inn recalls southern architecture of the early 19th Century which was popular at the Virginia Springs during that period. It is thus later than the 18th Century period represented in the restored area. It will be of brick, whitewashed, and its design and scale have been formulated with great care not to conflict with the general architectural appearance of the adjacent restored area, and yet to be a style readily distinguishable from the buildings in the area.

The plans for the new Inn have been prepared and are being executed under the supervision of Perry, Shaw and Hepburn, of Boston, architects of the Restoration. The landscaping will be under the direction of Mr. Arthur A. Shurcliff of Boston, landscape architect of the Restoration.

The Public Gaol was restored in accordance with plans prepared by the architectural department of Colonial Williamsburg, Inc., approved by Perry, Shaw & Hepburn, and the work was executed by the construction department of the Restoration. This structure, representing the "strong, sweet Prison" of the Virginia colony during the 18th Century, was opened to the public as the fifth exhibition building in the group of major public buildings which includes the Capitol, Raleigh Tavern, Ludwell-Paradise House and the Governor's Palace.

Excavation of the original foundations and examination of the surviving structure yielded such detailed information as the brick bond which had been used, the height of cornices, the size of the chimneys, and also the treatment of the window and door openings. Heavy oak sheathing nailed with great iron spikes was found under modern planks; old locks, bars, hinges and hasps still existed, and in the excavations were found not only pipe stems, bottles and other articles, but leg irons, handcuffs and shackles. Some of this same hardware has been used in the restored building.

Outside the prison have been erected the pillories and stocks designed from early American and English examples that were part of the equipment of Colonial Virginia prisons.

On Duke of Gloucester Street, near Dr. Blair's Apothecary Shop (restored), has been reconstructed the Pitt-Dixon House, a six-room structure rebuilt following the original foundations. In addition to the main house the "chair house and stable" have been restored.

Bassett Hall, one of the most interesting old houses in Williamsburg, has undergone additional restoration both in landscaping to complete the gardens and the completion of the interior finish of the main building for use as a residence.

On Prince George Street, not far from the Palace Green, the Deane Smithy Shop and Forge have been reconstructed on the old foundations and these buildings will be used as a smithy shop.

An extensive outbuilding program was included in the year's budget of work. A spacious stable at the Semple House, near the Capitol, has been reconstructed. Elsewhere in the restored area many additional outbuildings have been built after careful architectural research. Before the end of the year about twenty-five of these outbuildings will be completed under this program. These will consist of stables, well houses, smoke houses, kitchens, wood sheds, privies, poultry houses and dairies.

Reflecting the varied demands of an increasing number of visitors many other activities have been initiated and continued during the year. Parking and traffic arrangements in anticipation of the opening of the new Williamsburg Inn are receiving intensive study. Part of this deals with improved methods of handling and routing of visitors within the city limits. Other important aspects deal with connections with existing highways and new approaches to Williamsburg that will be provided by the new scenic parkway from Yorktown that is being built by the Colonial National Historical Park.

Photographs © F. S. Lincoln

Dr. Blair's Apothecary Shop. This brick apothecary shop was erected in the first quarter of the eighteenth century and was subsequently used as a mercantile establishment.

ART II

Bruton Parish Church. Seen from Nicholson Street with the Palace Green intervening. The barriers in the foreground are a modern adaptation necessitated by automobile traffic.

arrangement with Colonial Williamsburg, Inc., Part II of an authoritative presentation of the Restoration is en in this Portfolio.

t I, December 1935 Architectural Record, was intended to give a general picture of the Restoration, includ- the history of Williamsburg, responsibility for the Restoration, notes on the architecture by the architects, landscape problems, and furnishings.

s supplementary portfolio is devoted to details of outbuildings of lesser size, gates, fences, mantels, interiors work completed in the course of the past year.

landscape work was done under the direction of Arthur A. Shurcliff, Landscape Architect.

Photographs © F. S. Lincoln

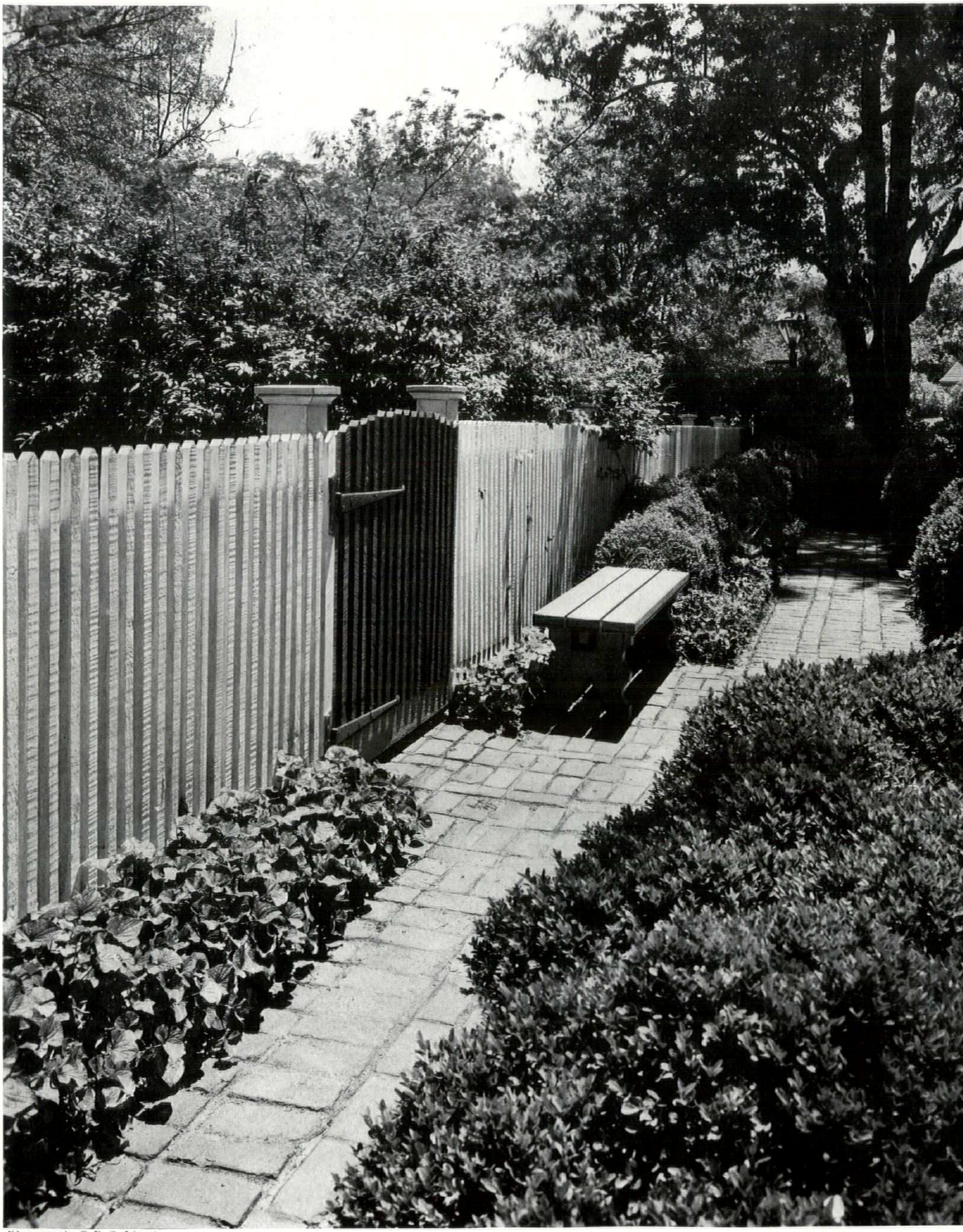
Door of Bassett Hall. An entrance to a small room adjoining the p
of this middle eighteenth century town house.

e Carter-Saunders House. At the time of the Restoration this house
essed an impressive nineteenth century portico. The original stone steps, though too
y damaged for reuse, were found in excavating a well on the property.

Photographs © F. S. Lincoln

The Quarter. A small cottage type Colonial house the records concerning wh
are obscure. In the nineteenth century it served as servants' quarters.

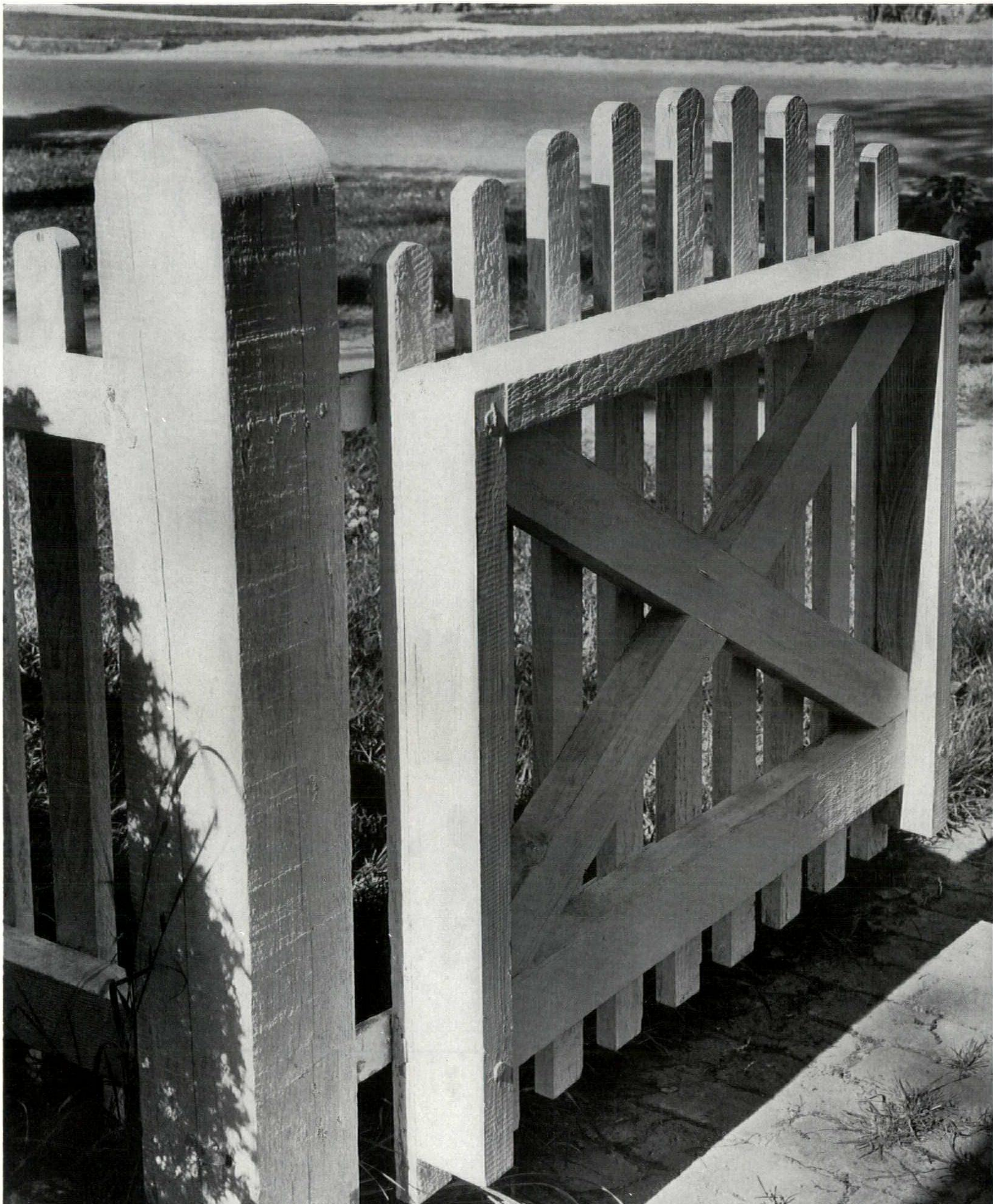
ne James Galt House. Moved from its original site, this Colonial dwelling been restored upon new foundations on the Duke of Gloucester Street where it has laced a modern building.



Photographs © F. S. Lincoln

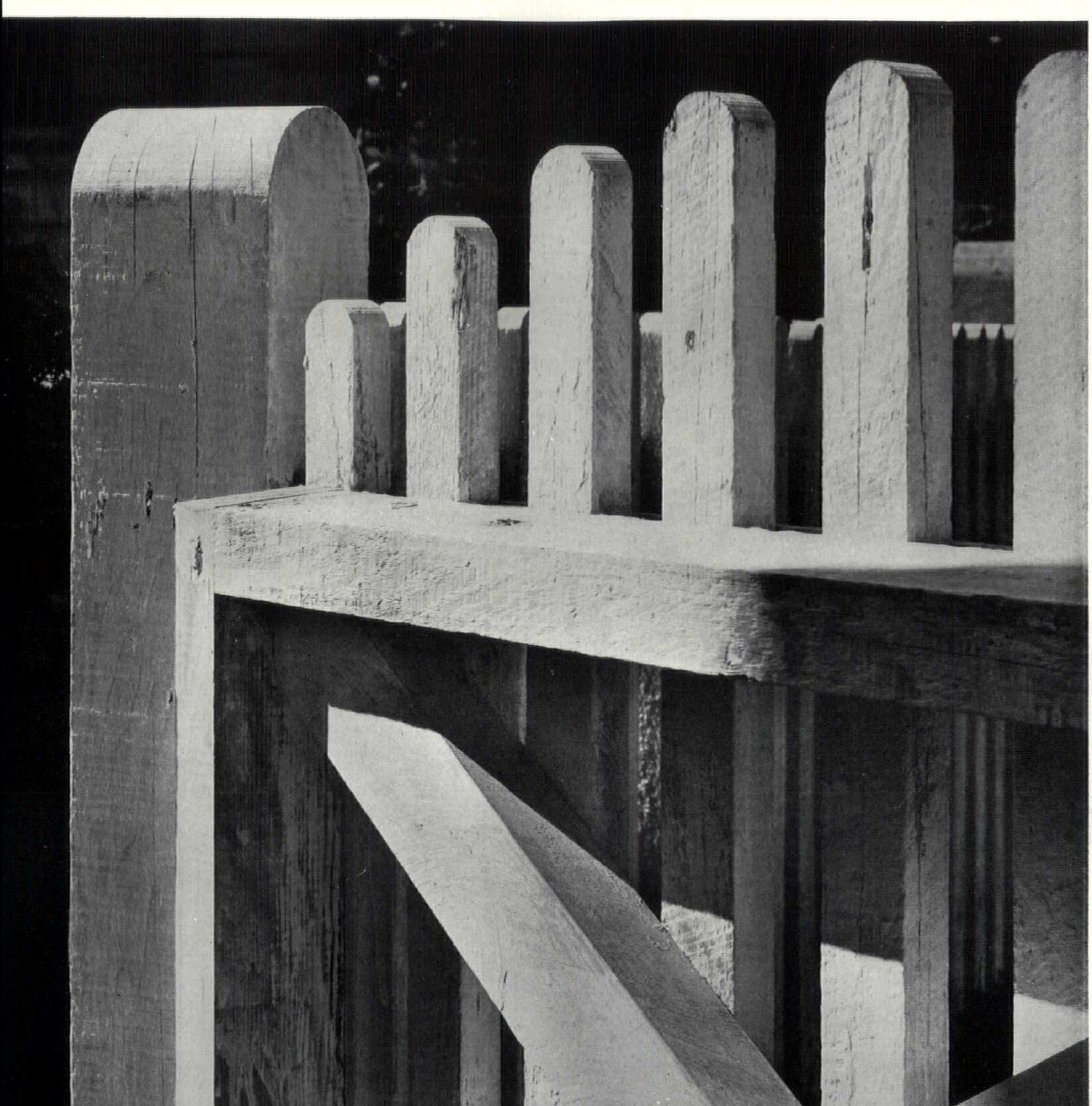
Coke-Garrett Gardens. This is one of the largest restored gardens of private dwelling house. Within box edgings are rose bushes, and the original terraces h been planted with crapemyrtle trees.

oke-Garrett Gardens. These gardens were among the few in Williamsburg
ich had survived even in part from the Colonial period.



Photographs © F. S. Lincoln

Gate to Kerr House. An approach to the garden of an imposing brick h
Original portion was erected in 1734 by John Kerr, goldsmith and jeweler.



ate to Kerr House. The design for this gate was an original gate at
metsham, Kent, England.

Photographs © F. S. Lincoln

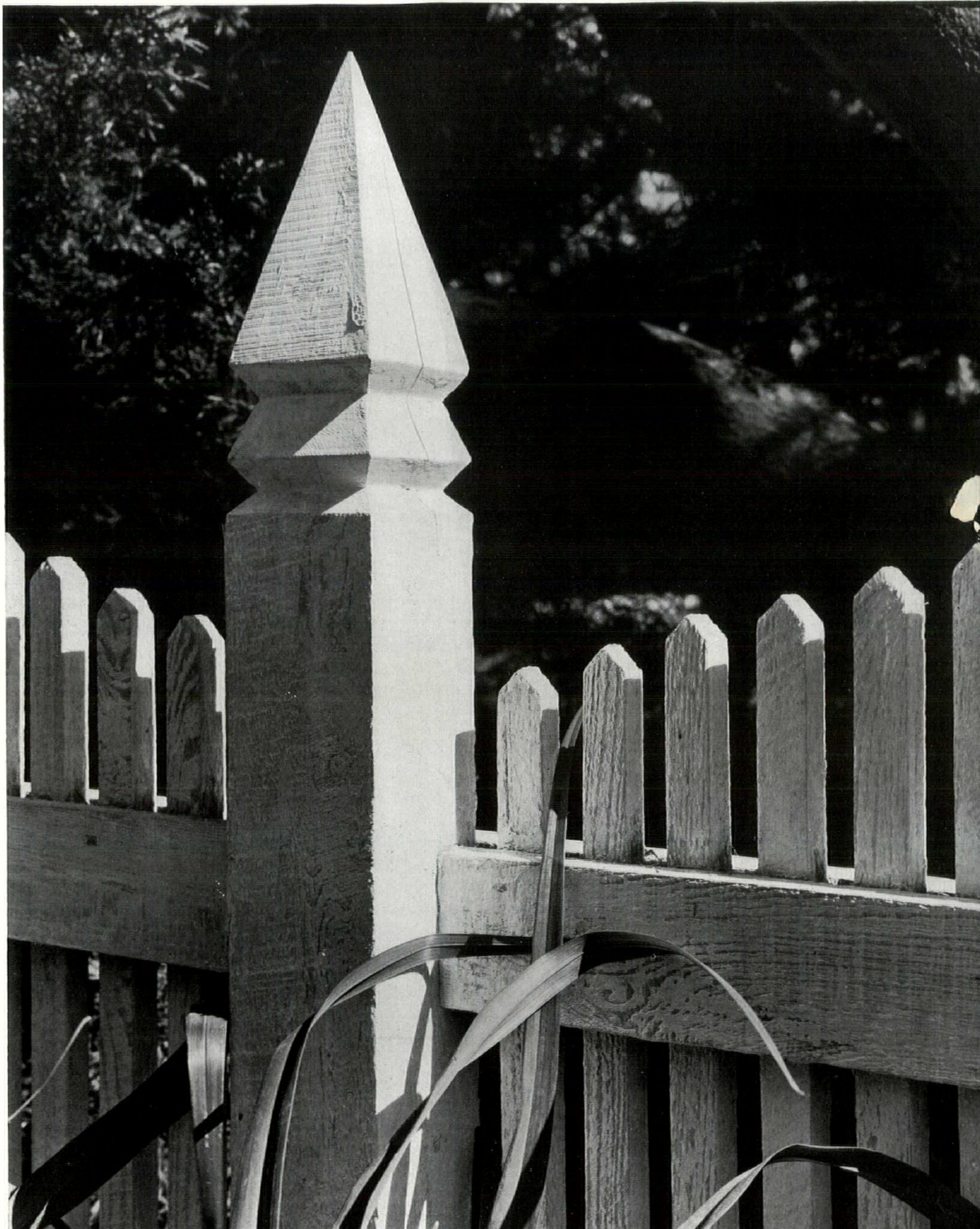
Gate to Purdie's Dwelling. Precedent for the design of this gate found in an eighteenth century gate in Bermuda, which had certain architectural feat in common with Virginia.

oke-Garrett Garden. View of restored gardens showing plants typical the period, also brick walks relaid in accordance with designs established by excavating any overgrown walks in the city.

Photographs © F. S. Lincoln

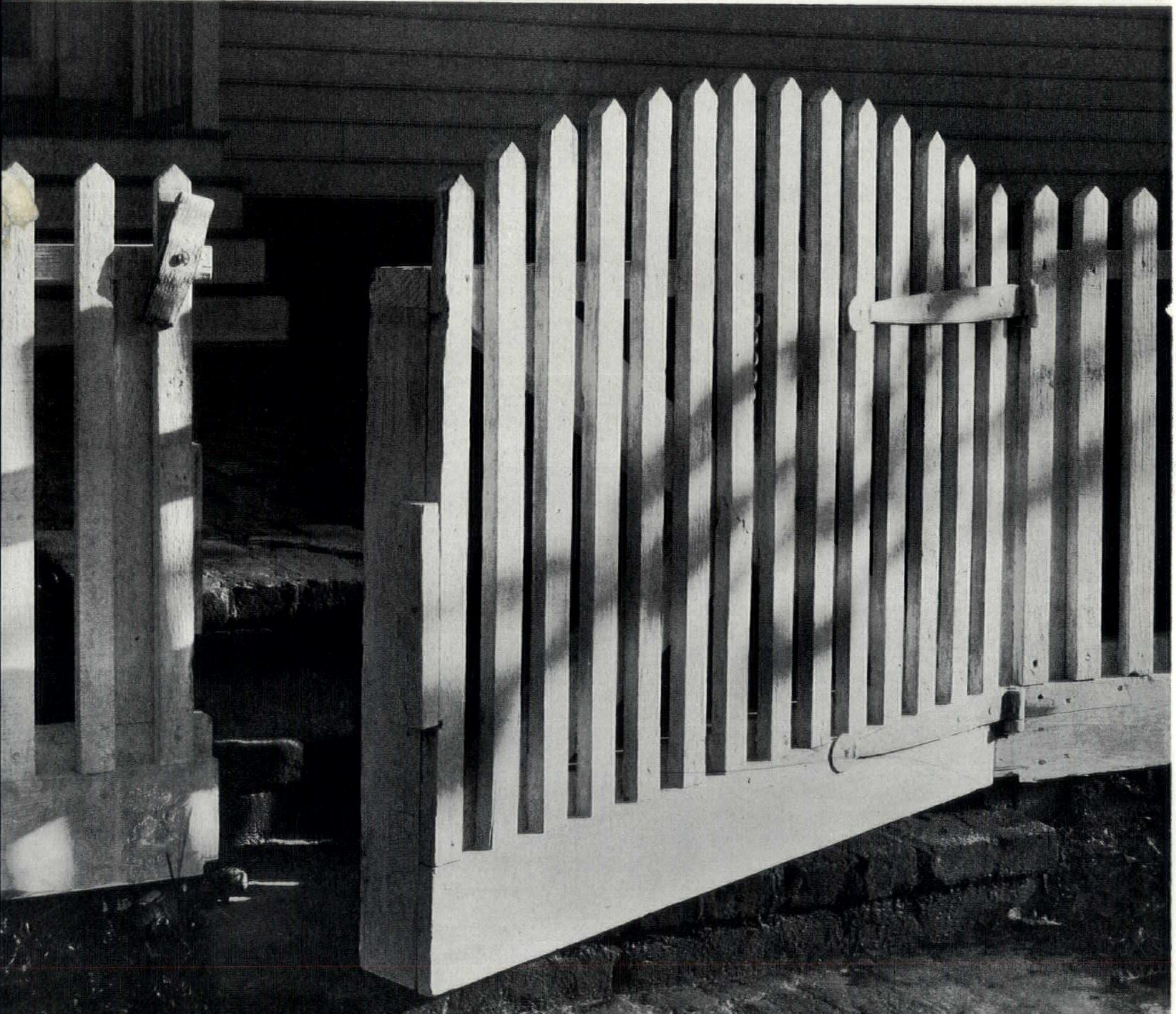
Garden Gate at Carter-Saunders House. The Chinese taste in... enced not only Virginia furniture, but the houses which contained it and the gates wh... led to the houses.

ate, Front of Lightfoot House. Each garden of the town is inclosed
h its whitewashed fence, reminiscent of days when cattle ranged at large in the city
citizens protected their shrubs and flowers from depredation.

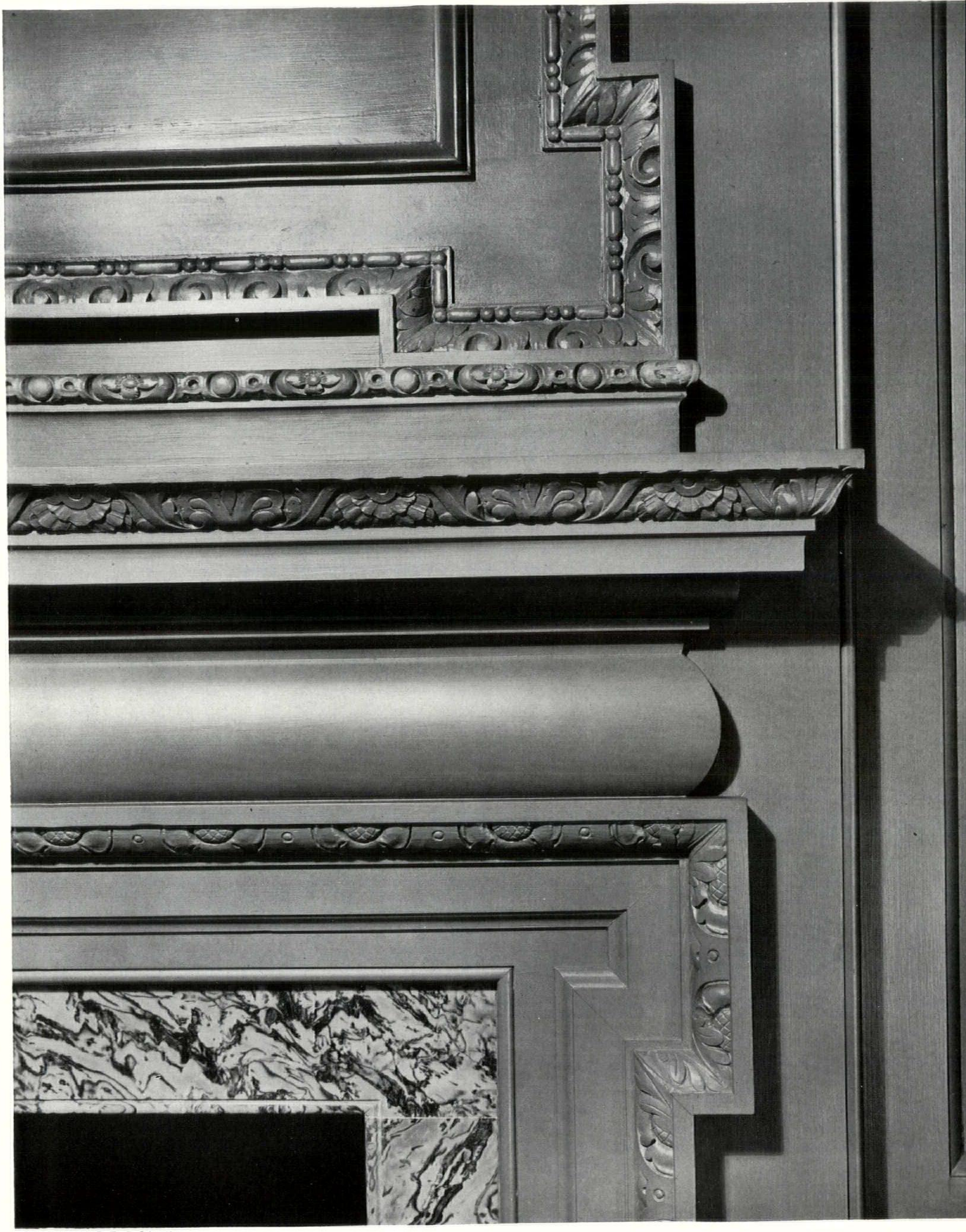


Photographs © F. S. Lincoln

Fence, Front of Bassett Hall. Surviving examples of gateposts, pic and fences in Virginia were copied and adapted to the restoring of fences which inclosed every town lot in the city.



ate, The Bracken House. The inclosing of lots with "a wall, pales, or
t and rails" was required of Williamsburg residents in the Act of 1699.



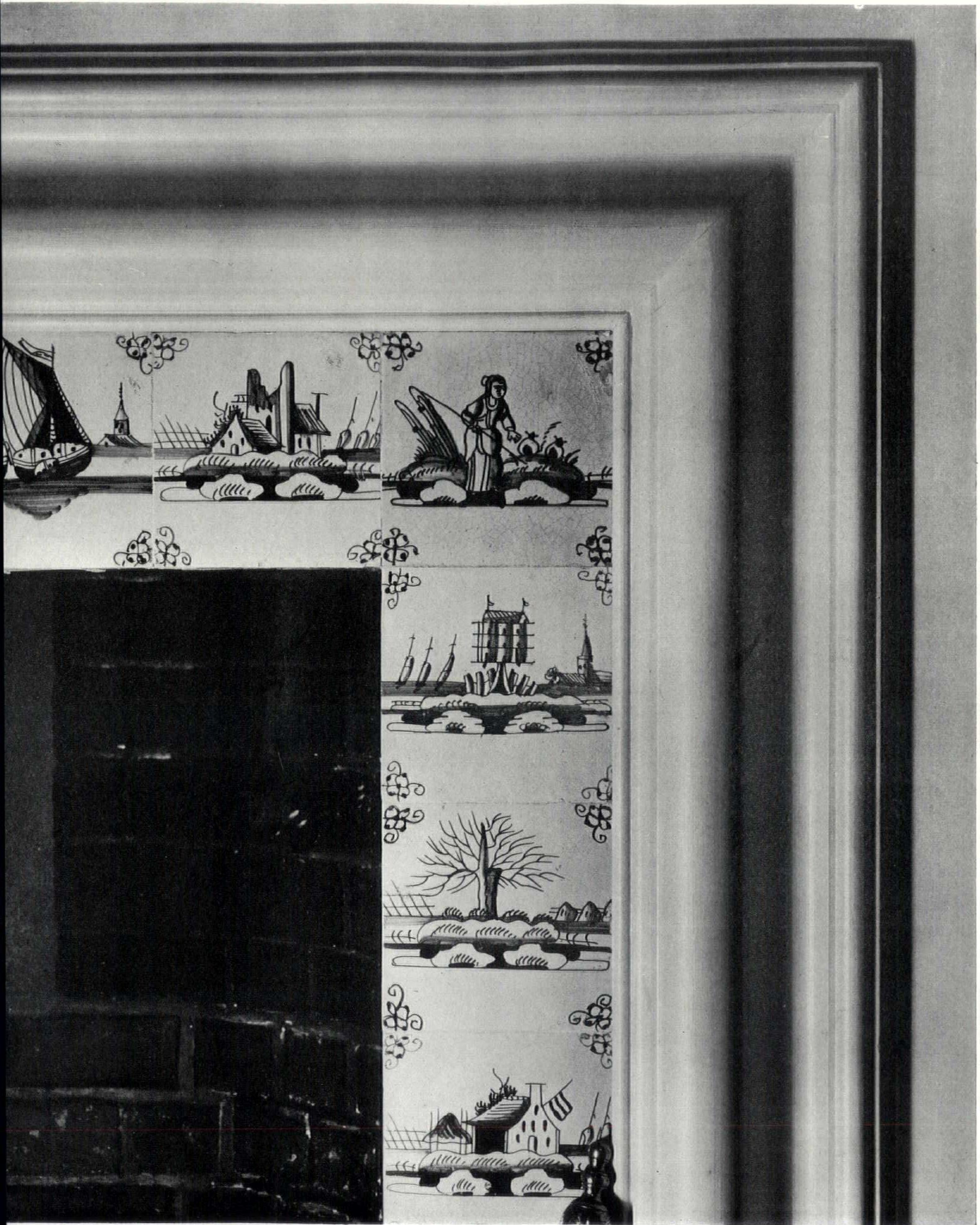
Photographs © F. S. Lincoln

Mantel Detail, Blue Bedroom, Governor's Palace. The d
and detail of this mantel and overmantel were inspired by an example at Stone Gate H
King's Lynn, England.

overnor's Private Dining Room, Mantel Detail. The facing *fleur de peche* marble is used in view of the fact that fragments of this same marble re found in excavating near the chimney base for this room.

Photographs © F. S. Lincoln

Supper Room, Governor's Palace. The Supper Room was circa 1751, at the height of the Chinese mode, symbolized by the use of antique Cl wallpaper from an eighteenth century house in London, and by elaborately carved wood



eplace Detail, West Front Bedroom, Governor's ace. Fragments of delft tiles were found in excavating the Palace site. Some of have been reused. The tiles shown are old tiles purchased for the reconstructed Palace.

Photographs © F. S. Lincoln

Supper Room Door Pediment, Governor's Palace. The Su
Room was added to the Palace in 1751. The pediment design with the concave rake
inspired by examples at "Badminton" and "Huntington Hall," England.

allroom Door Pediment, Governor's Palace. The monogram, orgius Rex, is inscribed on the pediment over the Ballroom door, as it was during the gn of George II that this wing was added to the Palace.

Photographs © F. S. Lincoln

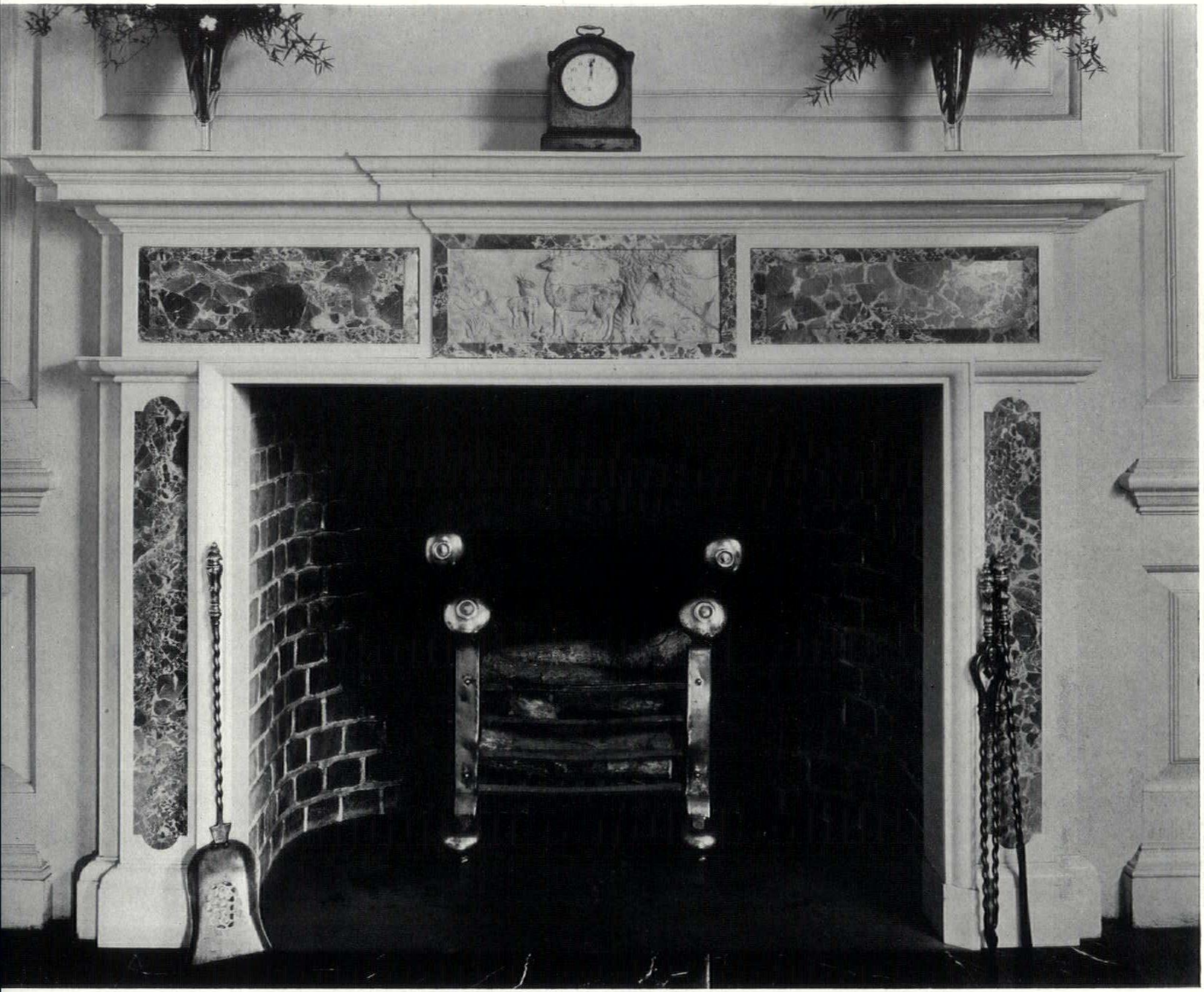
Grand Stair, Governor's Palace. The plan of these stairs was establis from a plan made by Thomas Jefferson during his residence in the building as governor the Commonwealth of Virginia.

allroom, Governor's Palace. The heraldic device above the door, the
ıstre" and the harpsichord, are indicative of viceregal luxury in which the royal governors
Virginia lived while Williamsburg was capital of the colony.

RESTORATION OF COLONIAL WILLIAMSBURG
PERRY, SHAW & HEPBURN, ARCHITECTS

Photographs © F. S. Lincoln

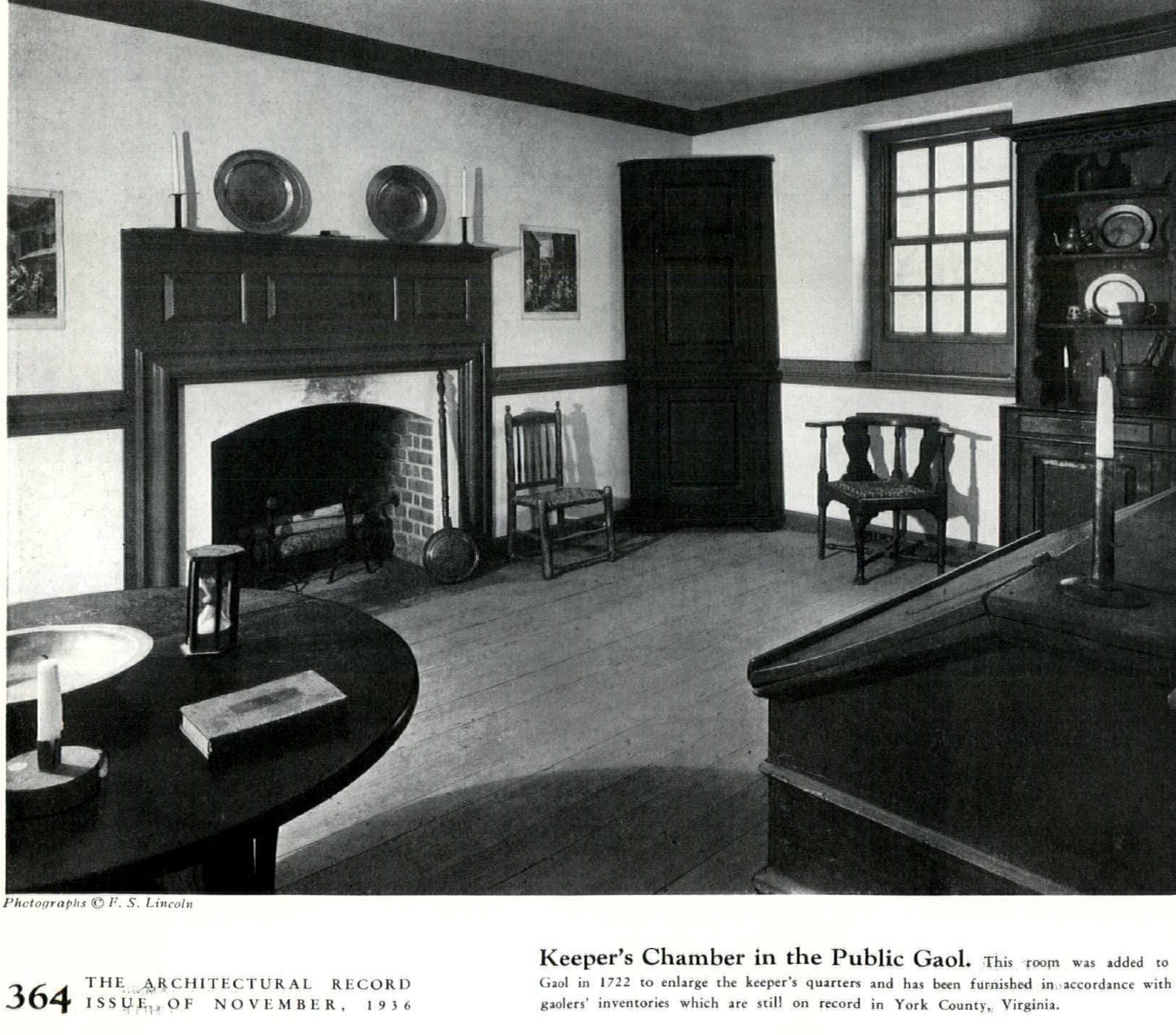
Supper Room, Governor's Palace. The Supper Room and Ballro
were added to the original building circa 1751 to meet the growing demands upon offi
hospitality.



lantel in Parlor, Governor's Palace. When the Palace burned in 1781 its marble mantels fell into the vaults below, where excavation brought fragents to light. These served in the design of this mantel.

The Gaol was ordered built in 1701. It was completed by 1704, under the direction of Henry Cary, master builder, who was also overseer of Williamsburg's first Capitol. In 1711, the stringency of the laws against poor debtors caused a General Court Prison for Debtors to be added to it, and in 1722 the Gaol was again altered and a substantial addition was made to the Keeper's House. Throughout most of the eighteenth century, until a further addition was ordered to the Keeper's House in 1773, the Gaol had this form, and has been restored to the 1701-1773 period.

Henry Hamilton, the Tory governor of the Northwest, was imprisoned for almost a year after he had been captured by George Rogers Clarke at Vincennes. Hamilton had attempted to incite the Indians to war on the patriots; and for his tactics was called the "Hair-Buyer" and was treated with more than usual severity, being denied the privileges of writing, of sending out to the taverns for his meals, or of having bedding and other luxuries. The narrative of his imprisonment from his Journal is not only a vivid glimpse into prison life of the eighteenth century, but it yielded numerous and detailed references to the appearance of the Gaol's interior and numerous features of its construction. (The prison cell described is not shown here.) Excerpts from this narrative follow: "We had for our domicile a place not ten feet square by actual measurements, the only light admitted was through the grating of the door which opened into the court. The light and air was nearly excluded, for the bars of this grating were from three to four inches thick. In one corner of the snug mansion was fixed

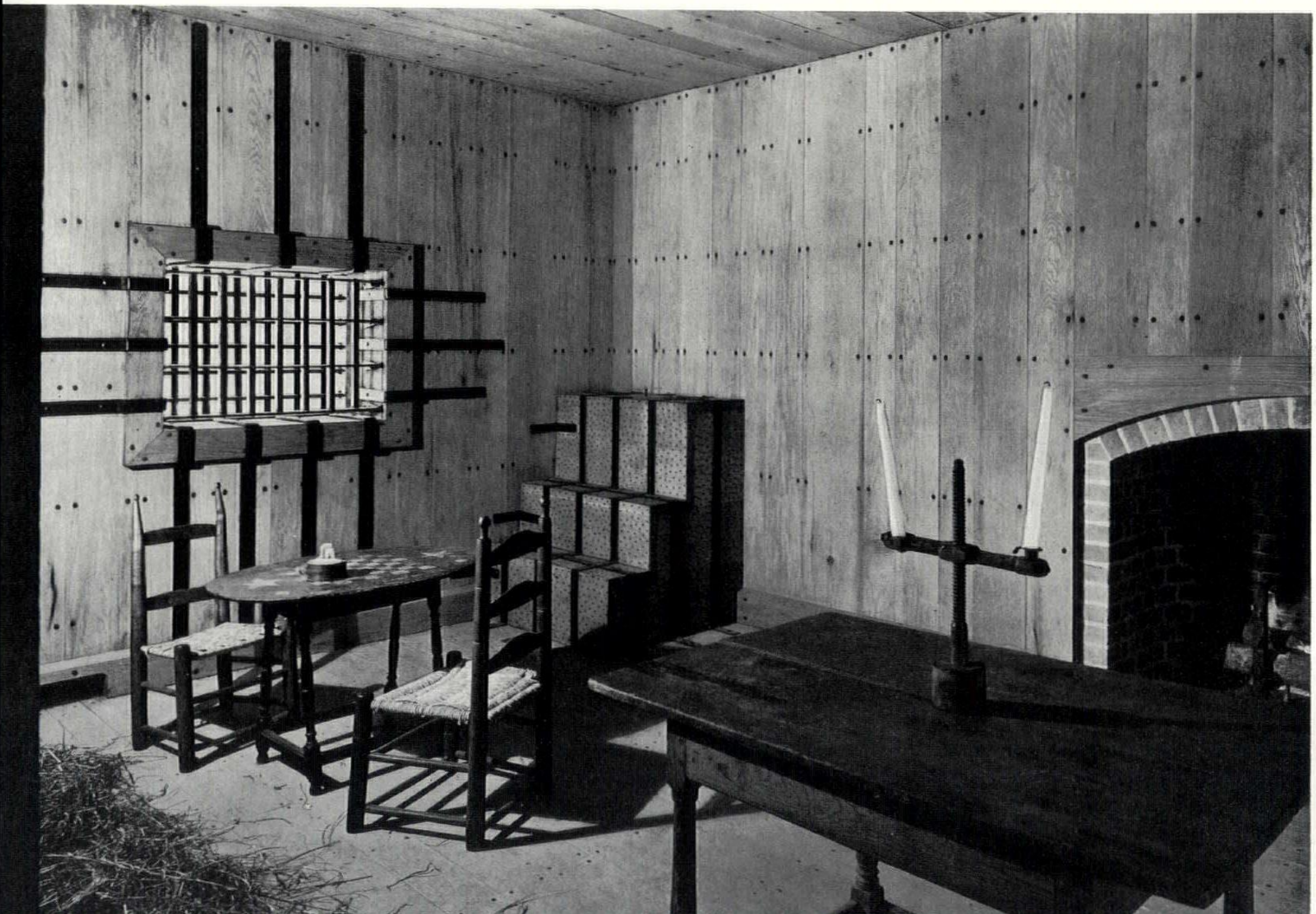


Photographs © F. S. Lincoln

Keeper's Chamber in the Public Gaol. This room was added to th Gaol in 1722 to enlarge the keeper's quarters and has been furnished in accordance with th gaolers' inventories which are still on record in York County, Virginia.

a kind of Throne which has been in use to such miscreants as us for 60 years past, and in certain points of wind rendered the air truly Mephytic—opposite the door and nearly adjoining the Throne was a little skuttle five or six inches wide, through which our Victual was thrust at us. It is not necessary to describe the furniture, as such folk as were detained to be residents here had no occasion for such superfluities. The Jaylor had not been long gone when I heard the noise of a flint and steel, a match was lighted, and by its light I espyed certain other persons who were utter Strangers to me. These worthy gentlemen when a candle was lighted offered me their services assuring me they were very sorry to see persons of our situation so hardly used. I must describe these persons as we shortly became acquainted . . .

"Mr. Speers he played on the fiddle, and perhaps to his enlivening strains I owe that I am able to write these Memoirs. A sailor who did not like staying on board was a third. They were all very fond of Mirth and Rum, the latter greatly promoting the former so that in a short time three of the six that we were, betook ourselves to dancing, but Mr. Speers was not firm enough to play and dance long so he sat on the throne, playing to the other Gentlemen, who may with propriety be said to have danced well. These good people however had the charity to offer us some rum which we were not so unwise as to refuse, so laying down in our wet cloaths on the boards we passed the night as well as we could . . ."

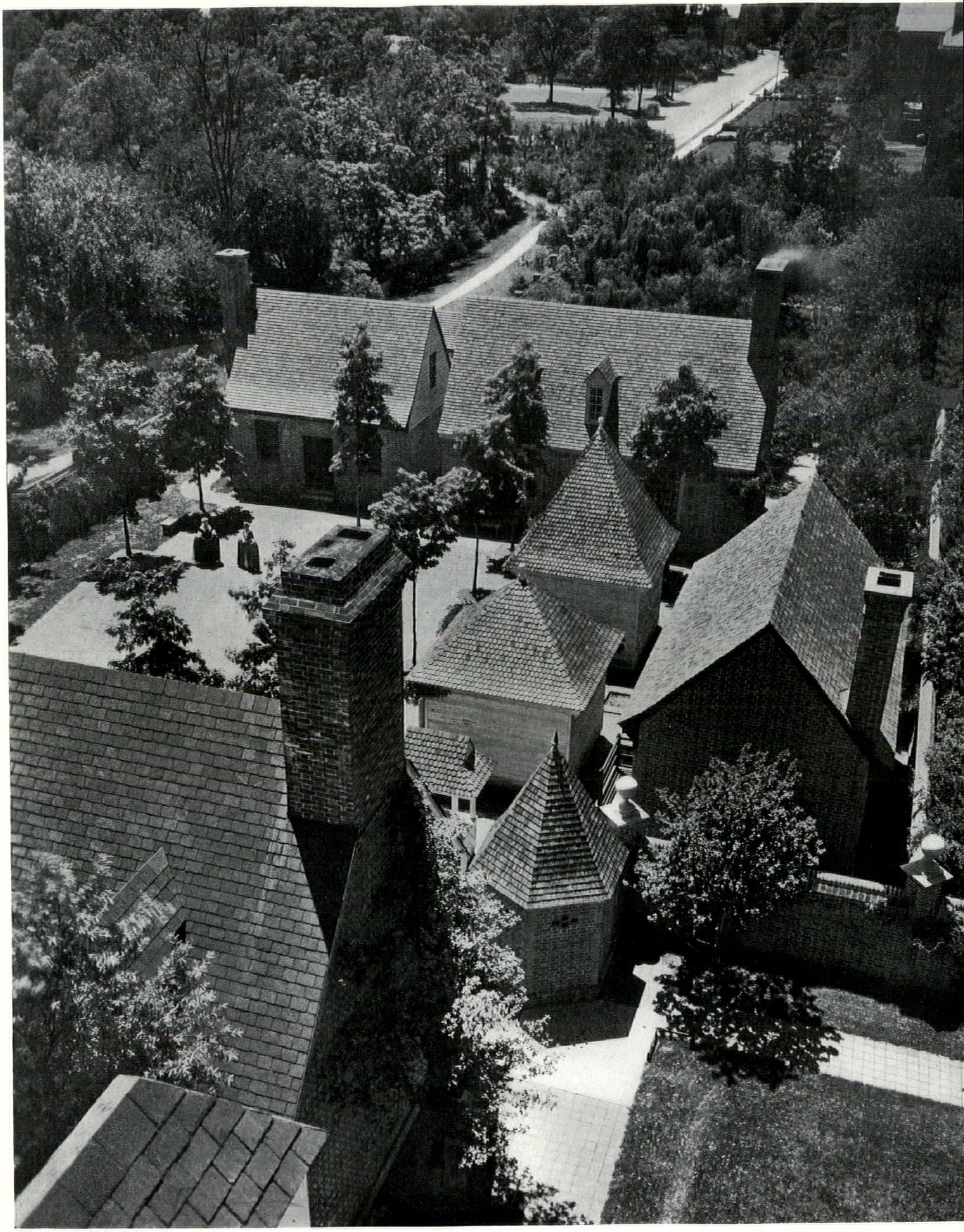


Debtors' Cell in the Public Gaol. Cells followed specifications of 1701, "underlaid with timbers under ground to prevent undermining" and the prison, made so secure with bolts, iron bars, heavy plank, was characterized in 1724 as "a strong, sweet Prison."

Photographs © F. S. Lincoln

Lamp on Corner of Duke of Gloucester Street. Reproduct lampposts of cast iron, made to simulate wood, with lantern fixtures adapted from old lamps, provide street lighting consistent with the period of restoration.

he Semple House. This house, built at the close of the eighteenth century, the residence of Judge James Semple in 1799.



Photographs © F. S. Lincoln

Outbuildings of Governor's Palace. The outbuildings (som which are shown above) included the kitchen, bagnio, laundry, scullery, salt house, house, dairy, "necessary houses," the "Brick Quarter," the poultry house, and

Garden of John Custis Tenement. The plan of this box garden was adapted from those shown on Sauthier's survey maps made of North Carolina towns in 1769. Brick paths run between the geometric figures of dwarf box.

Photographs © F. S. Lincoln

Holly Garden, Governor's Palace. American holly from the nea[r] woodlands has been used to establish a geometric garden figure. English holly was impo[rted] in the Colonial period, but experience has established that it will not thrive.

Holly Garden, Governor's Palace. The grandeur of the Palace gardens was one of the features noted by all travelers through Williamsburg in the Colonial period, and the estate was considered "one of the finest in all British America."

Photographs © F. S. Lincoln

Lightfoot House. Built in 1748 by Philip Lightfoot of Yorktown and "San[...] Point," Charles City County, this house is typical of the town houses of the capital dur[...] "public times."

tbuilding of Kerr House. Robert Beverly, 1722, wrote of Virginians'
es, "their drudgeries of cookery, washing, dairies, &c, are performed in offices apart
n the dwelling houses, which by this means are kept more cool and sweet."

Photographs © F. S. Lincoln

Coke-Garrett House. Porches were a late development at Williamsburg, be added to the older residences in various periods. The porches above, though not orig to the building, were of sufficient age to warrant survival.

. George Tucker House. The St. George Tucker House, here seen from box garden, was erected about 1788, though a part of it is believed to be an earlier lding moved to the site at that time.

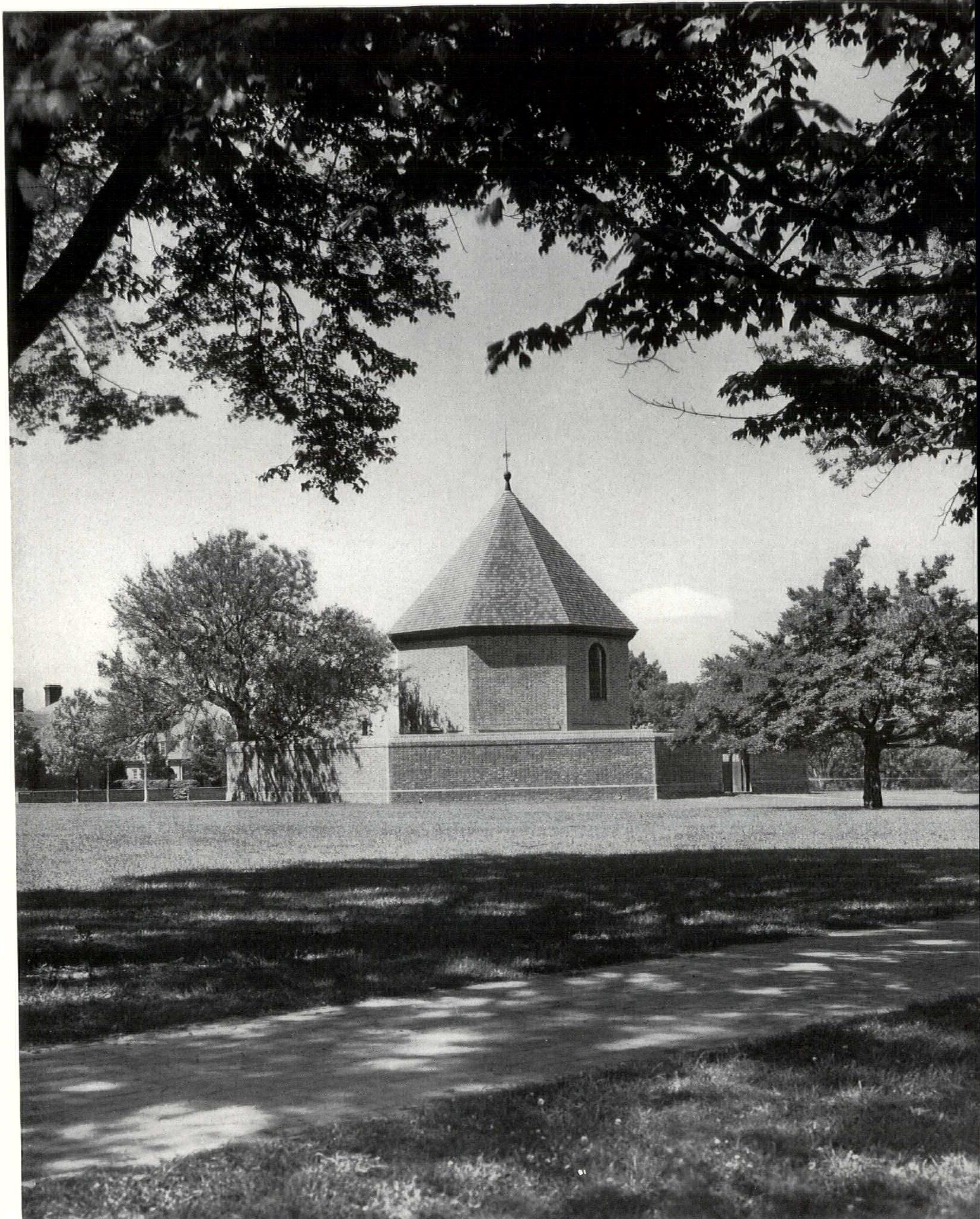
St. George Tucker Hous

tographs © F. S. Lincoln

ected about 1788 by a professor of law at the College of William and Mary, this house shows the trend toward king kitchens and outbuildings to the main dwelling by "covered ways."

e house stands at the intersection of Nicholson Street and Palace Green. Just beyond the outbuilding shown the left is the site of the first theater in America, erected on Palace Green in 1716.

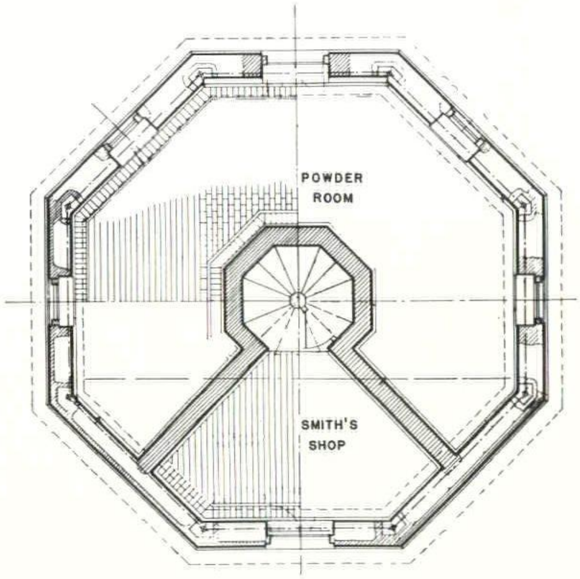
George Tucker House.



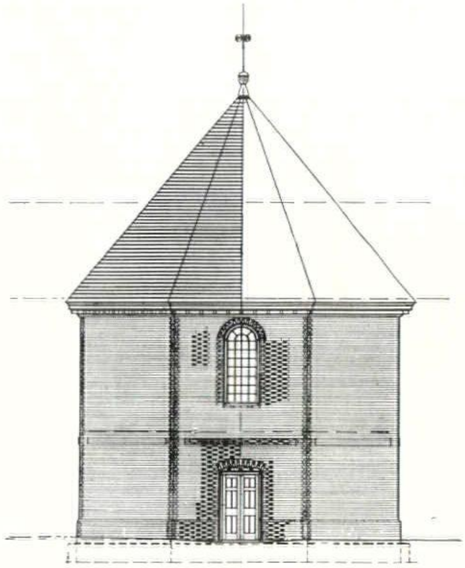
Photographs © F. S. Lincoln

estoration of the octagonal magazine and its surrounding wall was done by the Williamsburg Restoration in co-peration with the Association for the Preservation of Virginia Antiquities, owners of the property.
he structure, dating from 1714, had been used for a variety of purposes after serving as a magazine for many ears. Examination of the walls disclosed how much of the original magazine had survived changes necessitated different uses over a period of more than 200 years. One of the most important clues aiding the architects in eir study of the building was the discovery of the foundation of an octagonal stairway.
the restoration of the magazine four of the eight walls were torn down to the second floor level. From this point the ground level they were refaced, so that the brickwork in these walls of comparatively modern date might be placed with Colonial type brick, made by hand for this building, matching the brick in the rest of the structure.
he interior restoration of the magazine called for construction of the second and third floors that were in the iginal structure. An octagonal stairway supported by a central post extending the full height from the first to the ird floors was also restored. The second floor framing is of wood and steel, resting on steel beams and columns that ve been incased in concrete within the brick walls. This treatment will reinforce the exterior walls and relieve em of additional weight. A somewhat similar method was followed in the restoration of the Wren Building at e College of William and Mary several years ago. The first floor is finished in brick; the two upper floors in wood.

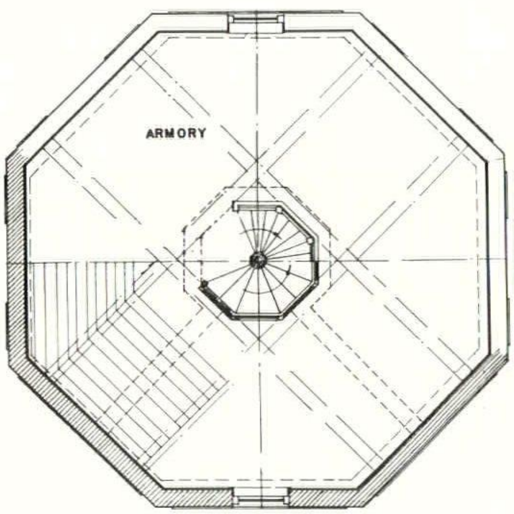
he Magazine.



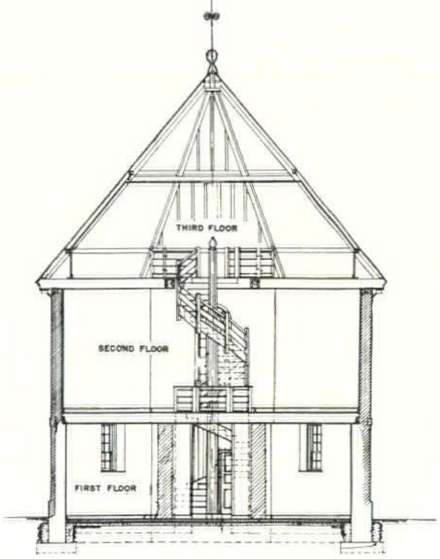
FIRST FLOOR PLAN



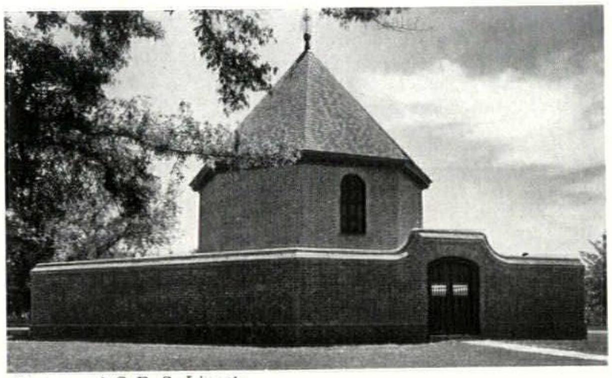
ELEVATION



SECOND FLOOR PLAN



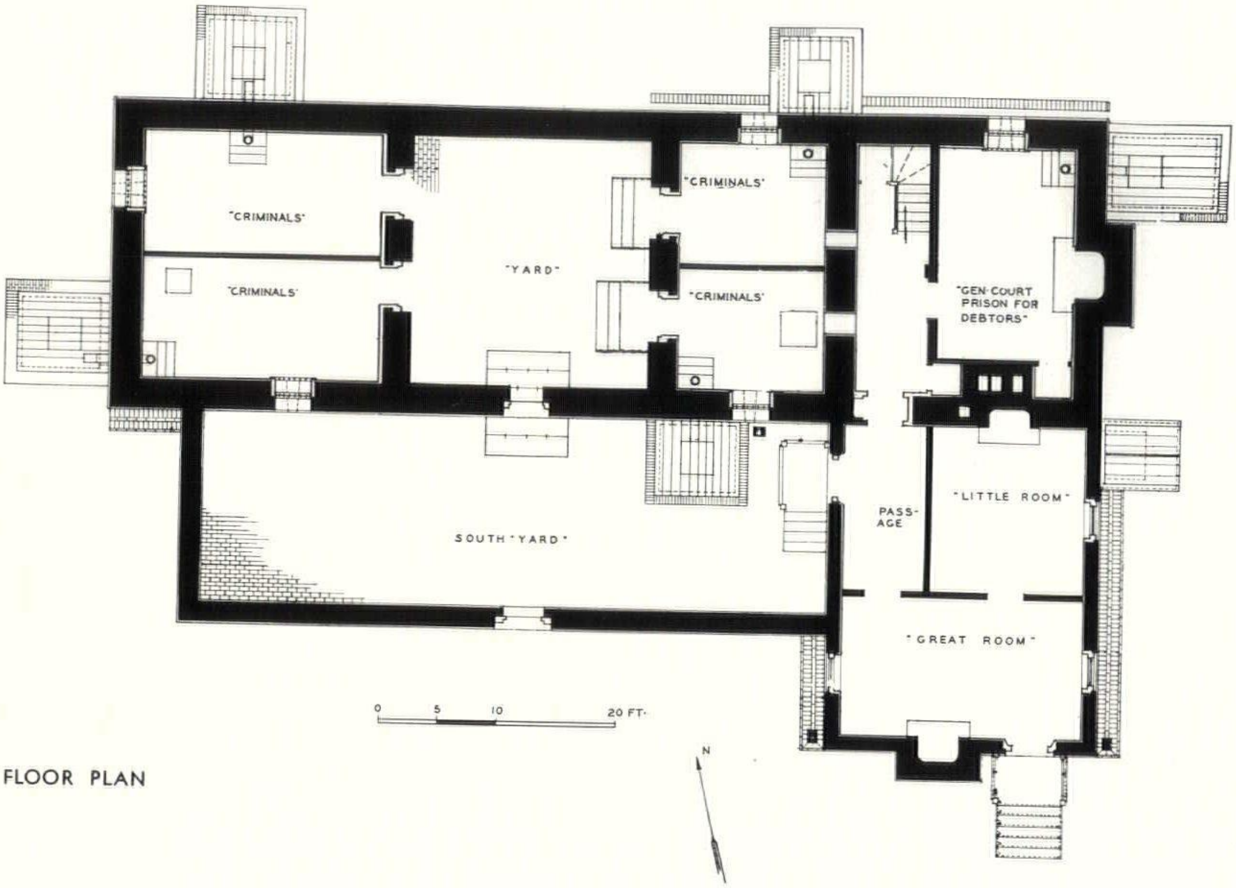
SECTION



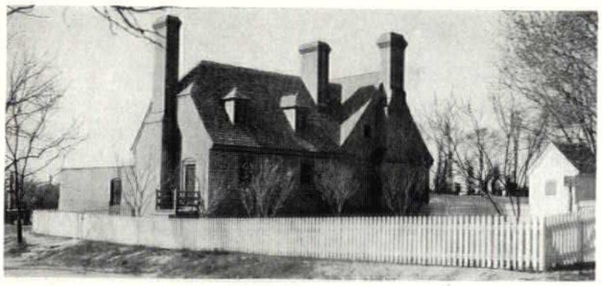
Photograph © F. S. Lincoln

THE MAGAZINE

OWNED BY THE ASSOCIATION FOR THE PRESERVATION OF VIRGINIA ANTIQUITIES RESTORED BY THE WILLIAMSBURG RESTORATION



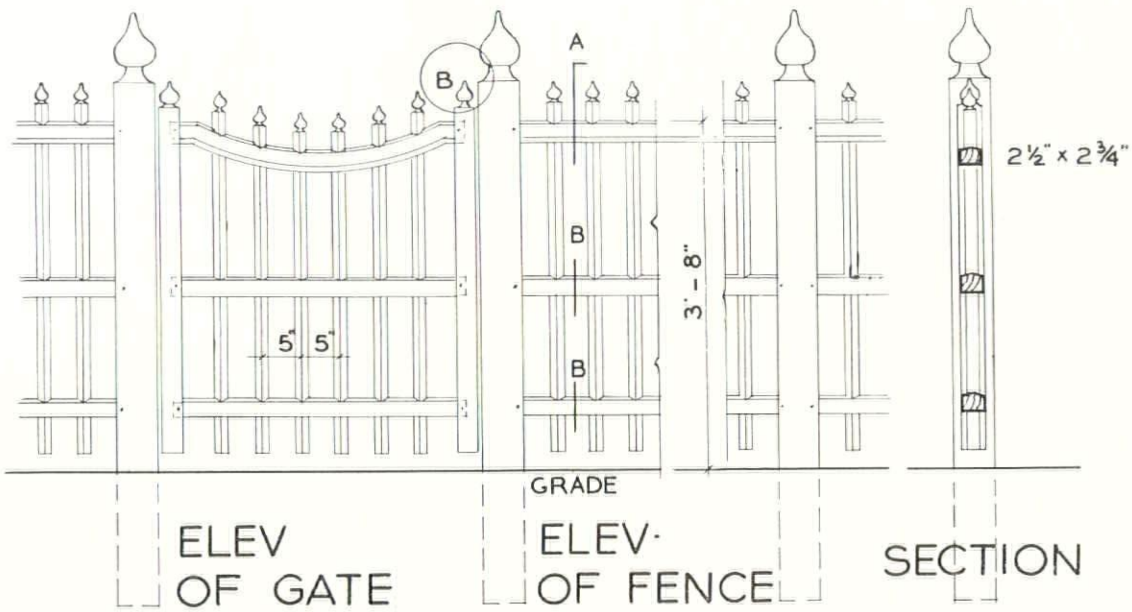
FLOOR PLAN

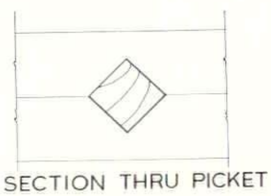


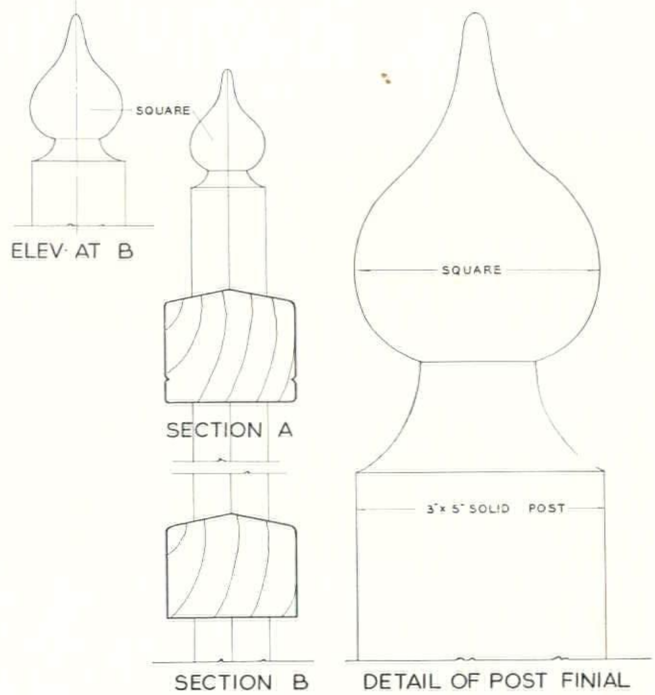
THE GAOL

WILLIAMSBURG RESTORATION

PERRY, SHAW & HEPBURN, ARCHITECTS





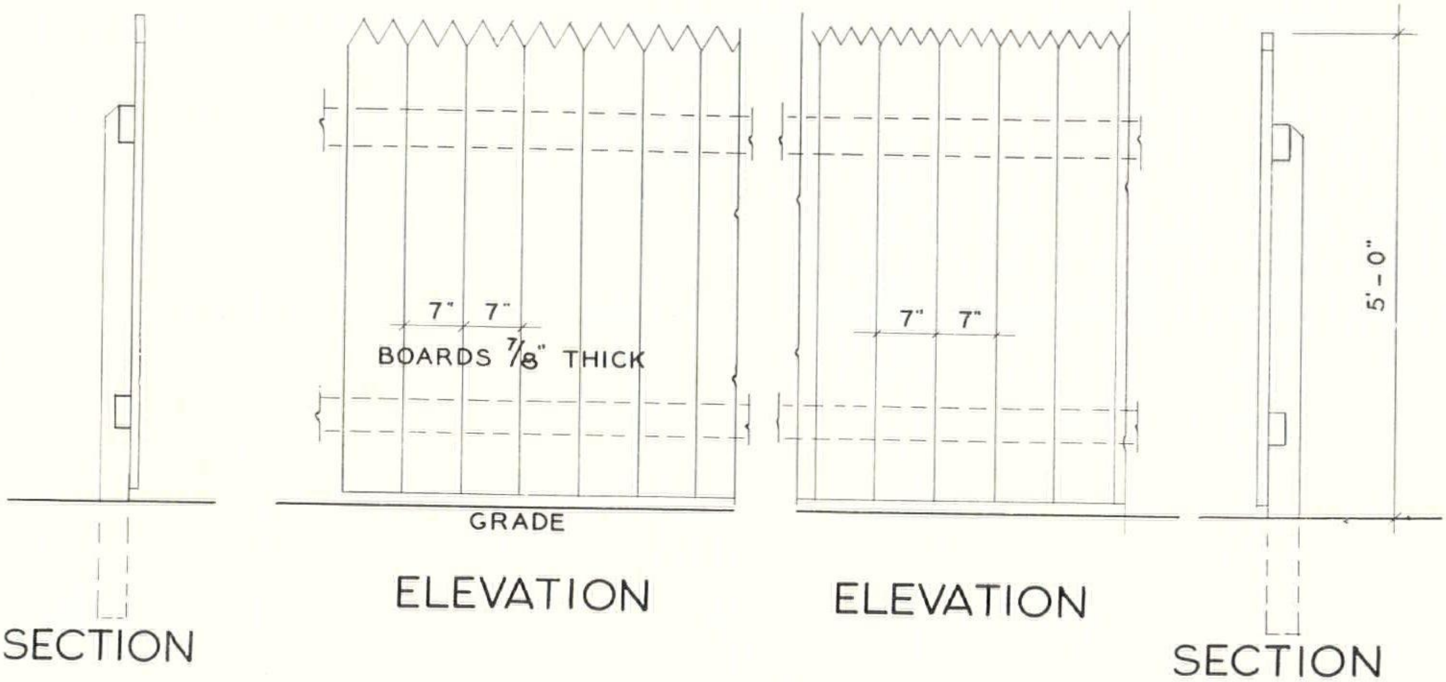


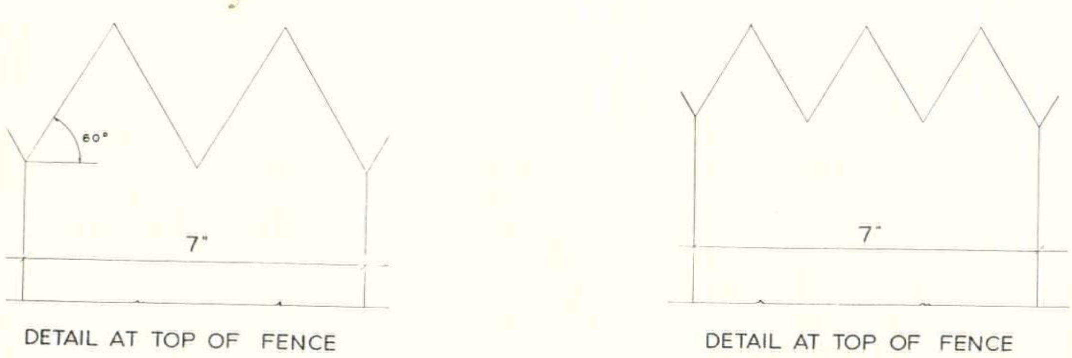
Photograph © F. S. Lincoln

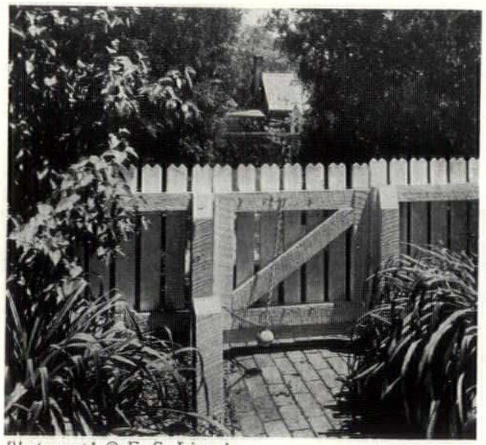
PICKETED GATE AND FENCE

WILLIAMSBURG RESTORATION

PERRY, SHAW & HEPBURN, ARCHITECTS



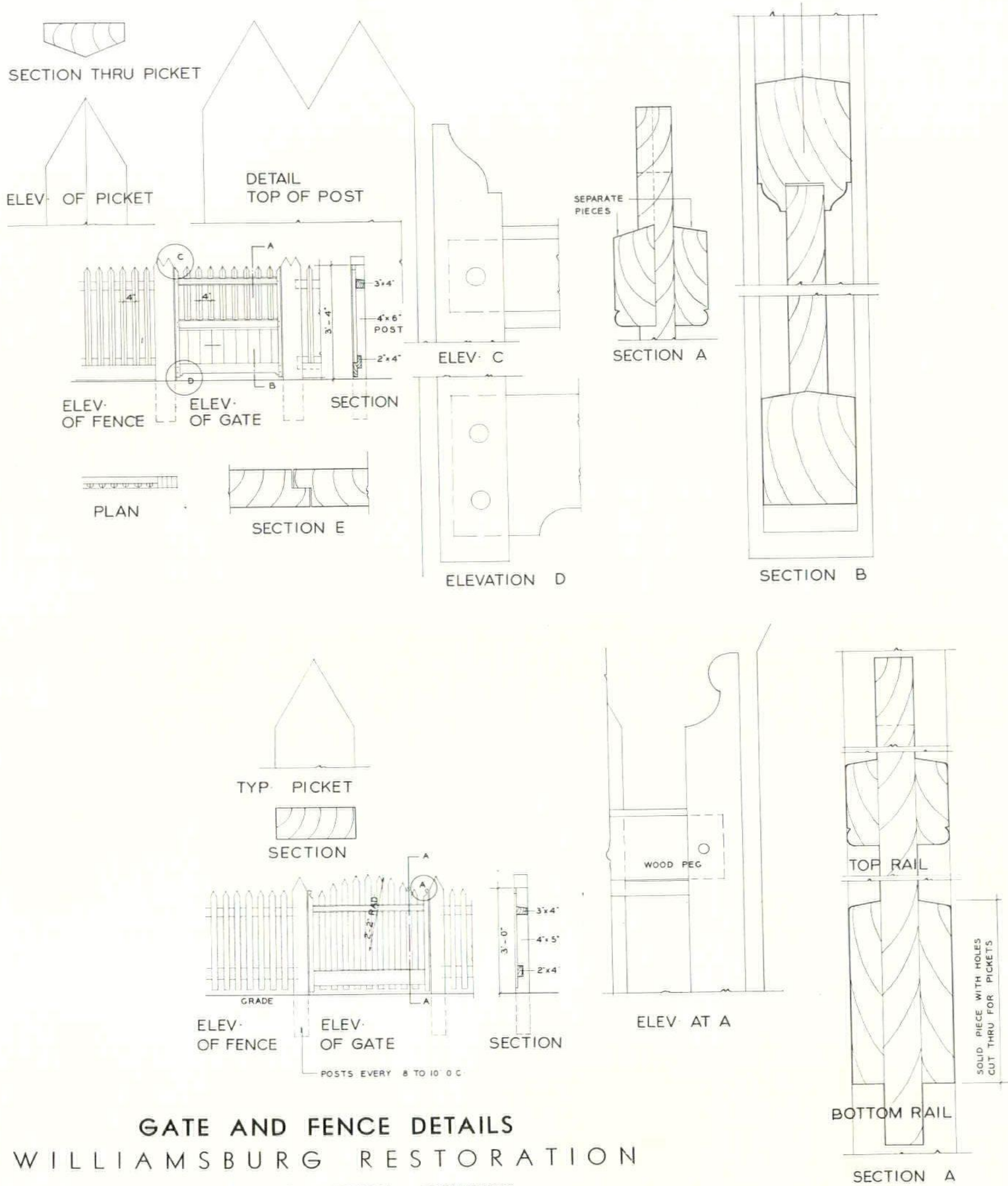



Photograph © F. S. Lincoln

BOARD FENCE

W I L L I A M S B U R G
R E S T O R A T I O N

PERRY, SHAW & HEPBURN, ARCHITECTS



GATE AND FENCE DETAILS

WILLIAMSBURG RESTORATION

PERRY, SHAW & HEPBURN, ARCHITECTS

FACADISM

by RUSSELL WALCOTT

In Howard Shaw's office almost twenty-five years ago, a stranger turned up in the drafting room one morning and was placed at a table next to mine. Within the first half hour he let it be known that he had worked with Charles Platt and professed to have known Stanford White almost like a brother. The old fellow was an amusing wreck. In a shiny soiled suit, with a frayed Vandyke beard half covering a dirty collar and a black string tie, he looked like the typical "artist" of those days. He would draw languidly all day, smoke countless cigarettes, destroy roll after roll of tracing paper, all the while mumbling hazily and half audibly to himself, and accomplishing practically nothing for the benefit of Mr. Shaw's purse. I remember how he amused us by his formula for being a successful architect: "All one has to do is to sit in a beautiful, paneled office in an immaculate white flannel suit. When a client comes in, don't notice him. Just look at the ceiling and murmur, as if to yourself, 'Exquisite! Exquisite!'" Then he'd chuckle a little, light another Egyptian Deity and add, "Yes, create an artistic atmosphere and you cannot help being a success."

I suppose he never tried it out, because there was small probability of his ever having a white flannel suit, to say nothing of keeping it immaculate. I never tried it either; but in those days, although his theory was exaggerated and absurd, there was more truth in it than there would, or could, be today. For architecture then was stylism, sometimes pure and almost always simple; and not many architects had yet emerged from their ivory—or celluloid—towers, those secure book-lined fortresses of precedent which kept them and their goddess Beauty insulated from defilement by the modern world.

Not all, but most of us, in those pre-war days, had been educated to believe that architecture was simply a succession of styles and that it was neither right nor proper to break too far beyond the rules of these styles as they were handed down to us by Vignola or Palladio or Scamozzi or Blondel. It had already grown necessary sometimes to make restrained concessions to the needs of modern life, for the elevator, rising real estate values, subways, and the chugging auto were changing the tempo of our cities even then; but most of us, looking out from our high sacristies of art, just got down another book and learned how to add adroitly another "order" to the lower tiers of columns. And thus we appeased the needs of business for a while and kept the goddess sacred. When there was a residence to do, we could always look into the "White Pine Series" and concoct an authentic Colonial. Architecture was tradition, tradition was style, style was always decoration—the costume in which we dressed the skeleton of lumber, concrete, and steel. And there we were, placidly content in the security of a creed which told us what was art.

It is not unfair to say that when we planned we always had a style for the building in mind so that the use and meaning of the plan was often limited by the aesthetic demands of that style. I think no one will deny that facades were much more important than plan or than the economics of the structure. This was the holy doctrine of Blondel which, alas, is still held sacred by many aesthetes in 1936.

One of the really enlightened competitors in a recent government building competition told me that after receiving the program he thought it would be helpful to talk to the individual whose job it would be to manage the building in the future. So he spent several hours with that practical man, learning facts about the department and its workings, finding what was the most desirable column spacing, story heights, elevator capacities and locations, the probable growth of this and that section, how best to light this portion and that, what divisions needed certain storage space immediately available and what kind and why, and what was the most efficient means of connecting and coordinating the different parts of the office force. In a couple of hours he collected a good many important facts which were not thoroughly covered in the program nor available from the Fine Arts Commission. As he rose to go, he thanked the building manager for giving him so much time; and to his astonishment the manager thanked him, saying: "I appreciate what you have done. It is most unusual. In all my long experience, and in the experience of many other men I know whose job it is to operate departmental buildings here, you are the first architect who has ever consulted one of us about the practical operation of a government building before the scheme, in general, was decided on."

Architects, of course, were not the only ones who were trained to think of architecture as a succession of styles. It was the popular conception, particularly emphasized by the privileged few who were able to toy with expensive domestic architecture. Before the depression almost all clients—fully ninety per cent of mine—came in with a picture of a pretty house they had clipped from a garden magazine, or at least with a burning desire to materialize the memory of some lovely setting they had seen in their travels through Europe, New England or along the James. Appearance was their first thought, almost always, and thus the plans of these suburban houses became, in the manner of Blondel, "convenances" to be fitted to a scenic shell as best one could. Residence architects didn't mind; it was so easy, provided they had a few shelves well filled with books.

Easy at first. But during the decade of the twenties, I noticed that this method of approach became harder to follow successfully. And the reason was that business, with a constant outpouring of new devices and materials which added to our comfort and pleasure and a little to the efficiency of building, was complicating and confusing the ancient archaeological principles of design. I noticed that the industrial architects were beginning to break free from the past but domestic architecture didn't; it stuck doggedly to the old way, trying to hide the new things under the synthetic scenery of any chosen age, although with increasing difficulty and expense. They tell me that one of the librarians who presided at the lectern in Yale's great cathedral of literature, "where nothing is quite what it seems," had a sense of humor about this attitude of ours. On Washington's birthday, when a lot of alumni come back to look around, he hung a sign on the aged (with acid) latch of the worm-holed (with an awl), antiqued (with a sandblaster) portals which read: "Gentlemen, the Library Is Inside."

And yet, in spite of our efforts to preserve tradition, business with its insistence on new things and particularly with its methods of creating them by mass production which employs economy, accuracy, continuity and speed (elements which domestic architecture abhorred), kept forcing us to face around. The result was that domestic architecture got trickier and trickier because we kept trying to use the modern techniques while still stubbornly sticking to the sentimentalities we thought were art. The strange thing was that only a few of us noticed our own confusion. Why, in 1927, when a client asked me in all seriousness if the fireproof "Colonial Farmhouse" we were building for her could be made safe from injury from a falling airplane, I only laughed and said: "If you can tell me how far the plane is going to fall and at what speed, I think I can get an engineer to figure it for you." The real absurdity of her question never reached my mind.

I who was one of the worst archaeological scavengers began to be bored by the results I was producing; but I didn't understand the reason for my boredom nor did I try to understand, until one Sunday afternoon when I was suddenly shocked out of my complacency by a trifling event which no one else probably noticed.

I had just finished an Elizabethan house for an Indiana broker. Behind the paneled walls and underneath the flagged and punchioned floors everything was strictly fireproof; in the knotty pine bookcases of the library whose design we had pilfered from the Metropolitan, was space for an experimental television set ingeniously concealed; underneath the old oaken stairway was an outlet for the most modern humidifier we knew how to specify in those days before the use of air conditioning became common; within the oak panels of another room was a secret door giving access to a practical laboratory with vent ducts, zinc counters, and a hundred twentieth-century gadgets. Outside, the ancient sagging roof, which rose above the halftimbered walls, concealed aerials for sending and receiving messages by air; each heavy roughened slate was held in place by copper nails and each dowel in the rugged timbering covered a bolt by which the "hand-hewn" tracery was fastened to the structure underneath. In some of the leaded windows was a picturesquely broken pane, and if you looked carefully you could see a little wire that instantly hid itself inside the wall but could carry messages in an electric jiffy to a burglar alarm. And out of one of the lovely, old, twisting Tudor chimneys I knew there came a vent from the gas boiler in the basement.

But that Sunday afternoon the lay person saw only the gables peaking through the trees, noticed only the discolored stones, the soft effect of rough brick walls, the half-opened casements—just picture glimpses from the sunken garden of a nice old English house. And I, with a highball in my hand, was warm with satisfaction because some people at the party had said they liked this pretty scene that I had helped to make.

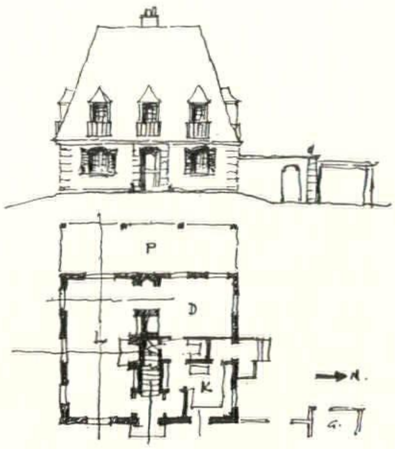
And then the terrible thing happened. The owner, arriving late from a hurried trip to New York, set his autogyro down upon the lawn not two hundred feet from my medieval scene. The soda in my drink got flat. He had not staged this awful contrast but it was a shockingly successful demonstration of the extent to which I, and my contemporaries, had gone in our unconscious perpetration of lovely anachronisms. It awakened all my sleeping suspicions about the value of my sometimes pretty contributions to the thing we called architecture; and it suddenly made me want to try to think. So as soon as I could, I maneuvered my mass production coupé out from the shadow of the six-car, fireproof garage that looked like a 17th Century tythe barn in Gloucestershire (which formed one side of the cobbled court), and motored home moodily while the satisfaction of being considered a successful residence architect in 1928 dimmed considerably. If architecture was scenic design, then I was all right; but I began to suspect there ought to be more to it than that.

Certainly it was ridiculous to keep on trying to fit modern mechanical conveniences into the shell of some adapted style which once had meaning and purpose but now no longer did. Soon, perhaps, it would be impossible to make most of the popular styles of architecture fit the requirements of modern life, modern living was changing so from the quiet, secure existence it once had been. If our sense of humor failed to save us, then business would, inevitably. We couldn't go on this way much longer without going nuts.

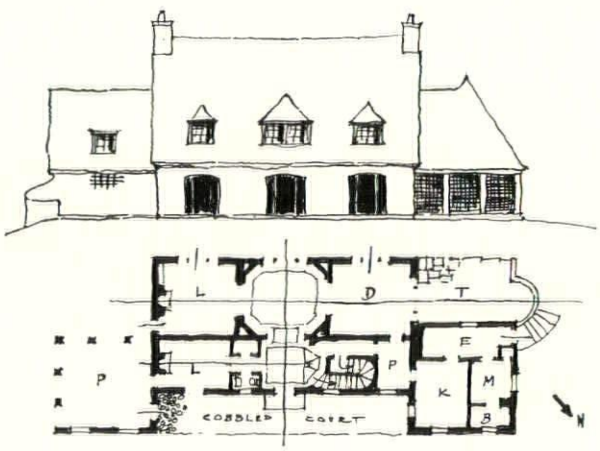
But it was a difficult problem. I didn't want to go in for this new style which some called "modern" and others "modernistic." I had done a couple of bathrooms in the latter style and I didn't like to think of them. Even if I had the courage and the ability to be rational about architecture, how would a well-grooved practitioner like me start to go about it? There was only one answer. Thinking. You had to find a way into the unknown by yourself, without help from any one—even a client; you had to dig into the secrets of honest architecture all alone; no more copying or adapting even from the most modern past of Le Corbusier or Gropius or Van der Rohe. That was the trouble with the products of most of our new American opportunists who were already treating the philosophy of these modern thinkers as just another fad in decoration.

To acquire a respectable knowledge of new materials and to learn how to use them efficiently would require more imagination than I had ever had to draw upon, because the limit of imagination had been the size of my library and the number of my trips to Europe. If I didn't look at my books, it might prove whether, after all, I had the capacity for any real imagination. I didn't like to take this horrible risk of finding out; but by the time I had reached home that Sunday evening, the prospect of the new adventure in imagination seemed to have infinite possibilities for interest which the old way didn't have, and it seemed worthwhile to try it out.

With satisfaction I soon began to see how far ahead I was of that time in 1920 when I first designed a house for myself. It had been a puerile, stagey casing for a compact but badly handicapped little plan. It looked like this:



The second one, in 1929, I had labored long and hard at. It was drawn in the years of my first questionings when I was trying to think and not to copy. But I hadn't then learned to break away from the old habits of design and in two years of serious struggle I accomplished nothing discernible. However, having the money and wanting a house, tired of trying longer for the ideal that was beyond my reach, I finally knocked out another meaningless style chassis that crippled what might have been a nice plan for that site. The scenery is of the same popular type as No. 1, although on a grander scale of cost. Only one thing did my tired ambition achieve: while the front is as stereotyped as a shoe, the living side has wide, muntinless steel doors from floor to ceiling that no "Provencal" cottage ever saw. Frankly, the big dark masses look like hell from the lawn, but who cares? We live nine months of the year inside looking out and the clear expanse of glass is a great satisfaction.



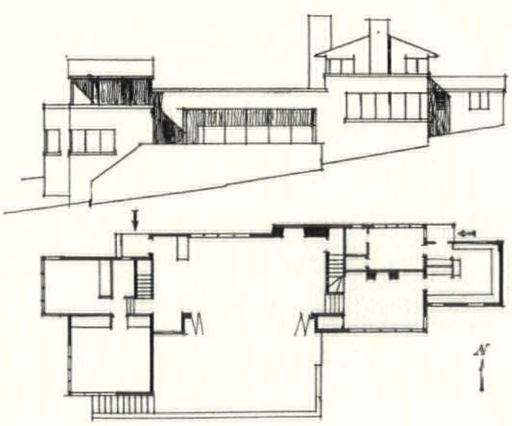
Since 1930 I have been working "off and on" at another plan. I knew why I had failed so dismally with my second house and wanted to try again. Meanwhile I watched a thousand new materials come on the market, saw a hundred different types of prefabricated unit houses given publicity and slowly became accustomed to the starkness—or cleanness—of modern forms in industrial design as well as in architecture. An inherent beauty born from the spirit of honesty and use seemed to be entering these forms. Realizing that I would still have to erase a lot of prejudices if I was ever to approach the interesting concept of architecture I was searching for, I began to clear away many old restrictions that had been imposed by education, custom and sentiment, while trying to retain those ideas which were intelligent and useful. That sounds easy; but try it sometime! I knew I was through with lots of things: axis lines that looked swell on a drawing but led up blind alleys actually; the imposing effects of wasted space; those picturesque sloping roofs that had so crippled my first two second floor plans; and the bottleneck dormers that necessarily ensued; garage connections through kitchens to the hall (for I employ no chauffeur and usually enter and leave the house in a car); muntins in windows; double-hung windows; wood floors that continually need waxing and often refinishing; niggardly little cornices in places where protection is needed from rain or sun; and many other habits I could reject now for personal reasons but had often fought hard for.

I find I want to relate the inside plan to the outside plan more completely and effectively than I ever have, and to make the plan satisfy scientifically the demands of climate and the requirements of site as far as I am able, to secure a pleasant life for my family rather than to please the conventional eye of a cautious stranger who may drive along the road. I want to make the layout compact (although that does not necessarily mean small), comfortable, convenient and as effortless as possible both in use and appearance. I want it to be flexible, because I found in the two other houses that flexibility is a valuable element for my family today. Once, "circulation" was supposed to render rigidly fixed spaces usable, but I find that if I can make these hitherto fixed spaces usable for different purposes at different times it is better for my manner of living than to depend on circulation. For instance, I want my guest room to be usable when there are no guests, my dining room for other purposes than a display of Sheraton furniture and Sheffield plate after the table has been cleared three times a day. I know this is not considered good social form but the practice has not yet been declared unconstitutional.

And, lastly, I want to use honest, durable, practical, and economical-in-the-long-run materials; but not necessarily local ones, because distribution has solved that problem today.

Those are some of the things I believe must be worked out before I even dream of an elevation, if I am ever going to achieve an honest house for myself or any one else and at the same time get a little closer to real architecture. They are more important, I think, than copying beauty from books. Just now, at any rate.

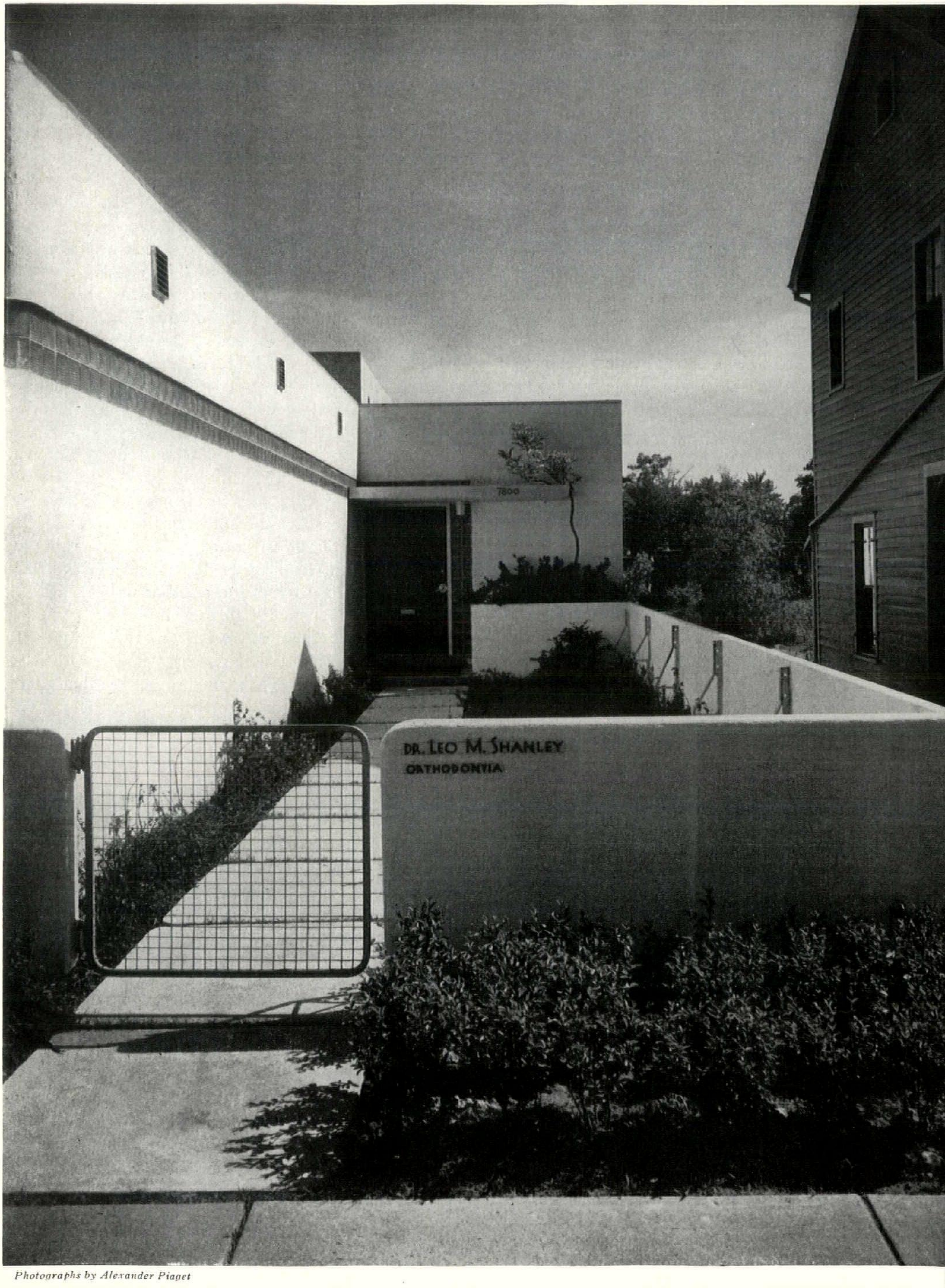
Instead of designing a scene for some engineer to figure later, as I used to, I was surprised to find that I was working from the first at a structural solution to the space arrangement I had in mind. It was hard to find an imaginative engineer who would work along with me, probably because we architects with our "cultural" processes had dulled their imaginations, too, but gradually we evolved an arrangement of structural points on the plan which would support any sort of a shell securely and then we could fill in the partitions and windows wherever we wished. The freedom of the process is astonishing to one who has worked all his life within the confinements of a style. This is what evolved.



I present it not with the slightest idea that it is perfect or even "good" architecture, but because it seems to me to show that progress is possible even in a facadist's mind. And now, having exposed my personal ambitions to the ridicule of those who still exist in ivory towers, to those high priests of art who know so definitely and surely that only the old forms of architecture are worth their while, to those well-smocked beings who speak so learnedly of "beauty," I can add only this.

I know of no set of rules by which architecture can be achieved. I've read of "the eternal laws of beauty and composition, form and decoration" but I've never found them written down—not any laws that one could call eternal. Beauty is certainly eternal but the laws of its form and composition and decoration, I think, are not. Can any one define the thing which makes such varied forms as the Taj Mahal, the Parthenon, Hagia Sophia, Chartres, the Carnavalet and, yes, the Washington Monument and even the San Francisco bridges accepted by different yet knowing eyes as being types of beauty? All we know is that the spirit in them can be felt. But we also ought to know by this time that we cannot copy the inspiration that makes one of these forms beautiful to you and another more beautiful to me. We can copy the form of it but we can never steal its spirit. Somehow it isn't possible. And yet, how hard we have tried!

Lately, some men have come to believe that there is only one way to achieve the essence that makes architecture—or anything else—eternal. They feel that when our dead trade becomes again a living expression of its own civilization—not of that of its ancestors—then inspiration which is the spirit of beauty will become possible. Only a few men have been trying the experiment and for such a little while; but already in some of the most recent attempts to express our own age in architecture a certain spirit has entered them and has changed their forms, not willingly but inevitably, to shapes which are strange to our stylistic traditions. And the authors of these attempts feel this is progress. Since there are no rules by which we can arrive at beauty quickly in these new forms, they believe that if we keep on learning facts and working honestly to express those facts it is not impossible that some day, somehow, some inspired genius will use the results of our crude and wishful experiments to achieve that beauty which we were never near. As Ictinus did long ago.



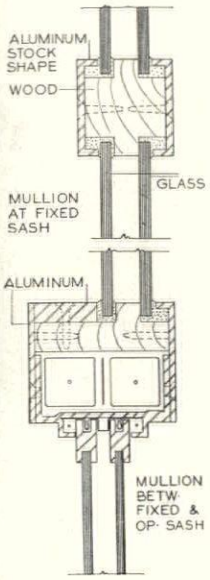
Photographs by Alexander Piaget

BUILDING FOR DR. LEO SHANLEY

CLAYTON, MISSOURI

HARRIS ARMSTRONG

ARCHITECT



Section showing double-glazed, fixed and operating windows.

Dr. Shanley is an orthodontist. The greater number of his patients are children between seven and eighteen years of age.

SITE:

A site was selected at the extreme edge of a business district in Clayton, a suburb of Saint Louis. The lot pitched southwardly about ten feet which gave an opportunity for two large rooms—the waiting room and the playroom directly below it. The latter is located at the sunny end of the building, leaving the long east side of the property for workrooms which open off from the corridor. This corridor is lighted by a narrow row of glass blocks shown from the approach. This scheme produced an entrance courtyard and removed the door from the noise and dust of the street. In bad weather cars can be driven under the south terrace and patients may enter the building at that level.

DETAILS:

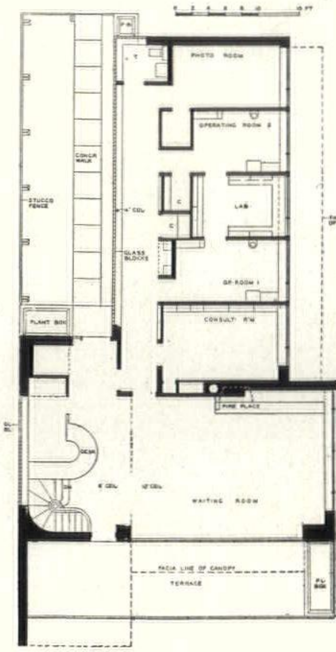
Considerable time was devoted to study of the technical details of the work to be done in the building, and one result of this study was the placing of the dental chairs very close to the side wall and the windows of the operating rooms. This made it possible to support all the equipment from the walls, and resulted in an unobstructed and easily cleaned floor.

Most of the equipment was specially designed, including hardware, light fixtures, movable lamps, and furniture.

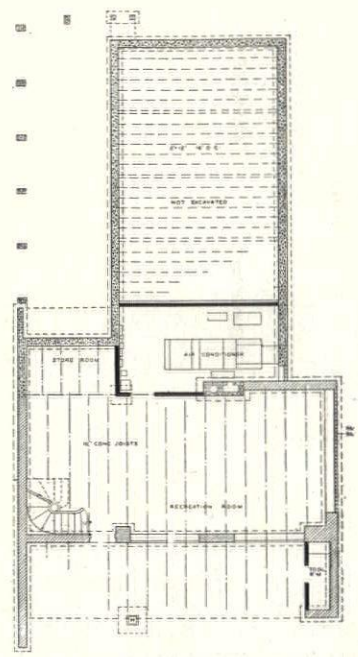
The fixed, double-glazed windows are shown on an accompanying drawing. The air space of fixed windows was dehumidified with calcium chloride in a metal box located under the windows. It was found to be an expense which would pay for itself in about three years since the building is mechanically cooled as well as gas heated.

Awnings for the two large windows help to reduce the transmitted sun heat as does the aluminum paint on the roof. There is a free circulating air space just below the roof and above the ceiling insulation.

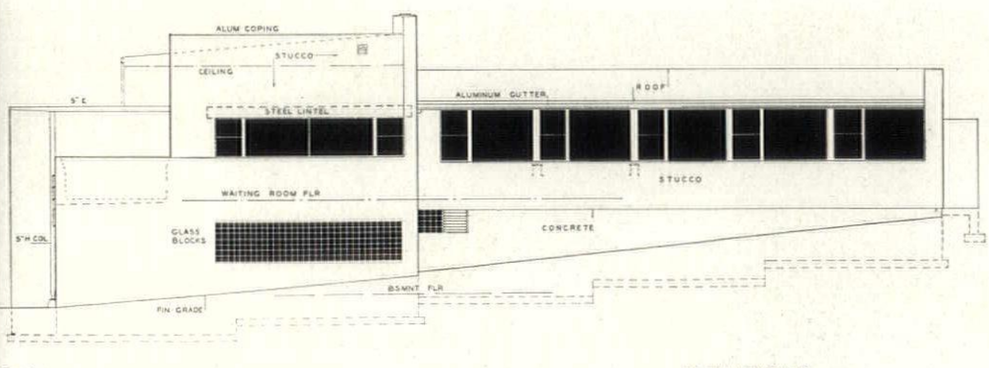
PLANS

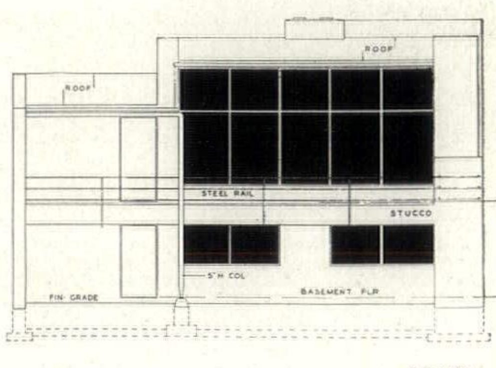


FIRST FLOOR

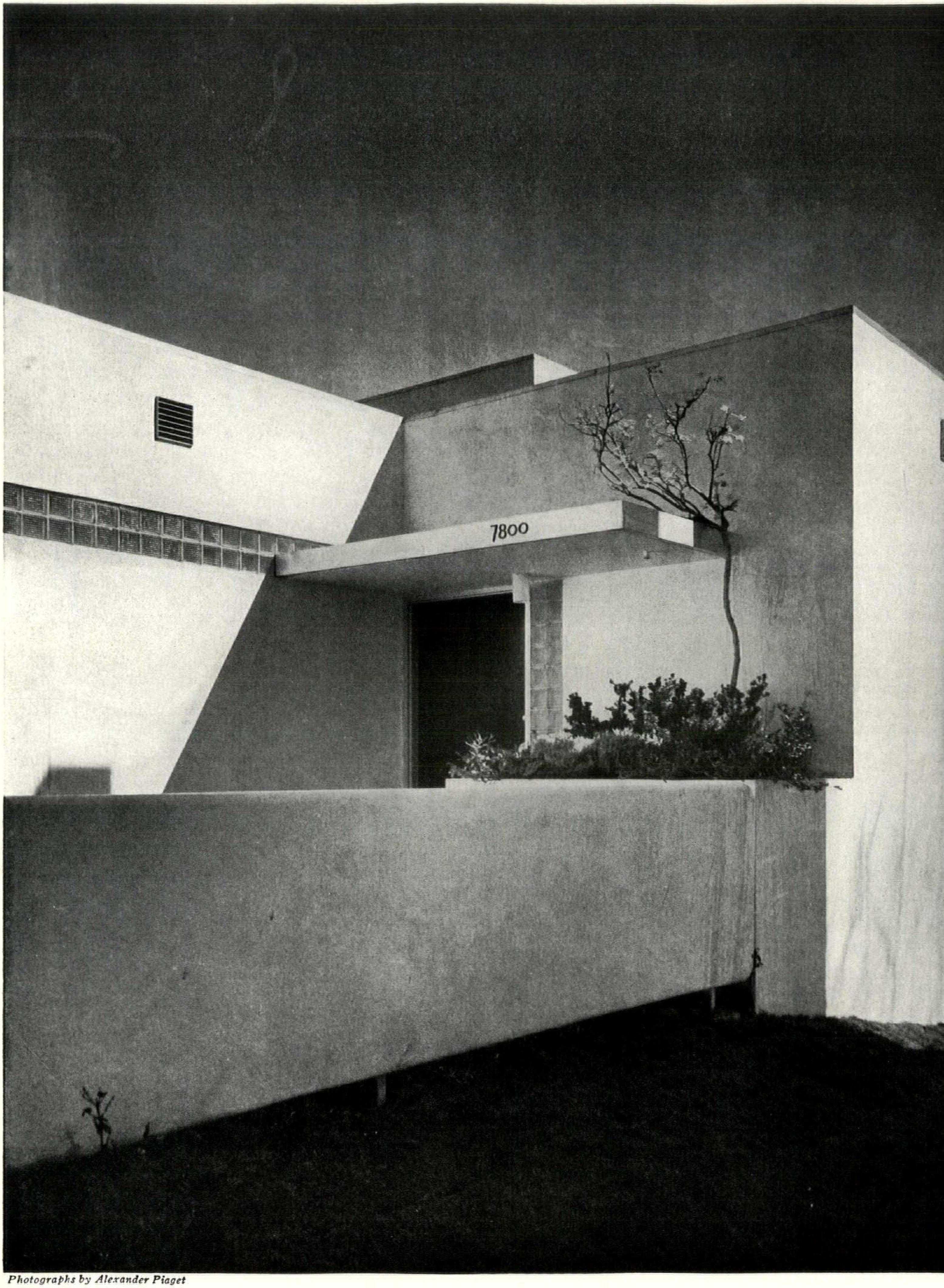


BASEMENT

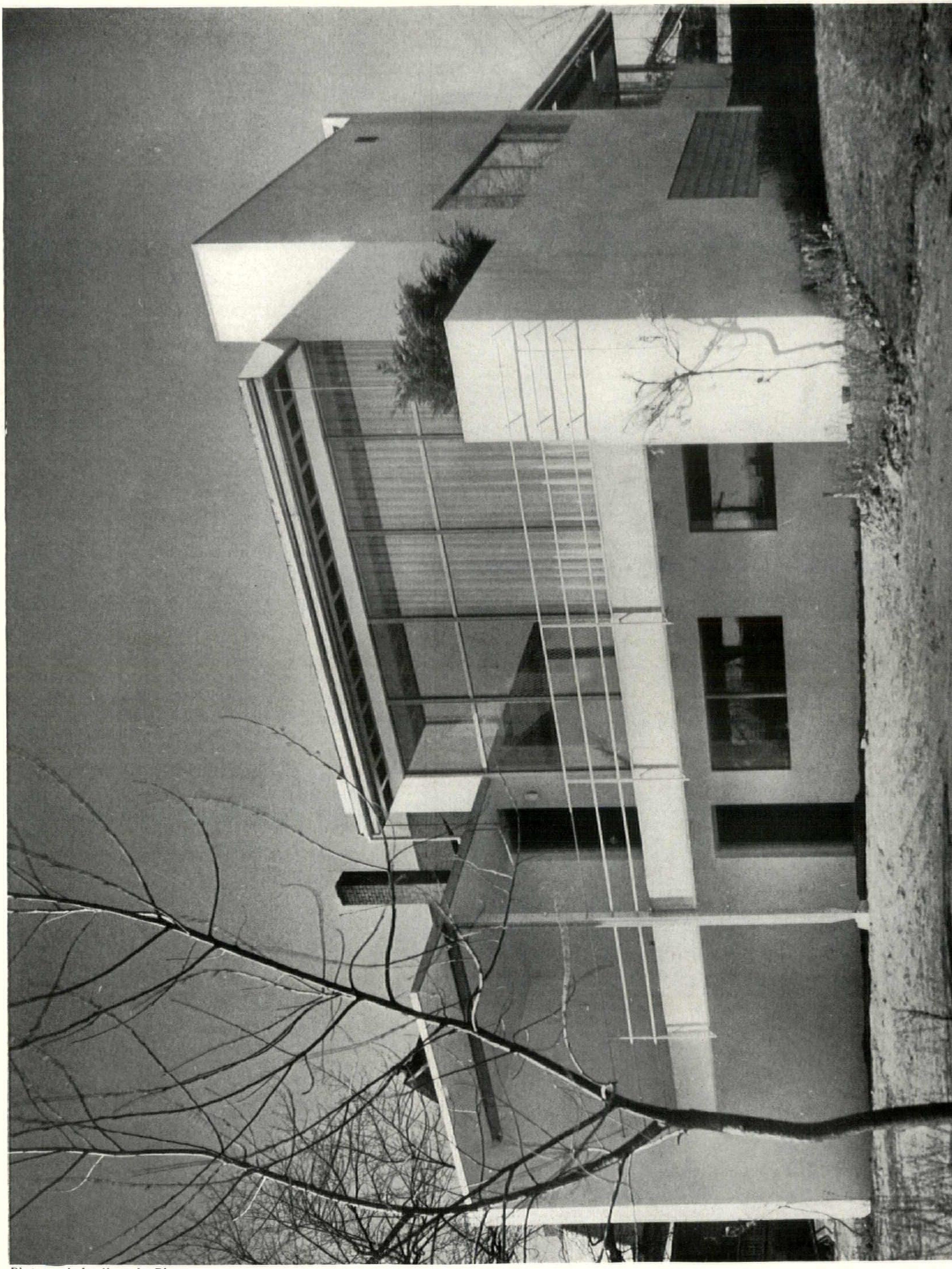




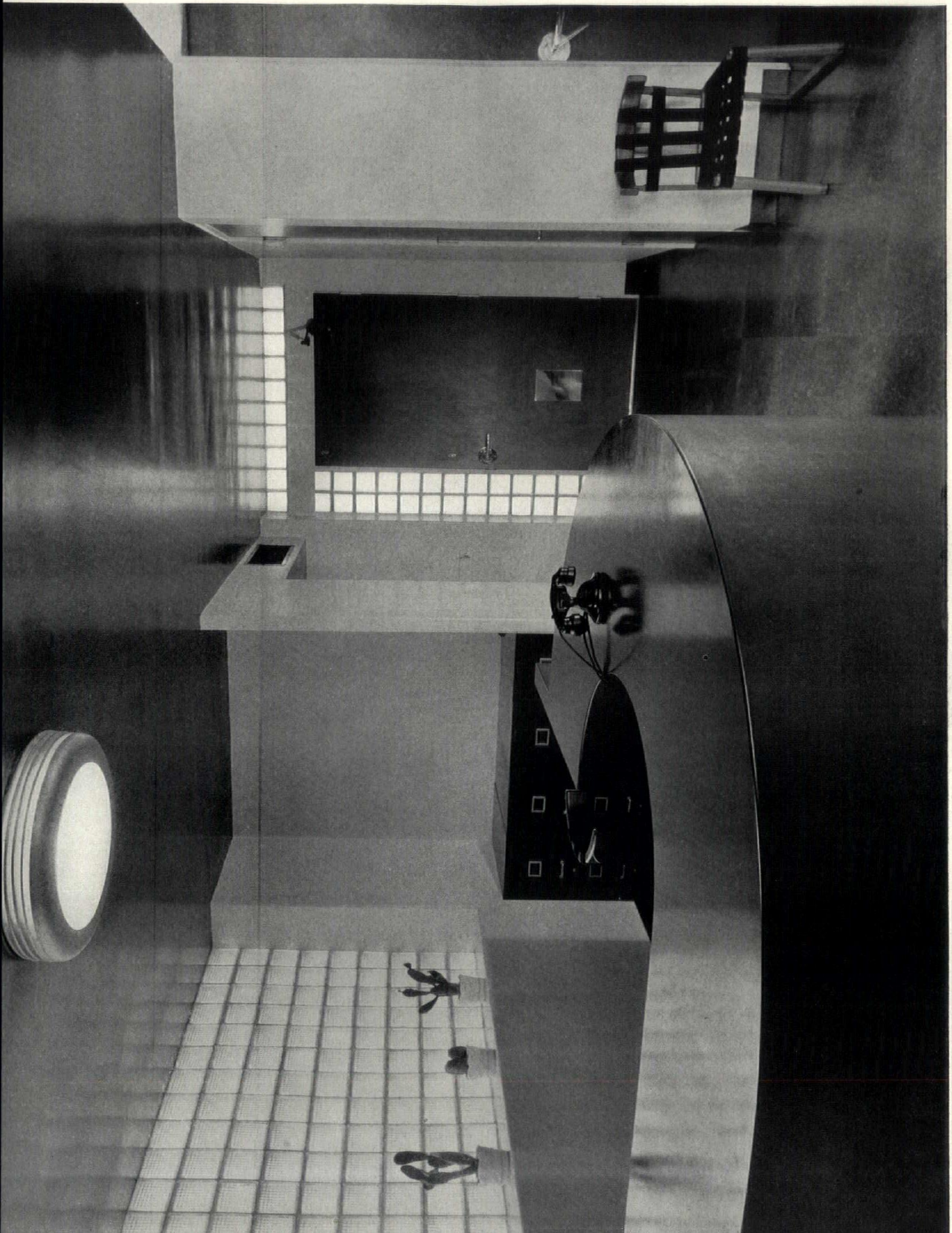
EAST — ELEVATIONS — SOUTH



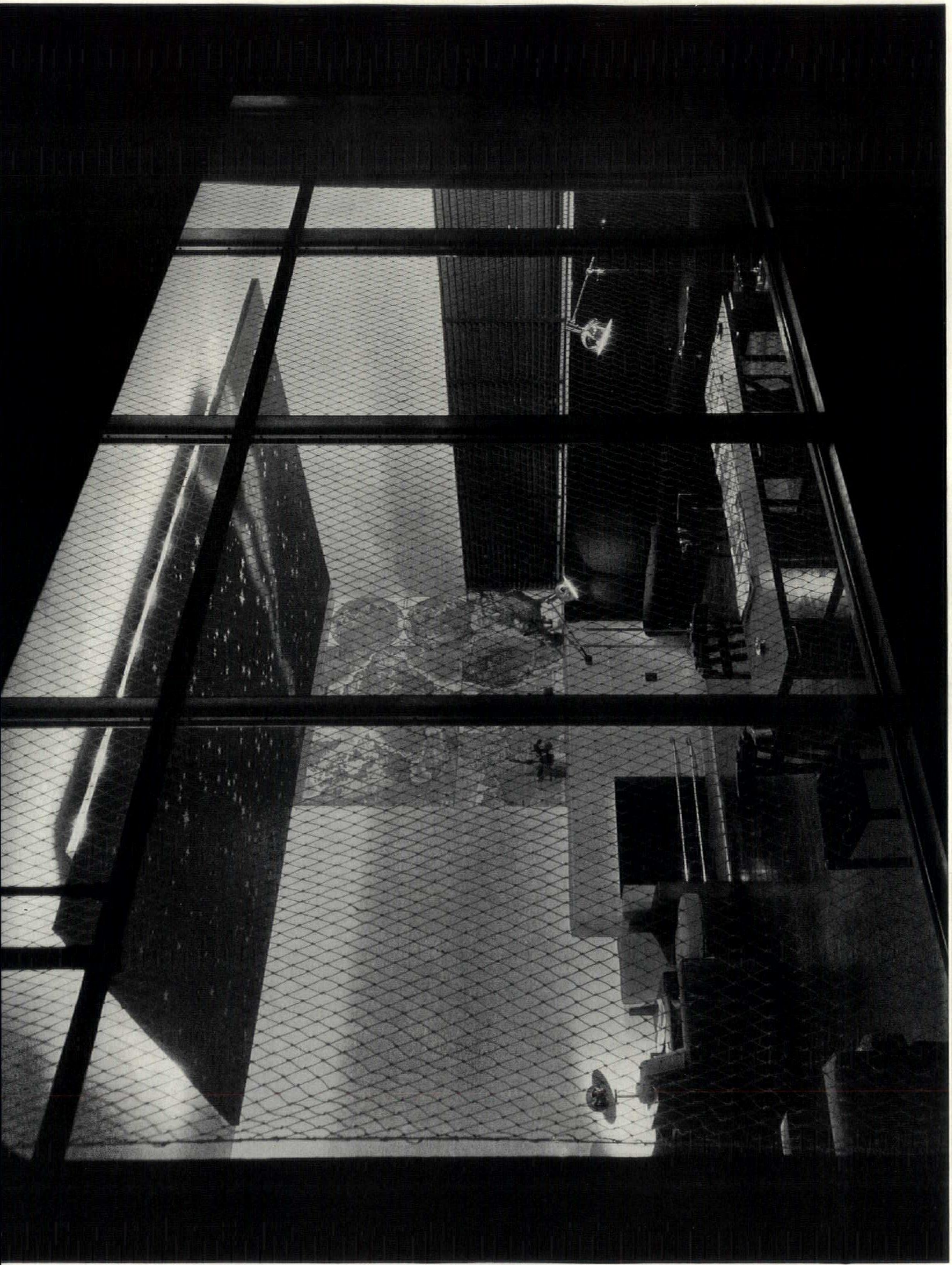
Photographs by Alexander Piaget



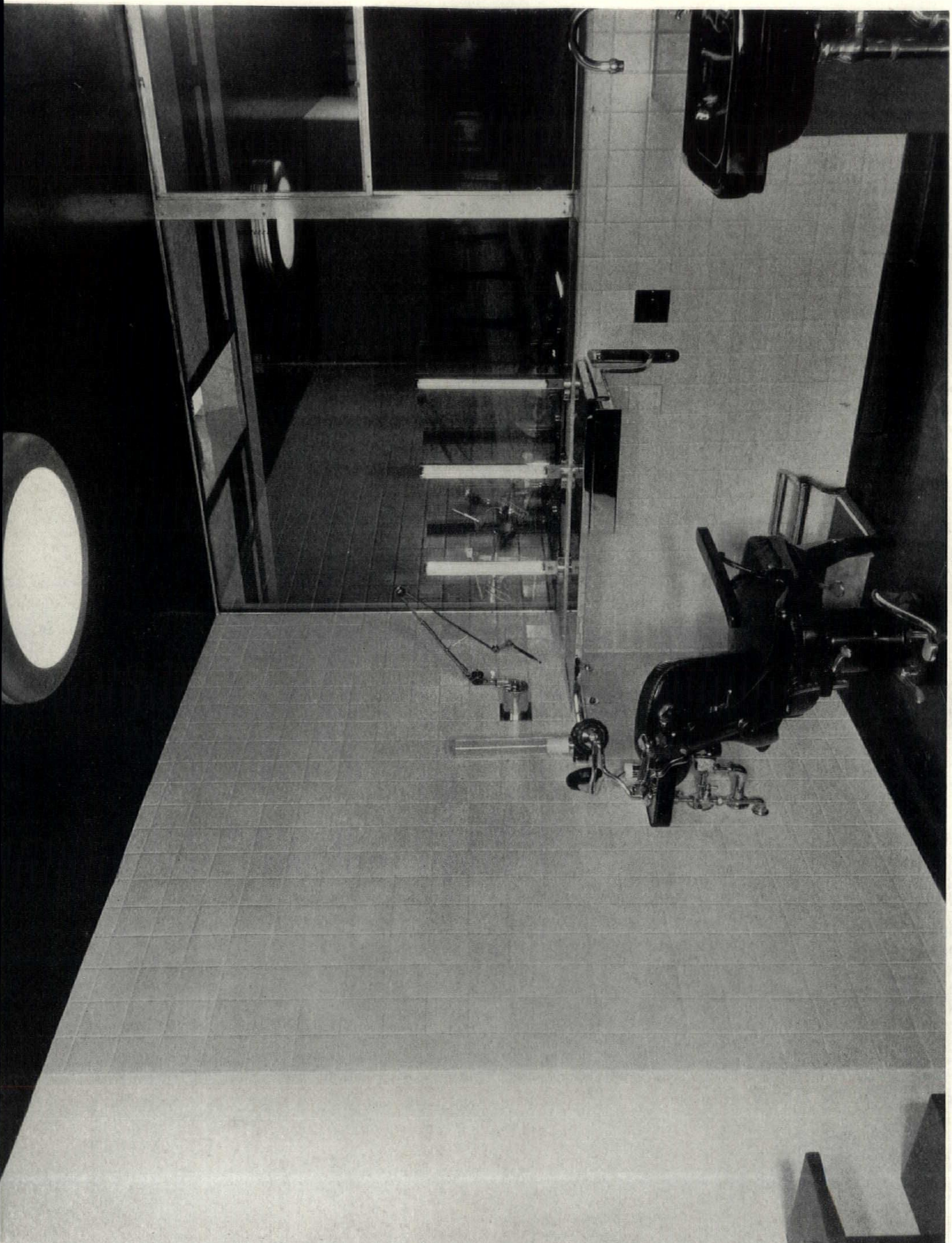
Photographs by Alexander Piaget

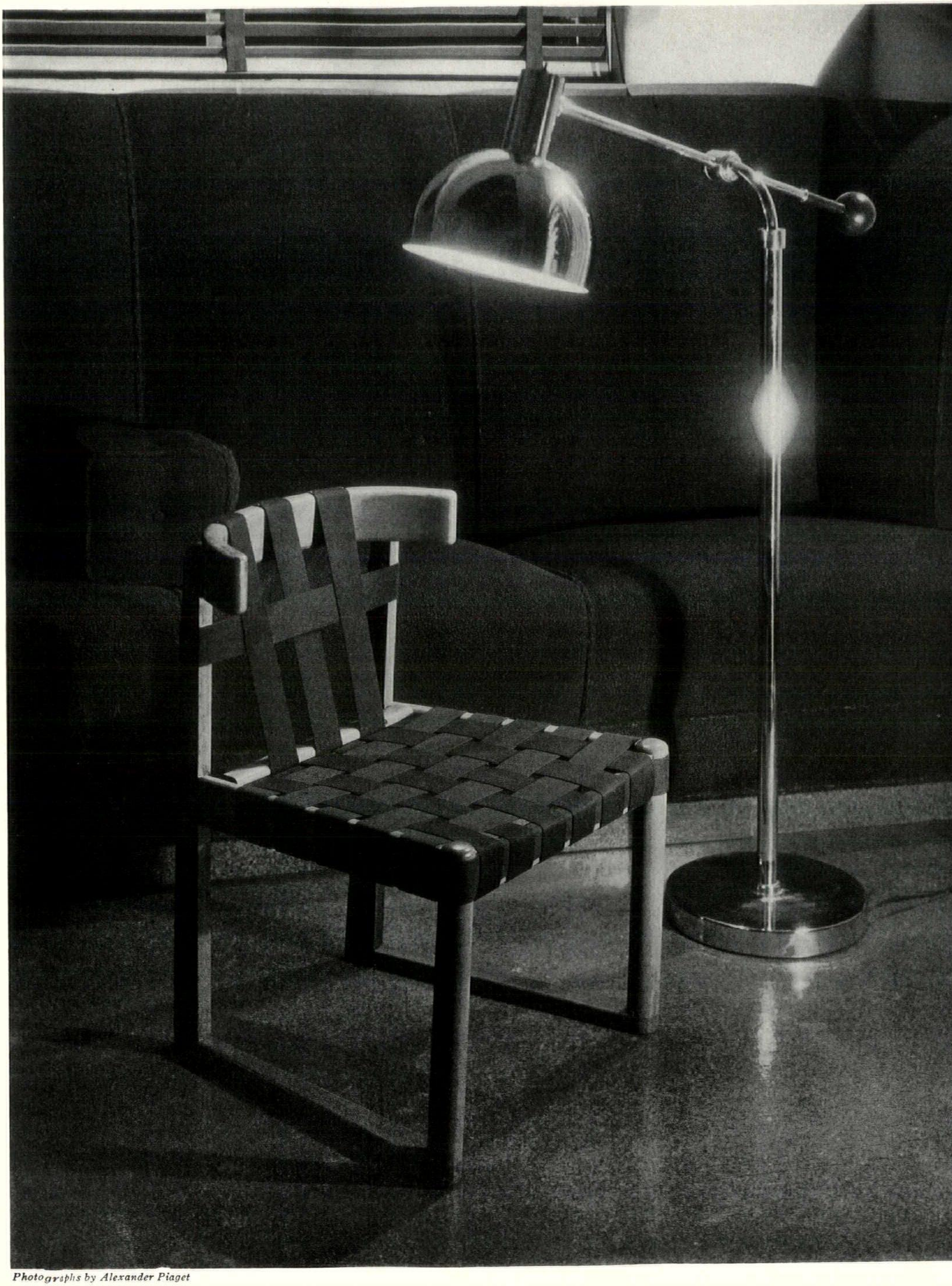


Photograph by Alexander Piaget

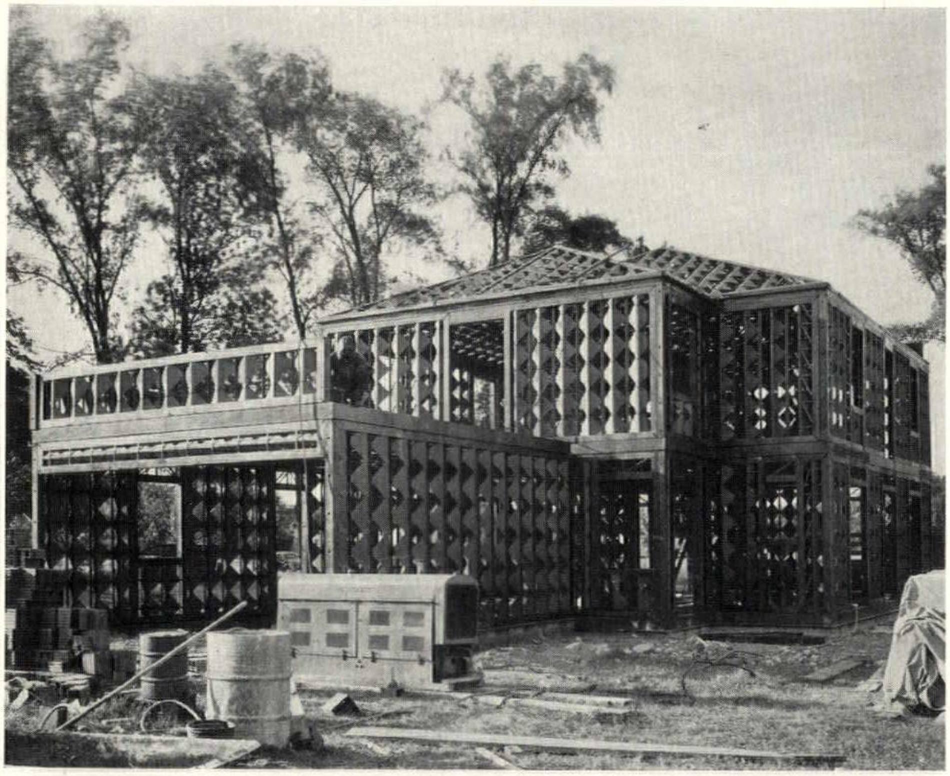


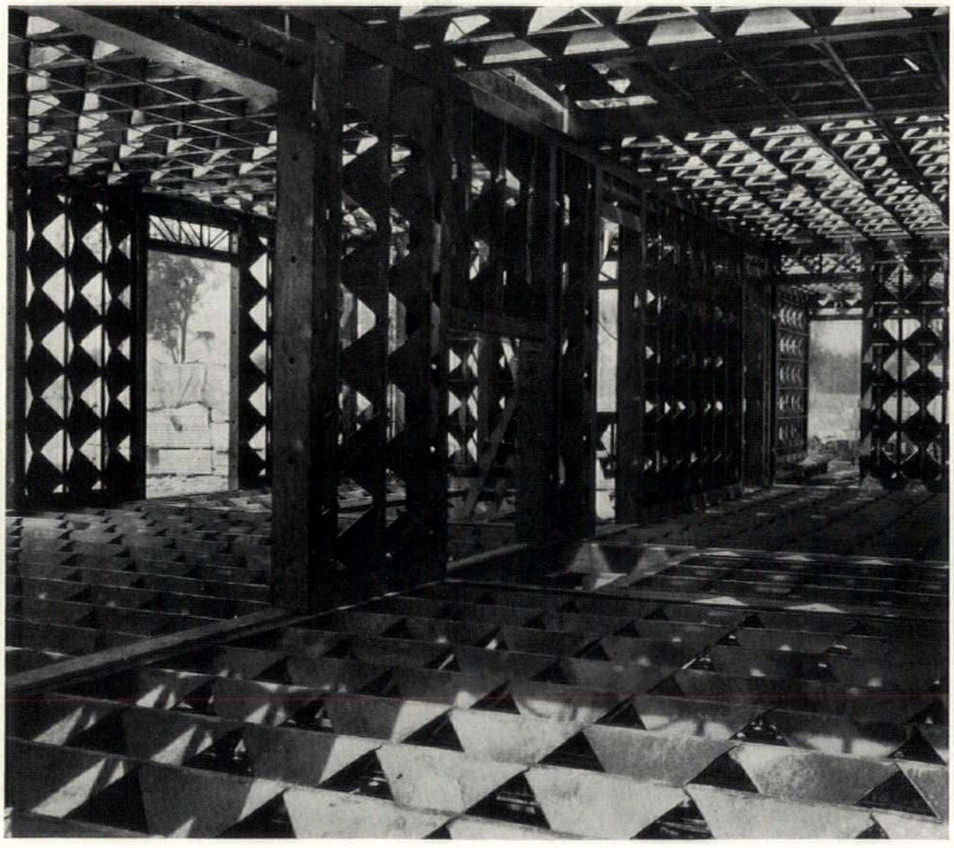
Photograph by Alexander Piaget





Photographs by Alexander Piaget





INTEGRATION IN STEEL

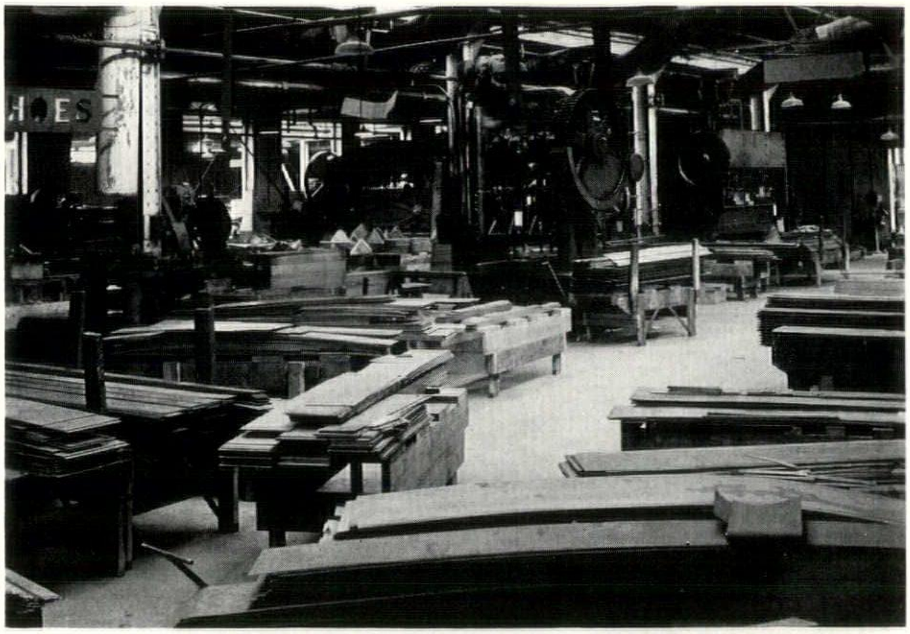
A new company—the Arcy Corporation —has entered the building field to produce houses "at a set price with a single contract." Architectural design, engineering, fabrication and field assembly are combined into a single merchandising organization that offers the prospective home owner the economies of a unified building procedure. Unnecessary production steps are eliminated.

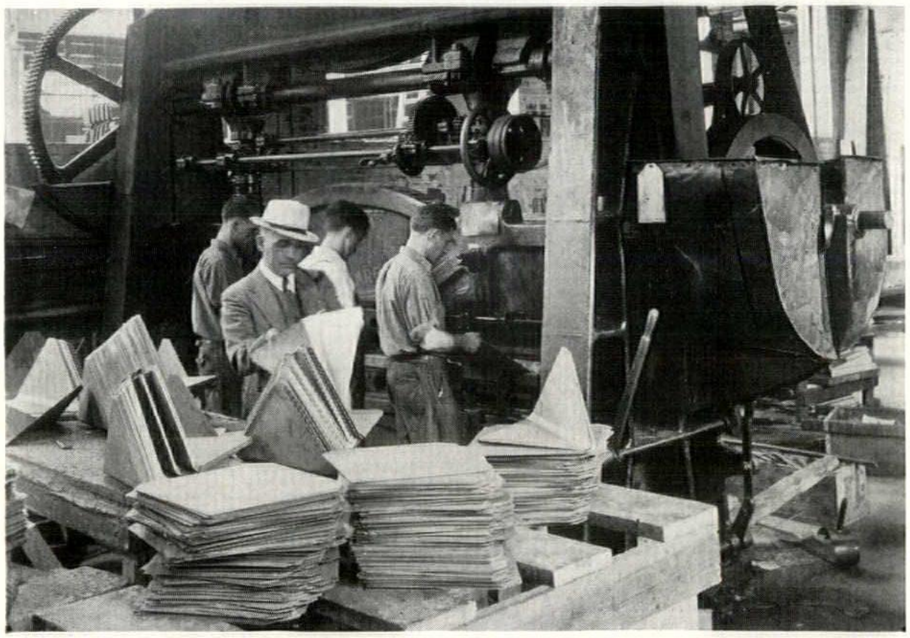
This commercial integration is reflected in the integration of the structural frame of Arcy Houses. A system of welded structural steel sheets and angles offers the advantages of standardization and prefabrication in combination with flexibility in the design and plan of individual houses. Any veneer can be supplied to the steel framework to provide whatever exterior design—from "Williamsburg Colonial" to "Modern International"—the buyer may desire. The houses are termite proof, windproof, fireproof, lightning proof.

Six houses are under construction at present. Five, in the $15,000 class, are being erected in the Cleveland Heights area (see photograph of models in News of the Month, page 331. Another, costing approximately $50,000, is being built for Laurance Rockefeller in Pocantico Hills, Tarrytown, N. Y.

Plans have been made for the production of houses costing $5,000 or less. These will have the same structural system as in the higher priced custom-built types. Some 50 standardized layouts have been prepared for buyers' selection.

Through arrangements already made with a life insurance company, mortgage money will be obtainable up to 66 2/3% of the combined value of house and land. Initial operations of Arcy Corporation will be within a 100-mile radius of 5 key cities: New York, Philadelphia, Pittsburgh, Cleveland, Chicago. Executive offices are in Rockefeller Center, New York. The organization is headed by B. J. McGarry, president.





Photos by Rempes

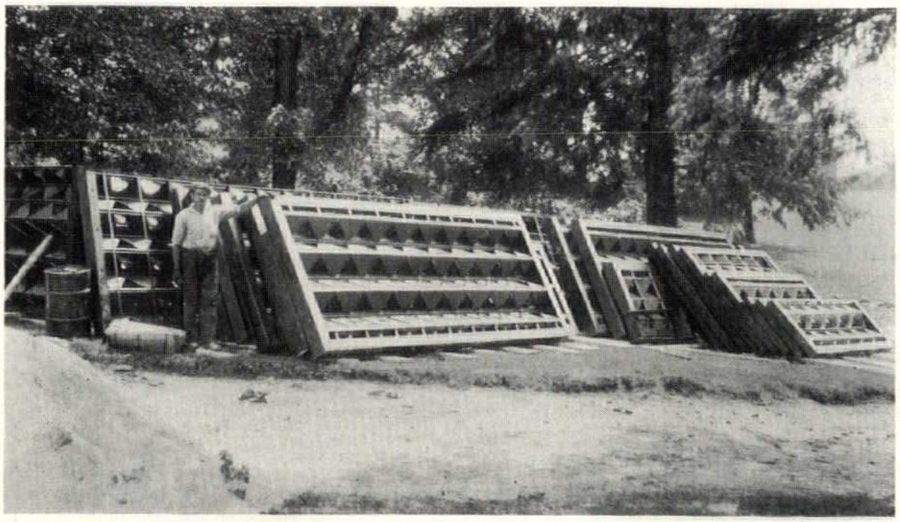
ARCY IN THE FACTORY

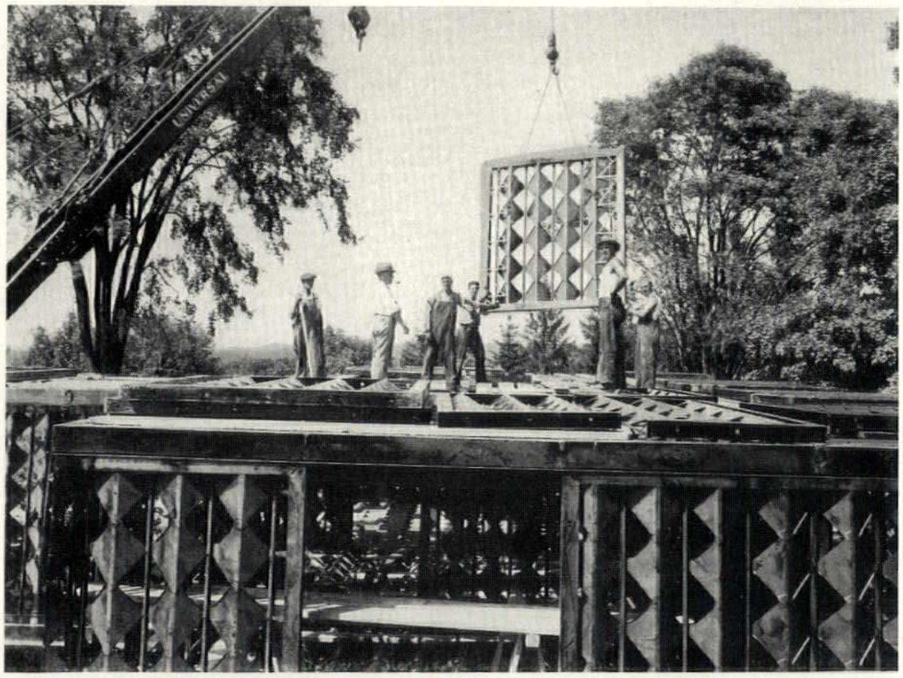
Standardized panels are fabricated in the Pittsburgh plant and then shipped to the building site for field assembly. Their construction is based on a system originally invented by Professor Walter H. Stulen of the Carnegie Institute of Technology and developed by the Arcy Corporation.

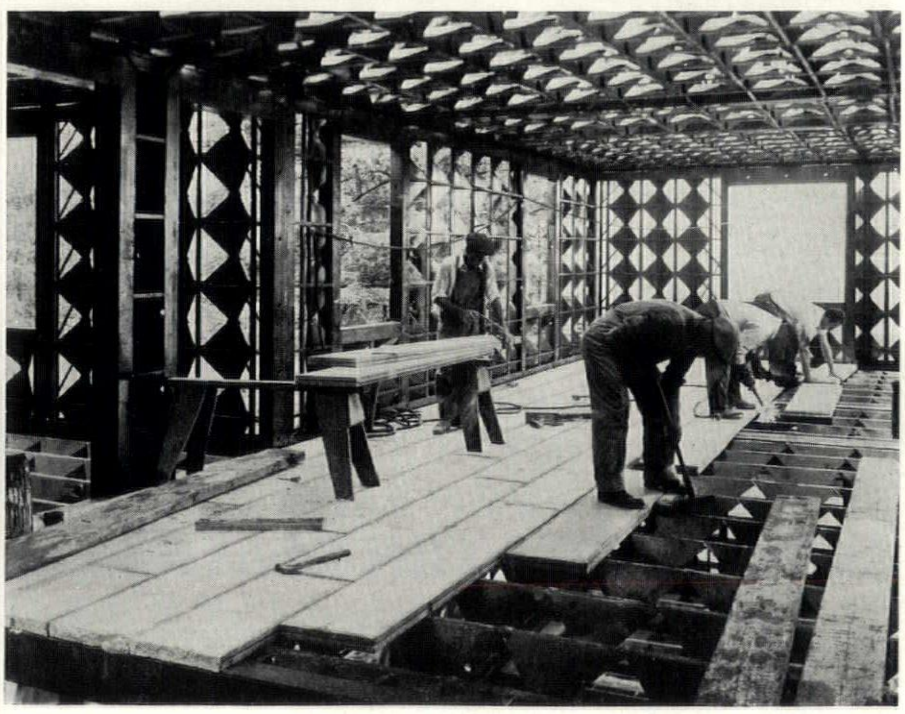
Structural units: Flat sheets of 16-gauge structural steel are cut into diamond shapes which are bent in the middle to almost a right angle and flanged along the edges to give stiffness. The plates are then placed in series and spot-welded to three 1″ steel angles running parallel along the middle fold and along the two outer diamond points. These welded units in turn are spot-welded together to form truss-like floor and wall panels.

Structural panels: A module of 18 inches—the distance between the outer diamond points—applies to all panels. The standard panel consists of four structural units, giving a 6-foot working width as the planning module. Smaller widths are fabricated only for special framing. Wall panels are 4½″ deep, floor panels 7½″—the variation is obtained by using diamond shapes of differing dimensions. Wall panels are 8′ 6″ and 9′ high. Floor panels run up to a maximum span of 28′; these are also used for the roof construction. All panels are framed inside steel channels and braced laterally by 1″ angles. The steel construction does not vary, regardless of spans or loads; the economy in standardized fabrication offsets any possible structural saving in steel.

The use of mass production methods is combined with flexibility in individual house design. Rigid unit costs are established for all structures. With present facilities, frames for 3 complete houses of the $15,000 class can be fabricated weekly.







ARCY IN THE FIELD

The structural integration includes the fabrication of metal cabinets, closets, kitchen sinks, window sash, door trim and base, stairs, air conditioning ducts and similar items according to Arcy specifications. Products of U. S. Steel Corporation are used wherever possible. A $15,000 *house takes about* 15 *tons of steel for the framework, about* 3 *tons for the miscellaneous equipment.*

Structural assembly: The steel panels are hoisted in place and welded together to form a single-unit structure. No nails or bolts are used; all connections are welds. The frame is anchored to the foundations (concrete, brick or the like) by means of base channels. Insulation and finishes are then attached to the steel framework. Cork is used for insulation (1½″ for walls, 2″ for roofs). Brick, stone, wood or any other exterior veneer is applied over the cork. Plaster over wire fabric lath is used for interiors. Gypsteel planks are used for floors.

Structural flexibility: Stairs, doors and windows are easily framed into the steel assembly. Since the design of the structural framework provides long unobstructed spans, interior partitions generally are not load-bearing and therefore can be made of a light construction and placed wherever desired. The triangular openings in the structural units and panels provide space through which wiring, pipes and air conditioning ducts can be run. Specially designed ducts, triangular in cross-section, are used.

About 60% of a typical construction job is steel prefabricated in standardized units. Local labor is to be employed wherever possible for work done on the site. The entire frame of a $15,000 house can be assembled and welded in 36 hours.

INTEGRATED ROOFS

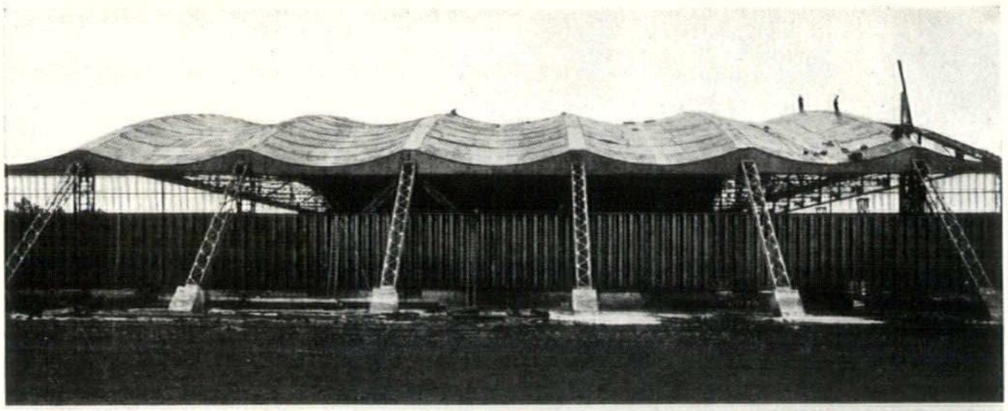
The threat of European war and the rapid development of huge air armadas have introduced new problems in the design and construction of hangars. To accommodate the wingspread of the planes, the hangars must be increasingly large; their openings must be wider and free of intermediate supports. Military strategy adds the requirement of speed and ease in assembly and disassembly.

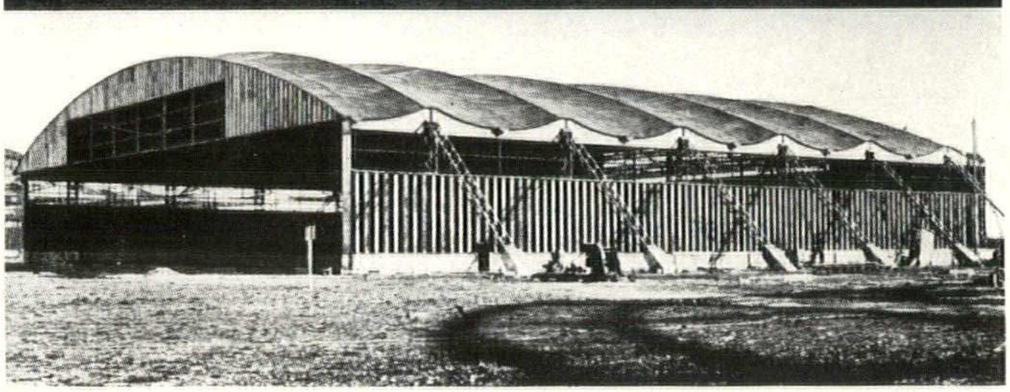
The new metal hangars of the French Air Ministry are composed of prefabricated units which can be easily erected wherever conditions demand. As in so much military work, a high technical standard is set. An innovation appears in the design of the roof where the tensional strength of steel is utilized to provide a covering of light weight. M. Aimond, engineer, is the designer of the roof.

The metal hangars, according to *L'Ossature Métallique*, have an unobstructed width of 70 meters. Their depth is variable in multiples of 11 meters—the distance between the columns which support the arched roof trusses. On these prefabricated trusses are suspended the prefabricated roof panels, like skin stretched over ribs.

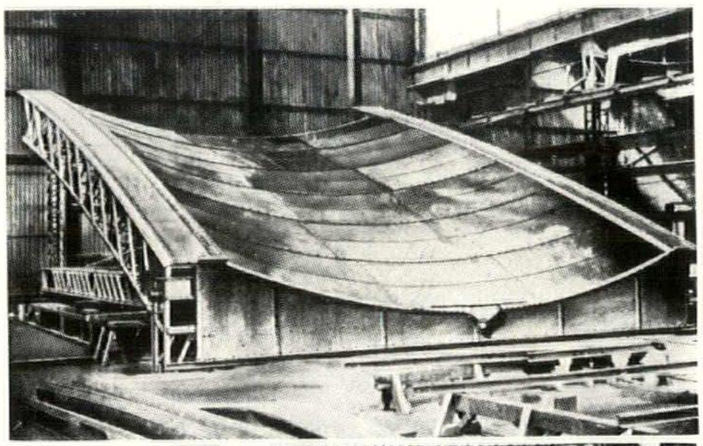
Roof panels: High strength steel sheets of 1.4 millimeter thickness are welded together in pairs to form units measuring about 2.50 meters wide and 3.35 meters long. These are joined in threes by welding or bolting to form bands 10.20 meters long. Each of these bands is suspended by its ends to consecutive pairs of arched trusses spaced 11 meters on centers. Each band takes a hyperbolic form and acts like a cable on a suspension bridge. The weight of the steel, the snow loads and wind loads are transferred into the roof trusses. The forces exerted on the trusses by the steel bands and their loads are equally balanced, for each arch is formed by two half-segments of the hyperbola. At the ends of the hangars are arched "throats" which terminate the steel bands and carry loads directly to the ground on their own supporting columns. Thrusts in the main trusses are taken in part by steel buttresses spaced regularly outside the structure.

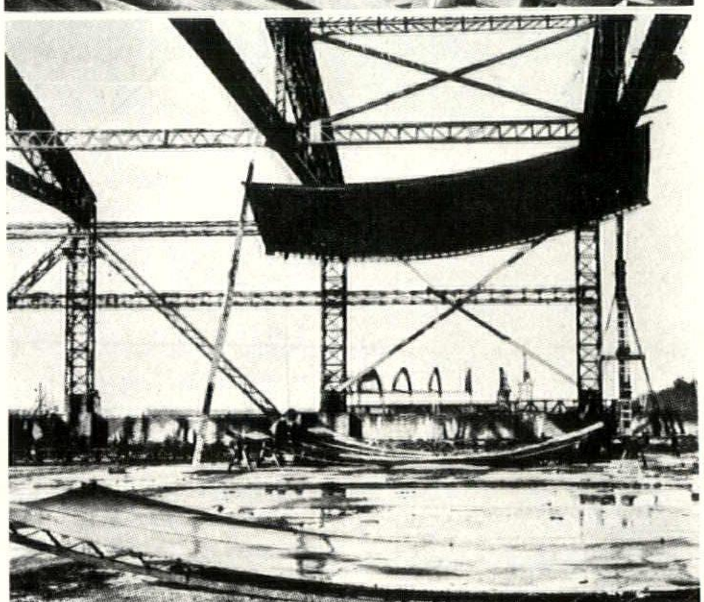
Framework: Columns are 9.10 meters high. The whole structure rests on reinforced concrete foundations rising 1.50 meters above the ground. Bases for the buttresses are 10.20 meters outside the main walls.





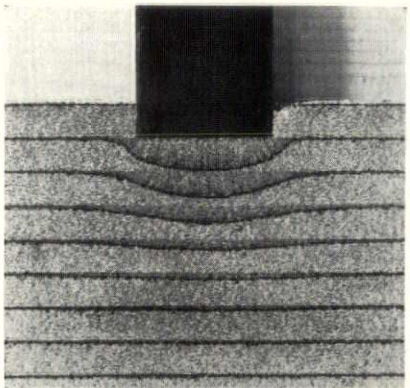
roofs for military mobility—the new prefabricated metal hangars of the French Air Ministry





standardized roof sections are fabricated in advance and then quickly assembled on the site

Illustrations courtesy L'Ossature Métallique



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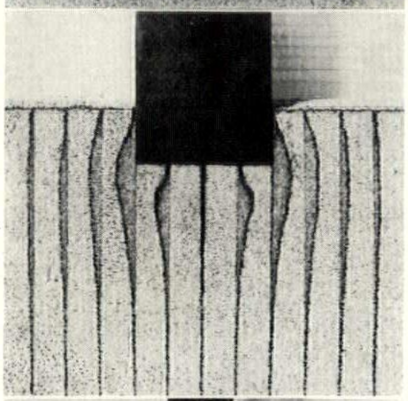

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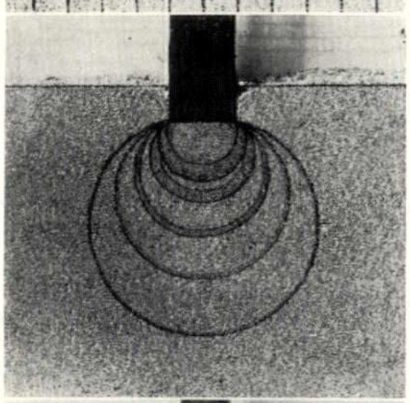

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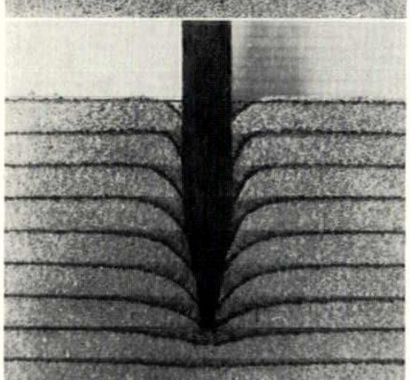

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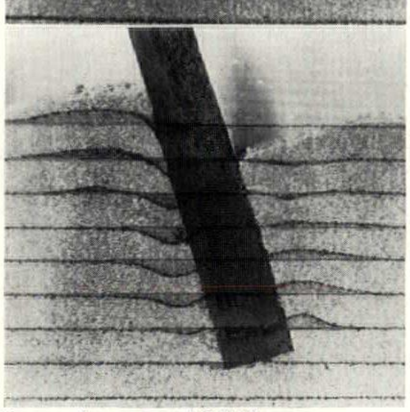

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Photographs courtesy A.S.T.M.

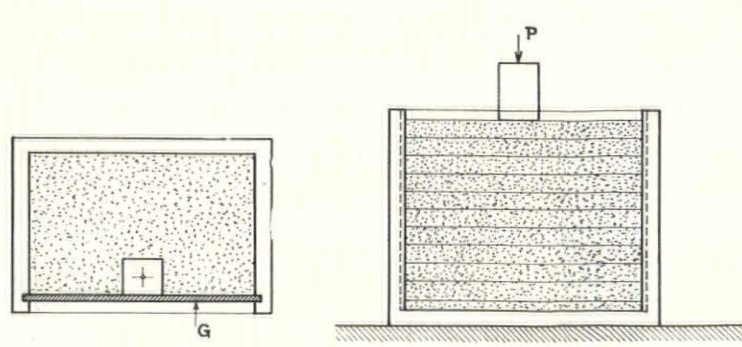
TESTING BEHAVIOR OF SOILS FOR FOUNDATIONS

Foundation work involves the problem of calculating stress distribution in soils. Every mathematical formula developed theoretically must be checked against practical experiments to establish its validity. Test apparatus and procedure for representing ground deformations have heretofore been generally cumbersome and expensive. It has been standard practice, up to the present time, to carry out such experiments with layers of colored sand. Much care has been necessary in preliminary preparation and placement.

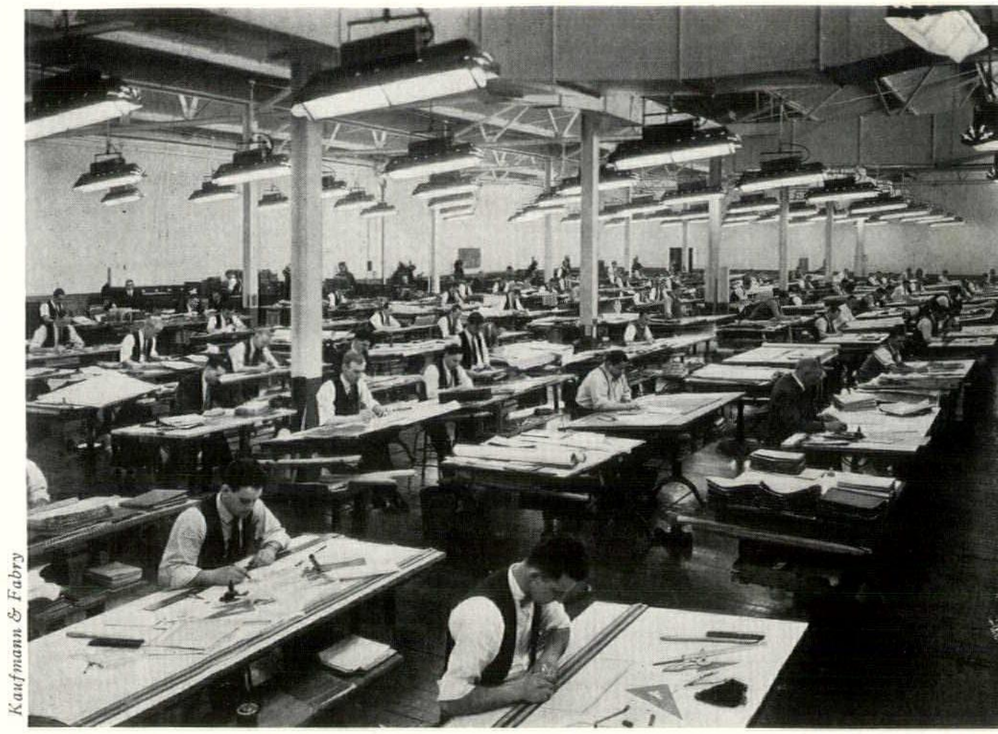
A new method, developed by K. Fischer, Viennese engineer, greatly simplifies the representation of stress in homogeneous masses of sand and may lead to new research in the field of soils and foundations. The Fischer experiments are described in a report received by the American Society for Testing Materials from a similar organization in Austria:

Process: "The apparatus consists of the customary box-like container with wooden walls, the front one being a strong glass plate slid in along grooves from the top (see diagram). The placing of the sand in colored layers is avoided, however. Before the glass plate is put in place a number of parallel lines consisting of a special coloring matter (aniline violet) are thickly ruled on it. After all lines have been dried, the glass plate is for a short time put into a damp space or treated with aqueous vapor in order that the colored lines will be moistened to the same degree. The glass plate is then slipped into the empty container with the lines on the inside face of the plate. By means of a funnel, fine sand is now carefully poured into the container, the filling progressing steadily in horizontal layers until the desired height is reached with a level, even surface. The grains of sand against the glass plate will absorb color from the lines. The test load must now be applied immediately in such a way that the plunger will be against the inner surface of the glass plate in order that the observations can be made in the vertical plane of the plate. The application of the load will show distinctly the progressive deformation of the sand layers, thus also affording a view of the stress distribution."

Results: "Some examples of the author's experiments are shown in the accompanying photographs. Figure 1 shows the distribution of stress in horizontal layers under a square plunger with vertical load, while Figure 2 gives the same load with a representation of deformations in vertical planes. It is difficult to demonstrate the latter deformations in any other way. Figure 3 shows the deformation of circles passing through the edges of the plunger. In this connection, it was possible to prove that such circles represent the location of like deformations (isochromes), a fact already theoretically known. Deformations in more complicated procedures can be represented in this way also, such as the deformation of horizontal layers when a pile is driven (Figure 4) and, finally, the deflection of horizontal lines in the case of the overturning of a vertical wall (Figure 5)."



plan and section of testing apparatus showing position of plunger



Drafting room of the International Harvester Co. (photograph courtesy G .E. Vapor Lamp Co.)

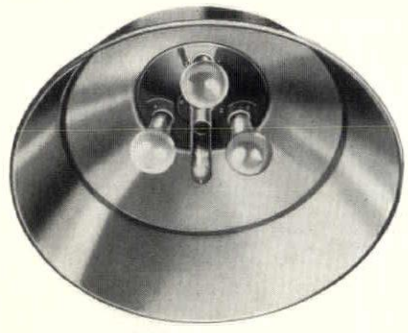
light designed for drafting

In the drafting room the seeing tasks are severe. Working efficiency depends on visual efficiency. This close relationship between lighting and productive efficiency is reflected in the steady advance of illumination standards for drafting work. A specific illumination level of at least 20 foot-candles at the working plane is usually recommended by lighting engineers. This level is taken as the standard of minimum adequacy since draftsmen show a measurable loss in productive efficiency when working at lower levels. Adequate illumination is not enough, however. The distribution and the visual characteristics of the light itself must also be correlated to the required seeing conditions.

The distribution of natural daylight as it enters the room from skylights or windows above and to the left of the drawing boards is usually taken by the lighting specialist as a desirable ideal, even in preference to completely shadowless indirect lighting. When artificial lighting is used instead of north light, the light sources—as in the case of windows—should afford a large area of low intrinsic brightness. A light source of concentrated brightness, even when shaded to protect the eyes from direct glare, results in disturbing highlights of reflected glare on tracing cloth, polished drafting instruments, and the like. Light distribution that lacks uniformity, such as that obtained with a desk lamp within a foot or two of the work, is tiring to the eyes and interferes with accurate observation of tone variations in renderings. The black shadows produced by a too intense direct lighting are disturbing. "Controlled" shadows of a diffused character are considered more natural and therefore more desirable.

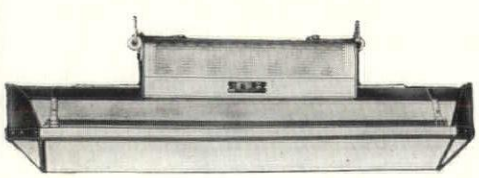
A proper spectral balance of light is another prerequisite for drafting efficiency, particularly where the work involves recognition of color values or use of colored inks, papers and paints. Ordinary incandescent lamps have an excess emission of red in comparison to daylight, which may result in a disturbing variation and contrast of values when such light is used to supplement daylight at certain hours or in certain parts of the room. Sometimes blue glass bulbs or filters are employed to correct the light, but this "subtractive" method absorbs 35% or more of the total light output, thereby reducing its efficiency correspondingly.

By blending together the incandescent light and the light of mercury vapor lamps, which are rich in blue and green emission characteristics, a color balance equivalent to ordinary daylight is obtainable. This "additive" method of color correction utilizes the full light output of both types of lamps. In recent months



Westinghouse mercury-mazda unit

Westinghouse 400-watt dome reflector



General Electric combination unit

such combination lighting units have been put on the market and research is currently under way on the development of new types of mercury vapor lamps of widened flexibility (see Technical News and Research reports: March, p. 243; April, p. 336; May, pp. 409, 410; August, p. 166; October, p. 44). It is significant that these combination mercury-incandescent units are finding early application in the design of drafting rooms.

Designs for drafting: A new drafting room building has been erected for the gas power engineering department of the International Harvester Co., Chicago. Walls of this building are windowless. Skylights in the sawtooth roof supply daylight to a completely air conditioned central drafting room which measures 145 by 75 feet in area and houses tables and desks for over 100 draftsmen, engineers and inspectors. For supplementary use with the daylight or for separate use when solar illumination is lacking, eighty combination mercury-incandescent units, operating at 850 watts, are mounted 11 feet high directly over and parallel to the left-hand edges of the drafting tables. The spacing of tables and cabinets is correlated to the lighting layout. A uniform illumination in excess of 20-foot candles is provided.

A system of combination mercury-incandescent lighting is now being installed in the main drafting room of the Harvard School of Architecture in Cambridge, Mass. The installation will provide totally indirect lighting.

transformers for mercury lighting

Transformers and reactors designed especially for the requirements of high intensity mercury lighting are announced by the Westinghouse Electric and Manufacturing Company.

Because of the difference between initial starting voltage required for the lamp and the final operating voltage, a transformer with high internal reactance or a reactor must be used with each lamp. This equipment is designed to regulate the current during starting period and to limit the current for slight changes in line voltage during normal operation.

All units are available in two types—suspension mounting type, from which lighting fixture can be hung, or wall mounting type, which can be mounted on wall or ceiling or any flat surface.

mercury dome reflector

A new dome type low-mounting reflector for use with the 400-watt high intensity mercury lamp has been designed by the Westinghouse Electric and Manufacturing Company. It is intended for general industrial lighting applications.

The reflector is equipped with a monax glass cylinder which surrounds the lower portion of the lamp providing a 72½° angle of cut-off. It is designed for mounting heights of 10 to 18 feet. The reflector is drawn from 22-gauge iron sheet porcelain enameled. A glass collar of monax homogeneous glass is supported by three steel cadmium-plated supports locked securely in the top portion of reflector. Lamp or collar or both may easily be removed without removing supports.

mercury-mazda lighting units

For industrial lighting where color correction is necessary, a combination 250-watt mercury-mazda lighting unit has been announced by the Westinghouse Electric and Manufacturing Company.

The units are designed for mounting heights of 8 to 18 feet. Two distinct circuits are used, one to control the mercury lamp and one to control the mazda lamps. The design is such as to allow three 60-watt, three 75-watt or three 100-watt mazda lamps to be used without interfering with the restarting of the mercury lamp in case of a voltage interruption. The unit consists of an aluminum reflector, with socket assembly and a monax diffusing hinged glass bowl. The entire socket assembly is attached to the top of the reflector. A slip type louvered cover provides sufficient ventilation for the sockets and allows for wiring or inspection of wiring.

Several refinements in design have been introduced in a new model developed by the General Electric Vapor Lamp Co.

At 275 watts the mercury tube supplies the same lumen output as did the older 350-watt tubes. For the incandescent component four 150-watt lamps are used. This ratio provides fullest color correction. The total ouput of 11,200 lumens is distributed through 650 square inches of diffusing glass so that the intrinsic brightness is well below glare level even when the light source is looked at directly.

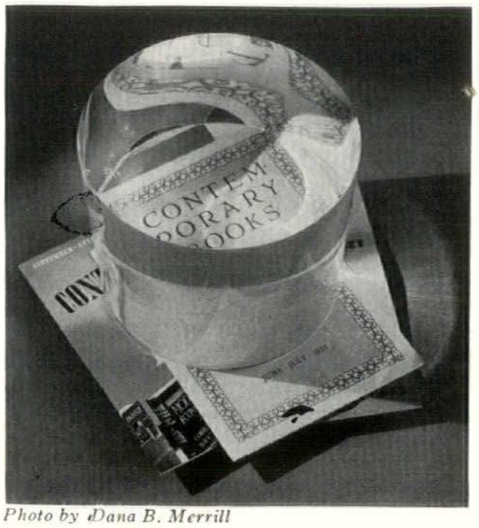


Photo by Dana B. Merrill

"Pontalite"—the cylinder of plastic is 9½ inches thick yet transmits light clearly

NEW PLASTICS . . . . . . "Pontalite", "Catabond"

thermo-plastic transparency

A new plastic bearing the trade mark "Pontalite" was described by H. R. Dittmar of the duPont Company in a paper before a recent meeting of the American Chemical Society. It has not yet reached commercial production, but a factory is now being built which will be in operation early in 1937.

This plastic, known to chemists as methyl methacrylate polymer, is only half as heavy as common glass, is as clear as optical glass, and is so strong that it will resist a tension of 4 to 5½ tons a square inch. Though softer than glass, it is hard enough to be widely useful.

Flexibility: Pontalite is thermo-plastic and can be sawed, cut, drilled, and polished; it can be molded readily to any desired form. A liquid intermediate variety can be poured into molds and hardened, and in this way castings are made readily. Unlike glass, Pontalite transmits a large proportion of the sun's ultra-violet light. It is, morover, unaffected by sunlight, and in general is not attacked by destructive elements. The absence of color permits fabrication into delicate tinted shades. By combining dyes and pigments, varying degrees of color and transparency can be obtained.

Applications: Solutions of the plastic, also the liquid intermediate form, have been used successfully as impregnants for wood, cloth, paper, stone, and electrical apparatus, according to Dr. Dittmar. Materials treated in this way are much more resistant to water, oils, and chemicals. For example, when wood is treated with the plastic, the strength is increased, as is resistance to water absorption, warpage, and the action of chemicals. Though Pontalite can be burned, it is not flammable in the ordinary sense; it is definitely a "safety" plastic. Many chemical variations of Pontalite can be produced, having a wide range of properties, all the way from hard, heat-resistant solids to heavy viscous liquids.

versatile laminations

A new synthetic resin, called "Catabond," is announced by the American Catalin Corporation, 1 Park Avenue, New York. It has been developed to replace certain types of glues in the manufacture of laminated products. Names of manufacturers of veneers, plywoods and similar laminated products using this new resin are obtainable on request.

The resin is practically colorless. It can be used as a surface coating as well as a bonding material between the different plies. Both operations are performed at the same time during the hot pressing of the plywood or veneer. Since a transparent and practically colorless film is formed, the resin takes the place of lacquer or varnish when applied to wood.

Colored surfaces: If color is required, the wood may be stained or a stain or pigment can be mixed with the liquid resin. Colored paper or fabrics can be laminated on the surface of plywood or composition materials, provided the colors will not run in the solvent with which the resin is thinned and will withstand the relatively low temperature (about 300° F.) at which the laminating is done.

Physical qualities: Catabond is weatherproof and resistant to injury by fungus growth or insects. It can be used in bonding wood that has been rendered fireproof by salt or other impregnation and in bonding wood or other materials to such composition fireproof boards as Transite and Masonite. The resin itself is noninflammable and resistant to heat up to temperatures at which wood itself is injured. Plywood bonded with Catabond is so resistant to water that it is not injured by prolonged submersion in boiling water. The glue line is stronger than the wood itself and this increases the strength of the plywood. As the process of bonding does not introduce moisture, swelling of the wood is avoided. Catabond combines chemically with water present in the materials laminated during the laminating process and it is not necessary to control their moisture content closely to avoid blistering and other defects in bonding.

Applications: Because of the properties imparted to laminated products by Catabond, it is anticipated that they will be used extensively for fireproof and other paneling; for bars, counter tops and table tops; for furniture; in the construction of water craft, aircraft and automotive bodies; for roofs and paneling in railway coaches and for a wide diversity of products such as luggage, kitchen accessories and the like.

THE ARCHITECTURAL RECORD

VOLUME 80 • NUMBER 6 • DECEMBER 1936

BUILDING TYPE STUDIES

To enable general practitioners to revise neglected check lists and specifications in the light of experience developed by specialists The Record will, beginning with the January 1937 issue, publish a monthly series of building type studies. Each study will be prepared by a group of specialists—architects, engineers and others—who have recently worked out problems connected with the type of building under discussion, the purpose being to review authentic current practice with respect to plan, construction methods, materials and equipment.

Each study will constitute an addition to the customary contents of the magazine and will be illustrated with photographs, plans and detail drawings. The illustrations for the series as a whole, by picturing architectural features of new significance associated with many building types, will give a fair idea of modern trends of expression in design and of the practical considerations motivating the trends.

BUILDING TYPE STUDY No. 1 — JANUARY ISSUE

RETAIL STORES, SPECIALTY SHOPS, SHOWROOMS, RESTAURANTS

A range of establishments typical of retail trade has been selected for analysis in the opening study of the Building Type Studies series, because there has been a notable advance in construction of new, and particularly in modernization of old, stores which seems likely to continue. In the buyers' market of the depression, survival of individual retail stores depended generally upon restudy of merchandising policy and method, together with simplification of overhead. The consequent modifications of theory and practice in retail trade have brought about important changes in store design.

AMONG THE CONTRIBUTORS TO THE JANUARY STUDY ARE:

NELSON MILLER, Chief, Retail Trade Section, Marketing Research Division, U. S. Department of Commerce.
WILLIAM MUSCHENHEIM, architect, designer of the Hotel Astor Grill, New York City.
ELEANOR LEMAIRE, department store designer.
JOHN WEBER, architect and showroom designer.
PERCIVAL GOODMAN, architect and jewelry store designer.
B. SUMNER GRUZEN, architect and designer of cash and carry stores.

Drawing by Steig, Courtesy The Nation

AUTO TRAILERS OF STUDENTS DOT CAMPUSES

(By Associated Press)

Dormitories on wheels are rolling onto the American college campus.

Almost as portable as a student's typewriter, they begin as trailers behind automobiles and end as campus homes. In them, at least four schools in the South and West are finding an answer to two questions: College housing and student finance.

Has Electric Lights.

A "trailer town" has grown up around Utah's State Agricultural College at Logan. It boasts electric lights, running water, and vegetable cellars. It has a "mayor," Julian Thomas of Heber City, Utah.

The town was born a year ago

Question: Is a Trailer Home or an Accessory?

Court's Decision Will Decide Motor Squatters' Lot

ORCHARD LAKE, Mich., Oct. 10—(AP).—Justice of the Peace Arthur F. Green wrestled today with the question of whether a trailer is a house or an automobile accessory. His de-

Michigan Town Is First in U. S. To Bar Trailers

Home on Wheels Fails to Comply With Law, Justice Rules

ORCHARD LAKE, Mich., Nov. 13 (UP).—This Michigan town, near Pontiac, today became the first community in the United States to ban automobile trailers.

The ruling was made by Justice of the Peace Arthur R. Green who held that trailers are human dwellings and must conform to a village building ordinance requiring at least 500 cubic feet of space per occupant.

Mildred Gumarsol, Pontiac factor worker, bore the brunt of Justice Green's ruling. He was was fined $1, plus $3.10 costs.

"We gave him a break," said Justice Green, "because we knew this was an important test case."

Gumarsol pleaded that the decision would affect a $10,000,000-a-year industry—an industry which twenty-seven manufacturers, now

TAIL WAGS DOG AS TRAILERS BOW AT MOTOR SHOW

1,000,000 people will be living in trailers by the end of this month, estimates the American Automobile Association; 250,000 trailers will be sold next year, says the industry; and within twenty years 20,000,000 Americans will be trailer-housed, according to economist Roger Babson. Be this as it may, the nation's newest and fastest-growing industry stepped full blown into the limelight of last month's New York Auto Show. Leasing one floor, a dozen or so of the largest companies showed a wide range of models priced from $400 to $2,500 and offering accommodations for 2, 4 and 6 persons.

The New York show served merely to highlight the increasing attention which the trailer industry is receiving. In its rapid rise Gilbert Seldes sees indications of "a movement of population besides which even the Crusades will seem like a Sunday School picnic." Social, economic and political repercussions there certainly will be, but so far the use of trailers is largely confined to (a) persons with independent incomes, (b) persons on extended vacations, (c) itinerant workers in seasonal industries, and (d) commercial and institutional users. However, from Detroit comes a report of a trailer city designed for year-round use by tenants permanently employed in the motor capital. They have electric, water and sanitary connections; groceries are delivered, garbage collected. "They are paying for the trailers on time at rates lower than rentals. And they can move whenever they want to. . . . All they have to do is—like the early Texans—put out the fire, call the dog and move."

The use of the trailer by such diverse groups naturally leads to an increasing range of body types and an expanding demand for services and accommodations. Already industry and municipal governments are offering these. W. H. Ludlow, writing in the *American City,* points out that a "trailer-town" presents problems in planning and management, quite different from those of the "tourist camps" which most cities now provide. The towns should be laid out in streets, with properly landscaped plots at least 25 by 35 feet, "so that the trailerite will not look right into his neighbor's window. . . . Minimum facilities include toilets, washrooms, showers, water and electric outlets, to which are usually added a social hall, various types of recreation and amusement . . . stores, cafeterias and laundries are also needed to make the town complete."

Trailers raise vexing problems

But planning is only one aspect of these trailer towns. "Who should run them? How should they be taxed?" the *American City* asks. "As to operation and taxes, some cities may prefer to manage trailer parks directly . . . others may prefer to lease muncipally-owned camps to private operators, thus retaining ultimate control and realizing an income, but placing details of management in the hands of an experienced operator. Still others will merely tax privately-owned camps by means of the property tax and special license fees."

As to the regulation of trailers themselves, methods vary considerably from state to state. In Florida the fee is a flat $12, while in Pennsylvania they are taxed merely as trucks, according to size and weight. *Trailer Travel,* in a recent survey, finds that "registration fees are required in 40 states, while 42 states require registration. Reciprocity period granted nonresident trailers in every state except one." They are taxed as personal property in 28 states. Numerous limitations on size, weight, design are found; 15 states require safety chains or emergency couplings; brakes are required by 16 states if weight exceeds a minimum; maximum length (with tow cars) varies from 35 feet in some states to 85 feet in others.

Sanitation, education, control—all these problems rise to vex the authorities. Since sanitary equipment in the trailers varies widely—from none in some types to complete bath and kitchen in others—the accommodations of the trailer towns must likewise vary. This problem arose at a recent convention of the American Health Association. Speaking of "this recent innovation" as a possible source of health risk, V. M. Ehlers of the Texas State Park Commission warned that "because of its compact convenience it furnishes the owner with a tendency to stop just anywhere, regardless of the absence of a pure water supply and proper sewage and garbage disposal." And California, threatened with 50,000 trailer children this winter, asks an even more pertinent question: Who will pay for their education? Because they are not citizens of that "or any other state" Vierling Kersey, Superintendent of Public Instruction, thinks "the Federal Government should defray the costs of their education."

The problem of control crops up in the "trailer-town" at the nation's Capital, where no trailers are allowed to stay more than two weeks, and no local trailers are permitted at all. But the trailerites' welcome varies from town to town. In the Southwest, according to F. L. Minnegrode, "a battle is brewing over the treatment of trailer tourists." Writing in the N. Y. Times, Mr. Minnegrode sees "the local merchants lined up against the hotel and tourist camp proprietors" in the discussion as to whether trailers will be "welcomed or banned." Sarasota, Florida, existing on tourists of whatever variety, welcomes trailerites to its already overcrowded municipal trailer town. Huntington Beach, California, likewise has one, while permanent convention grounds for the two large associations—American Trailer and Tin Can Trailer—at Sandusky, Ohio, and Manistee, Michigan, annually attract not only trailerites but manufacturers of trailers "and every manufacturer who has something which he feels the trailer owner ought to add to his conveniences."

For various reasons "some cities may fight trailers, ban them from parking within city limits and tax them heavily," the *American City* warns. That is precisely what happened in Orchard Lake, Michigan, last month, when trailers were outlawed in the town, trailer owners fined. But, by and large, the cities cannot let "changes brought about by trailers catch them unawares. . . . They will regulate and control the trailer to make it a new but integral part of the city pattern."

Trailerite will get what he wants

Whether the cities welcome or bar the trailerite will largely depend upon local politics; but the indications are that, regardless, the trailerite will get the increasingly specialized services he demands. Especially interesting in this light is the recent announcement of General Trailers Corporation: "the automobile trailer is initiating not only a new business but a new industry. . . . In anticipation of its rapid expansion, we have created a 5 *Point Plan* that will provide the greatest possible degree of comfort and convenience for trailer owners.

"The first point in this plan is the manufacture of trailers. . . . The second point is the location and operation of trailer camps throughout the country. It is proposed to operate two different types of camps for two distinct purposes; (1) trailers 'stop-over' camps placed at approximately 250-mile intervals between leading centers of population on main highways, and (2) trailers 'tourist' camps to be located wherever possible on the shore of a lake, a river or on the seashore. Complete accommodations will be offered in these camps for a vacation of any duration or, where the climate permits, for a permanent home.

"Point No. 3, the rental of the trailers: It is proposed to operate an ever-increasing rental service through which trailers may be rented for a day, week, month or season . . . it will be possible to rent a trailer from any distributor, travel to any part of the United States desired and turn the trailer into the distributor located nearest to the ultimate destination.

"Anticipating the need for winter storage facilities, each main building of the trailer camps will have a connected sizable floor area which will be used during the summer months for dancing, games, etc., and inclosed during the winter for dead storage of trailers. The fifth and final point is the organization of 'General Trailers Association'."

Companies use them also

The trailer is by no means confined to personal uses, however. Indeed, as the magazine *Steel* wisely points out, the larger proportion of registered trailers in 1935 were commercial units. And the rapid adaptation of the trailer to commercial and institutional services of all types is of special significance (*Technical News, August,* 1936, *pp.* 160-164). Ever alert to new markets, *Steel* estimates the 1937 production of trailers at 250,000 units, whose consumption of steel will be "impressive."

Impressive, also, will be the consumption of standard household equipment. Since the industry, at the present stage, *fabricates* the shell and *assembles* the equipment, it offers a large potential market for the equipment industries. Already a wide range of equipment—stoves, refrigerators, plumbing and heating units, radios and furniture—is being built to the industry's own specifications. And, under the highly competitive conditions already effective in the trailer industry, the use of equipment will inevitably increase on both a quantitative and a qualitative scale.

Where does this leave the designer?

The rapid rise of the trailer industry presages entirely new problems of design. 250,000 will be built next year; who will design them—architect, engineer, automotive designer, industrial designer? And on what basis? At the present time the trailers show clearly the effect of automotive design on the shell: but the interior equipment is that of a modern house, scaled down in bulk and weight to meet the special requirements of the trailer. Under increasing pressure, and at an accelerating speed, these two design trends will merge into a new concept of domestic shelter — a concept which appears likely to have a profound effect on the entire building industry.

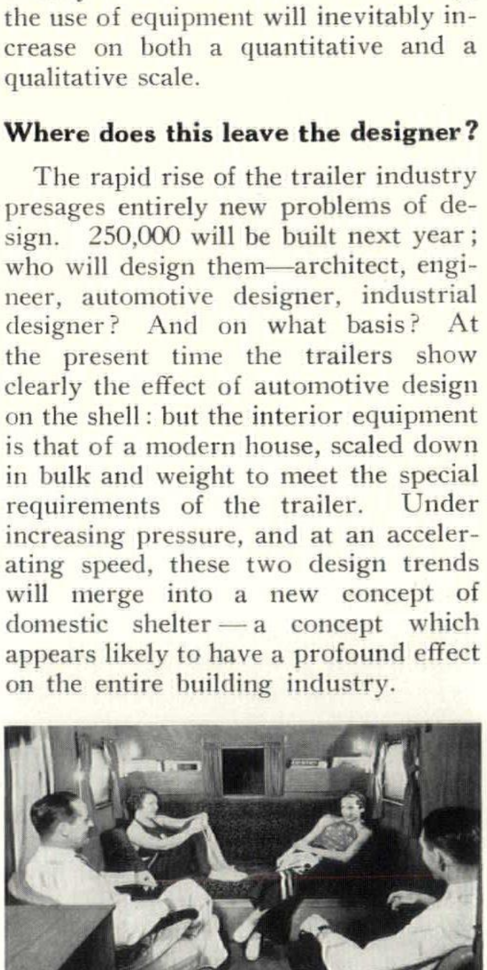
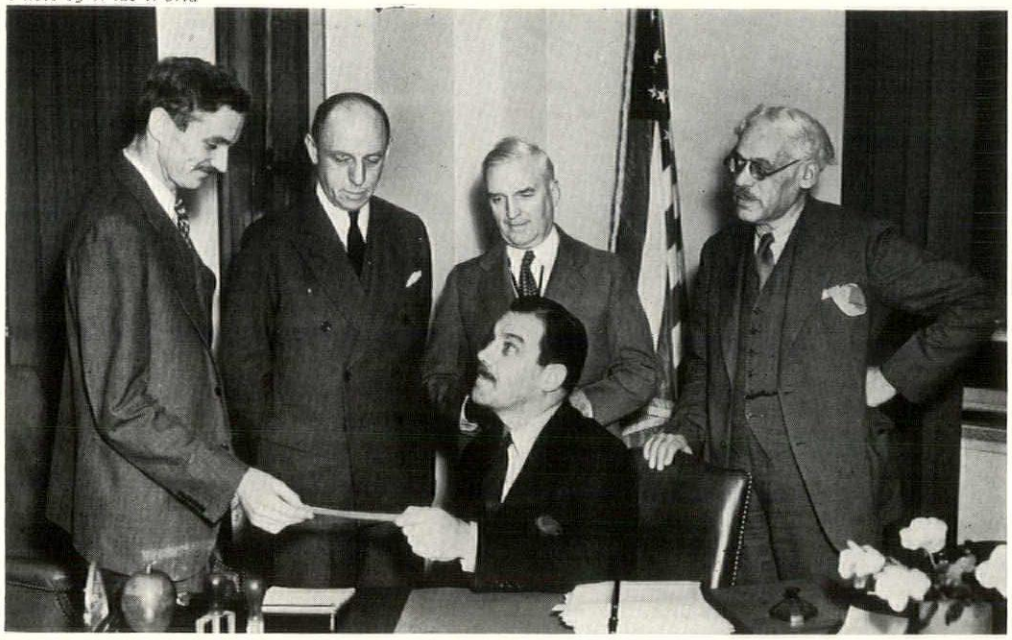


Photo by Wide World



PRIZE WINNER, YET NOT WINNER OF THE PRIZE, George Lyman Paine, Jr., young Manhattan architect, last month received a "cash consideration" of $1,000 for his design of a typical building for New York's World's Fair. Paine's design was awarded first prize in the recent contest "to discover new talent" for the Fair; but the award was stalemated when Paine was discovered to be "technically ineligible" according to contest rules. The problem was finally solved by awarding no First Prize, giving the $1,000 to Paine. Second prize of $750 went to Peter Copeland, Manhattan; third prize of $500 to Peter C. Smith, Norwalk, Conn. (Prize-winning designs appear on pp. 462-464, this issue.)
Picture shows Architect Paine (left) getting the $1,000 check from Fair President Grover Whalen (center) while Percy Straus, Stephen F. Voorhees and Robert D. Kohn look on.

WORLD'S FAIR FINDS ASH-MOVING TICKLISH JOB

Soil conditions of the Fair site made news when the *Herald Tribune* (N. Y.) quoted Hugh Moran, son of one of the partners of Moran & Proctor, consulting engineers. Mr. Moran was reported to have described conditions at the site as presenting all sorts of structural difficulties, and to have described the type of foundations they would require. These statements were next day denied by the firm in a letter to President Whalen as "totally unauthorized" and "contrary to facts." The letter went on to say that no unusual problems were contemplated and that the "type of foundations described (in the *Tribune* article) . . . are so fantastic that they would not be considered by us for this or any other project."

Unusual, however, the soil conditions at the Fair remain. Beneath the 3-foot vegetable mat of the Meadows lies at least 70 feet of silt—a tidewater swamp from the glacial era. Tests have disclosed definite tidal "waves" in this mud, a subsoil movement which makes excavation and filling a precarious job. It was these conditions which determined the concentration of buildings on the northern end of the site; and it is these conditions which have led to one of the most interesting dirt-moving jobs in this country. On this site for 35 years have been dumped the ashes and rubbish of Brooklyn and Queens—a dump pile which reached 90 feet in spots and an average elevation of 50 feet. Boring showed that the rubbish had settled 25 feet into the swamp muck.

Far from being a liability, the *Engineering News-Record* points out that these ashes "suddenly became a blessing. In fact, it is doubtful whether the site would have been economically feasible without the huge supply of dry fill immediately available. Hydraulic filling from the Bay was undesirable, for a wet fill over the swamp muck would have been unstable," and dry fill is scarce in New York in the quantities required for the Fair grounds. Therefore, not only the grading plan, but the physical plan of the Fair itself was based on the amount of material available in the dump, and by careful planning "a rolling topography, much more pleasing than the existing flat meadowland, was laid out over the full site to exactly balance the cut and fill." Even the size of the artificial lakes which will ornament the grounds was figured in this manner.

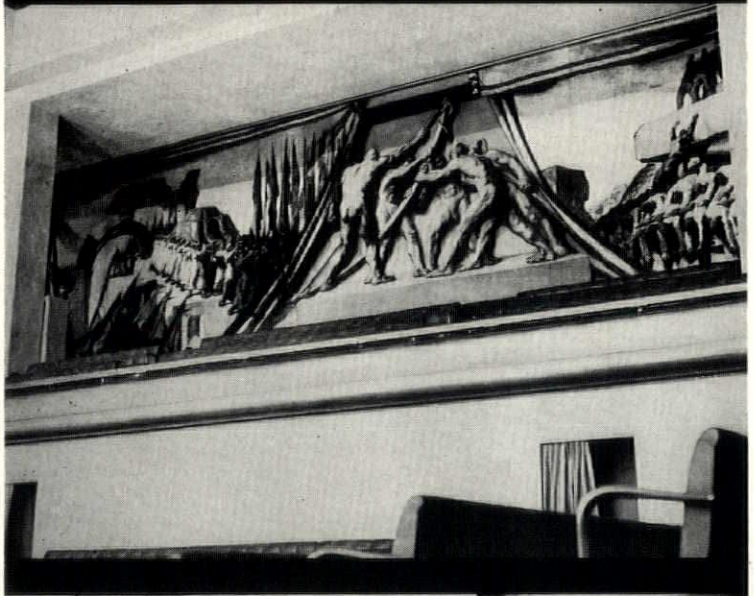
The actual dirt moving "is a far from simple job." Working in three 7½-hour shifts per day, the contractor moves from 40,000 to 50,000 cubic yards. All operations follow a careful plan which was evolved before bids were submitted, since the contractor must take full responsibility for mud wave, and any ground heaving must be corrected at his expense. Two troublesome features of the job are the presence of metal rubbish in the ashes—"old automobiles, plumbing fixtures and hundreds of domestic hot water tanks"—and the deep-burning fires which the excavations have uncovered.

• Estimating an average daily attendance of 250,000 and an occasional daily maximum of 800,000 visitors, World's Fair engineers gave the results of their traffic studies to the world. Pointing out that the Fair would present a traffic problem equal to a city the size of Cleveland, Grover Whalen said that the Fair "will have its own port, its own rapid transit line, its own bus system, its own police and fire departments." Transportation to the site by means of train, trolley, subway, boat and motor will be provided: and this traffic will be handled by an intramural bus system which will include express busses circling the Fair ground and local busses on the inside roads. All private motors will be parked in convenient spots and bus and pedestrian traffic within the Fair grounds will be carefully segregated.

SERT MURALS ADORN NEW COUNCIL ROOM OF LEAGUE OF NATIONS

Wide World Photos

A



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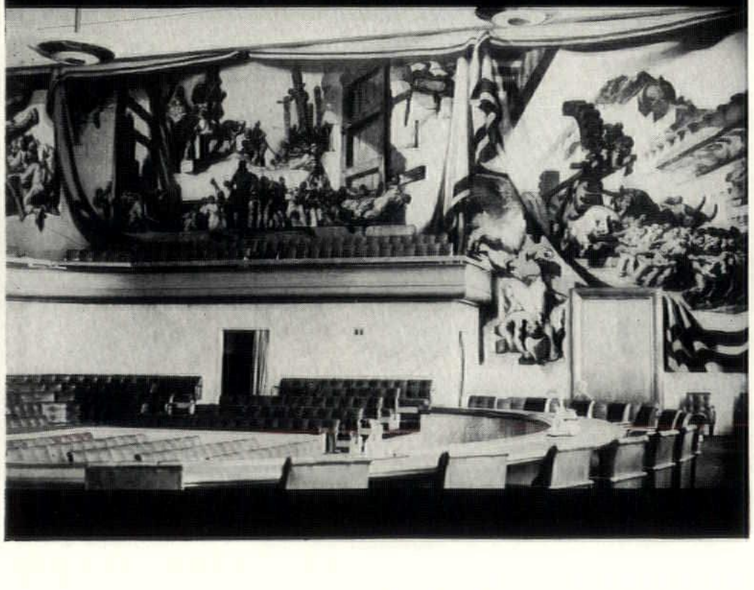

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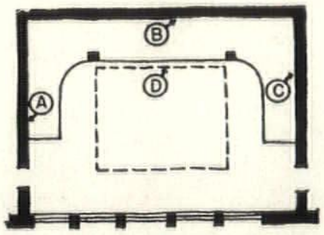
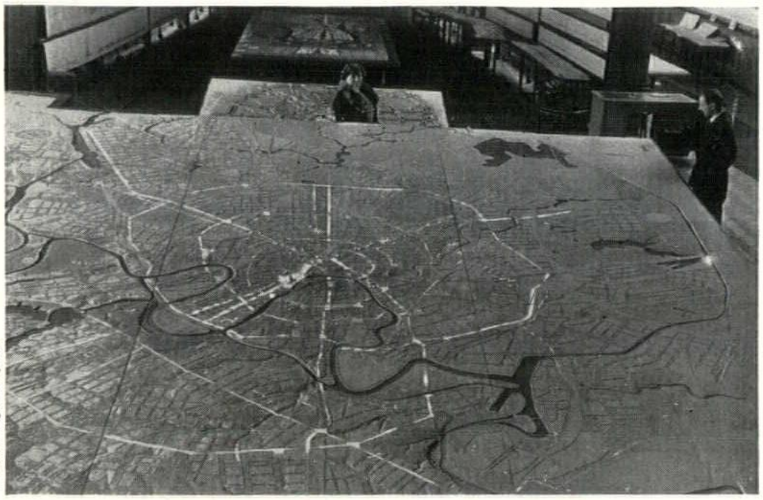


Recently unveiled in the Council Room of the Palace of the League of Nations in Geneva are the murals of the Spanish artist, José Sert. Employing a typically Sertian technique, heroic in scale and subject matter, the panels are executed in monochrome. Covering three walls and the ceiling of the Council Chamber, the panels portray the not-yet-realized liberation of the human race: exhausted by war, humanity is shown throwing off the chains of prejudice and hate to win peace and freedom at last.

After a decade of erratic activity, the Palace of the League of Nations is now nearing completion on a hill overlooking Geneva. The selection of architects caused a storm of discussion and the design was finally awarded to a group of five architects, of whom Le Corbusier and Jeanneret were at first members. Called "a cocktail of a project" because of its eclectic design, the building has had a colorful history. In 1934 construction stopped altogether due to a shortage of funds—the League members failed to pay up—and the weekly *Beaux Arts Journal* found that "budget overrun, money out . . . the artists to whom the States have awarded commissions are asking themselves if they are ever going to embellish a structure over which there has been so much discussion." Work was resumed, however, and the artists—including Sert—have practically completed the building.

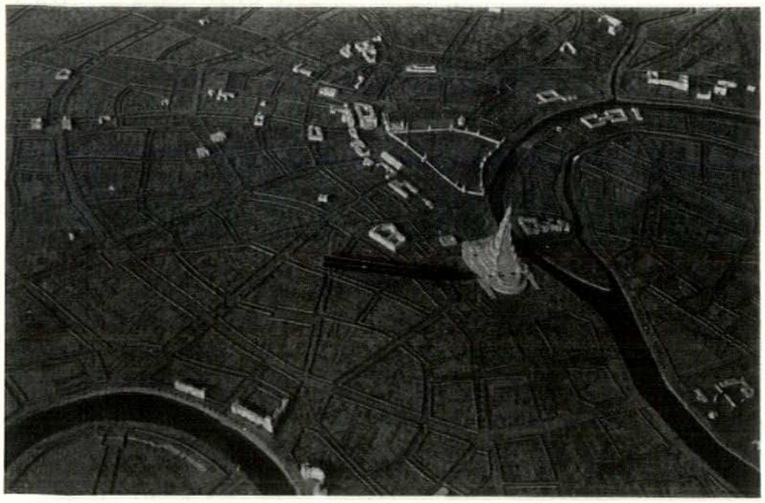
In his middle sixties, José Maria Sert is one of the world's most successful muralists. His list of commissions in Europe is impressive, including murals for the Royal Palace and the Palace and Chapel of the Duke of Alba in Madrid (both of which were destroyed in last month's air raids), the Municipal Building in Barcelona, and many large residences in London and Paris. In this country he is known for his "Marriage of Figaro" in the new Waldorf-Astoria and for his Rockefeller Center murals, of which these League murals are highly reminiscent.

D

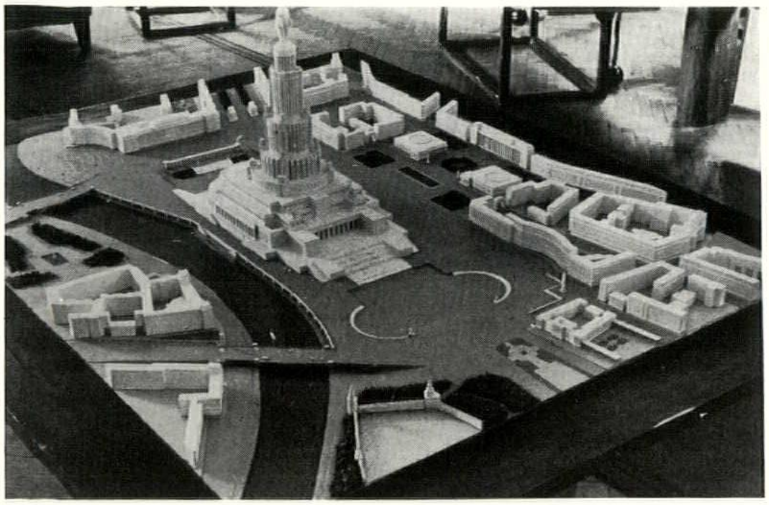


Photos by Sovfoto

A general view of the model of greater Moscow, with the expanded radial-circular boulevard system lighted up.



A detail of the city's heart showing the ancient Kremlin and new Palace of the Soviets. The fountain pen gives some idea of the scale of the model.



A large-scale model of the Palace of the Soviets now under construction, with various governmental buildings around it and a corner of the Kremlin at the extreme bottom.

MOSCOW PLANS FOR THE FUTURE

Ancient Czarist city rebuilds on scientific lines

The Moscow Planning Commission in 1931 was faced with two concurrent problems—(1) the immediate expansion of municipal services and enterprises to take care of one of the most rapidly growing cities in the world and (2) the integration of these services and enterprises with a long-range plan which, at that time, had not yet been evolved. It was only after a long period of discussion that the basic principles of reconstruction were determined. In its decision of July 10, 1935, the Council of People's Commisars said that the historic radial-circular plan should be retained and expanded; that industry within the city should be definitely limited to avoid concentration; that an ultimate maximum of 5,000,000 population should be provided for in the plans. (Present population, 3,600,000.)

• Upon this basis, a ten-year plan has been evolved. The incorporated area of the city has been expanded from 2,850,000 to 6,000,000 acres—mostly to the southwest, where the country is high and rolling. Beyond the city limits an immense circular belt of forest and park land is being developed. Using the existing plan, a completely integrated system of arterial highways—both radial and concentric—is being developed. Construction of all streets includes an underground system of utilities—gas, electricity, water, heat and sewerage—designed to accommodate the planned maximum population.

• Intimately connected with the development of the street pattern was that of parks and waterways. The boulevards which radiate in all directions from the city's heart are also parkways which, broadening as they approach the city limits, directly link the peripheral parks to the city proper. The margins of Moscow River and the numerous canals and lakes are also being developed as parkways upon which a great deal of the city's new housing will front.

• The housing problem played a very important part in the formation of the city plan. Although in the past 5 years some 20 million square feet of housing has been constructed, an enormous shortage—qualitative as well as quantitative—remains. Thus it is estimated that 165 million square feet of living space will be added to the city's housing accommodations in the next 10 years. This resulted in the conversion of many small residential blocks into large tracts suitable for large-scale housing developments. Provisions for schools, theaters, cinemas, shops, public and office buildings were planned not only on a city-wide, but also on a community basis.

• Aside from purely technical questions there was much idealogical discussion as to what degree of mobility the urban population would develop. The finished transportation plans provide for perhaps the highest degree of mobility on the part of the population of any city in the world. The subway system, street cars, trolley busses and motor busses will ultimately form a complex system with the capacity of 4 billion rides per year.

Globe Photo

NEW HOME FOR TOMMY ATKINS

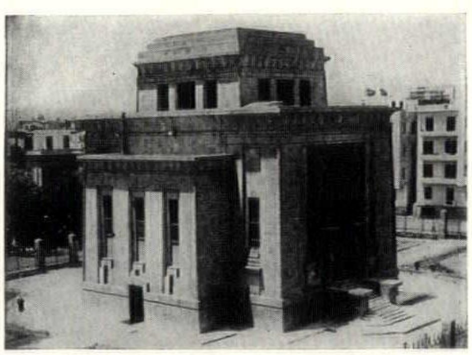
British soldiers pose with household goods as they move into modern flats built for them in London. Christened "Jubilee Buildings" for last year's celebration, this housing for "the married men in His Majesty's forces" includes all modern conveniences.

VEGLIANTE PRIZE GIVEN

Harry Lucht, Bergen County (N. J.) architect, was last month awarded the Vegliante Prize award of the Architects League of Northern New Jersey. The award, made possible by the late Anton L. Vegliante, is given annually to a League member "who distinguishes himself in his work during the preceding year."

"HOUSE BEAUTIFUL" AWARDS

The board of judges of the annual "House Beautiful" competition last month awarded Perry M. Duncan, New York architect, first prize of $500 for the best 6-to-9-room house built east of the Mississippi. Second prize of $300 went to Hunter McDonnell, New York. Both prize-winning houses were in the New York metropolitan area.



Globe Photo

NEW TOMB FOR RECENT PHARAOH

Soon to be dedicated by the Egyptians with holidays and celebrations is this Tomb for the Pasha Zaghoul. Showing traces of the traditional Egyptian style—battered walls, lotus ornament, etc.—the structure is located in the heart of modern Cairo.

"OLD IRONSIDES" IS AIR CONDITIONED NOW

As part of the precautions now being taken to preserve the gun deck and berth deck of the U. S. Frigate "Constitution," air conditioning has just been installed, to prevent the shrinking and checking of the timbers of those two decks. Many of the original timbers used in "Old Ironsides" deteriorated, thus necessitating their renewal. Search for the desired replacement wood of proper quality and seasoning required many years. (The yellow pine was originally obtained in South Carolina and Georgia; Massachusetts and Maine provided the white oak.) During the winter the gun and berth decks are heated for the comfort of the thousands of visitors to this oldest of U. S. Navy ships. Installation of a simple heating system would reduce the air's relative humidity and therefore tend to dry out excessively the timbers in this old ship and result in abnormal shrinkage and checkage.

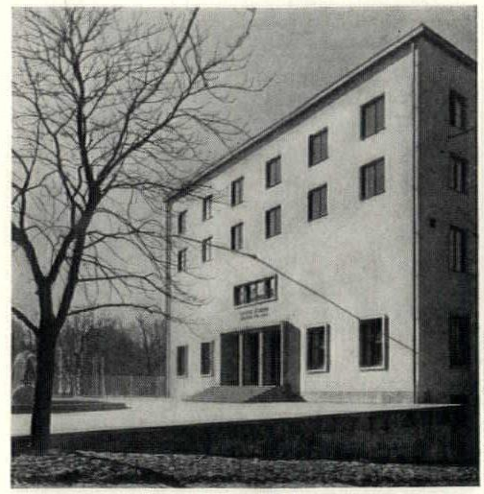
The new system, operated for the first time on Armistice Day, will correct this condition.

CBS PLANS NEW HOLLYWOOD STATION

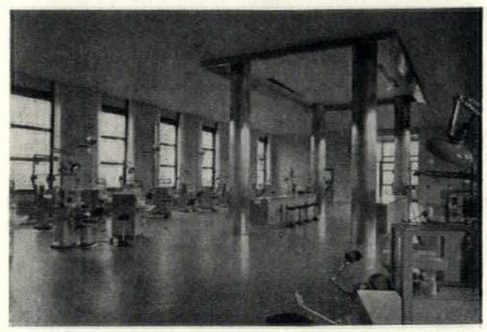
At an estimated cost of $1,000,000 Columbia Broadcasting System will next year begin the erection of the country's most modern broadcasting center, in Hollywood, California. The new broadcasting center, which will occupy an entire block in the central district, will house the studios and offices of KNX, recently-acquired CBS outlet in Hollywood. Plans also provide additional studios, offices, and large auditoriums for Columbia's nation-wide and Pacific Coast network activities. An undetermined portion of the new premises will be given over to experimental television studios.

William Lescaze, designer of the interiors of three CBS Manhattan playhouses, is in charge of the "creative side" of the project. A novel use of new structural materials and a unique arrangement of space itself are promised. "Interior design will incorporate all that is new and tested in methods of program production, acoustical perfection, and engineering technique." Present schedules set October 1937 as the date for occupancy.

AMERICAN CLINIC FOR SWEDISH TEETH



Architect's Journal



New Eastman Dental Clinic for Children.

Before his death, George Eastman, of Kodak fame, gave $1,000,000 to the city of Stockholm for a public dental clinic, stipulating only that it provide as nearly as possible the services offered by the Rochester (N. Y.) Dental Dispensary. The clinic, while handling all the more complicated cases of the school clinics, also includes a training hospital for dental nurses and post-graduate work for dental students. The Stockholm institution is similar to others founded by Eastman in London, Rome, Brussels and Paris.

CALENDAR OF EXHIBITIONS AND EVENTS

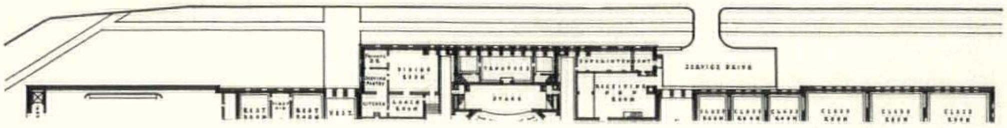
- **December 1-19**—Exhibition of frescoes and mural designs by Virginia H. Wood, 730 Fifth Avenue, New York City.
- **December 4**—Eighteenth Annual Beaux-Arts Ball, Hotel Astor, New York City.
- **December 4, 5**—Annual Meeting, National Association Housing Officials, Philadelphia, Pa.
- **December 15**—"Plastics in Aviation" Exhibition, Metals and Plastics Bureau, International Building, Rockefeller Center, New York City.

1937

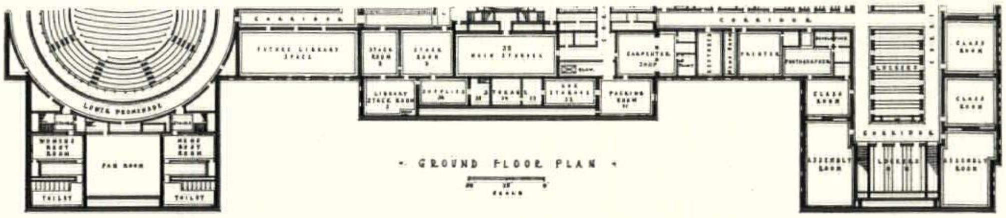
- **January 18-20**—First national Concrete Contractors Conference, Hotel Sherman, Chicago, Illinois.
- **March 15-19**—Exposition and Convention, National Oil Burner and Air Conditioning Association, Commercial Museum, Philadelphia, Pa.

Photograph by M. Zimmerman

FLOATING RAILWAY



MUSEUM PLANNING



by PHILIP N. YOUTZ, A.I.A.
President of the American Federation of Arts

Although museum buildings in America represent the very generous investment of public and private funds, there are few, if any, of them which stand out as models of efficient architectural planning. Most museums are seriously handicapped in the conduct of their program by the architecture of the building which houses them, in spite of the fact that money has not been stinted in the design and erection of the building.

The responsibility for the lack of functional design in the museum field must be shared by museum staff, architects, and trustees alike. Too often the architect sees a museum commission as an opportunity to erect an elaborate but useless monument. Museum directors and their staffs have not taken time in many cases to formulate carefully the needs of their institutions, or if they have formulated them they have overstressed immediate needs and not thought of the growing needs of the future. Frequently, boards of trustees have erected their museums before engaging a director and staff so that they have had little or no professional advice on the character of the building.

If these three groups could be brought together—the trustees, the architect, and the museum staff—and given the opportunity of thoroughly analyzing the needs of a modern museum, we should probably see a new type of museum design unlike any that has been tried in this country or, indeed, in Europe. Perhaps architects are in the best position to lead the way toward this goal by insisting upon an exhaustive preliminary study of their problem in conference with the trustees of the future institution and members of the museum field.

In the course of many years of conference with trustees of museums throughout the country, with colleagues in the museum field and colleagues in the architectural field, the writer has gradually developed certain principles and standards of requirement which seem to apply to most institutions. This

CHARLES E. WILBOUR LIBRARY, BROOKLYN MUSEUM WILLIAM LESCAZE, ARCHITECT

paper attempts to summarize these very briefly with full acknowledgment that the best of these suggestions have been made by others.

1. A museum should be located as near the center of the population which it serves as possible. While it is not necessary to place a museum on the most expensive business property, it should be adjacent to the municipal center or located on a main arterial highway where it will be passed and seen by a maximum number of people. Particularly important is it that the site shall be served by adequate means of transportation.

2. Since a museum building is usually monumental in character its location should be studied in connection with the city plan, so that it will become a civic asset. This is particularly appropriate because a museum is open to all of the public. The prestige of a city is greatly increased by a well-planned municipal center including the city hall, courthouse, library, public auditorium, and museum.

3. There is no one "best" style for museums, but the style should be such that it does not hamper the active functions of the building. Style is a matter that can well be left to the architect to determine because he is the most competent student of architectural design.

4. A museum should have one main entrance and this should be at ground level and of sufficient size to accommodate safely the maximum occupancy of the museum building. Monumental flights of steps are not only physical and psychological barriers which the museum visitor must overcome, but they are extremely dangerous in case of wind, rain, ice, and snow, or in case of a sudden panic where several hundred visitors attempt to leave the building all at the same time.

It is impractical for a museum to have more than one entrance. Several entrances greatly complicate the guarding of the collections, make it difficult to guide and direct the public through the galleries, and require duplication of checkrooms, information desks, stairs, elevators, and directories.

5. In planning a museum, as in planning any other important building, the main rooms should be located next to the entrance and on the ground floor. The public can thus enter them with a minimum of walking and effort. Less important rooms may be placed on upper floors.

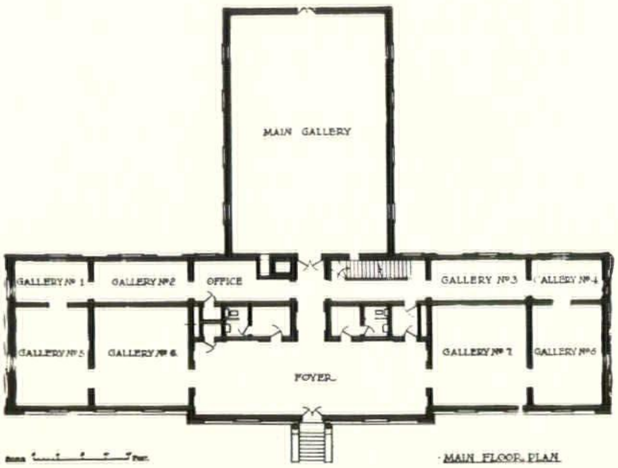
CARD INDEX FILES, READING ROOM OF THE CHARLES E. WILBOUR LIBRARY, BROOKLYN MUSEUM. The library, much used by students, was the first part of the museum plan to be modernized.

The old idea that the main galleries of museums should be on an upper floor so as to receive top light is no longer valid. The lighting engineers have developed such excellent methods of artificial lighting at moderate cost, and the architect has devised such reliable natural light for lower floors by the use of continuous clerestory light admitted through diffusing glass, that it is no longer necessary to do violence to the plan and make the most important rooms the most remote.

6. In planning the museum the architect should devote primary attention to the problem of circulation. The visitor should be led into the museum and through it naturally and easily without feeling that he is in a maze and without being interrupted by architectural features. There should be continuous controlled circulation, at least through each main division of the museum, so that the director and his staff may arrange the material in each of these divisions to be seen in an orderly and intelligent sequence.

In a small museum it is well to have all the galleries arranged in a continuous sequence so that the

MUSEUM PLANNING



MINT MUSEUM, CHARLOTTE, N. C. The old mint at Charlotte was demolished and reconstructed on a new site as a Mint Art Center and Museum. The plan has admirable circulation. Visitors naturally turn to the right and are led consecutively through all the galleries and back to the entrance hall. The plan might be improved if all doors but the central one were eliminated at the entrance hall so that the wall in front of the visitor as he enters may be used for the exhibition of objects.

museum visitor is unconsciously led from one to the other in a predetermined and natural order. The museum staff is thus able to present collections in an effective, educational manner. In a large museum with many cultural divisions this controlled circulation can best be applied to the different main divisions, for few visitors will want to see more than one department at a time.

7. The functions of the museum can be conveniently divided into several groups:

a. The permanent collections which in a large institution may be divided into a number of main divisions; these should occupy the main floors of the museum.

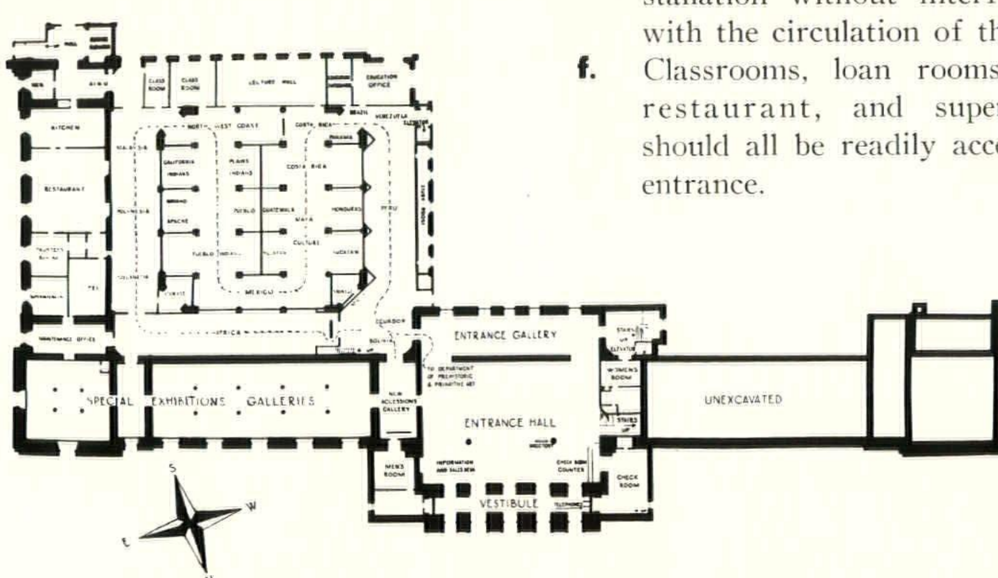
b. The museum offices and preparation rooms. These may advantageously be located on an upper floor or in a remote wing for they are used by few visitors.

c. The maintenance rooms, such as the receiving room, loan storage room, carpenter shop, machine shop, printing shop, modelers' studio, locker rooms, etc. These can to advantage be put in a light basement or in a remote wing.

d. The storerooms. Each department of the museum should have a separate fireproof, dustproof, damp proof, air conditioned storeroom. These can be located in a dry basement or in a remote wing; they do not require outside light; they should be accessible to the receiving room and a service elevator connecting with all floors of the museum.

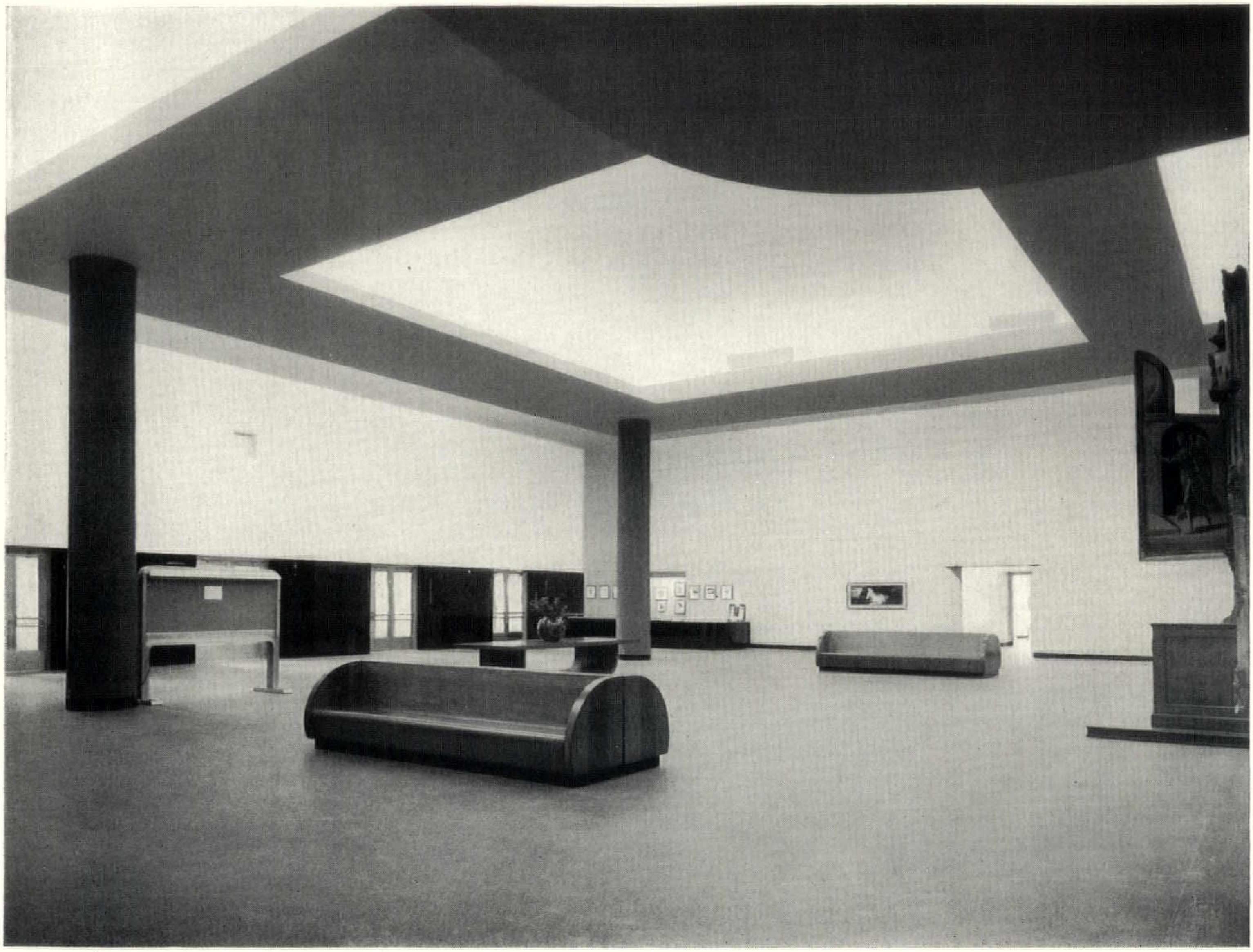
e. Special exhibition gallery for temporary exhibitions. This should be located adjacent to the entrance on the main floor and should be so planned that it may be shut off during installation without interfering in any way with the circulation of the building.

f. Classrooms, loan rooms, education office, restaurant, and superintendent's office, should all be readily accessible to the main entrance.



PLAN OF MAIN FLOOR (REMODELED), BROOKLYN MUSEUM. The plan shows such features as the use of a blank wall immediately in front of the visitor as he enters and where objects of art may be displayed. A series of special exhibition halls adjoins the entrance hall which may be closed off during reinstallation without interfering with the main circulation. There is a concentration of "most used rooms," such as education, loan office, classrooms, restaurants, superintendent's office, on the first floor.

by PHILIP N. YOUTZ, A.I.A.



ENTRANCE HALL, BROOKLYN MUSEUM

8. The entrance hall of the museum serves the functions of orienting the public, of providing space for large groups, and gives the visitor his first impression of the institution. Therefore, the entrance hall should give direct access to the main galleries on the first floor, to the elevators and stairs communicating with the galleries on the upper floors, to the special exhibition gallery for temporary exhibitions, to the checkroom, toilets for both men and women, telephones, directory, and information desk.

In order to serve as a meeting place for large groups, the entrance hall must be of fairly generous size. Any one who has watched the operation of a museum will notice how crowded the entrance becomes when school or club groups of from forty to four hundred persons arrive at the same time.

In order to give the visitor an adequate first impression it is well to leave the wall immediately facing him as he enters entirely unobstructed by doors or stairs. It can then be used as a kind of stage on which notable objects may be installed which will be arresting to the visitor and give him an impression of the character of the institution as a whole. Doors can conveniently be placed in the corners of the hall, thus protecting the axis for objects.

9. Museum stairs should be centrally located in a fireproof stair tower adjacent to the entrance hall.

They should be purely functional in character. Monumental stairs are bad for they are dangerous to the users, they occupy valuable space, they are expensive, and they usurp the attention of the visitor which should be directed to the collections.

10. Museum elevators should be of generous dimensions so as to accommodate large groups. It is most convenient to take an entire class in one trip or, at least, in two. Slow-speed elevators are satisfactory in museums because they rarely have to serve more than five or six floors.

11. The interior of a museum should be devoid of architectural ornament or should have a minimum of architectural ornamentation. The function of the architectural interior of the museum is to serve as a background for objects, and any form of ornament is sure to detract from the visitor's attention and make it difficult to display the objects effectively. In the case of an art museum, any pronounced interior style is likely to be incongruously out of harmony with the major portion of the material shown. The architect must content himself with fine proportional surfaces and repress all desire to adorn the interior.

12. Such architectural features as rotundas, colonnades, monumental stairs, grand courts of honor, are the excess baggage of the Victorian era and have no place in a contemporary regime. They bewilder the visitor, compete with the collections for interest, are inappropriate backgrounds for installations, are extremely costly and interfere with circulation. The prestige of the museum rests on the quality and organization and installation of its collections, not on pretentious architectural features.

13. The main axes in every room in a museum should be reserved for the display of objects. Doors and service panels should be moved to the corners of the room. Walls should have no obstructions and a minimum number of breaks so as to facilitate the installation of objects.

14. The most convenient proportion for galleries is a comparatively narrow room of twenty to twenty-five feet in width with a considerably greater length. Large square galleries and courts are difficult to install and are unintelligible to a visitor for he finds their multiplicity of objects confusing and is unable to follow any definite line of circulation.

15. All museum galleries should have one or more invisible metal moldings so that objects can be installed without marring the walls.

16. The most inexpensive wall treatment is hard plaster finish with colored pastel tones in oil or casein paint.

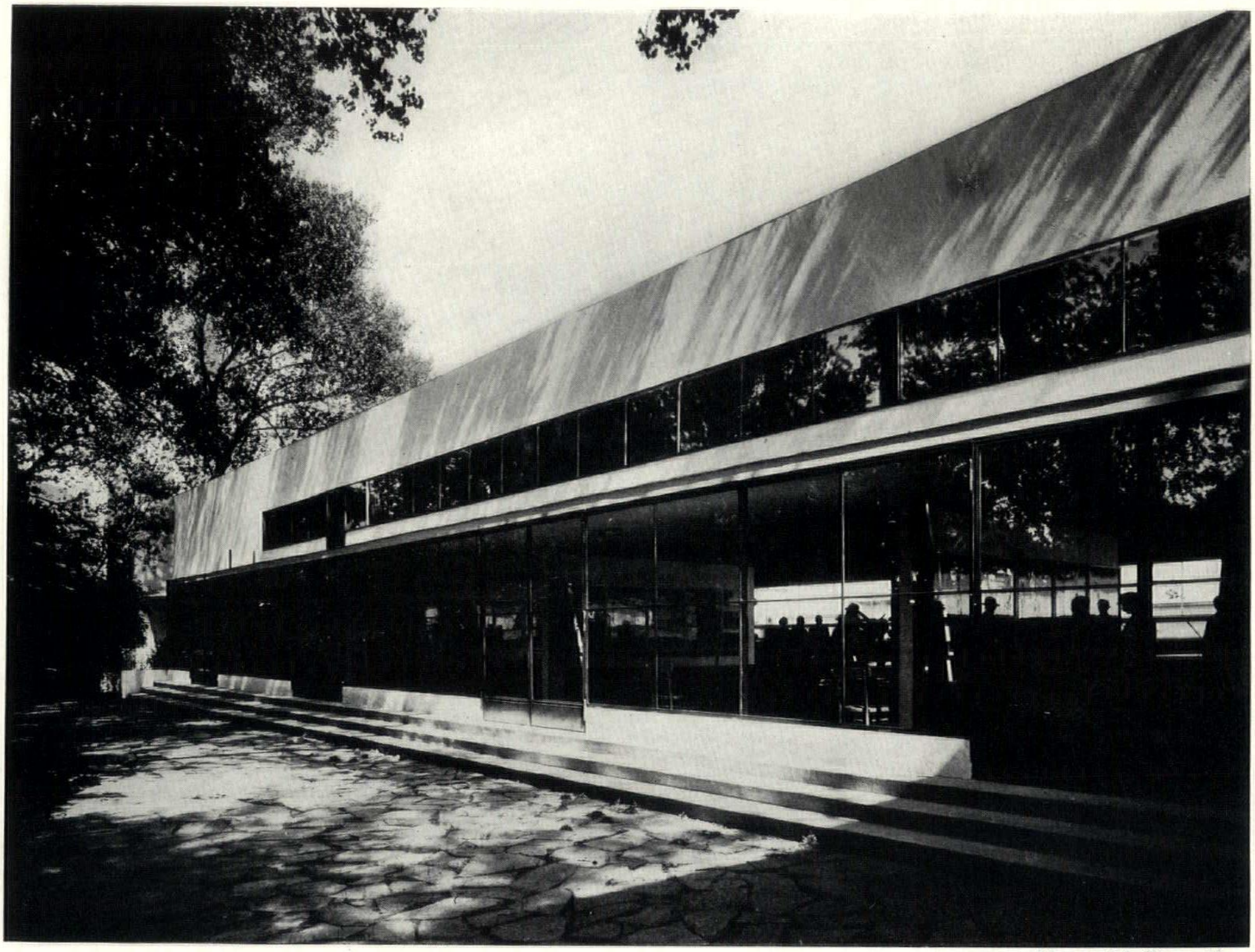
17. In decorating a museum the ceiling should be kept white for diffusing and reflecting lights, the walls light pastel tones so as to show off objects to advantage, and the floors slate gray so as to prevent reflection which is fatiguing to the eyes. Slate gray is better for floors than any other color for it harmonizes with any type of installation scheme. Dark floors give a gallery repose and make a suitable base for installing objects.

18. All artificial lighting in a museum should be indirect so as to protect the visitor's eyes and prevent reflection in the glass of the exhibition cases.

19. There should be no built-in installation for such built-in features destroy the flexibility of a living museum. Where everything is movable in a museum it is possible to keep it up to date.

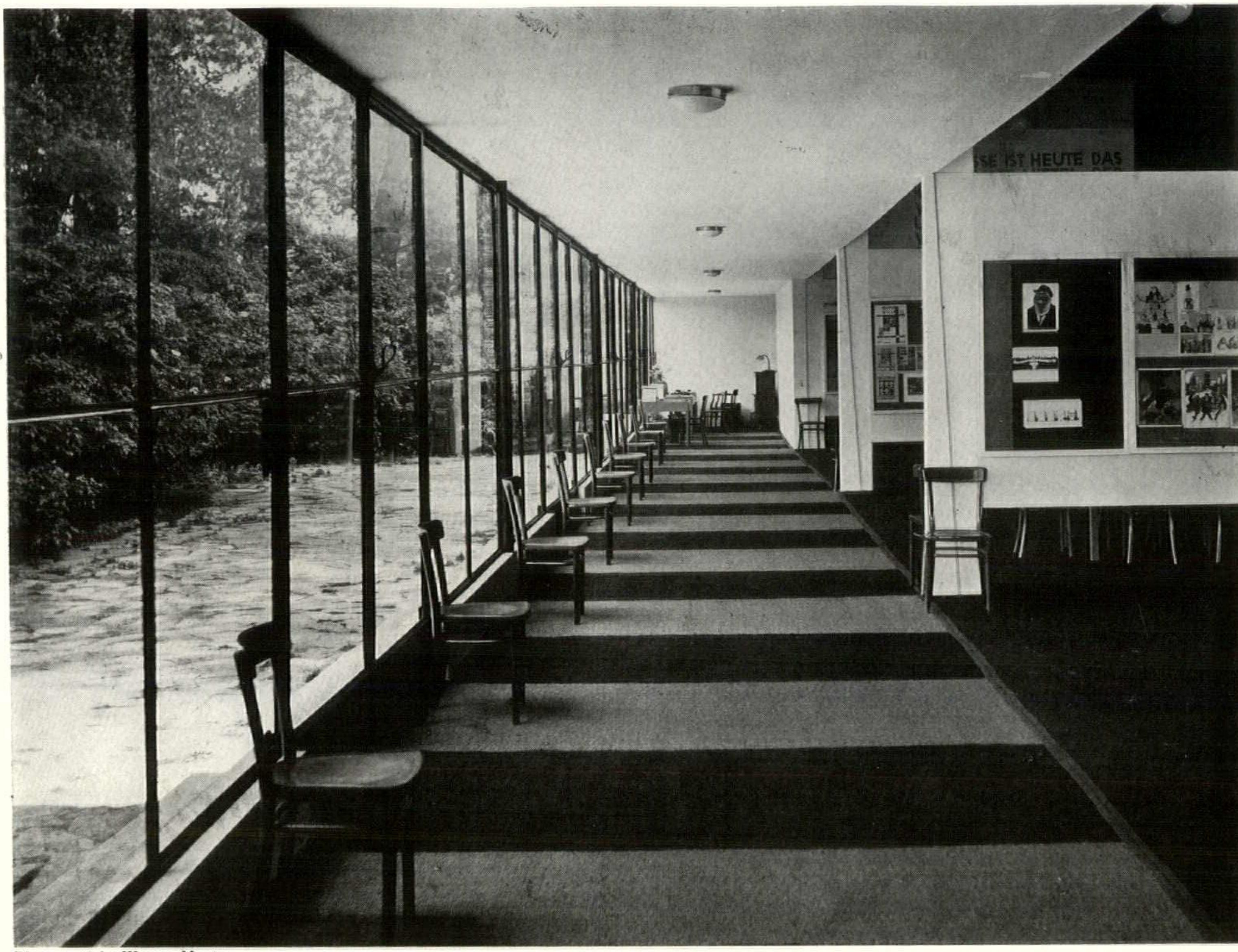
20. The museum should be, as far as possible, air conditioned. As the walls must be kept free for installation the best way to install air conditioning is to have an exhaust grille, perhaps two inches wide, just above the baseboard and a supply grille in or near the ceiling. These can be arranged as continuous bands so that they will be practically invisible. The supply grille should always be on or near the ceiling so as to avoid damaging objects.

21. The average museum floor should be designed to carry a load of at least a hundred and fifty pounds per square foot although many special museums will require a floor load considerably heavier than this.



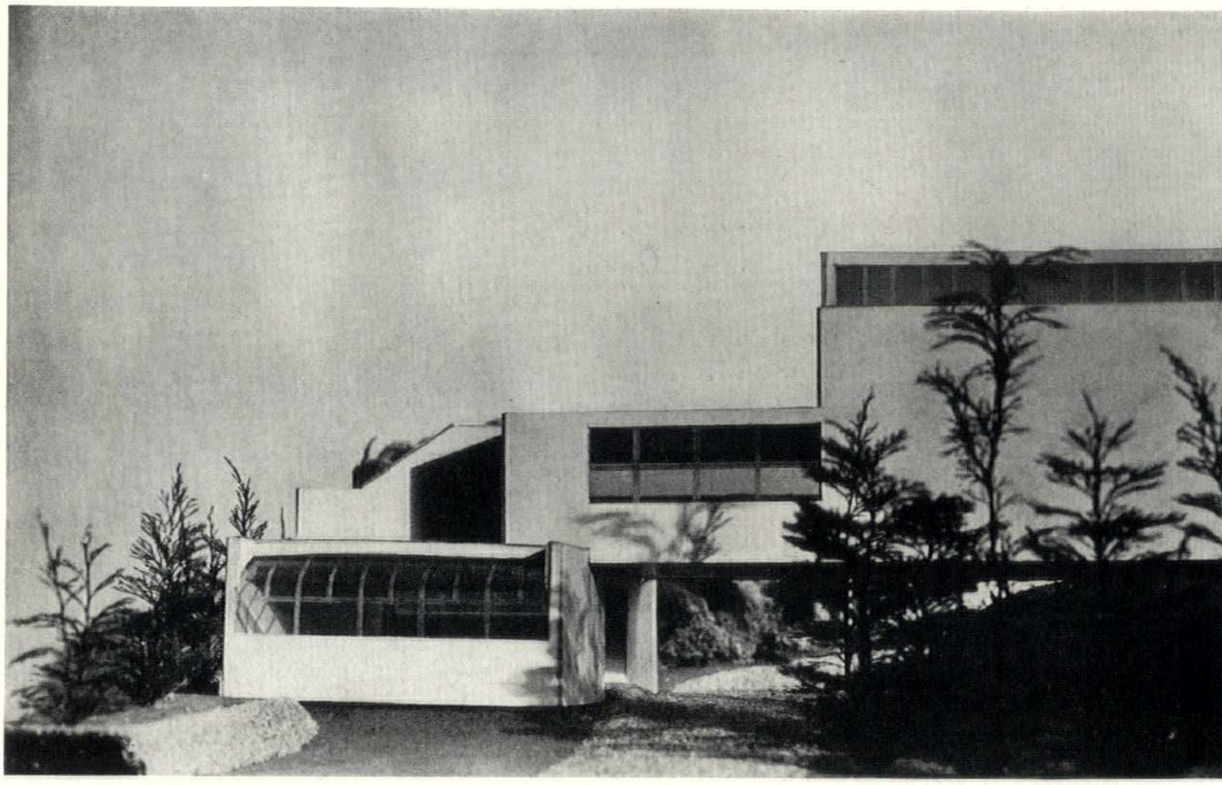
Photograph by Werner Mantz

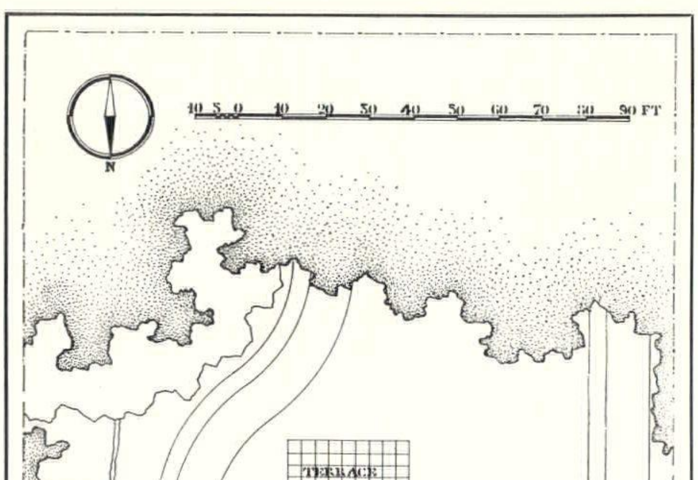
EXHIBITION BUILDING FOR A NEWSPAPER, Cologne, Germany. Hans Schumacher, Architect.



Photograph by Werner Mantz

EXHIBITION ALCOVES lighted from side gallery, facing on garden background. Hans Schumacher, Architect.





A COMMUNITY EXHIBITION BUILDING PROPOSED FOR DARIEN, CONNECTICUT. By A. LAWRENCE KOCHER and ALBERT FREY.

An art club with interests in painting, sculpture, music and drama required a permanent building with provisions for an exhibition hall and auditorium combined. Studios and other rooms were required.

SITE: The ground slopes abruptly to an upper level, fifteen feet above the highway. An old roadbed near the eastern end of the plot is about eight feet lower than the plateau level chosen for the building site. There are several large trees scattered toward the front. The natural difference in level made excavation unnecessary and permitted entrance to the building by a passageway. Each room has windows suited to required light.

PLAN: The rooms shown are at the upper level. The exhibition hall and auditorium are combined. The large stage serves dramatics and is intended as an art studio. The terrace faces a wood to the south, forming an attractive space for outdoor exhibits.

Photos Berliner Bild-Bericht

EXHIBIT IN A CONFERENCE ROOM FOR A CORPORATION. WALTER GROPIUS, ARCHITECT.

EXHIBITION ROOM, PARIS.
WALTER GROPIUS, ARCHITECT.
Stairway designed by Walter Gropius; chairs on the left designed by Marcel Breuer; chair on right designed by Mies van der Rohe.

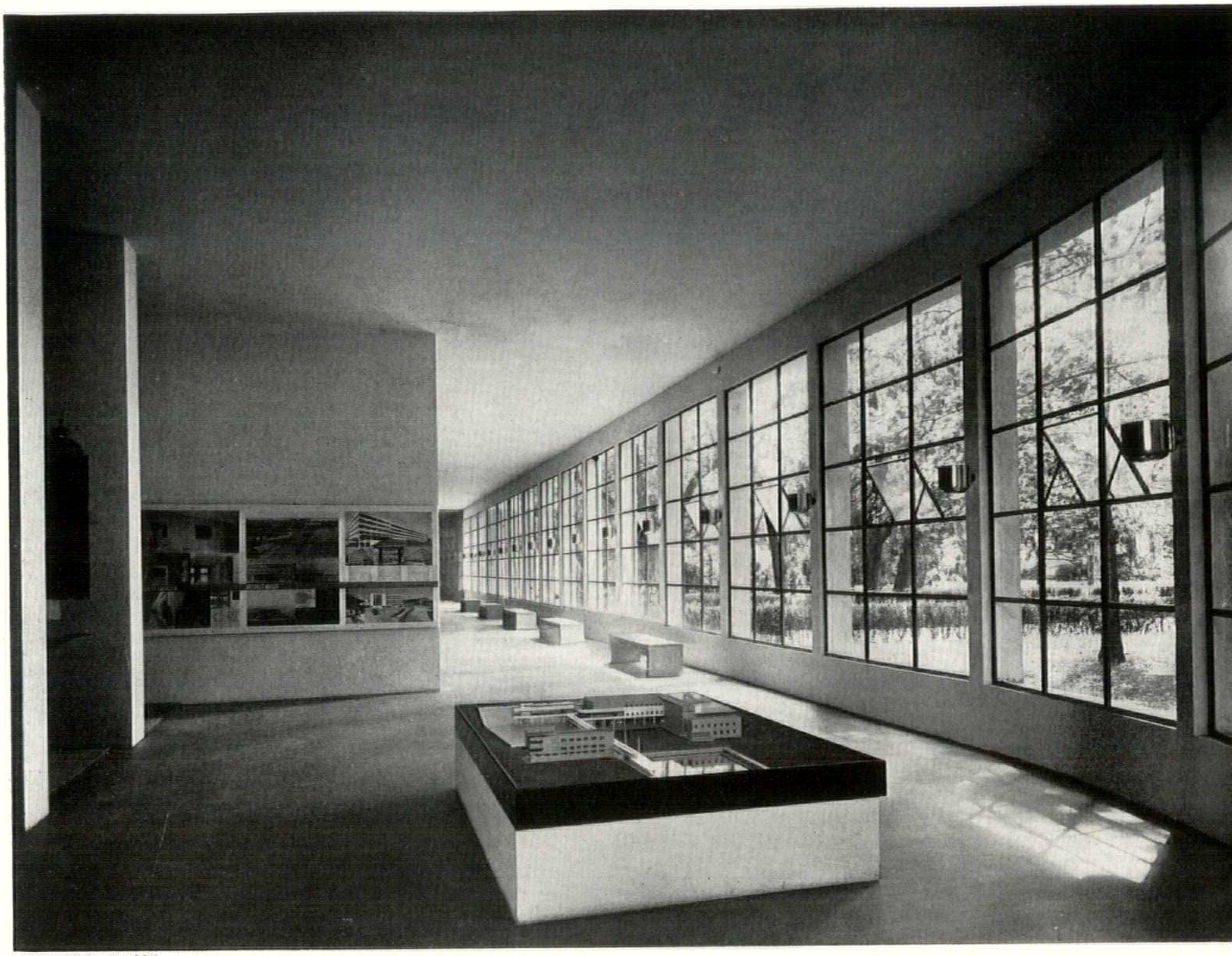
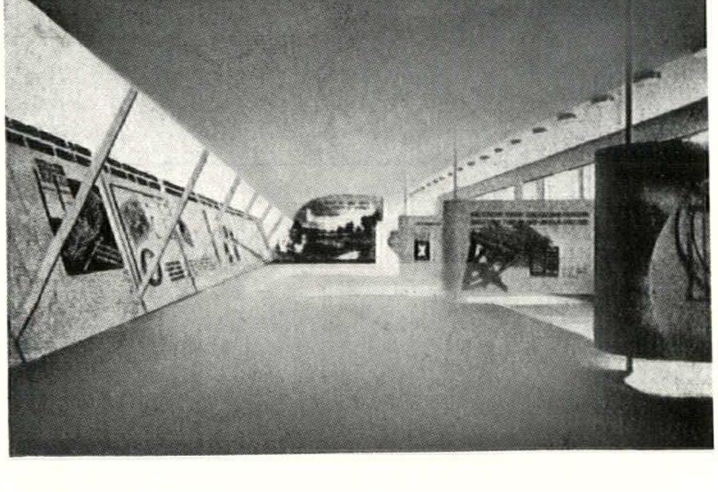


Photo Crimella-Milano

Photo Das Werk



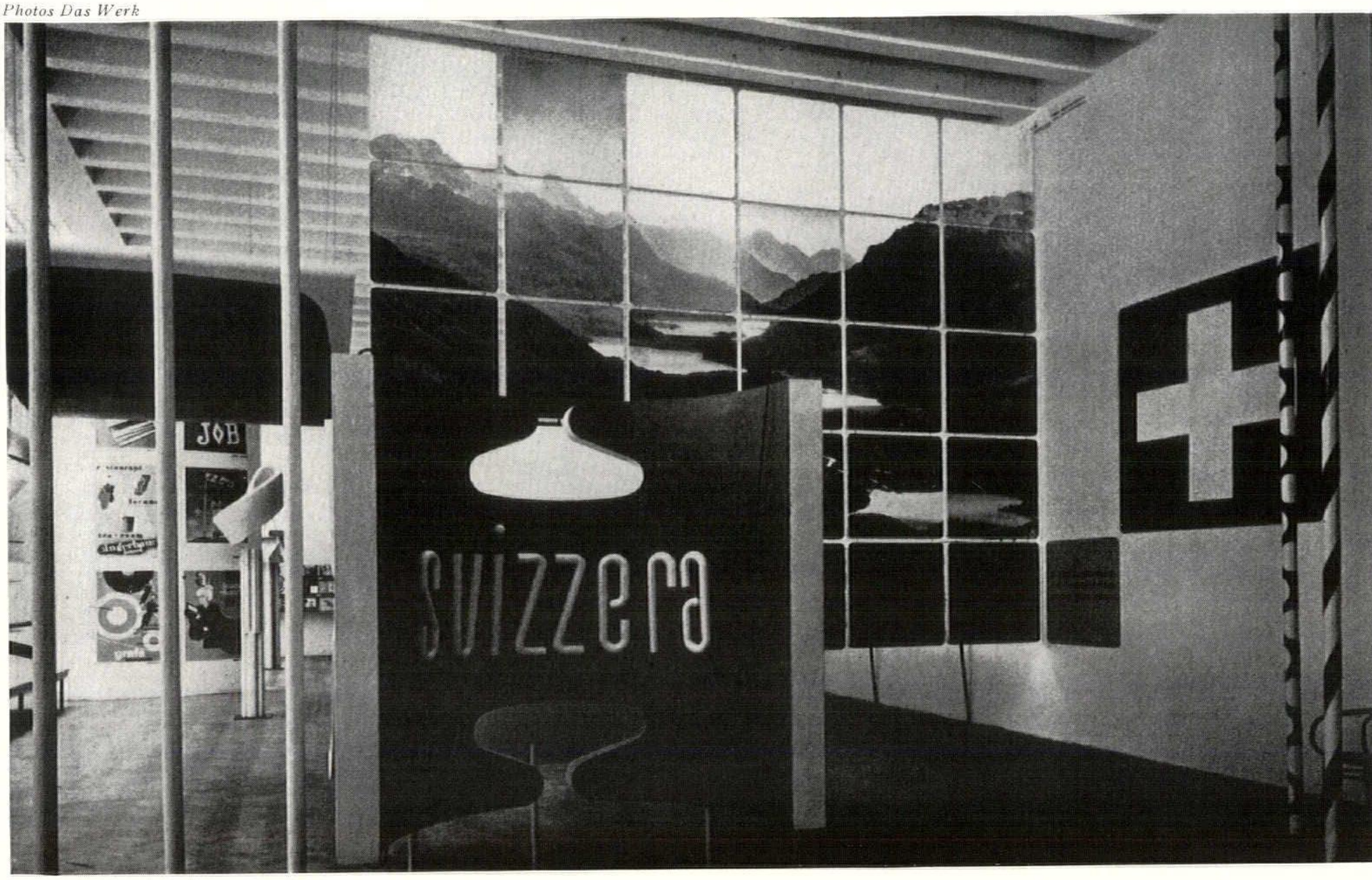
ABOVE: Gallery of Architecture, Milan Exhibition, Triennale, 1936. Agnoldomenico Pica, Architect. Satisfactory lighting from side. Models viewed from all angles.

LEFT: Display of architectural drawings and photographs, also community planning. A. Branchetti, A. Pasquali, Caesare Pea, Architects.

RIGHT: Exhibition Hall, Triennale, Milan; Swiss section by Max Bill. Showcase in foreground is violet in color; dots on back wall are blue-gray; sculptural forms are by Max Bill, Zurich.

Photo Das Werk

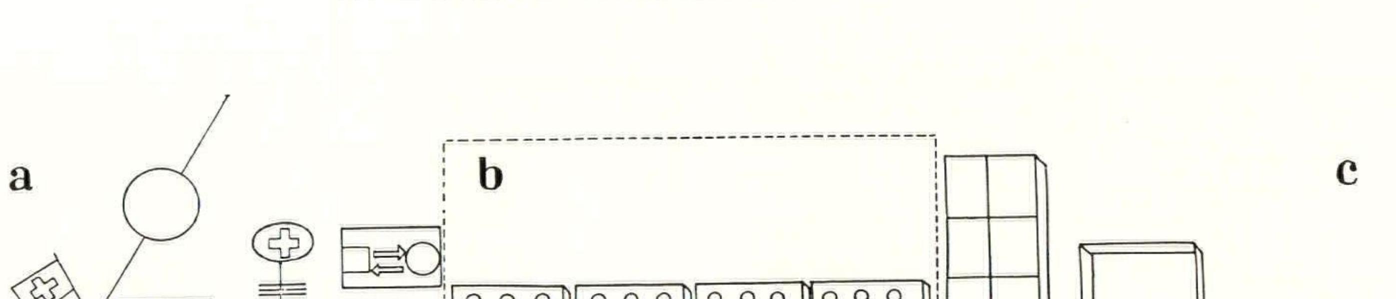
Photos Das Werk

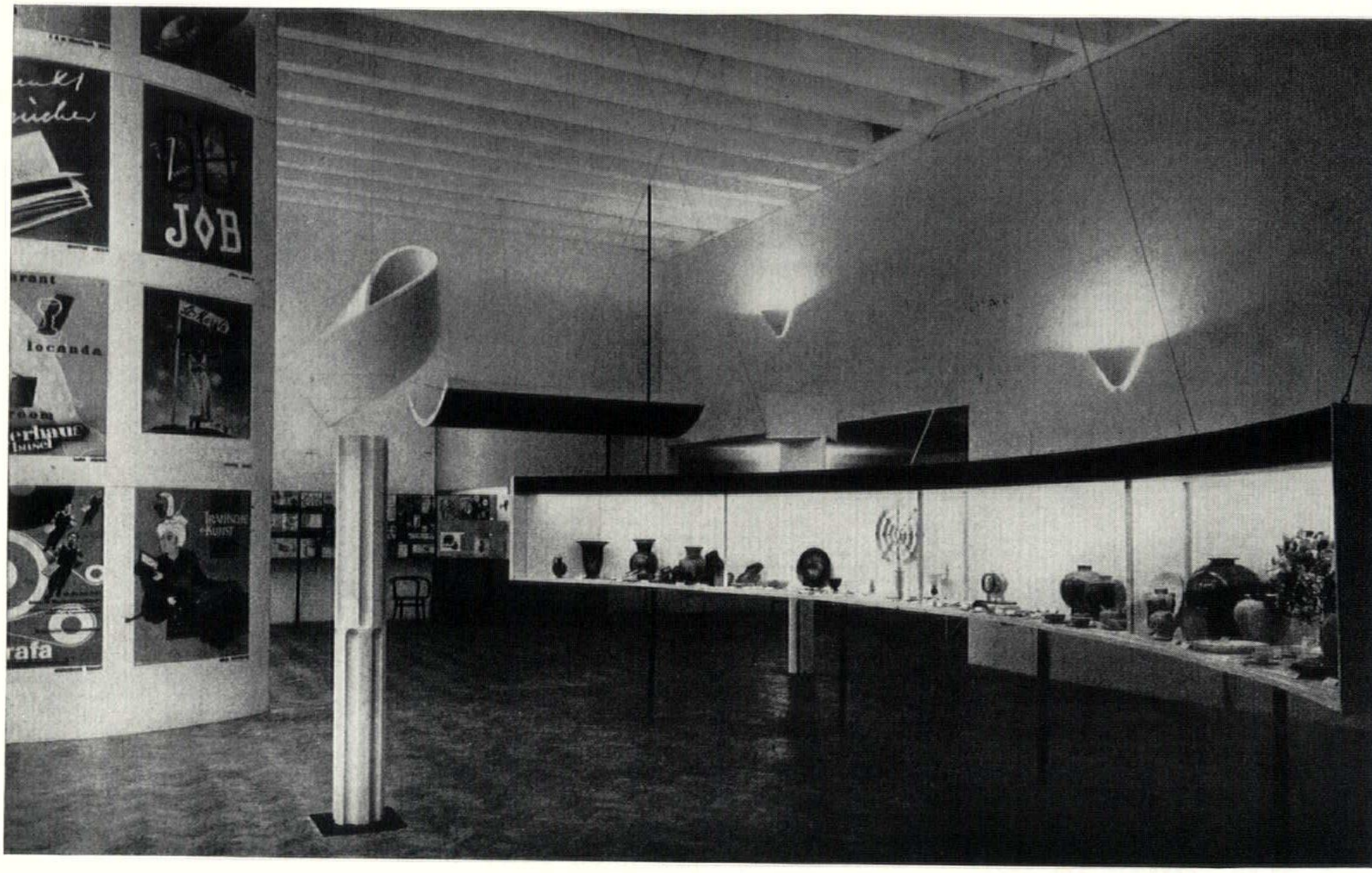


ABOVE: Entrance to a hall for display, Triennale, Milan, 1936. Designed by Max Bill.

BELOW: Standard exhibit cases: (a) Nationality symbolized by globe and flag. The display relates to overseas export. (b) Production display. The factories, as colored photographs, have a plastic effect through lenses in the viewing boxes. The lighted holes attract visitors. The picture is designated at the front of the box. (c) Phototower used to show products which are not easily exhibited, such as turbines, locomotives, mechanical looms, etc. Smaller cases are used for display of smaller objects.

OPPOSITE PAGE. UPPER: Exhibition room for the display of crafts. The background is clear white, lighted from top of case. Exhibits at back, center, are mounted on a black background. Posters at left are applied to a yellow background. LOWER: Plan of exhibition rooms for graphic arts "Grafa International Exhibit, Basel, 1936."

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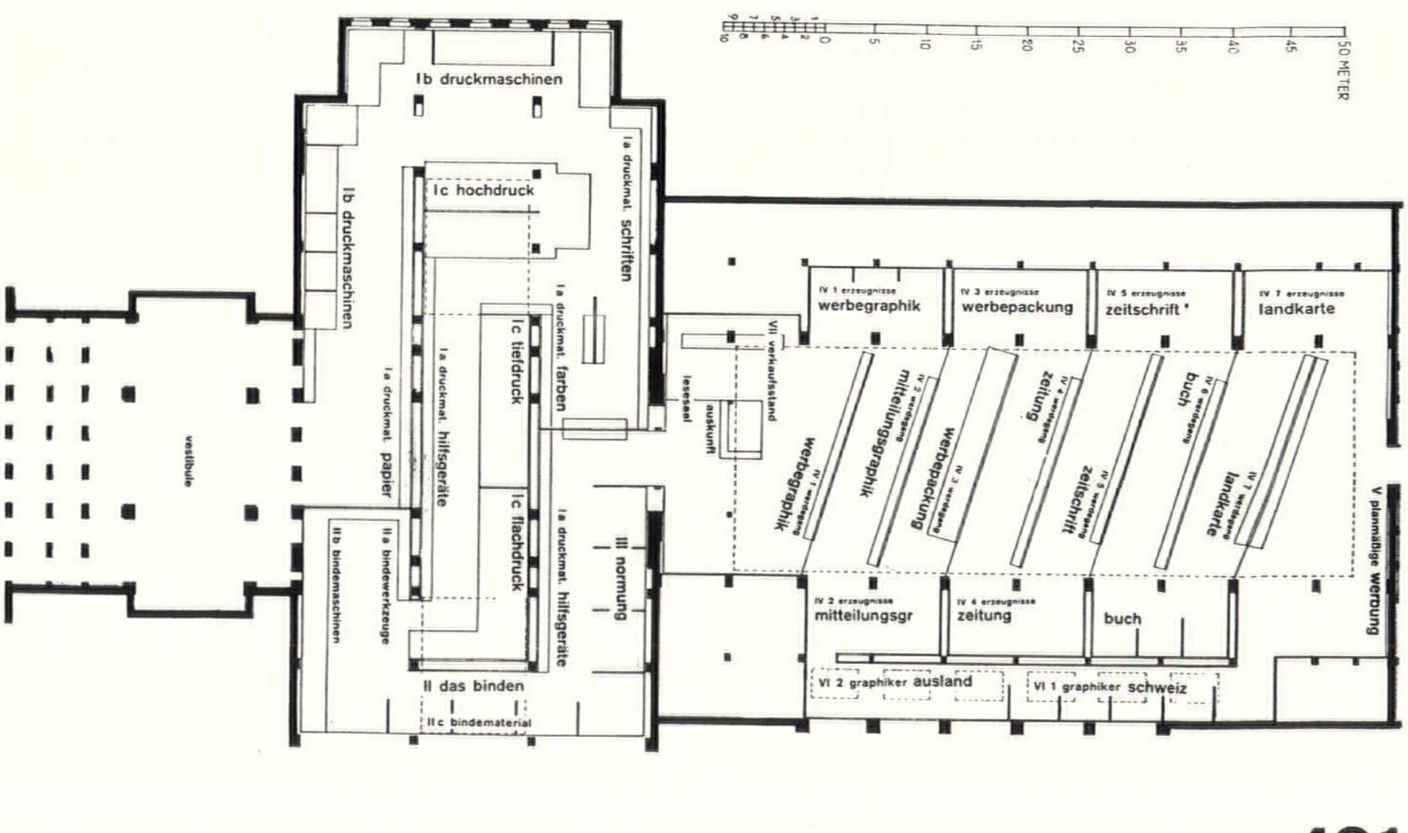
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II das binden
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IV 3 erzeugnisse werbepackung
IV 5 erzeugnisse zeitschrift
IV 7 erzeugnisse landkarte
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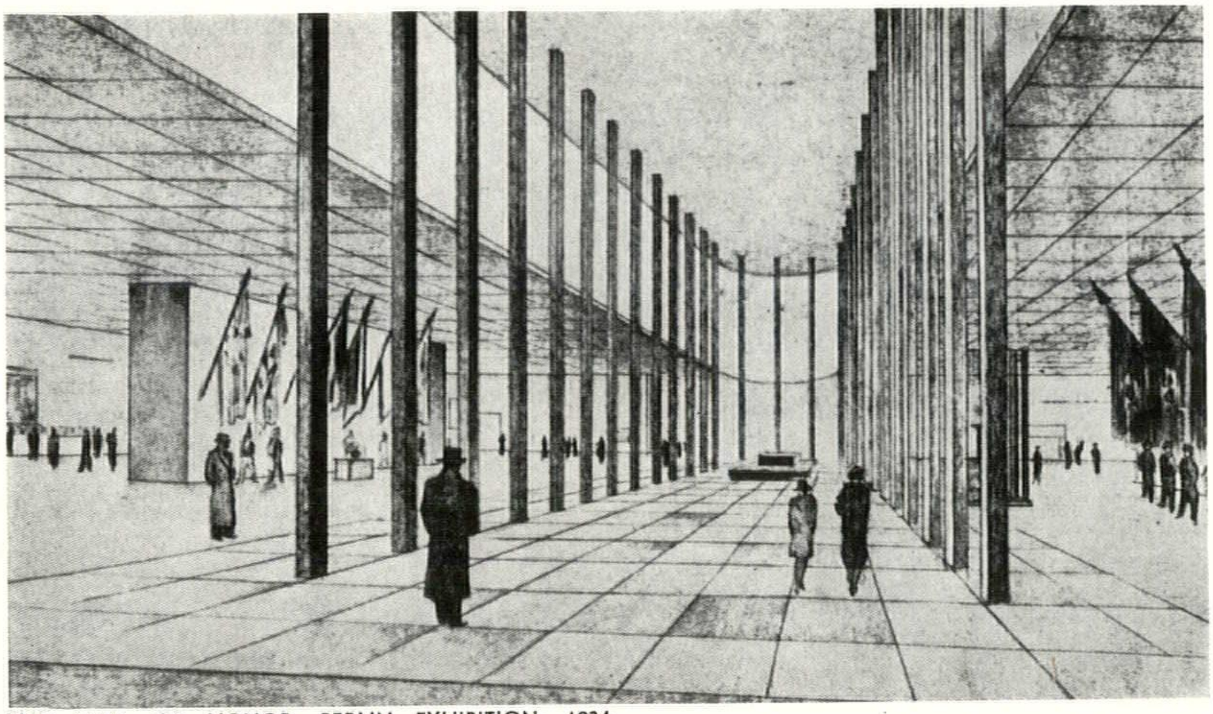
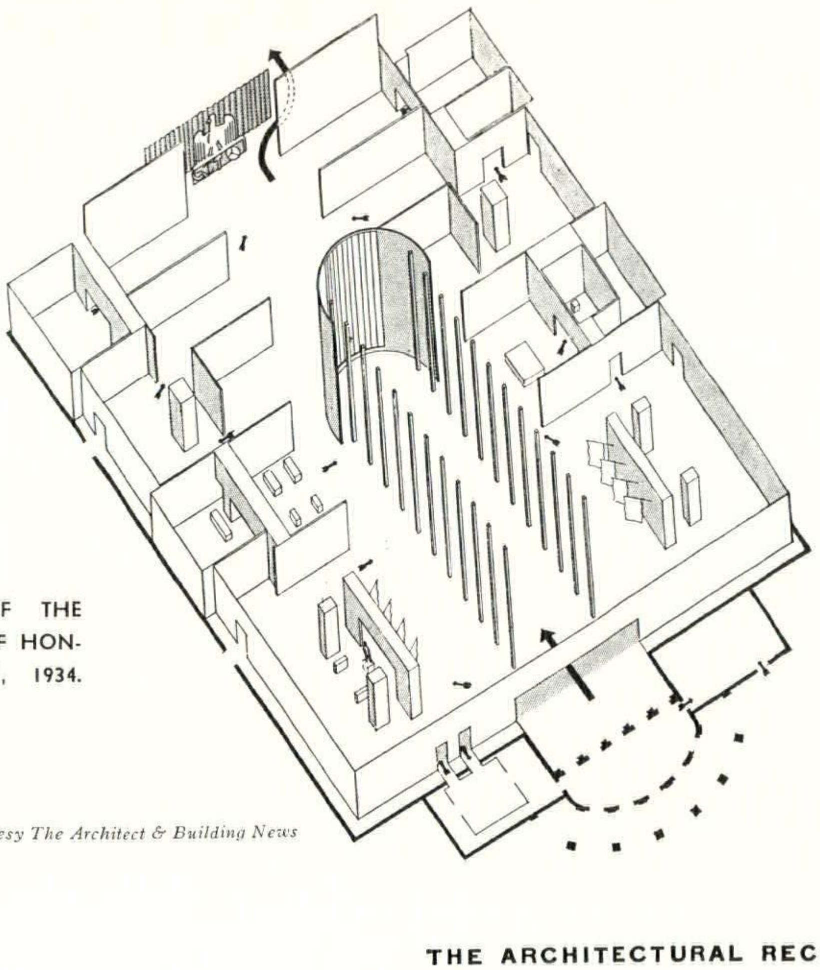


THE HALL OF HONOR, BERLIN EXHIBITION, 1934



SECTIONAL LAYOUT OF THE ENTRANCE AND HALL OF HONOR, BERLIN EXHIBITION, 1934.

Courtesy The Architect & Building News

PORTFOLIO

HOUSE OF S. M. SADI, NORTHPORT, LONG ISLAND. DESIGNED BY S. M. SADI.

HOUSE FOR MISS HAGUE, PASADENA, CALIFORNIA. VAN PELT AND LIND, ARCHITECTS.

HOUSE FOR H. J. ALLEY, BRENTWOOD HEIGHTS, LOS ANGELES. RALPH C. FLEWELLING, ARCHITECT.

WWJ BROADCASTING STATION, DETROIT, MICHIGAN. ALBERT KAHN, INC., ARCHITECTS AND ENGINEERS.

THE THIRD UNITARIAN CHURCH, CHICAGO, ILLINOIS. DESIGNED BY PAUL SCHWEIKHER, INC.

SUFFOLK DOWNS RACE TRACK, BOSTON, MASSACHUSETTS. MARK LINENTHAL, ENGINEER.

NEW DETROIT FEDERAL BUILDING, DETROIT, MICHIGAN. ROBERT O. DERRICK, INC., ARCHITECTS

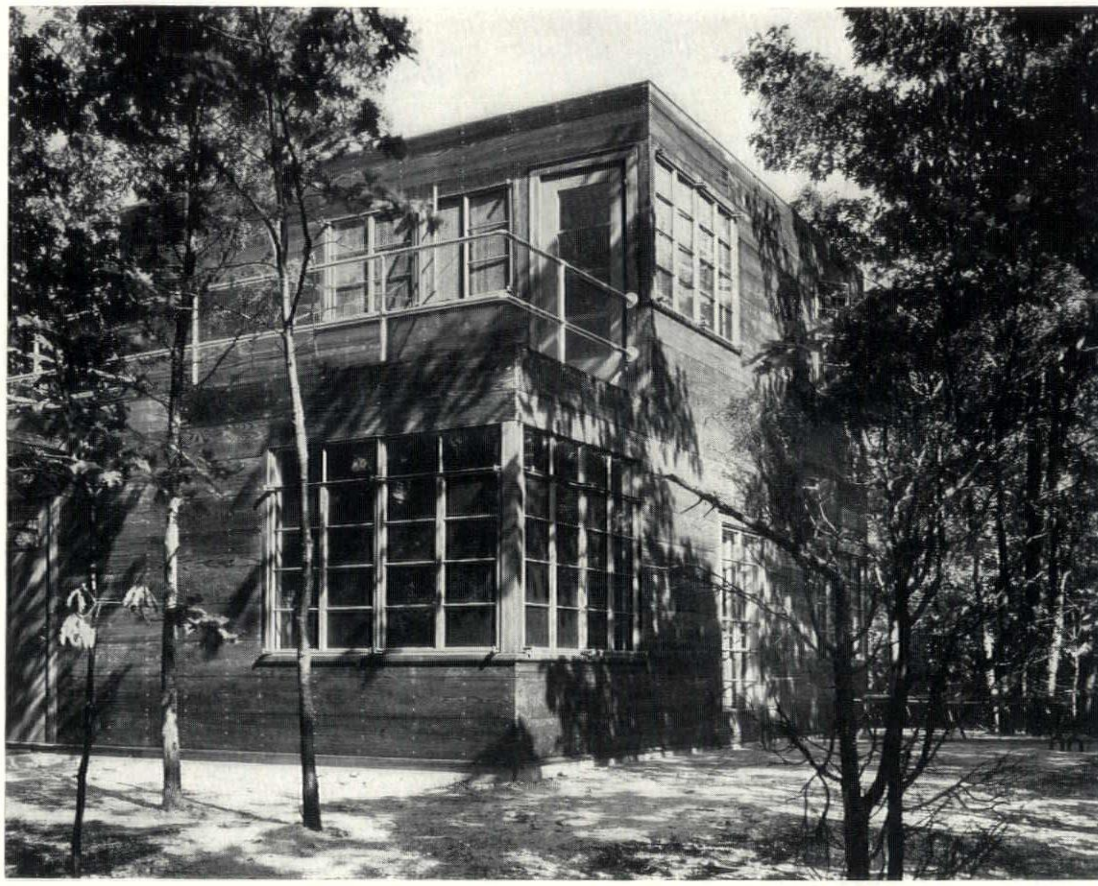
WORLD'S FAIR COMPETITION
FIRST MENTION, GEORGE LYMAN PAINE, JR.; SECOND MENTION, PETER COPELAND; THIRD MENTION, PETER COKE SMITH.

JACKSON COUNTY COURTHOUSE, KANSAS CITY, MISSOURI. KEENE AND SIMPSON, WIGHT AND WIGHT, AND FREDERICK G. GUNN, ARCHITECTS; EDWARD F. NEILD, CONSULTING ARCHITECT.

CORINTH MUSEUM, CORINTH, GREECE. W. STUART THOMPSON, ARCHITECT, OF THOMPSON AND CHURCHILL.

CURRENT ARCHITECTURE

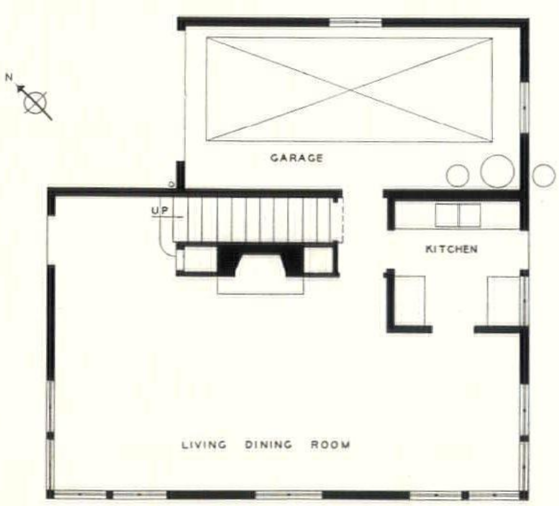
Photographs by F. S. Lincoln



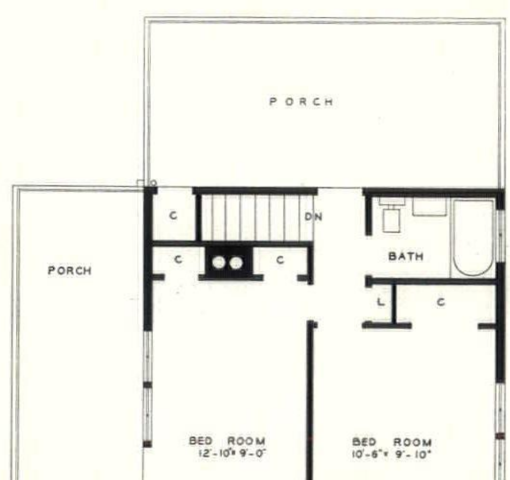
HOUSE FOR S. M. SADI

NORTHPORT, LONG ISLAND

DESIGNED BY S. M. SADI



FIRST FLOOR



SECOND FLOOR

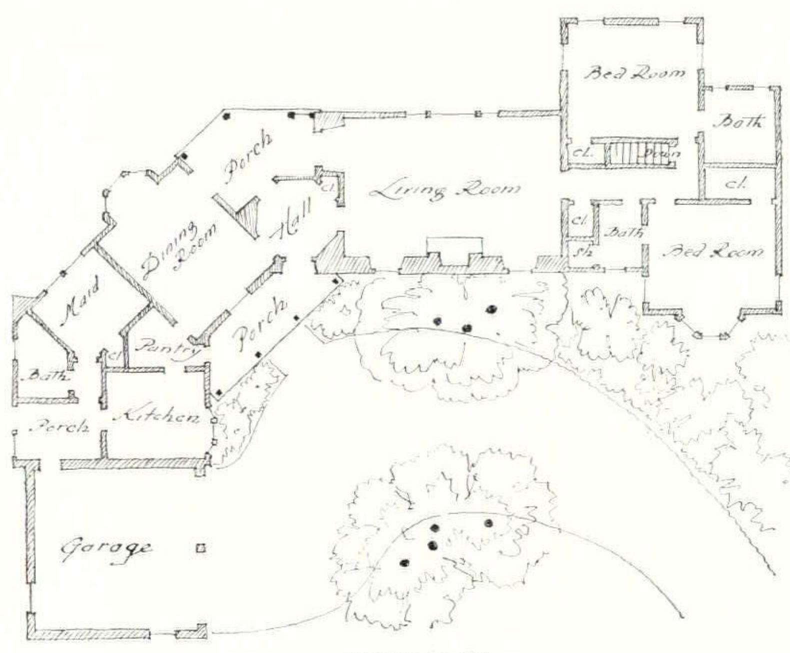
Photograph by George D. Haight

HOUSE FOR MISS HAGUE

PASADENA, CALIFORNIA

VAN PELT AND LIND, ARCHITECTS

Designed to conform to the contours of the property, this frame-and-stucco house is planned so that all the major rooms command the view down the slope and across the valley below. The cost, including landscaping, is $7,700.



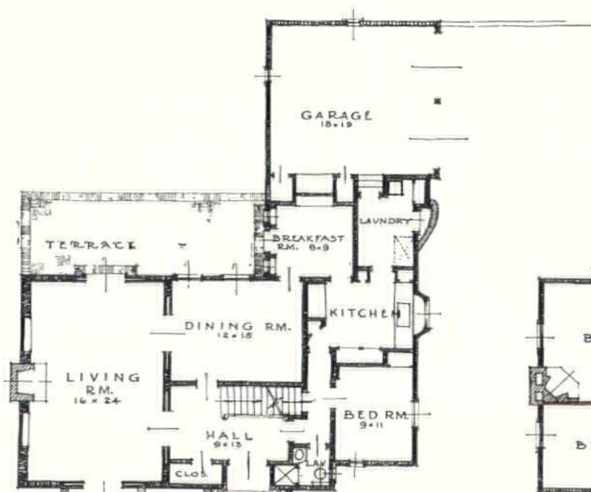
FLOOR PLAN

HOUSE FOR H. J. ALLEY

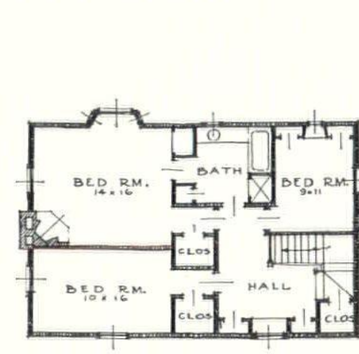
BRENTWOOD HEIGHTS, LOS ANGELES

RALPH C. FLEWELLING, ARCHITECT

A compact and relatively large house, built of frame, with exterior finish of plaster and wood siding. Built at a cost of $6,500 in 1933.



FIRST FLOOR



SECOND FLOOR

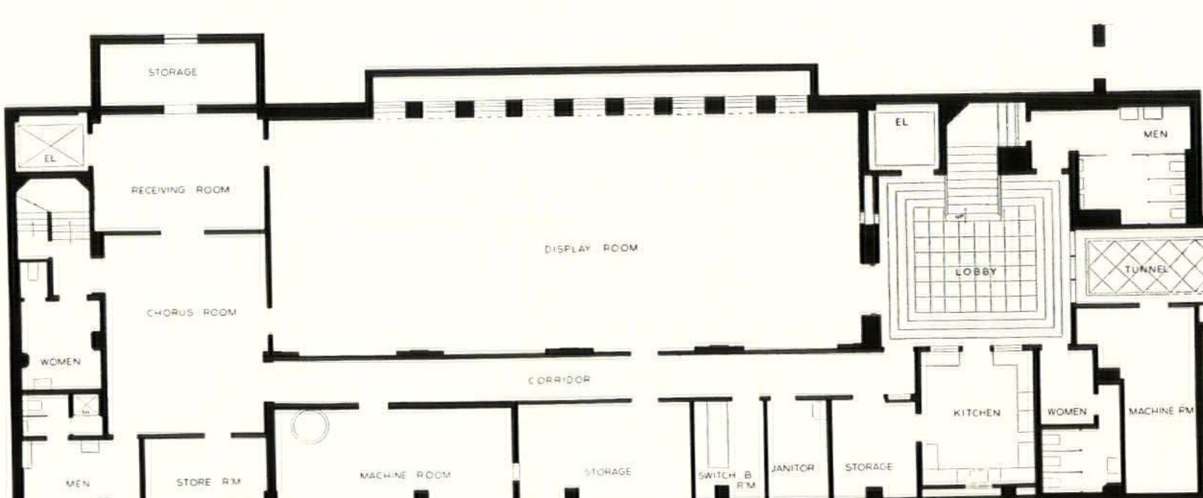
Photographs by Robert W. Tebbs

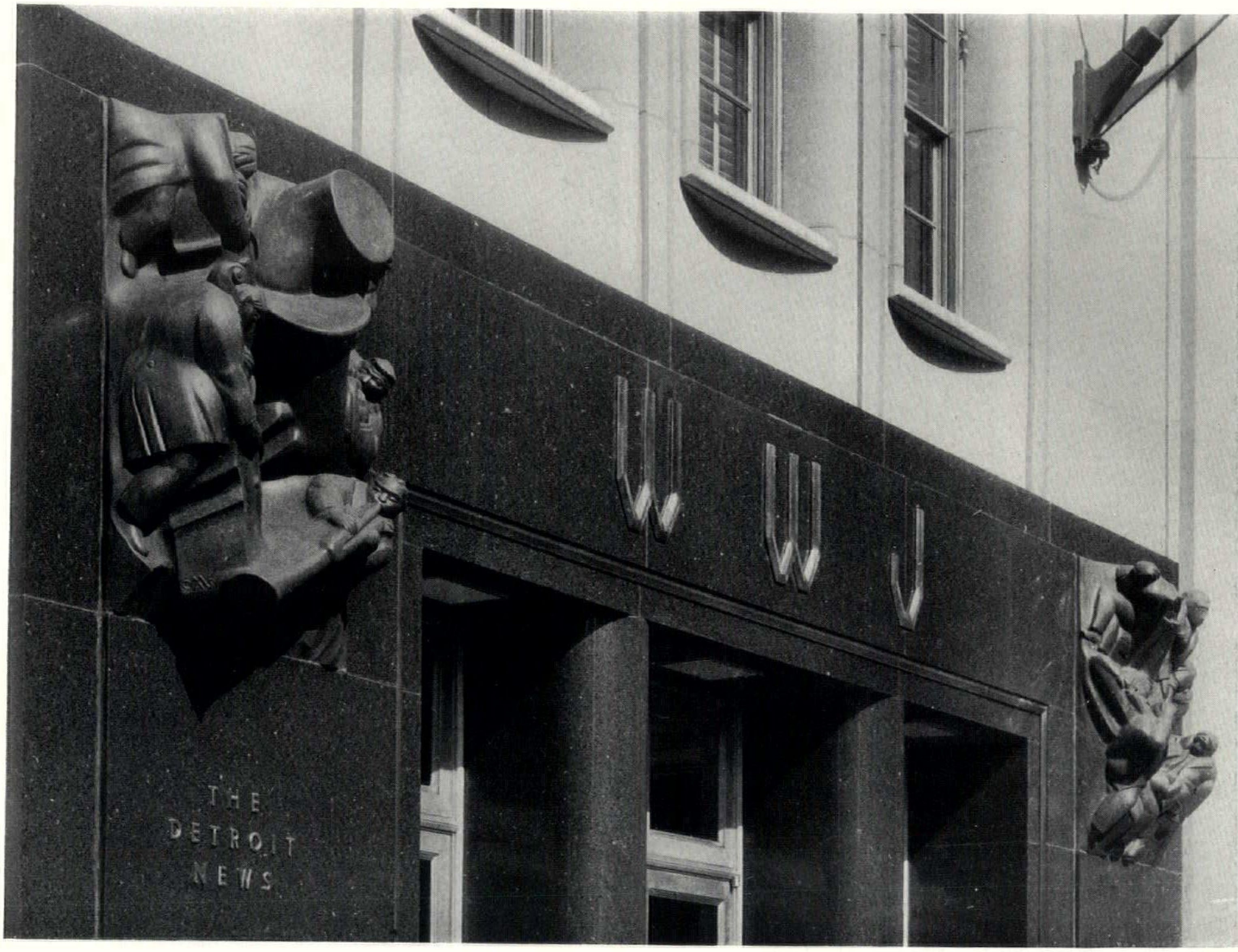
WWJ BROADCASTING STATION
DETROIT, MICHIGAN
ALBERT KAHN, INC.,
ARCHITECTS and ENGINEERS

The construction is a combination of structural steel and reinforced concrete. The façade of the building is faced with Indiana limestone, the treatment around the main entrance being of black artificial granite. The two panels at the main entrance are carved in granite from models prepared by Carl Milles, sculptor. Exterior windows and doors are of aluminum. All studios are soundproofed and treated for proper acoustics by Johns-Manville, perforated Transite backed up with Rock Wool being used quite generally for walls and ceilings. For proper sound reverberation, parts of the walls are treated with Transite over solid plaster. The building is air conditioned and cooled throughout; heating is by steam. The interior of the building is done in a simple manner depending mainly upon color and outline. The floors are of linoleum.

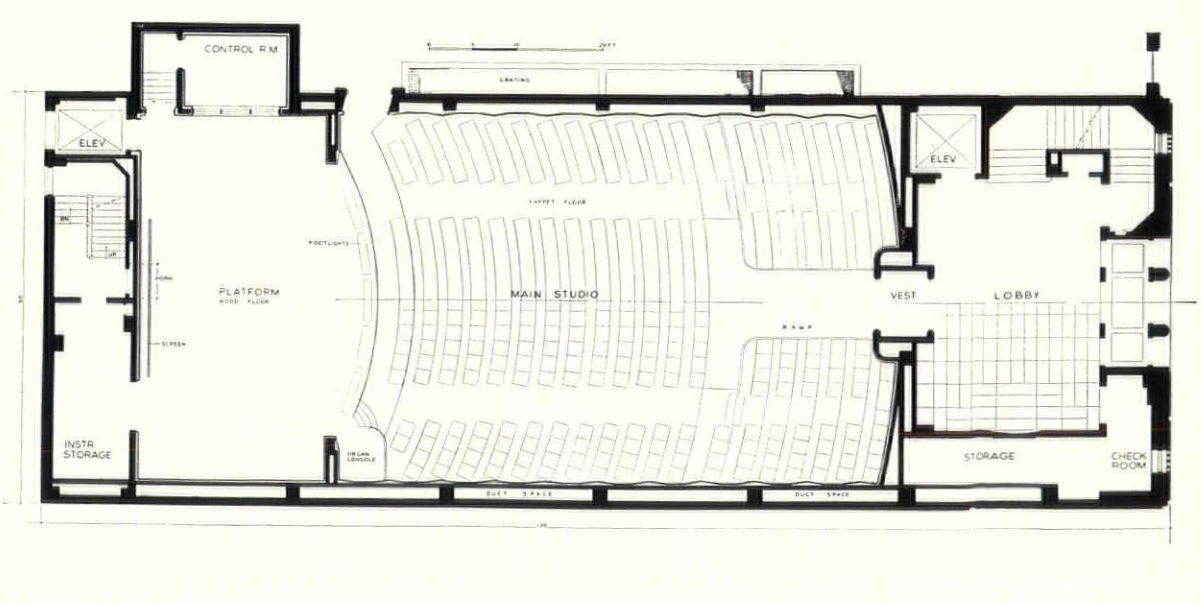
On the ground floor there is a small auditorium seating approximately 350, with a fair-sized stage; on the second floor, two large studios which are two stories in height, and one smaller. On the third floor, there is still another studio in addition to what is called the Rehearsal Room which may be used as a studio. There is also a library, numerous offices on a mezzanine above the entrance lobby and others on both the second and third floors. The main control room is on the second floor, though each studio has its own separate control room. For the two large studios on the second floor there are observation galleries for visitors, also small private rooms from which clients may view the broadcasting. In the basement is placed a large exhibition room to be used by advertisers, also a modern kitchen for the Home Economy division.

BASEMENT

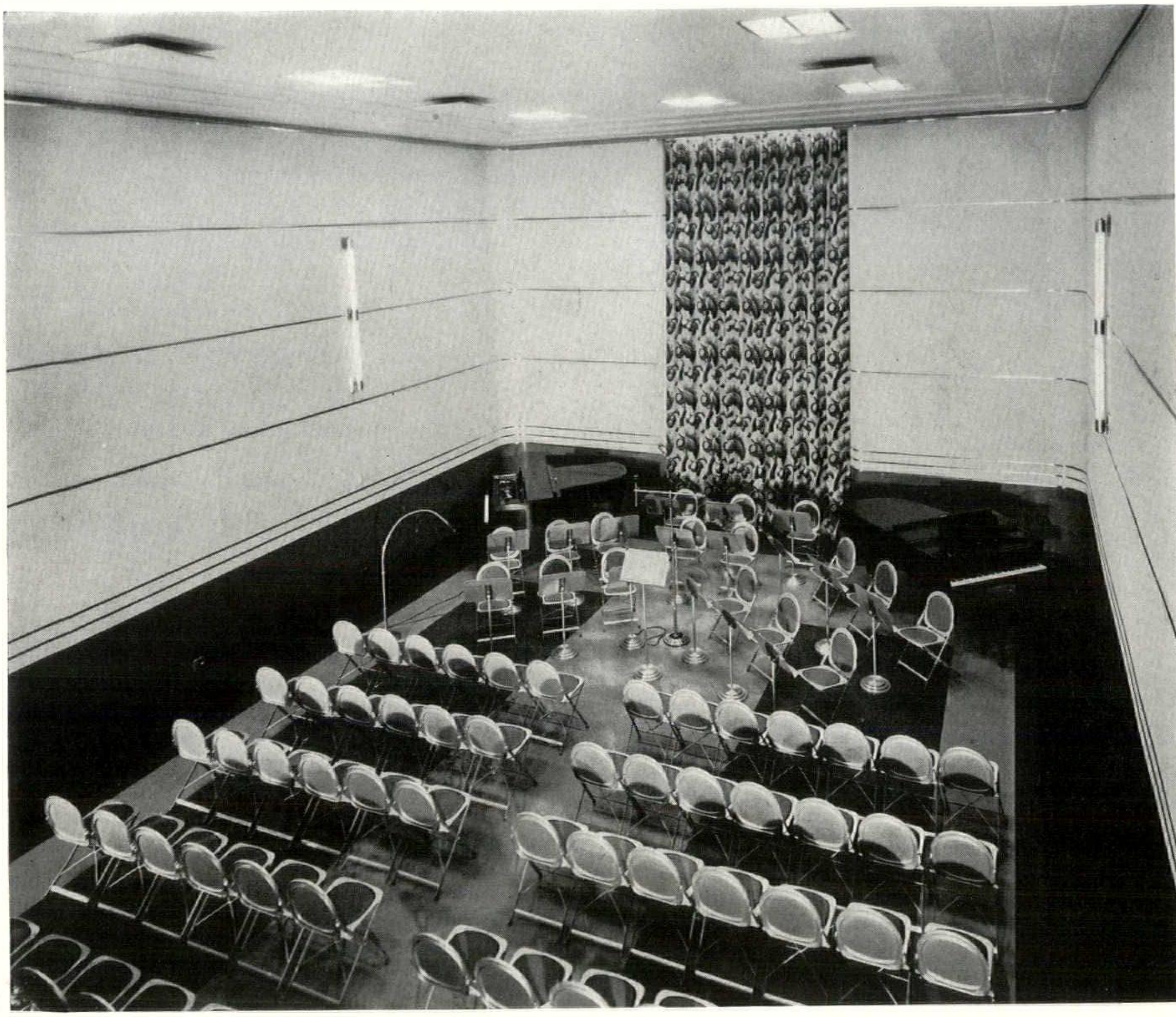




CARL MILLES, SCULPTOR



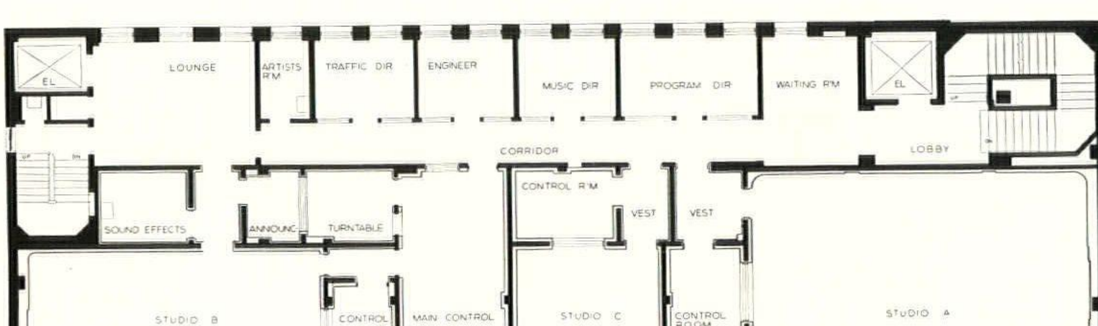
FIRST FLOOR



STUDIO A

WWJ BROADCASTING STATION DETROIT, MICHIGAN

ALBERT KAHN, INC., ARCHITECTS and ENGINEERS

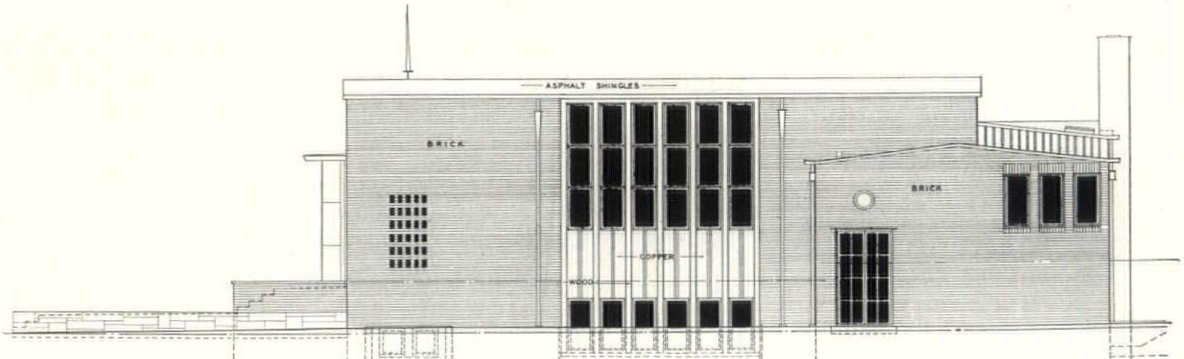


SECOND FLOOR

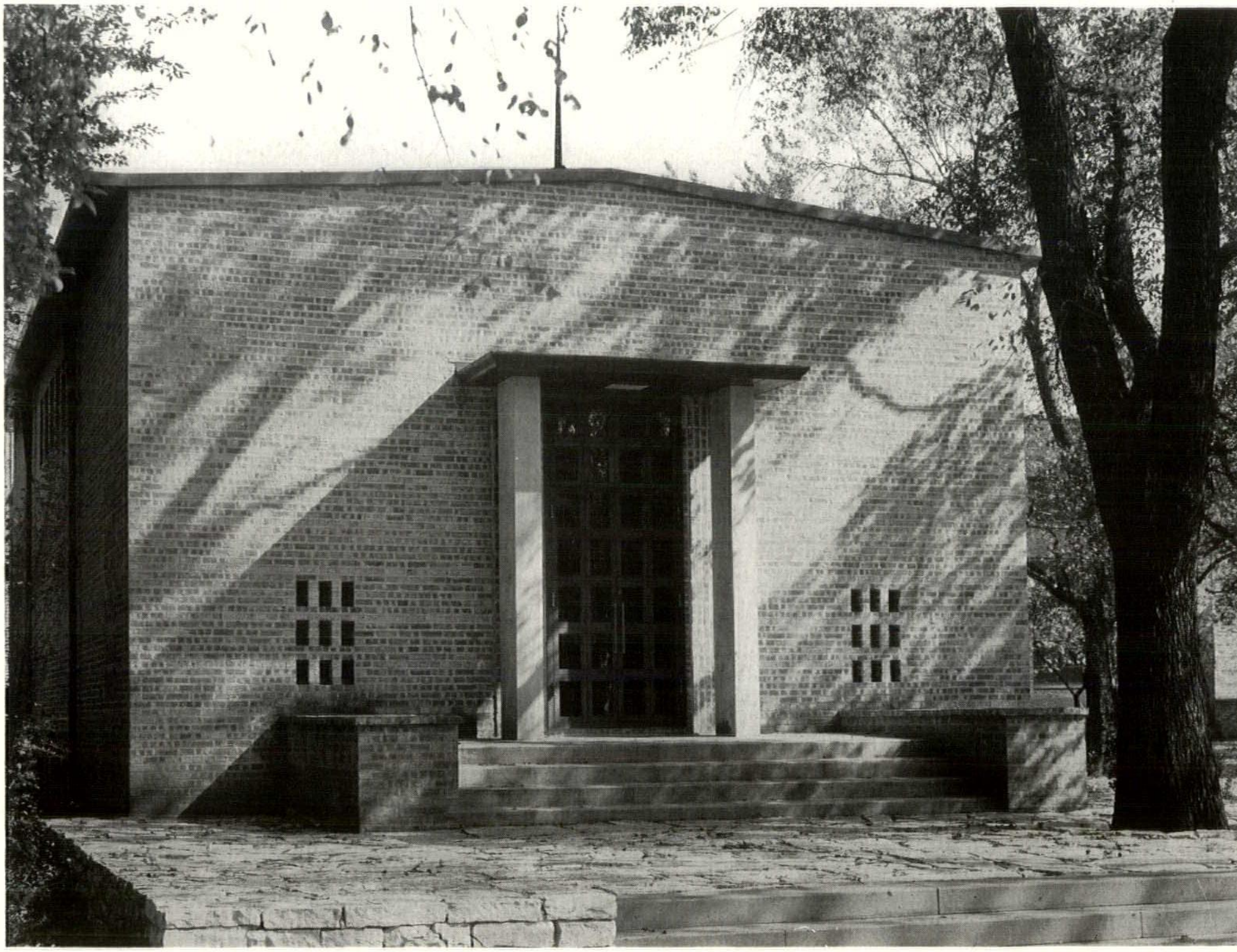
THE THIRD UNITARIAN CHURCH

CHICAGO, ILLINOIS

DESIGNED BY PAUL SCHWEIKHER, INC.

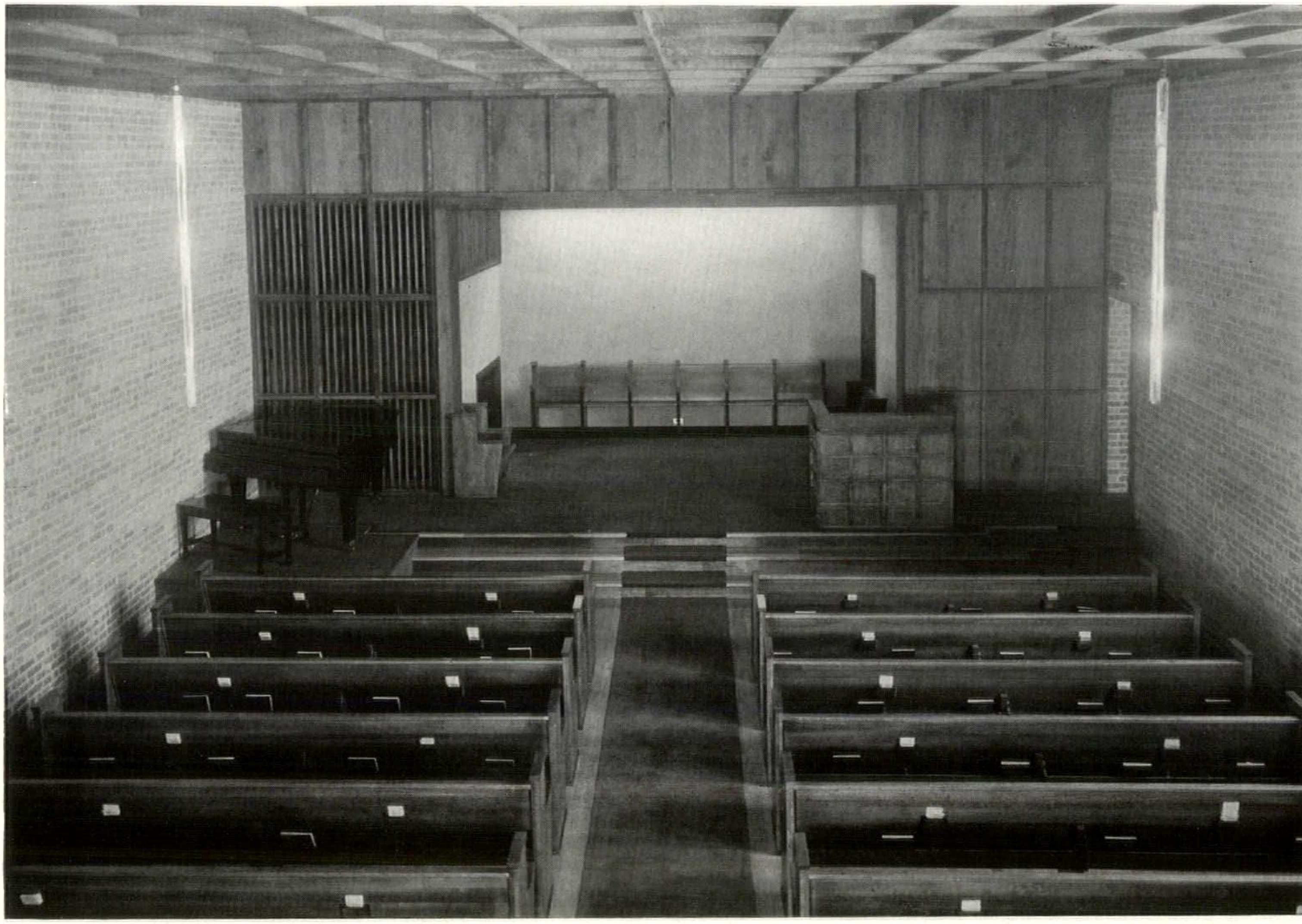


ELEVATION



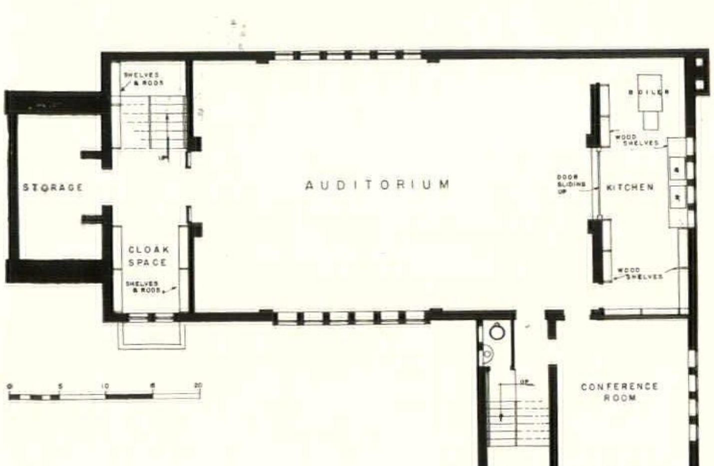
THE THIRD UNITARIAN CHURCH
CHICAGO, ILLINOIS
DESIGNED BY PAUL SCHWEIKHER, INC.

GROUND FLOOR: Concrete floors, walls concrete to grade. Walls to roof are solid common brick (Illinois hard common of a buff to deeper browns color). The brick is also exposed on the interior. The ceiling and proscenium are of plywood. The organ chamber has been designed for the new Hammond pipeless electric organ. The ground floor is used for dinners and dances. The main auditorium window at present glazed with opal white glass is later to be replaced with stained glass. Roofs, gutters, and downspouts are of copper.

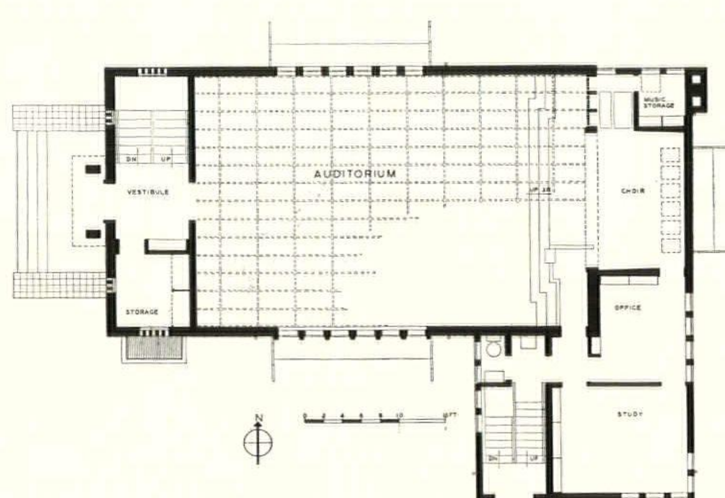


THE THIRD UNITARIAN CHURCH
CHICAGO, ILLINOIS

DESIGNED BY PAUL SCHWEIKHER, INC.



BASEMENT

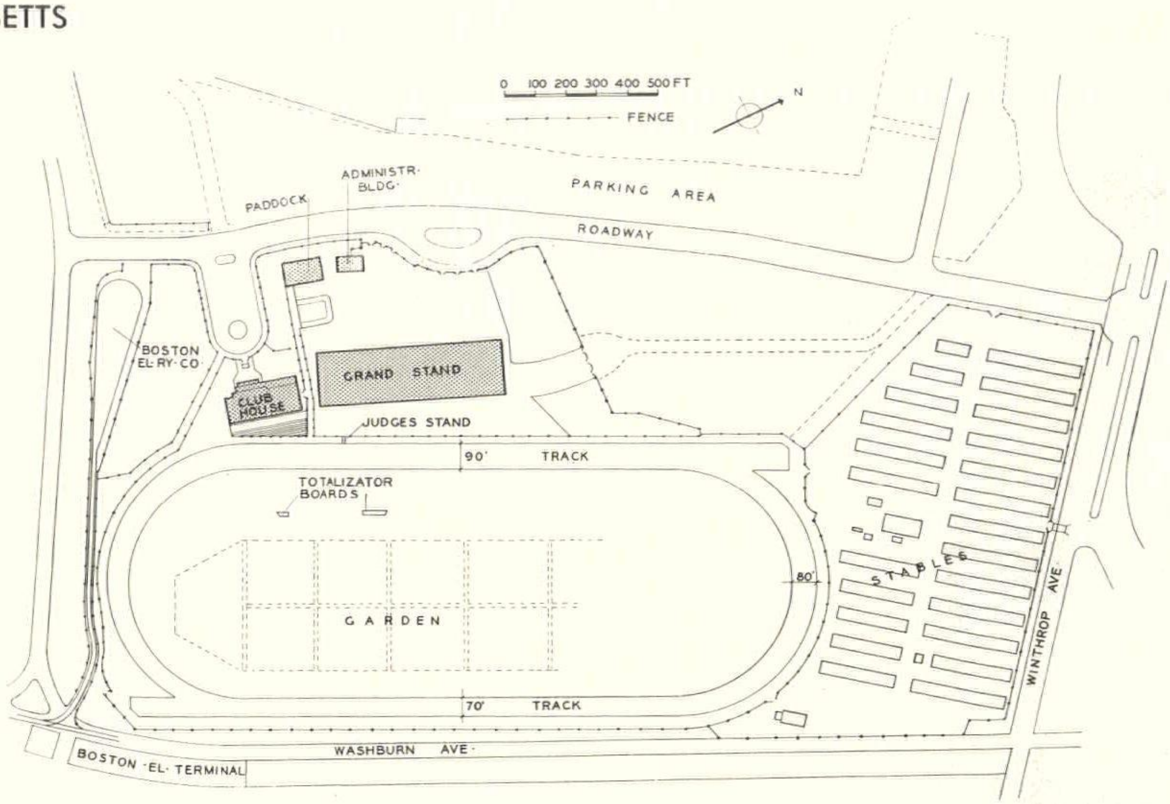


GROUND FLOOR

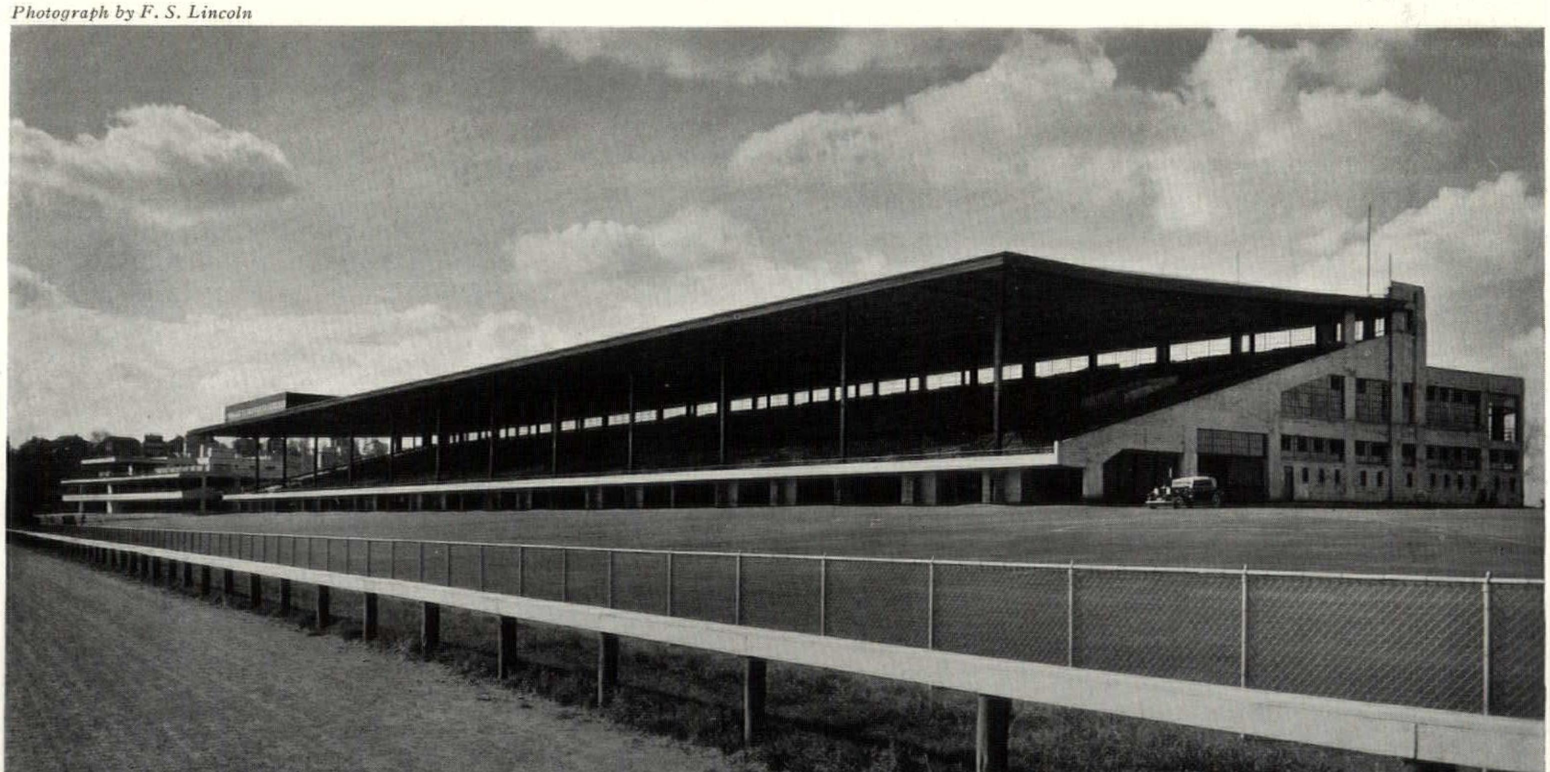
SUFFOLK DOWNS RACE TRACK

BOSTON, MASSACHUSETTS

MARK LINENTHAL, ENGINEER



Photograph by F. S. Lincoln



CLUBHOUSE WITH SLOPED TERRACES IN FOREGROUND; GRANDSTAND BEYOND

Photographs by F. S. Lincoln

SUFFOLK DOWNS RACE TRACK
BOSTON, MASSACHUSETTS
MARK LINENTHAL, ENGINEER

The elements of race track planning are as complex as a modern industrial plant. The track requires elaborate provisions for receiving, seating, and servicing audiences of many thousands. There is also the need for housing and servicing horses. Provision must be made for grading, drainage, sanitary sewerage, water supply, lighting roads, paving, parking areas and lesser buildings of many kinds. Race tracks operate but a few weeks in a year. They must, however, be so designed as to operate at peak load during few hours and on few days of the year.

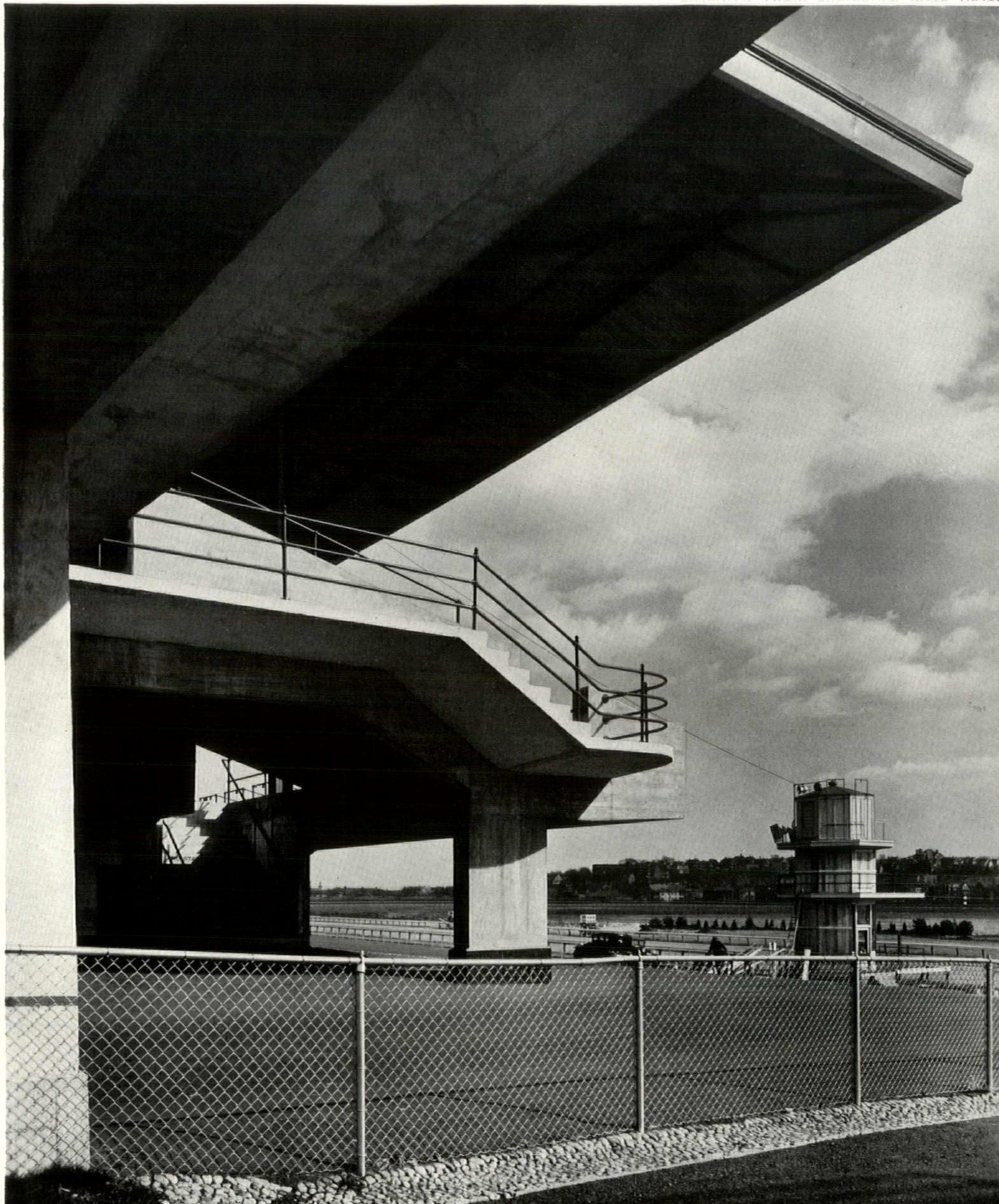
The problem of race track design consists of: (1) good vision from all angles; (2) handling of traffic. The problem of vision is to so arrange the grandstand, clubhouse and standing space in front of them that all spectators will have a clear and unobstructed view of the entire track. The factors involved are the slope of standing spaces, the pitch of the grandstand and of the clubhouse verandas, the angle which the grandstand and the clubhouse make to each other and to the line of the home stretch.

Mr. Mark Linenthal, writing in *Engineering News-Record,* says of sight lines that these are "best handled by the method of trial and error. A perfect solution, in the writer's opinion, is impossible because any practicable arrangement of clubhouse and grandstand will, of necessity, involve the obscuring of some part of the track from the upper corner of the grandstand on the end nearer the clubhouse. A good solution will minimize this defect. The accompanying plan will indicate a solution that has been tried out in practice and has demonstrated enough success to meet with the approval of race track managements.

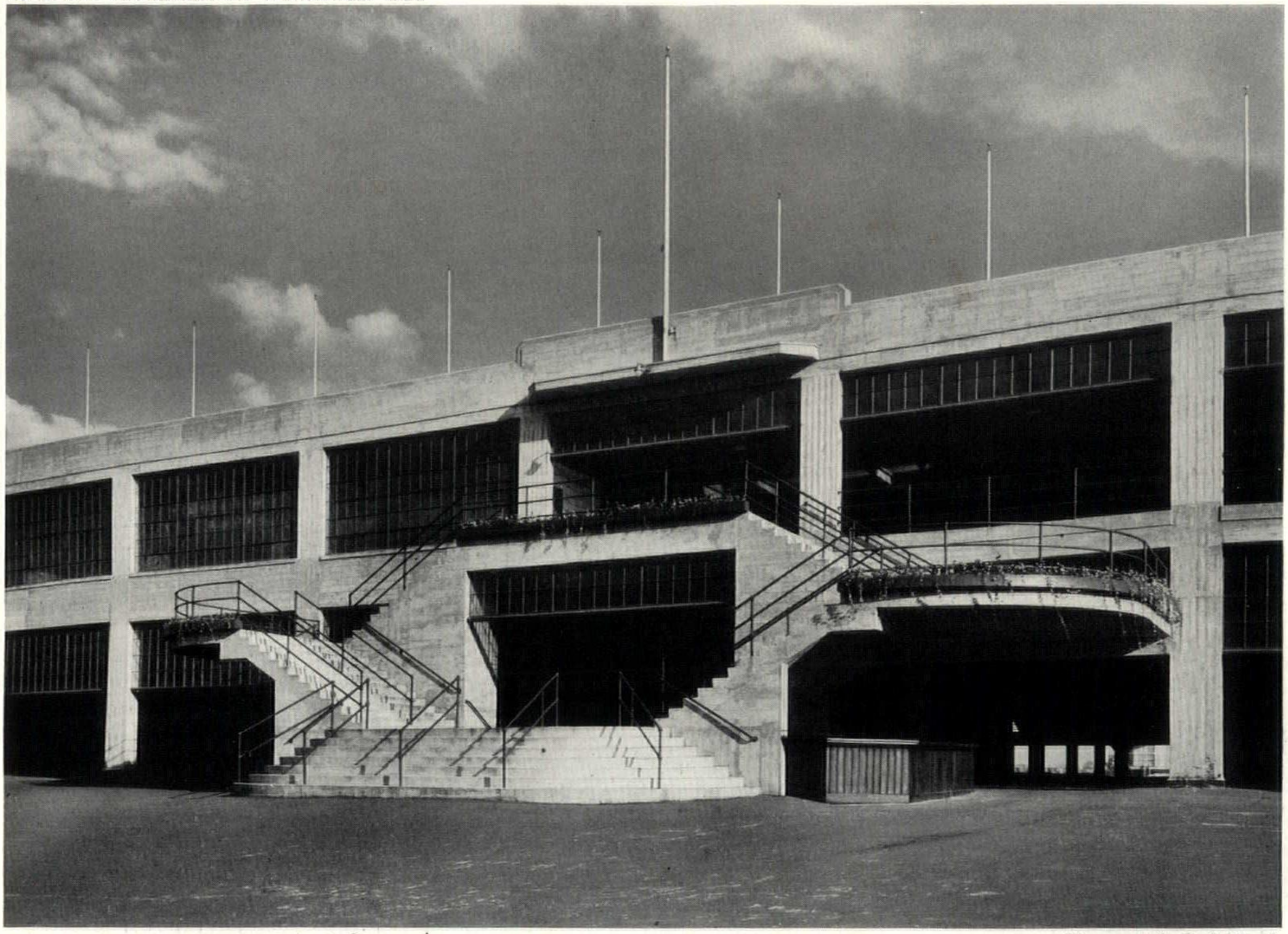
"The second great problem in planning is the handling of three kinds of traffic—pedestrian, automobile and horse. Incidentally, but of no less

DETAIL OF CLUBHOUSE TERRACES

STAIRWAY FROM STANDS TO RACE TRACK



STAIRWAY APPROACH AT NORTHWEST SIDE



Photographs by F. S. Lincoln

SUFFOLK DOWNS RACE TRACK

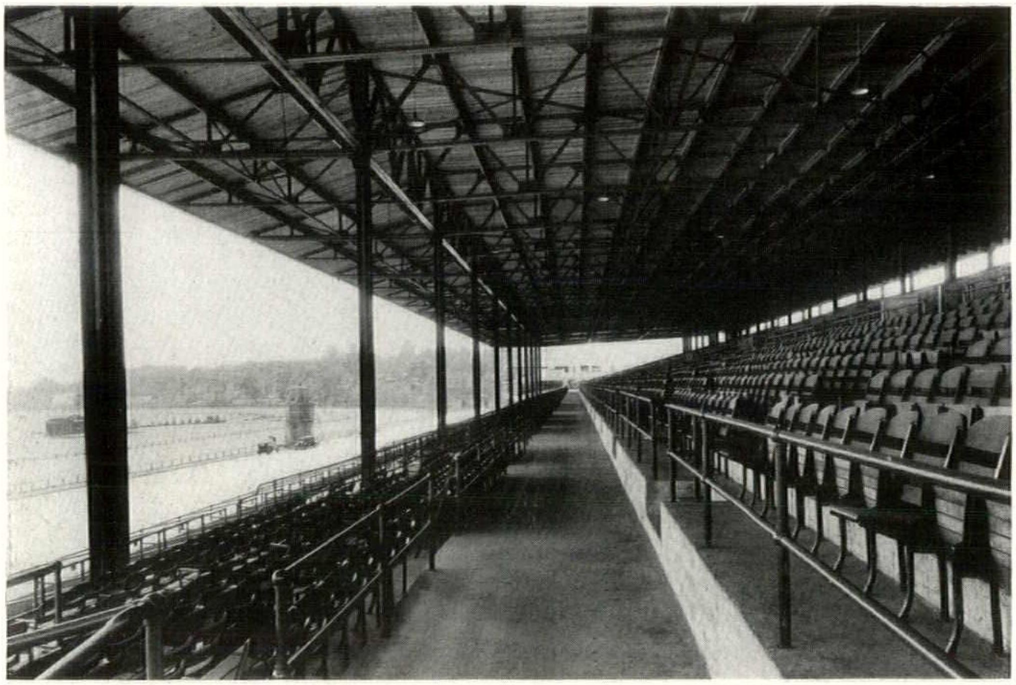
BOSTON, MASSACHUSETTS

MARK LINENTHAL, ENGINEER

importance, there is need for provision for railroads, street cars, busses, etc., which may be available for handling people and horses to and from the track. By far the largest proportion of spectators at the race tracks in these days come by automobile. Thousands, however, come by railroad and street car. The bus traffic, also, is large enough to merit consideration. The horses are transported to and from the track by railroad and by auto van.

"The writer is unable to offer any general rule for the solution of the problem presented by these traffic needs. Here again the method of trial and error on the drawing board seems to be the only practicable one. In making these trials there are a number of requirements which it is well to bear in mind. Most of the people who come to the race track go to the grandstand. Entering the plant, they come in more or less gradually, but they all want to leave at the same time. The thoroughbred race horse is a highly nervous animal and as far as possible should be isolated from the crowd, except during the parade from the paddock to the course. The attendants need freedom from the crowd as well as do the horses. The jockeys should, as far as possible, be kept from contact with the public during the racing hours. Accidents may occur to spectators and jockeys. Objectionable persons must be quickly and quietly removed.

'To meet these requirements, it follows that the roads should be wide, parking spaces should be laid out generously, stations for trains and street cars and busses should be placed as close to the grandstand as conditions of the site permit. The stables should be located to permit the easy receipt of horses and supplies, easy access to the track and isolation from the public. The jockeys' quarters should be located as close as possible to the paddock where they mount the horses. There



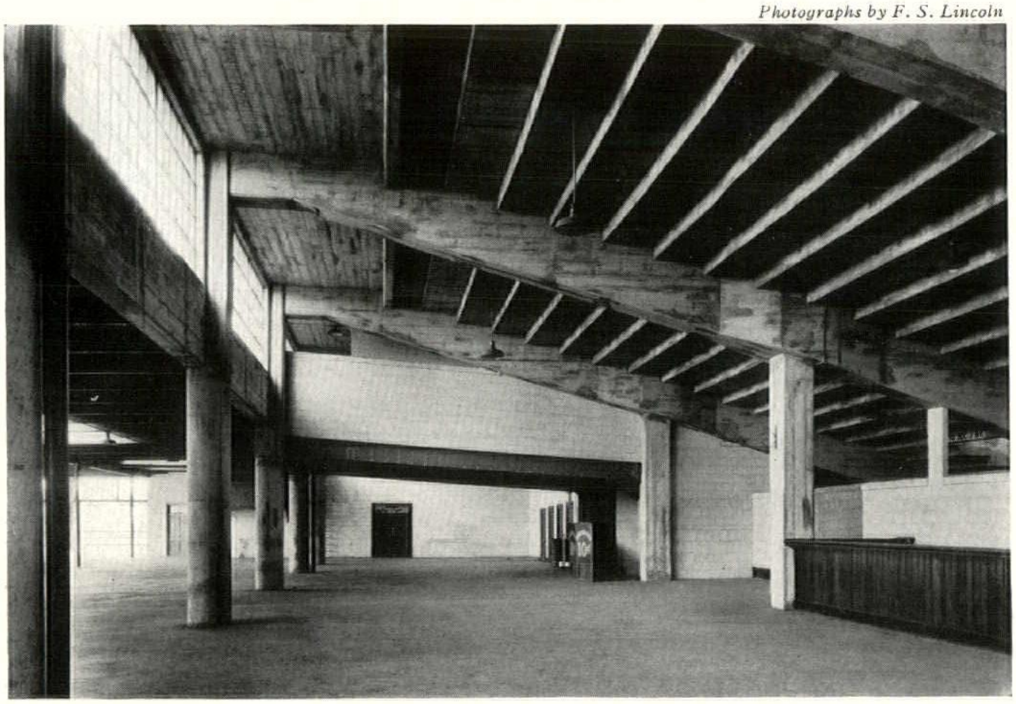
THE INTERIOR OF MAIN STAND is 800 by 185 feet and seats 11,000 persons.

SUFFOLK DOWNS RACE TRACK

BOSTON, MASSACHUSETTS

MARK LINENTHAL, ENGINEER

Photographs by F. S. Lincoln



UNDER SIDE OF GRANDSTAND.

must be easy and quick approach to the first aid room and the police station without too much publicity.

DESIGN OF BUILDINGS

"There are some rather unusual structural details in the grandstand. There is no diagonal bracing, and the transverse bents take the wind load as rigid frames. The combination of reinforced concrete and structural steel, with the concrete work well on its way before the arrival of the steel, involved provision for receiving column bases designed for large restraint, and details anchored into the exterior concrete columns to receive steel beams. Simplicity was the aim in these details.

"In the clubhouse an entirely different problem was presented. A race course clubhouse is essentially a large reviewing stand containing, in addition, lounges, restaurant, kitchens, toilet facilities, offices, etc. These auxiliary rooms are all highly finished and completely furnished and compare favorably with similar rooms in any modern clubhouse or hotel. Even a fully automatic electric passenger elevator with a cab and doors of the most modern design was included.

"With these considerations in mind it was decided at Suffolk Downs to use a bolted steel frame with rolled steel joists closely spaced, except on the roof where wood joists were used. The rough floors are 2½" concrete slabs and the roofs are wood boarded. In the rooms the slabs are covered with finished flooring; outdoors, they are exposed.

"The administration building is substantially a small office building and is finished as such a building ordinarily is, with plastered surfaces and wood trim. It was built with masonry bearing walls and steel beams supporting plank floors. In this way the shrinkage due to drying lumber was minimized and at the same time reasonable economy in construction was maintained.

"The paddock is a large open shed. It was built with masonry exterior piers and spandrels to match the other structures and with a heavy timber and plank roof.

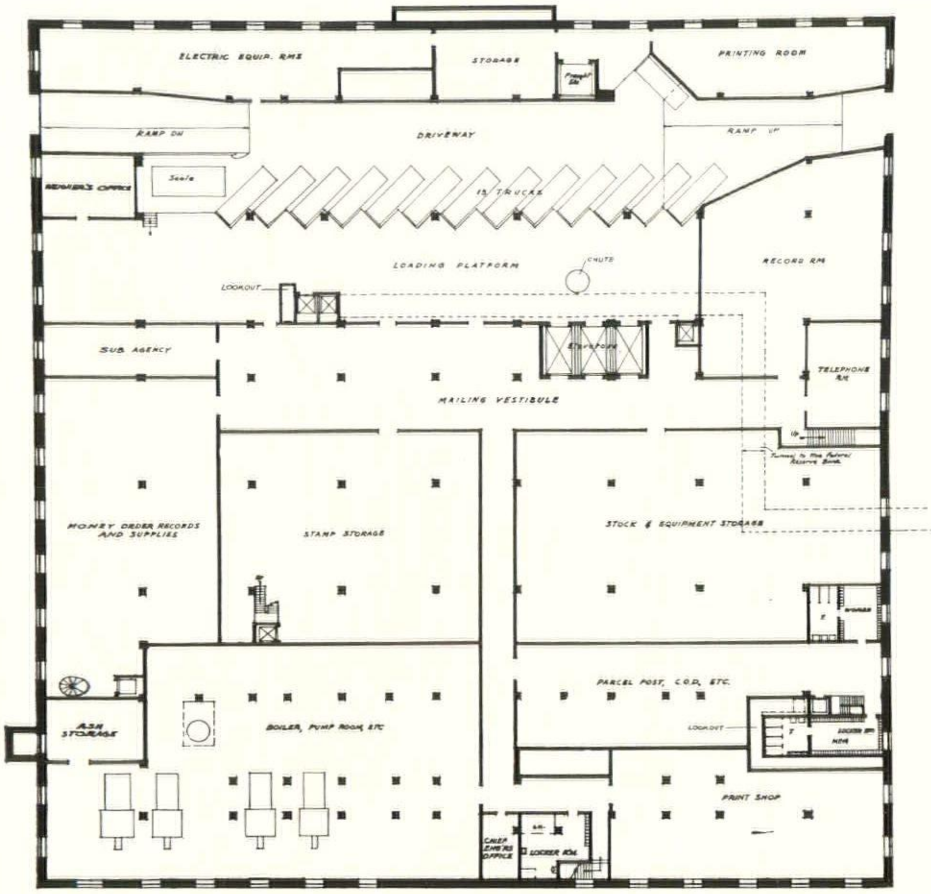
"The stables are light wooden structures; this construction being chosen for the sake of economy. The other buildings in the stable area, such as the mess hall and equipment building, are all wood on spread footings carried to the original fill."

NEW DETROIT FEDERAL BUILDING
DETROIT, MICHIGAN

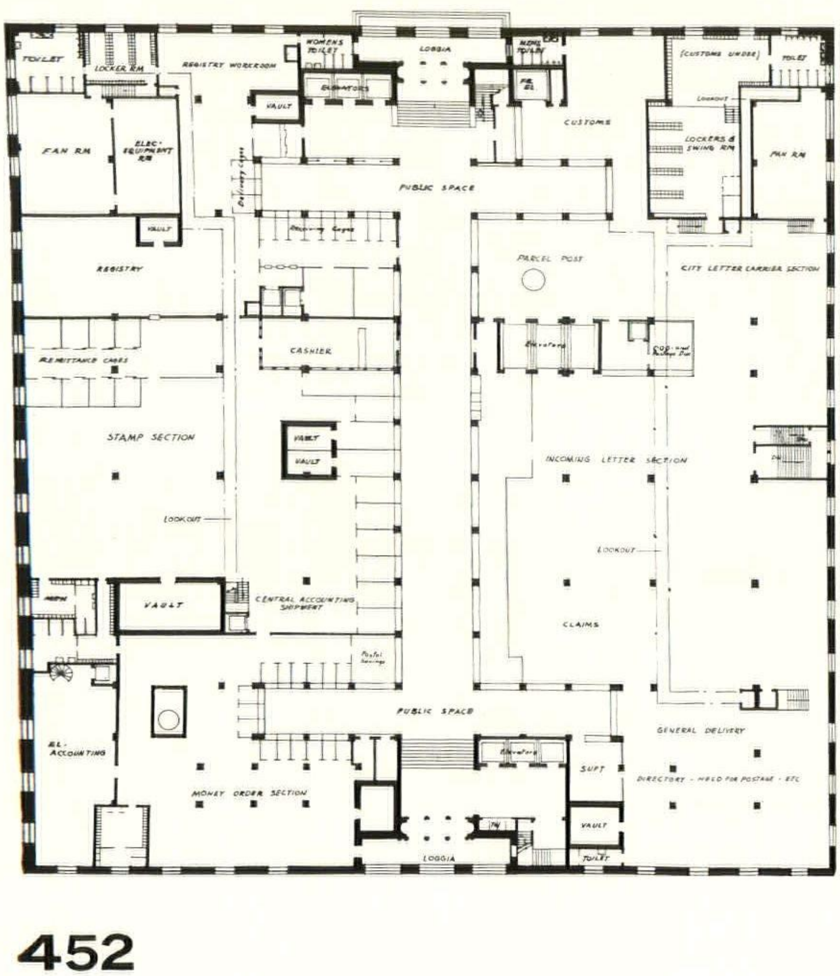
ROBERT O. DERRICK, INC., ARCHITECTS

Photograph by Robert W. Tebbs

NEW DETROIT FEDERAL BUILDING
DETROIT, MICHIGAN
ROBERT O. DERRICK, INC., ARCHITECTS



BASEMENT



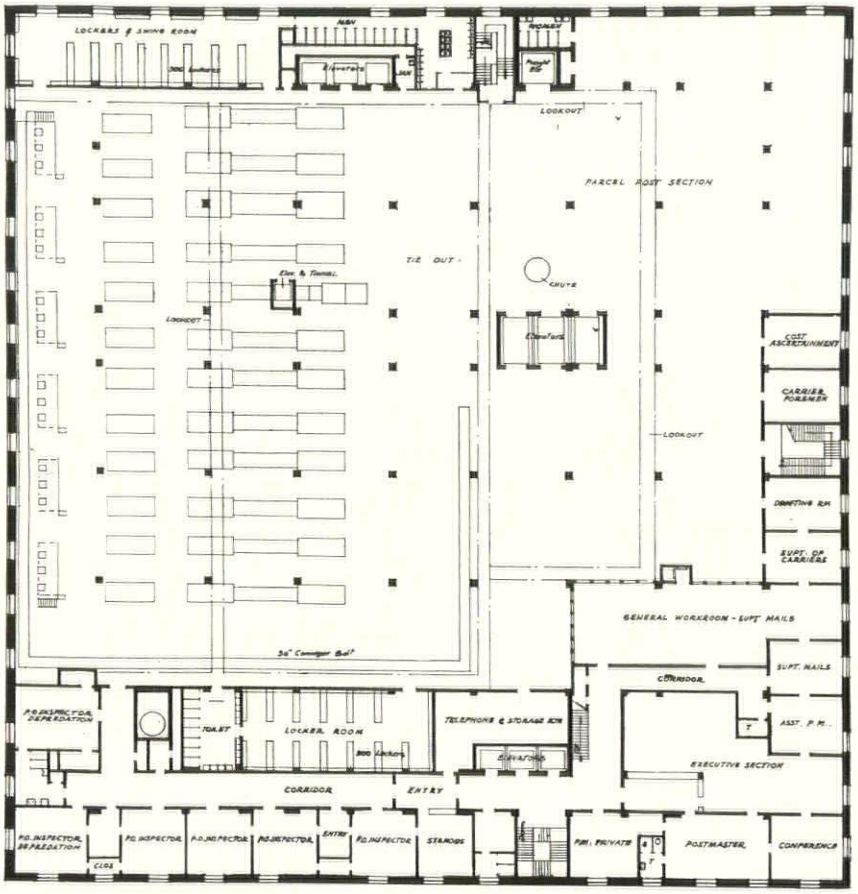
FIRST FLOOR

Photograph by Robert W. Tebbs

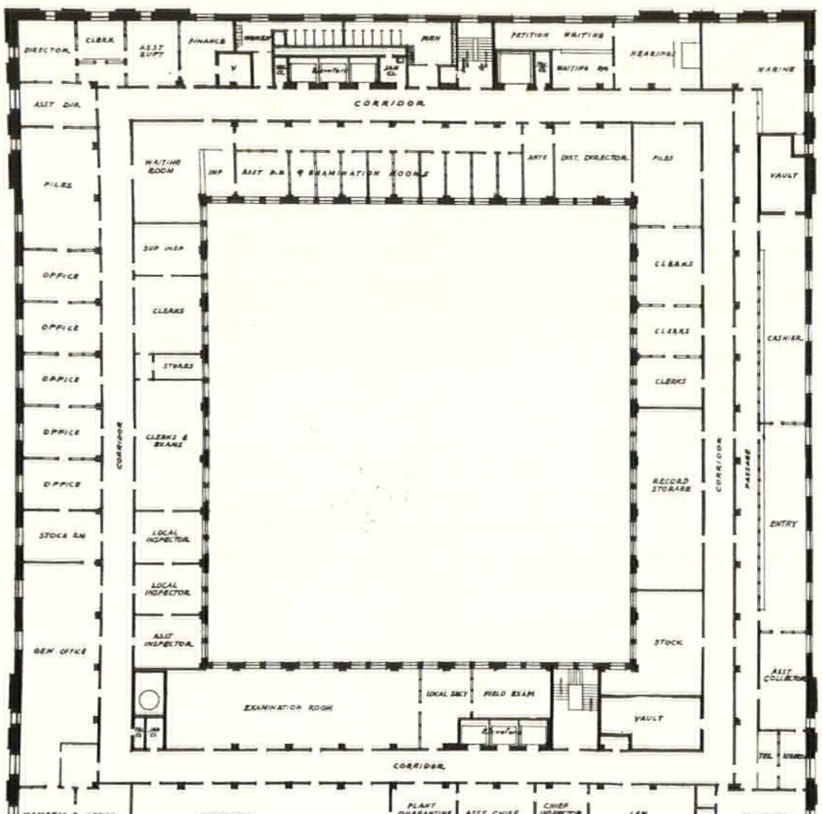
NEW DETROIT FEDERAL BUILDING

DETROIT, MICHIGAN

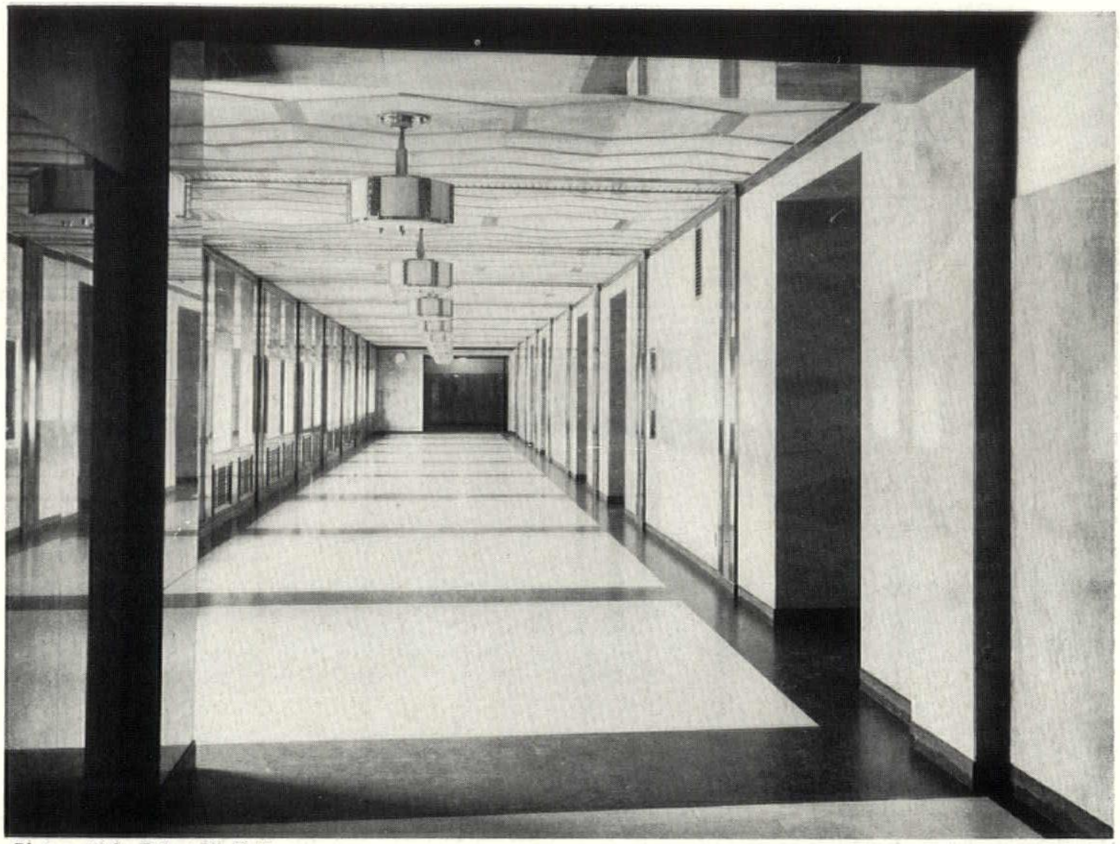
ROBERT O. DERRICK, INC., ARCHITECTS



SECOND FLOOR



FOURTH FLOOR



SEVENTH FLOOR CORRIDOR

Photograph by Robert W. Tebbs

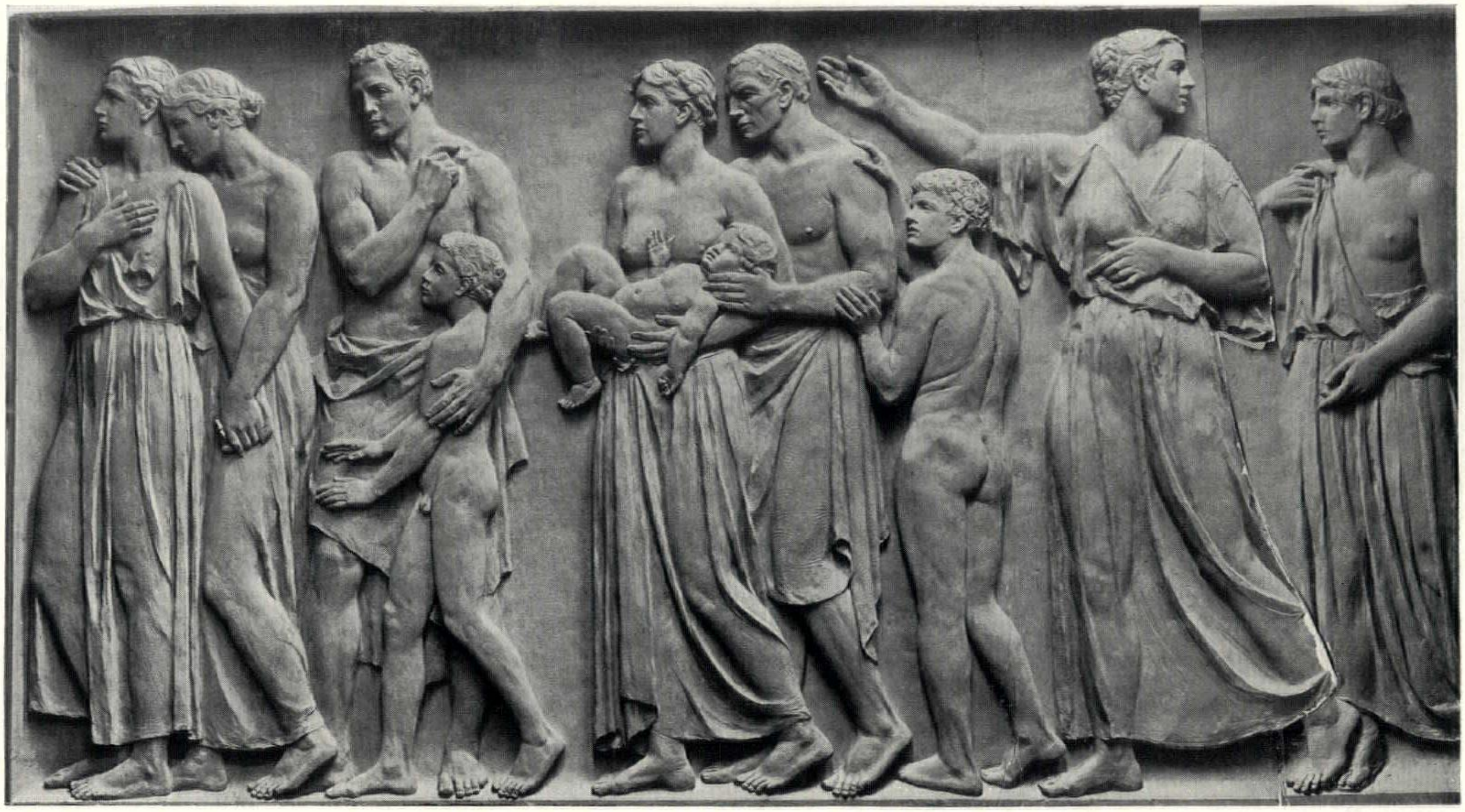
SITE: Site of old Post Office. SIZE: Basement and ten stories; structure designed to carry two additional future stories to the height of 210 feet. FOUNDATIONS: To hard pan, 120 feet below street level. Appropriation: **$5,650,000.**

The building accommodates nine government departments and several government bureaus, the official title of the building being "U. S. Post Office, Court House, Custom House, etc."

BASEMENT, FIRST AND SECOND FLOORS: Post Office Department; THIRD FLOOR: Departments of Treasury, Agriculture, Veterans' Bureau; FOURTH FLOOR: Department of Treasury (Customs), Labor (Immigration, Naturalization), Commerce (Foreign and Domestic, Steamboat Inspector); FIFTH FLOOR: Department of Treasury (Internal Revenue); SIXTH FLOOR: Departments of War (Lake Survey, Quartermaster, Air, Ordnance, Reserves, Recruiting, Engineering), Navy (Hydrographic, Navigation, Marine Corps); SEVENTH FLOOR: Department of Justice (Federal Courts); EIGHTH FLOOR: Department of Justice (Federal Courts and Offices); NINTH FLOOR: Departments of Justice (U. S. Commissioner, Marshal, Prohibition), Treasury (U. S. Coast Guard); TENTH FLOOR: Departments of Commerce (Radio), Justice (Investigation, Referees Bankruptcy), Treasury (Industrial Alcohol, Public Health), Agriculture (Weather Bureau, Animal Industry).

EXTERIOR: The building is entirely faced with limestone. The four sides are identical excepting that main entrances are placed on the north (Lafayette Boulevard) side, and on the south (Fort Street) side. A main corridor runs directly through the center of the building connecting these two entrances. This arrangement was made possible by a combination of local mail conditions and the cooperation of the postal authorities who developed a special mail handling system to attain building which has no rear elevation. Another undesirable feature, the exterior loading platform for mail trucks, is also eliminated by substitution of ramps which lead to an interior loading platform in the basement. The building is therefore symmetrical from any view.

A massive base, over fifty feet high, contains the Postal Department. Above this, four stories of offices and one of courtrooms are faced with fluted piers with a frieze of low relief carving in which are panels symbolical of the various governmental departments. The upper stories are set back slightly, forming the third unit which is a minor repetition of the one below.



SCULPTURAL PANEL OVER MAIN ENTRANCE REPRESENTING LAW AND JUSTICE. CHARLES KECK, SCULPTOR.

JACKSON COUNTY COURTHOUSE

KANSAS CITY, MISSOURI

KEENE & SIMPSON, WIGHT & WIGHT
and FREDERICK C. GUNN, Architects;
EDWARD F. NEILD, Consulting Architect

While the three hundred feet of height of this courthouse is the equivalent of 28 stories in the usual business building, the courtroom floors in this building actually are two stories in height, with balcony offices providing each large courtroom with plenty of office space for the use of lawyers and court attendants.

A practical arrangement of the courtroom is featured in this structure. The judge's bench is in one corner of the room, permitting a clear view of witnesses, jurors and audience. The jury box is so located as to give a clear view of the witness and the bench. The witness chair is placed against the rear wall in about the position that the judge's bench occupied in older courtrooms—a focal point for every eye in the room.

The floor materials vary from asphalt tile on the ground floor and a part of the first floor to rubber tile in the court corridors of the fourth, fifth, sixth, ninth and tenth floors. The floor treatment elsewhere is a terrazzo tile. Battleship linoleum is used generally on the floors of offices and in the courtrooms and court quarters.

Black walnut and white oak are the woods used in the cabinet work and trim. All furnishings and all metal equipment were designed especially for this building.

Two floors of jail accommodations are just beneath the execution chamber at the top of the building.

A dual system of heating and air conditioning is yet another interesting feature of this building. Huge steam boilers are responsible for courthouse comfort in winter, while through the same pipes air conditioning in the summer in parts of the building is made possible.

BRONZE AND WHITE METAL PLACQUES OVER MAIN ENTRANCE DOORS. JORGEN C. DREYER, SCULPTOR.

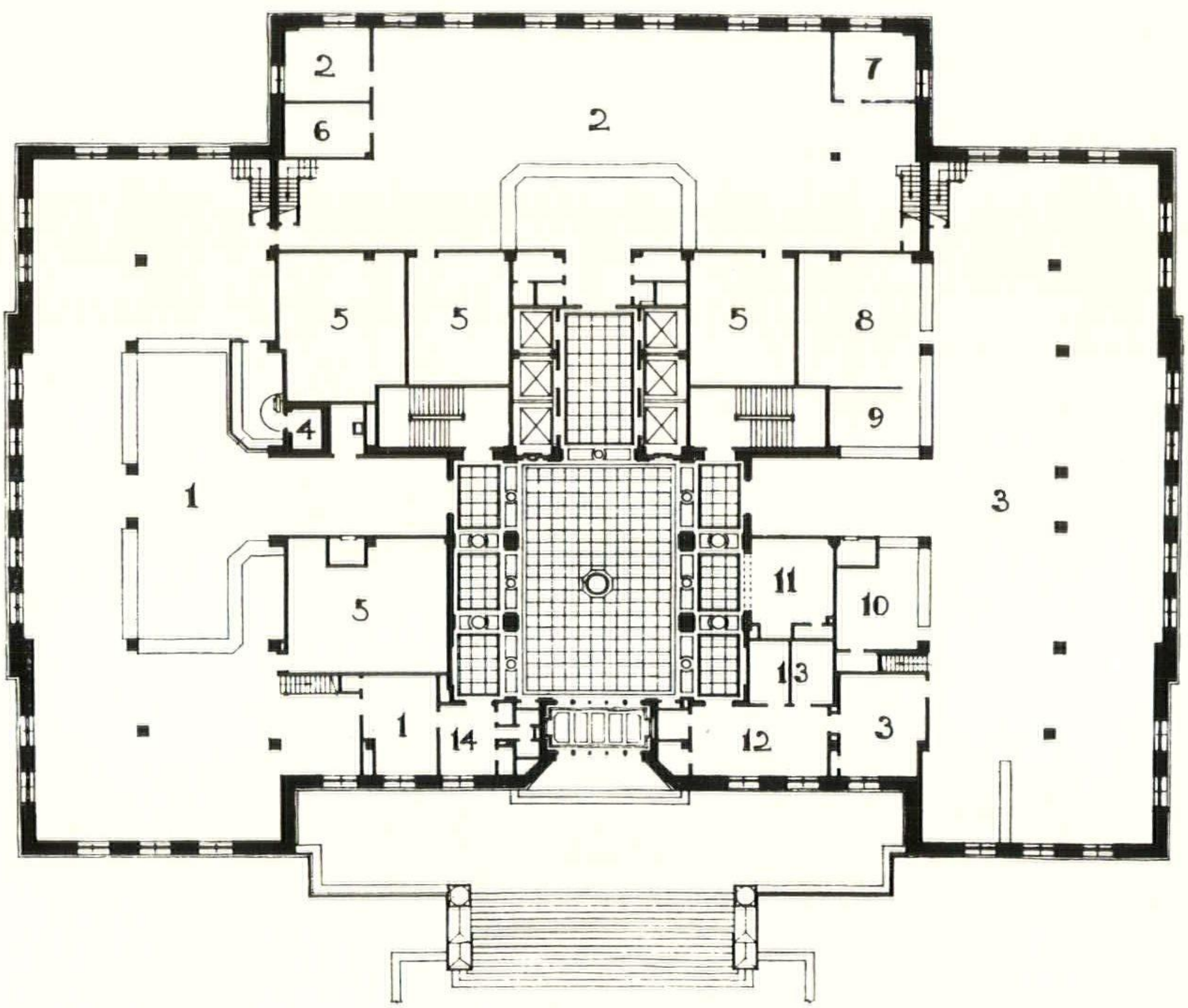
JACKSON COUNTY COURTHOUSE

KANSAS CITY, MISSOURI

KEENE & SIMPSON, WIGHT & WIGHT and FREDERICK C. GUNN, Architects; EDWARD F. NEILD, Consulting Architect

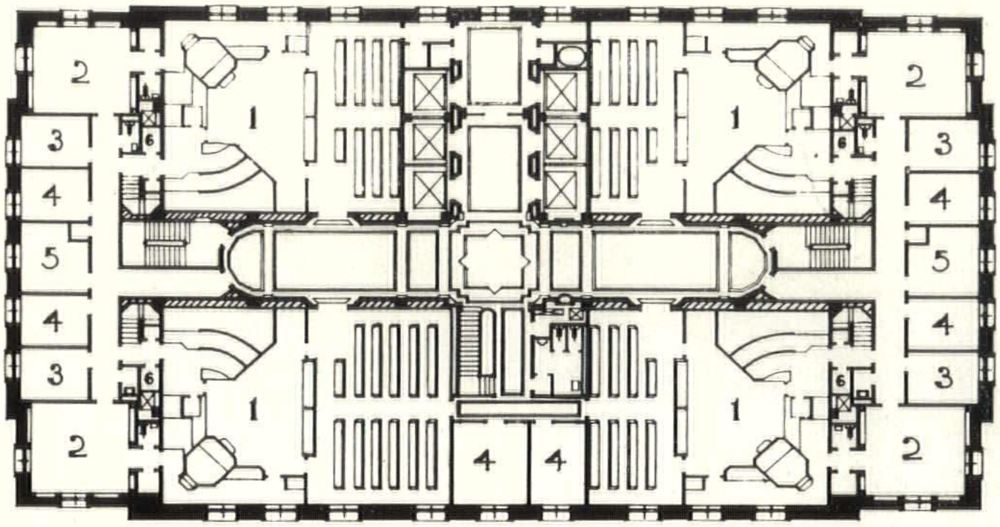
FIRST FLOOR

1 Collector
2 Assessor
3 Recorder
4 Cash Vault
5 Vaults
6 Supplies
7 Drafting Room
8 Delivery
9 Releases
10 File Index
11 Cigars
12 Marriage License
14 Ceremony
15 Telephones



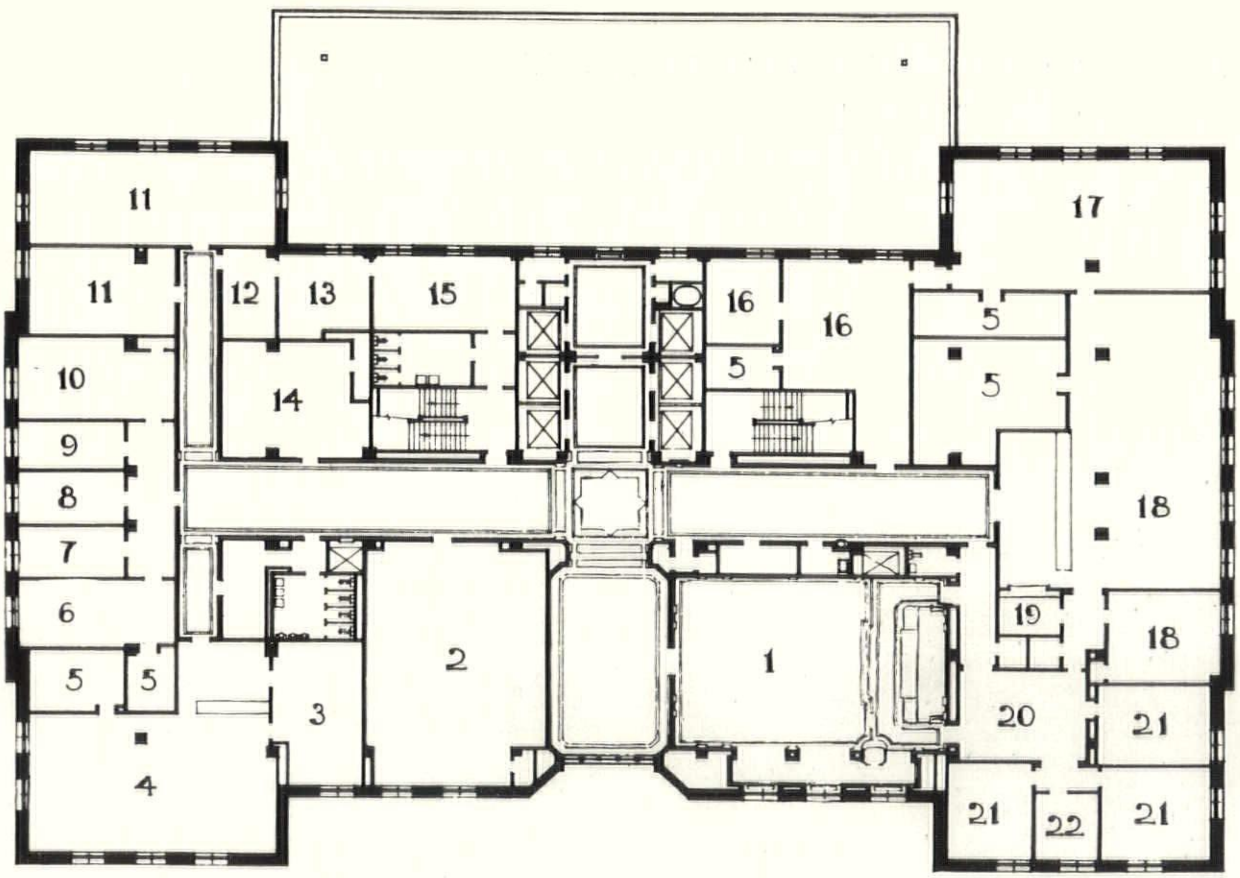
FIFTH FLOOR

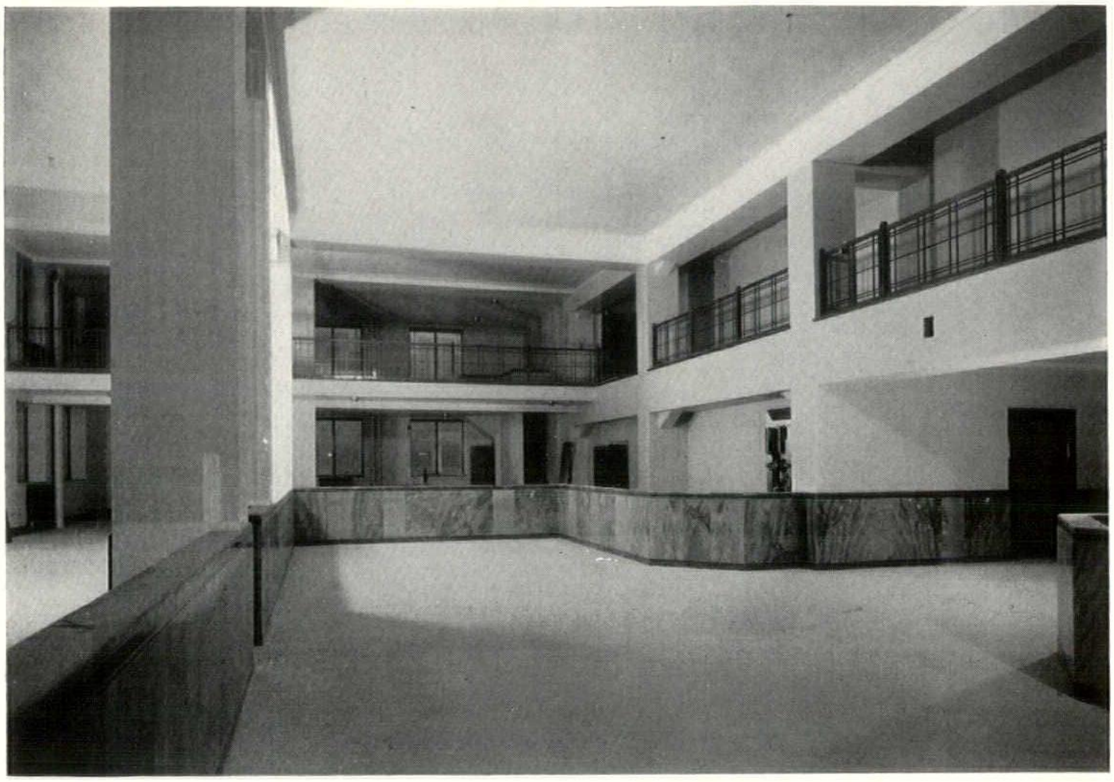
1 Courtrooms
2 Judges
3 Clerk
4 Witness
5 Conference
6 Prisoner



SECOND FLOOR

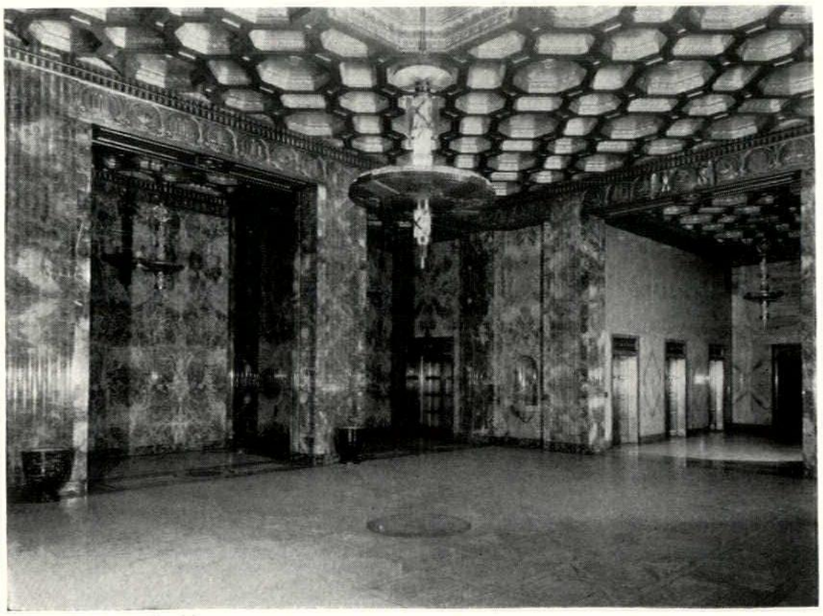
1 County Court
2 Special Workroom
3 Highway Engineer
4 Drafting Room
5 Vaults
6 Purchasing Agent
7 License Inspector
8 Deputies
9 County Investigator
10 Custodian
11 Hearing Rooms
12 Telephone Equipment
13 Telephone Switchboard
14 Storage Room
15 Emergency Room
16 Auditor
17 Workroom
18 Country Clerk
19 Licenses (Hunting and Fishing)
20 Anteroom
21 Judges
22 County Counselor





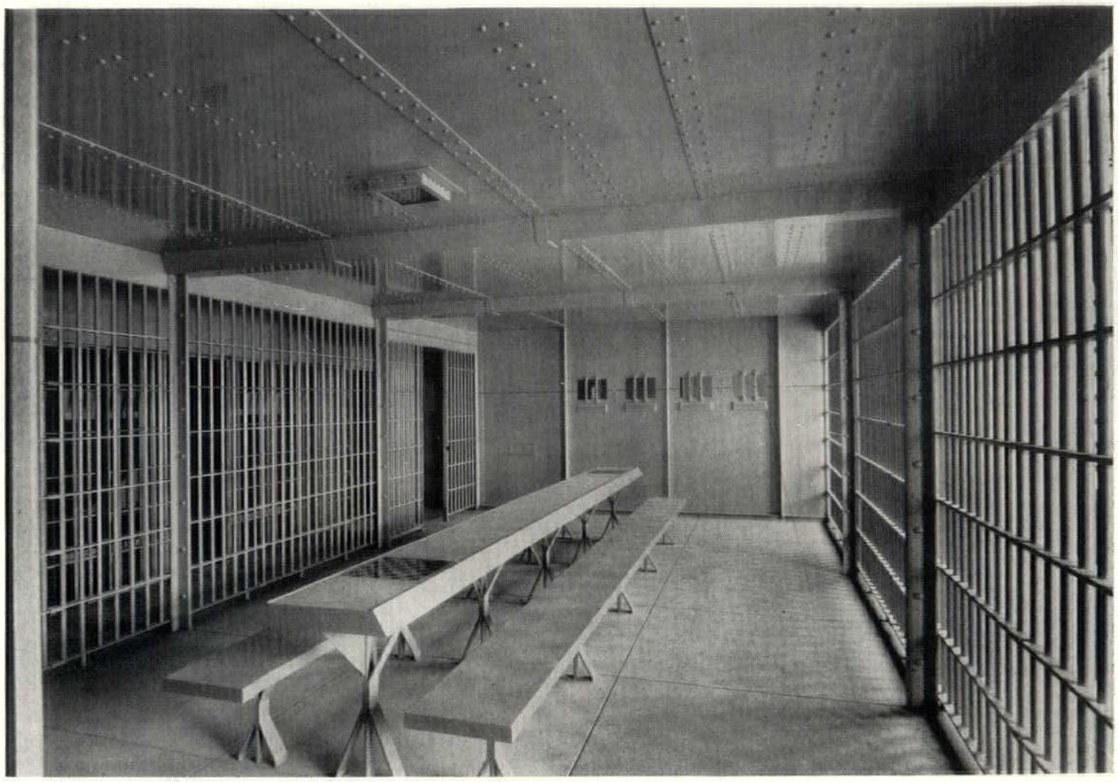
JACKSON COUNTY COURTHOUSE

KANSAS CITY, MISSOURI



Photograph by Harkins

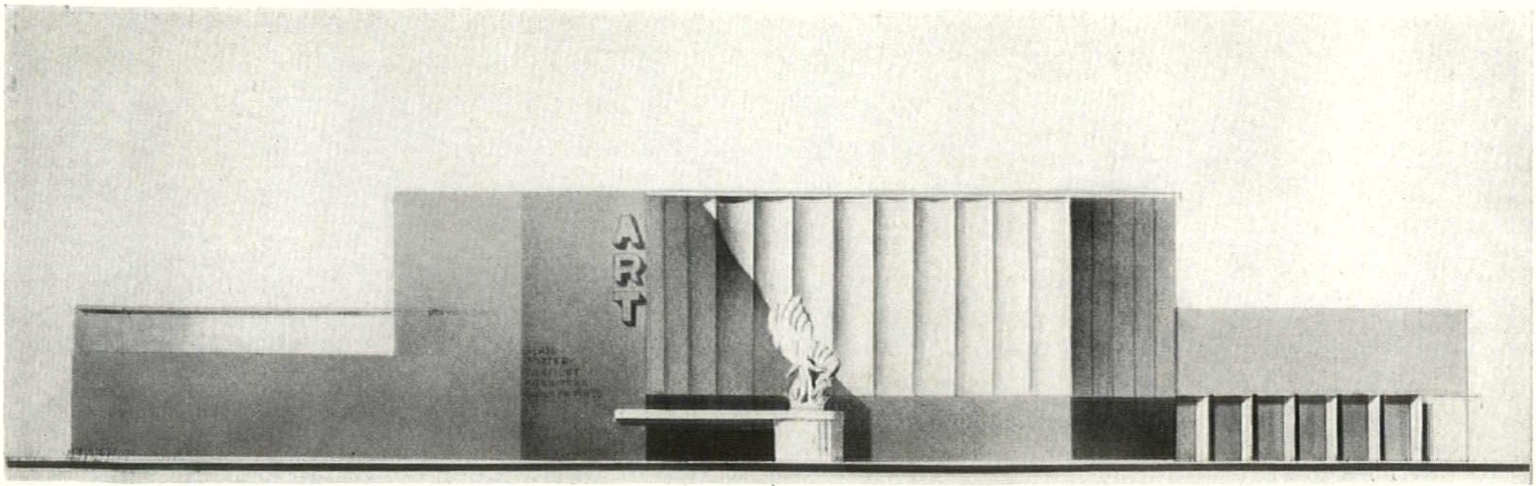
Above: COUNTY COLLECTOR'S OFFICE. Left: MAIN LOBBY AND FOYER AND ELEVATOR LOBBY.



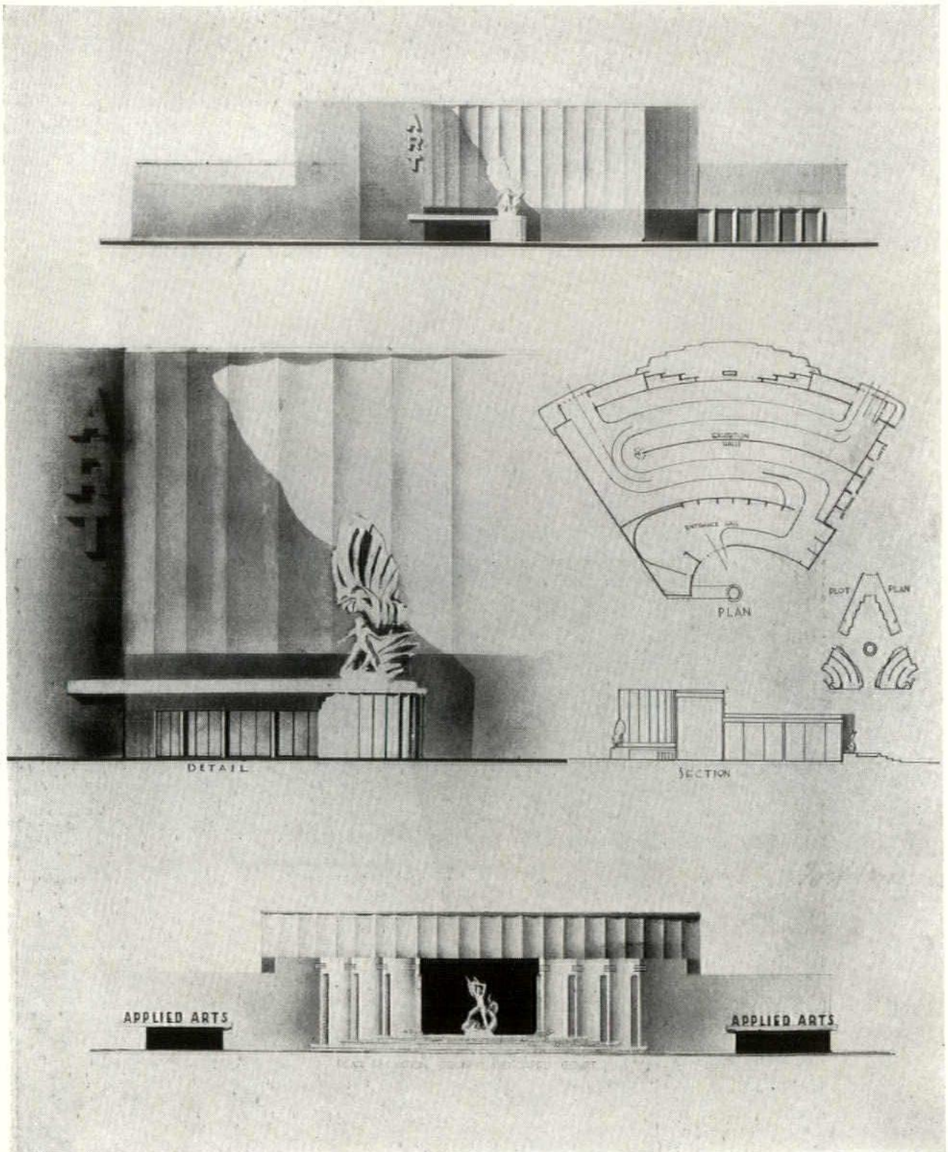
KEENE & SIMPSON, WIGHT & WIGHT
and FREDERICK C. GUNN, Architects;
EDWARD F. NEILD, Consulting Architect

Photograph by Harkins

Above: JAIL DAY ROOM, TYPICAL FOR UPPER PORTION OF BUILDING. Right: TYPICAL CIRCUIT COURTROOM ON FOURTH, FIFTH AND SIXTH FLOORS.



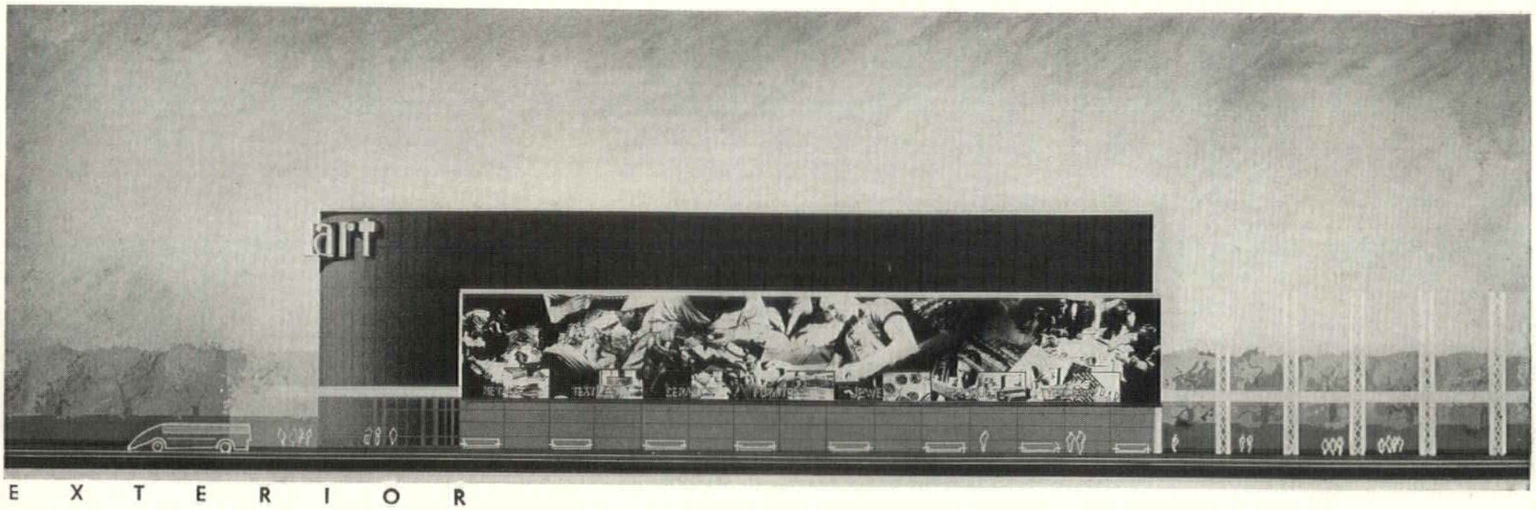
E X T E R I O R



COMPETITION FOR THE DESIGN OF A TYPICAL BUILDING FOR THE NEW YORK WORLD'S FAIR OF 1939. The designs represented met the requirements of the competition for a one-story building, the first floor being at about the ground level, with an outside height at the main entrance not exceeding 80 feet. As presented by the terms of the Program of Competition, the exhibition hall was designed for construction with frame covered plaster or plasterboard inside and a general surface outside of plasterboard or stucco.

FIRST MENTION
BY GEORGE LYMAN PAINE, JR.

The exhibit building is without conventional or symmetrical niche for entryway. It has an aisle or circulatory and wending by curves through the entire structure. The designer's intent was to lead the spectator along the curved way by the constantly changing nature of the scene and at no time to leave him overwhelmed by "too much to be seen."



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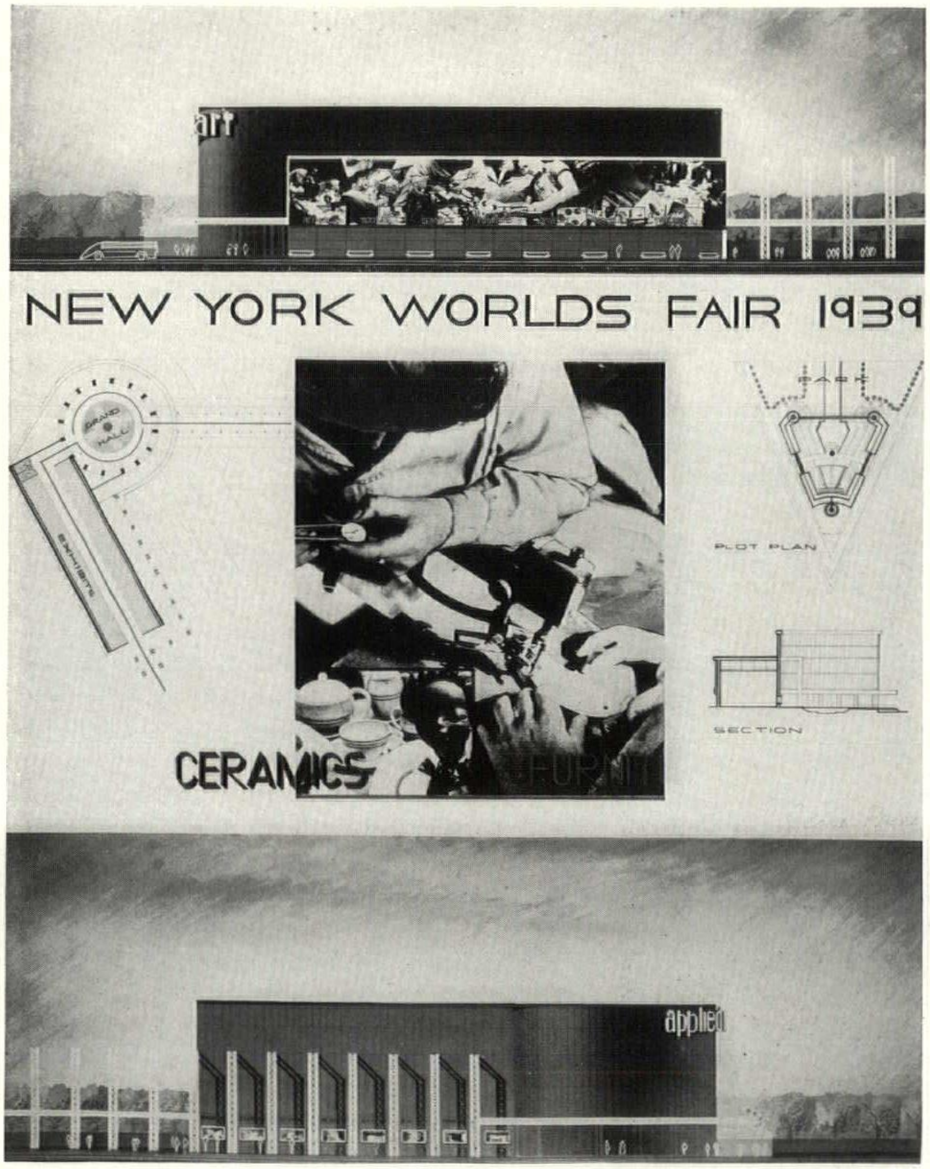
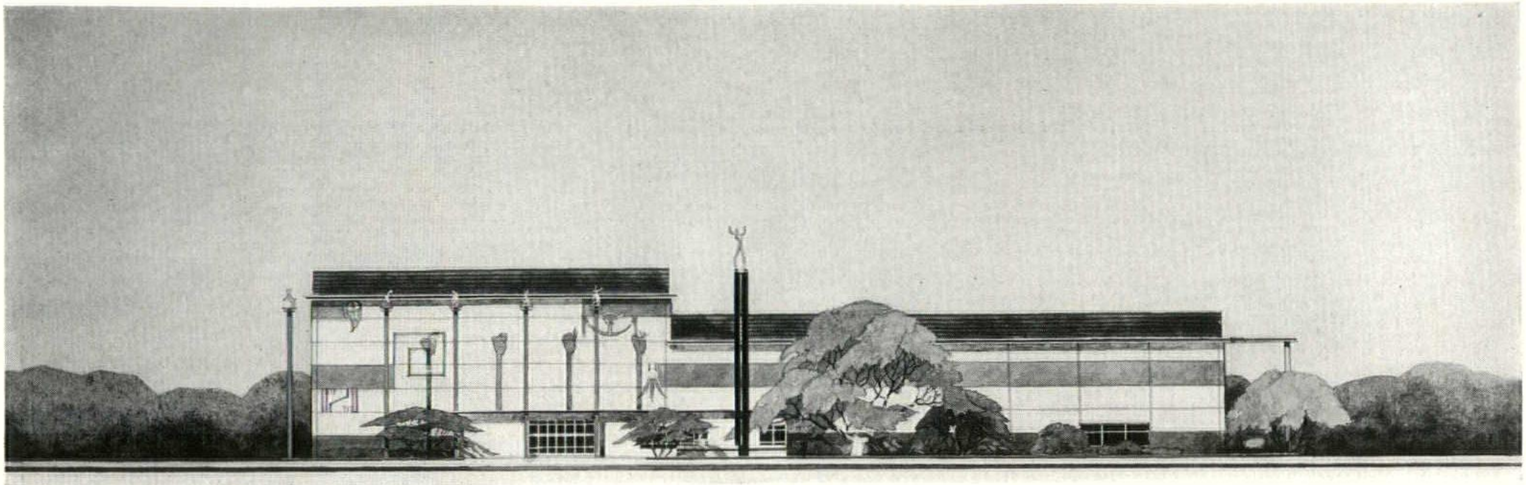


Robert D. Kohn, member of the Board of Design of the Fair, served as professional adviser for the competition. The jury of award consisted of Stephen F. Voorhees, Gilmore D. Clarke, William A. Delano, Jay Downer, Charles Butler, William F. Lamb, R. H. Shreve and Walter Dorwin Teague, all of New York City, and Paul Cret of Philadelphia and Louis Skidmore of Chicago.

SECOND MENTION BY PETER COPELAND

Mr. Copeland's scheme consists of a circular grand hall, giving into a rectangular exhibit space. The building carries on its outside wall a decorative photo mural of gigantic dimensions. Light steel masts join buildings and courts and are proposed for lighting or other display.



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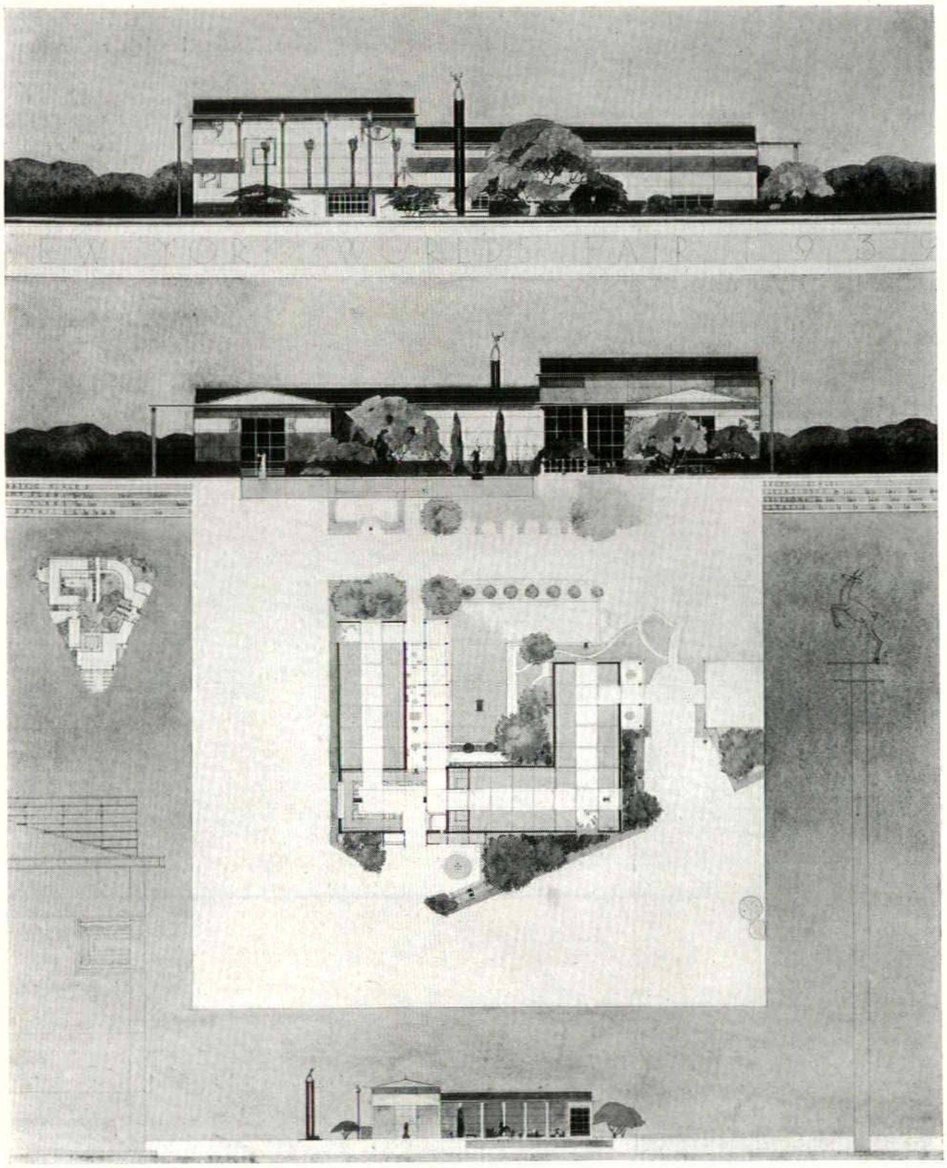
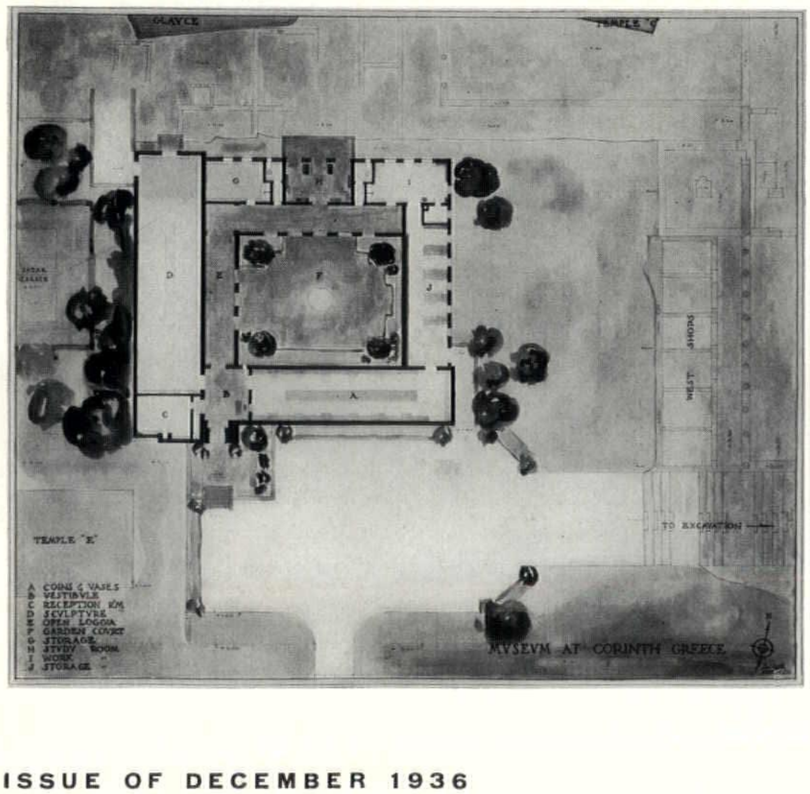


THIRD MENTION
BY PETER COKE SMITH

The plan employs paths, pools, fountains, decorative columns, trees and portieres to obtain an informal setting in and about the exhibition hall. The building depicted is intended to be treated with bold Pompeian colorings, terra cottas, blues, whites and blacks.

The jury gave honorable mentions of $100 cash value to designs submitted by the following men from the metropolitan area of New York: Frederick G. Frost, Jr.; Morris Ketchum, Jr., and Richard Boring Snow; Ralph E. Leff and Max M. Feldman; Johnson and Birnbaum; William Muschenheim and Morrison Brounn; Robert W. McLaughlin and Stamo Papadaki, collaborator; Leonard Dean; J. Gordon Carr; John Hironimus and George W. McLaughlin, collaborator; Landefeld and Hatch, and Rene Chambellan, collaborator; Aspinwall and Simpson; Dwight James Baum; Frank E. Johnson and Charles F. Schillinger, collaborator; Joshua D. Lowenfish; Louis Allen Abramson; W. K. Harrison and J. A. Fouilhoux; I. Woodner-Silverman; Francis Keally; Robert W. Cutler; Maximilian Bradford Bohn and Charles Beeston.

GENERAL VIEW



CORINTH MUSEUM
CORINTH, GREECE

W. STUART THOMPSON, ARCHITECT,
OF THOMPSON AND CHURCHILL

PLOT PLAN

EXTERIOR VIEW

CORINTH MUSEUM

CORINTH, GREECE

The Corinth Museum at Corinth, Greece, was built for the Greek Government by the American School of Classical Studies at Athens, of whose managing committee Professor Edward Capps of Princeton University is chairman. The building houses the antiquities found at the site.

The building is in the midst of the ruins of the ancient city of Corinth and because of its location it has no architectural pretense or ornamentation on the exterior. All exhibition rooms are built around a central courtyard used for exhibition of Byzantine sculpture. A friendly, comfortable museum, in which one wants to linger and study, has been attempted. Besides the usual exhibition rooms a reception room, a study library and view room (containing maps and

INTERIOR OF LARGE SCULPTURE HALL

W. STUART THOMPSON, ARCHITECT, OF THOMPSON AND CHURCHILL

books on Corinth) have been included. The courtyard has been planted and has seats and benches.

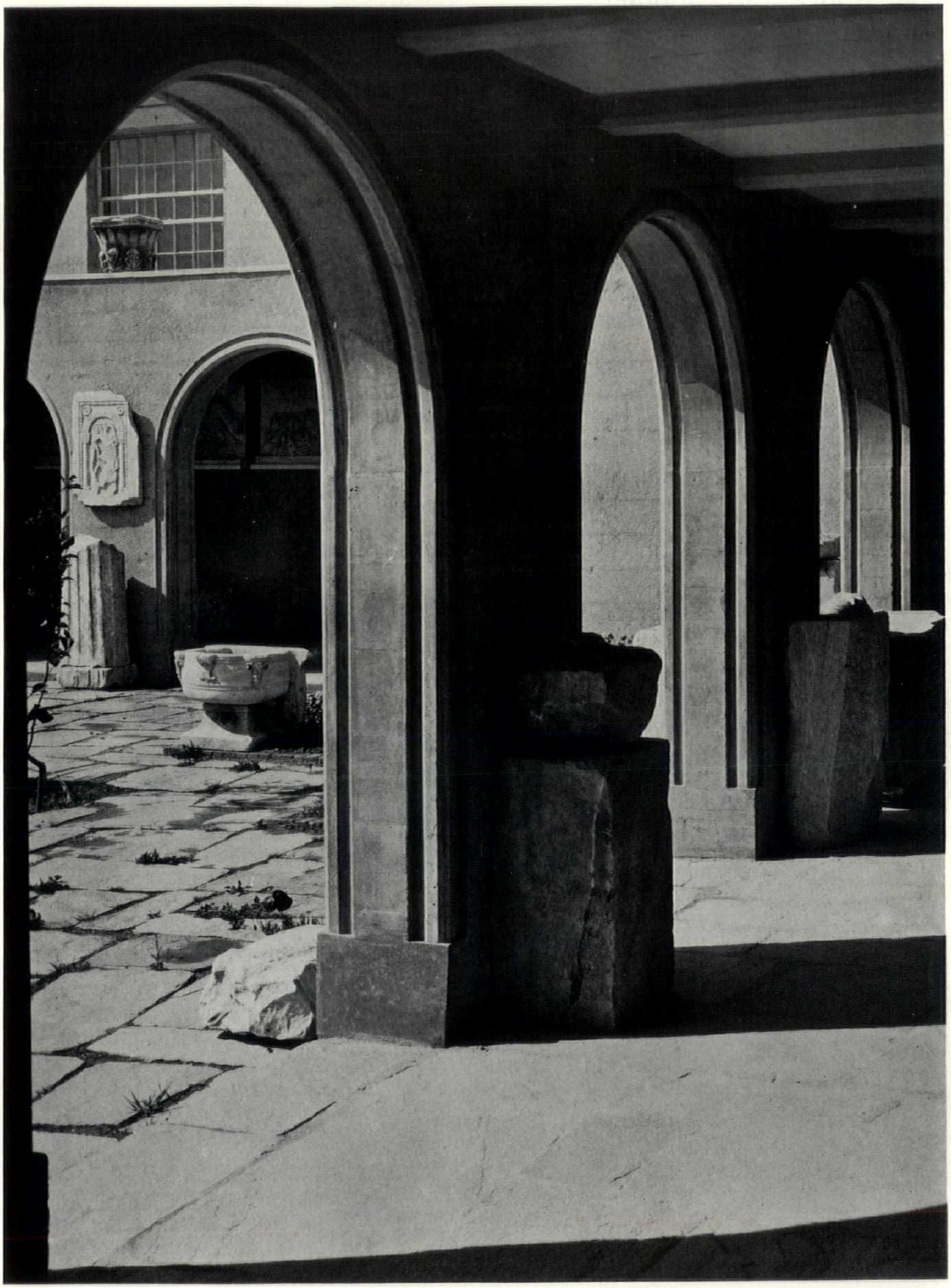
Corinth has been destroyed by earthquake thirty times in the past two thousand five hundred years. Mr. Charles Mayer, a New York engineer, created an earthquake-resisting structure. His design called for doubly reinforced concrete monolithic walls, 1'0" to 1'6" thick. Walls, floors, and ceilings were tied together as one mass. No applied finish or plaster was used. Color was mixed integrally in concrete, exterior surface being hammer dressed and interior surface rubbed. Windows are metal detention sash and doors special bronze. The roof is of local hand-made yellow and red tile tied down with copper

INTERIOR

CORINTH MUSEUM

CORINTH, GREECE

COURT



W. STUART THOMPSON, ARCHITECT, OF THOMPSON AND CHURCHILL

VASE ROOM

CORINTH MUSEUM

CORINTH, GREECE

W. STUART THOMPSON, ARCHITECT, OF THOMPSON AND CHURCHILL

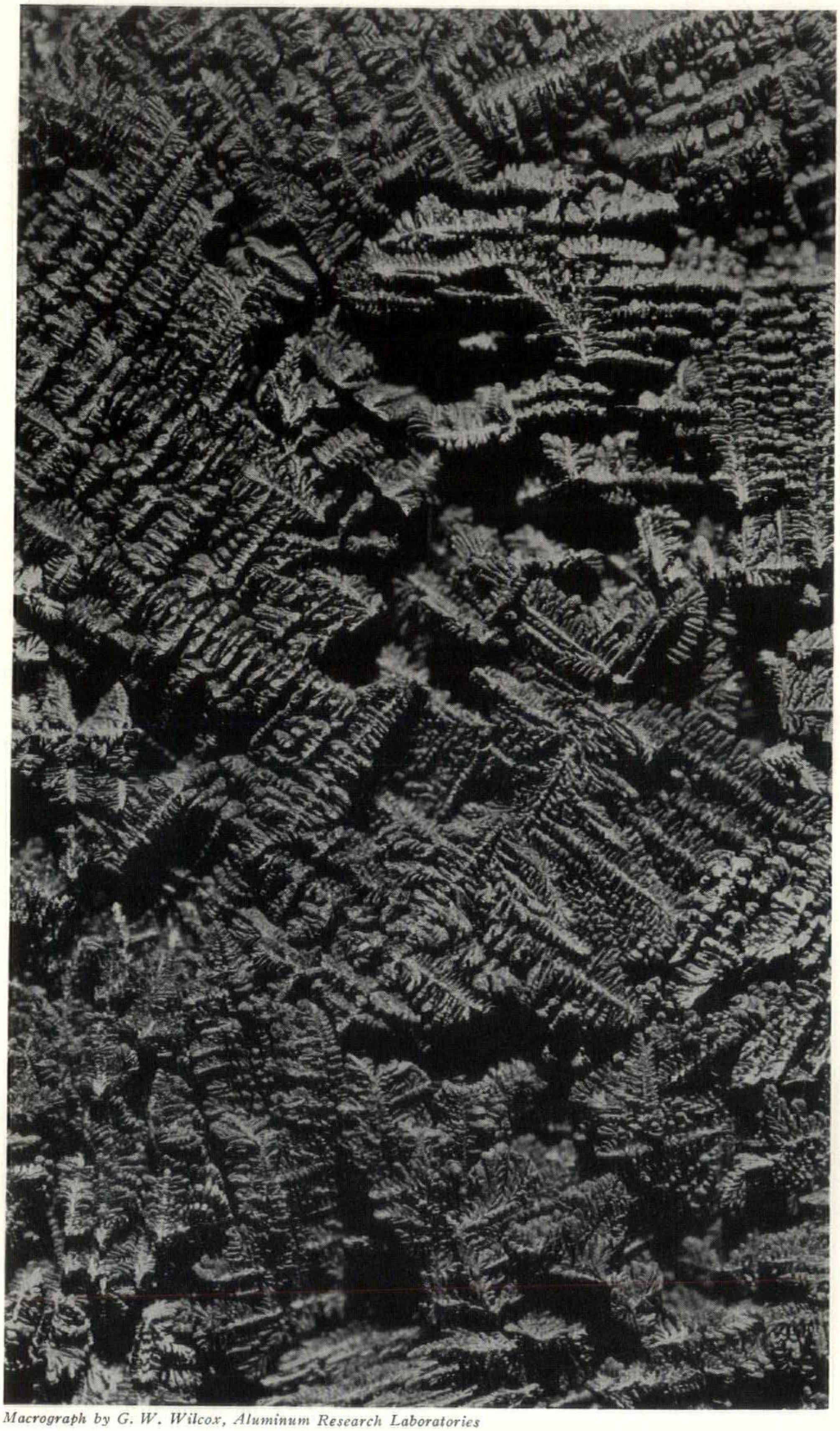
straps. Floors of exhibition rooms are of terrazzo tile and floor of courtyard is of unpolished Tenos marble slabs. Plumbing, heating, hardware, doors are imported from America.

The building in color matches the yellow brown tone of the rocks of Acrocorinth, the mountain forming the background. Windows are painted a dull red-brown. The interior of the courtyard is gay with blue window trim and with yellow and orange stripes around the arches.

The architects designed the furniture appropriate for use in this museum. The exhibits in the vase cases are intensified by means of light-reflecting mirrors.

TECHNICAL NEWS AND RESEARCH

DECEMBER 1936



Macrograph by G. W. Wilcox, Aluminum Research Laboratories

An architectural alloy under the microscope: This magnification of 25 diameters shows how aluminum crystallizes from a melt. When such a casting is rolled or extruded, dendrites are broken into fragments, making the alloy more uniform. (See also "The Alloys: a Complex New Technology" in book review section, page 12.)

THE TECHNICIAN ON THE CULTURAL FRONT

K. LÖNBERG-HOLM
and
C. THEODORE LARSON

The cultural front comprises all activities directed toward the expansion of social wealth. It is expressed in the continuous advancement of standards of productivity. The position of the technician (artist, architect, engineer) on this front can be defined only through an analysis of economic and technical forces in production.

All production—products, enterprises, ideas—can be analyzed relative to the phases of a characteristic cycle of performance: (1) research, (2) design, (3) fabrication, (4) distribution, (5) utilization, (6) liquidation. Each phase of this cycle is subject to planning control, for all are interrelated and interacting; a new design implies a liquidation of the old design. The continuity of this process is exemplified in the building field—the production of any structure does not end until its final demolition.

The driving force in business is the making of profits. The various phases of production all serve as means to this end. For these profits to be made, there must be a continuous increase in commercial activity, either by progressively adding new markets or by more intensively integrating the existing mechanism of production. In either case the profits are obtained (1) through ownership claims or (2) through production control, which involves ownership of the means of production. The status of the technician in the business economy depends on the market value of his performance.

The pace of industrial expansion is geared to the two forms of profit-making. Profit through possession tends to slow down production by emphasizing minimum liquidation; profit through production tends to speed up production by emphasizing maximum output. When planning control over liquidation is lacking, then friction occurs and a breakdown of the production routine is the ultimate outcome unless adjustments are made in the claims of ownership. This is evident in the repetition of economic "crises" and "recoveries" resulting in an increasing centralization of control.

Monopoly control of production for the preservation of existing ownership claims leads to the economic self-sufficiency and isolation of the totalitarian state (fascism). The drive for profits, however, results in an increasing pressure for new markets. Technical development becomes increasingly the design of instruments of military aggression. In housing, technical advances are expressed in the production of gasproof and bombproof "shelters." Liquidation becomes the planned destruction of new productive forces instead of the elimination of obsolete restrictive forces.

For a continuous advance in production standards there must also be a continuous liquidation of obsolete products, enterprises and beliefs. This is possible only in an economy where property relations impose no restrictions on the continuous development of new productive forces. With a centralized planning control that integrates all the phases of the production cycle, all lines of activity can be brought up to the par set by the most advanced standards of productivity. This expansion of social wealth implies increasing industrialization.

The social importance of the technician is stepped up as his function becomes the promotion of social productivity (advancement of human well-being and knowledge) as well as the promotion of mechanical productivity (greater efficiency of the physical plant). The pace of industrial expansion can be speeded up by planned liquidation of obsolete production and by planned research for new designs offering higher standards of productivity. This depends on a scientific control of production—the recognition and application of the most advanced standards in science, technology and sociology.

Such design potentialities advance continuously as increasing industrialization provides new instruments of control for the expansion of social wealth. The advance of science and technology is reflected in a shift in emphasis from standards of minimum subsistence to standards of maximum performance. Design becomes the control of environmental forces (human activities, matter and radiation) for the improvement of human life. The conception of housing as a means of protection against nature or society changes to a conception of structures as specific means for environmental control.

The introduction of new industrial techniques makes possible a new design integration which is needed for a more precise control of environmental forces. New organizational and structural forms, impossible with traditional productive relationships, are implied. The advance in environmental control is expressed in an increasing surplus of human energy which is released from drudgery and becomes available for the promotion of social productivity. With increasing integration in production, individual productivity is stepped up and society is enabled to create new and better environments.

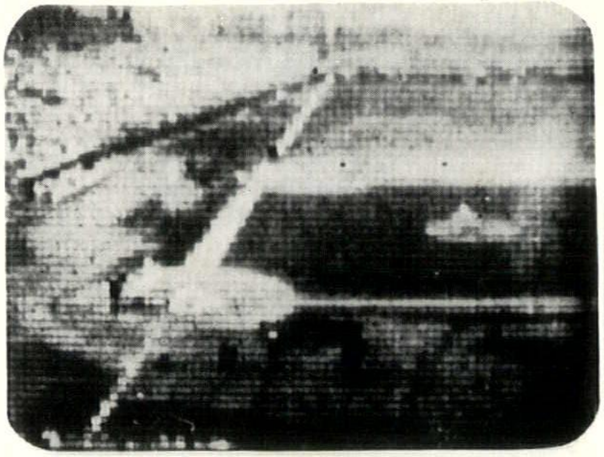
The measure of social power is the degree of integration in each field of productive activity. This is expressed by increasingly worldwide development of production networks—distribution of the productive plant as determined by physical and social resources, power, communication and transportation systems. Increasingly the emphasis in production is placed on precision control. The criterion of design becomes the integration of motion (control of time and matter). Advances on the cultural front are measured by an expanding range of human activity and by an acceleration of events.

The cultural front thus becomes the specification of standards and the control of increasing ranges of performance. Advances involve an increasing degree of integration of all lines of activity along all phases of the production cycle. This integration of productive activities presupposes the liquidation of obsolete economic relationships and the emergence of new relationships in line with industrialization.

The technician's position thus becomes—

(1) *On the economic front:* affiliation with organizations promoting economic security and social progress.

(2) *On the technical front:* design and advancement of new instruments promoting social and industrial integration.



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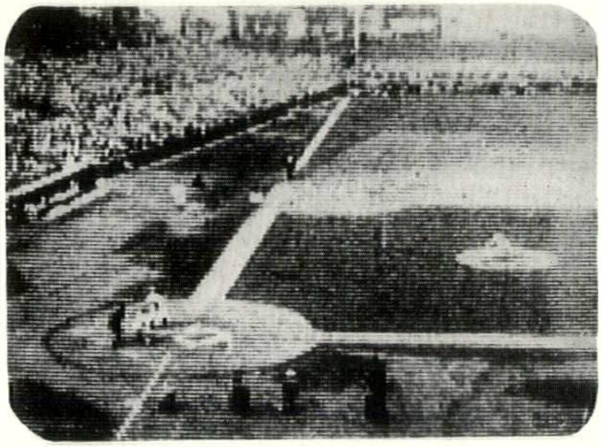

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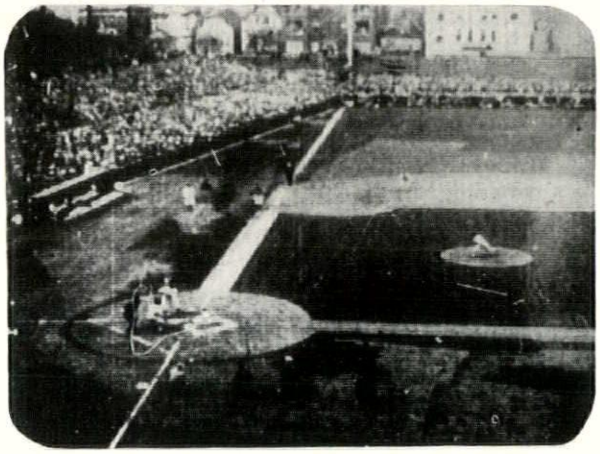

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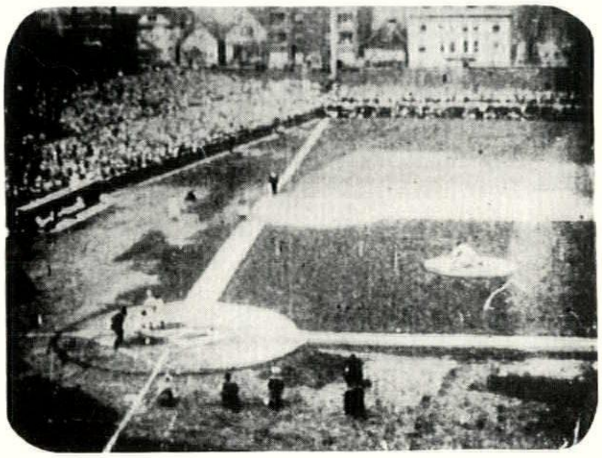

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INCREASING PRECISION: Clearness in the television images depends largely on the number of scanning lines. The accompanying views are not photographs of actual television images, but photographic equivalents made by RCA to facilitate the study of images. Pictures now consist of 343 lines. An increase to 441 lines is anticipated.

TELEVISION NETWORKS

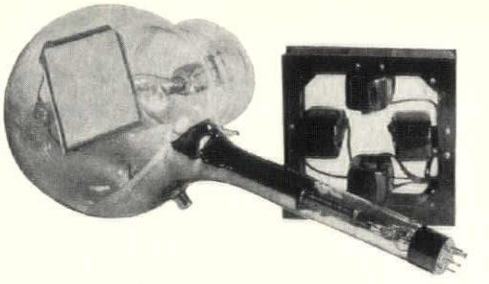
On November 2 regular television service began in London, according to a British Broadcasting Corporation announcement. One-hour programs are sent out from the Alexandra Palace station twice daily except Sundays.

On November 6 the first complete program of television entertainment was broadcast from the 10-kilowatt 6-meter transmitter atop the Empire State Building in New York. The show—a phase of the field tests now being conducted by Radio Corporation of America—was staged in the NBC television studio in Radio City and reproduced on 15 television receivers lined up in a darkened room on the 62d floor of the Rockefeller Center skyscraper for observation by 200 invited guests.

The present field tests do not mean that regular television service is now at hand, the American engineers point out emphatically. Many factors have yet to be investigated and coordinated. Nevertheless, it is said, results already attained in laboratory experiments go beyond the standards accepted for the inauguration of experimental television service in Europe. "We believe we are further advanced scientifically in this field than any other country in the world."

The problem of integration is so complex that it is hazardous to forecast when television will be available as a public service. The year 1938 is sometimes mentioned, however, and one authority has predicted that within 10 years all those who now have radios in their homes will be operating television dials. The significant step at present is that television has been brought out of the laboratory and into the field for tests by which a basis may be set for technical standards.

SENDING BOTH SIGHT AND SOUND OVER THE AIRWAYS



RCA iconoscope — the television "eye"

The need for integration in the television system, because of the close functional relationship of transmitter and receiver, has been described by David Sarnoff, president of RCA—

"Television is a highly complicated system of transmitting and receiving elements with thousands of interlocking parts, each of which must not only function correctly within its own sphere of activity, but must also synchronize with every other part of the system. In broadcasting of sight, transmitter and receiver must fit as lock and key.

"On the other hand, broacasting of sound permits a large variety of receiving devices to work acceptably with any standard transmitter. Notwithstanding the great progress that has been made in sound broadcast transmission, a receiving set made ten years ago can still be used, although with great sacrifice in quality. This is not true in television, in which every major improvement in the art would render the receiver inoperative unless equivalent changes were made in both transmitters and receivers.

"Important as it is from the standpoint of public policy to develop a system of television communication whereby a single event, program or pronouncement of national interest may be broadcast by sight and sound to the country as a whole, premature standardization would freeze the art. It would prevent the free play of technical development and retard the day when television could become a member in full standing of the radio family."

The required technical progress presupposes a rapid rate of obsolescence. For this reason a limited number of receivers have been manufactured; at present they are being used at strategic points of observation for testing and improving the RCA television system under actual service conditions. The programs are likewise experiments intended to determine the most desirable studio technique.

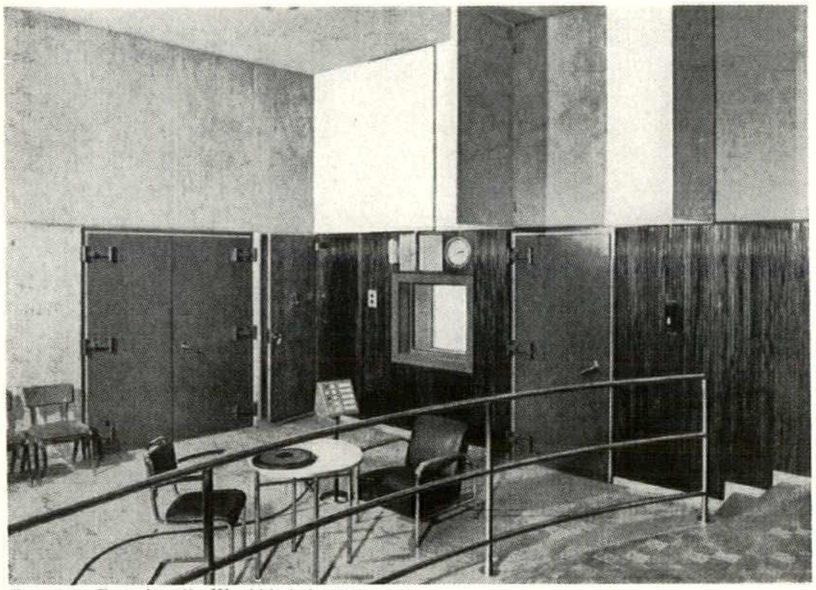
Networks: Because of the quasi-optical behavior of the ultra-short waves, the maximum range of a transmitter depends on the optical distance to the horizon and increases with the height of the antenna. The Empire State Building transmitter (1,250-foot altitude) has a range of about 45 miles. The average station is limited to a range of 25 to 30 miles. The wide band required in television makes impossible the transmission of images over existing telephone or ground line systems, as in the case of radio, so new wire facilities will have to be created before an interconnected service can be rendered on a nation-wide basis. Such a coaxial cable is now being installed between New York and Philadelphia by engineers of Bell Telephone Laboratories.

Receivers: A receiving set at present is much like a radio console cabinet in appearance and reproduces pictures on a reflecting-mirror screen measuring 7½ by 12 inches. Continued progress in obtaining greater luminescence and better definition of images is indicated in laboratory experiments, particularly on screens made of multiple synthetic crystals. In a new German invention, according to a U. S. Bureau of Foreign and Domestic Commerce report, a 2" x 2½" picture on the flat end of a cathode-ray bulb can be enlarged and thrown on a 3-foot screen which stands separate from the receiver.

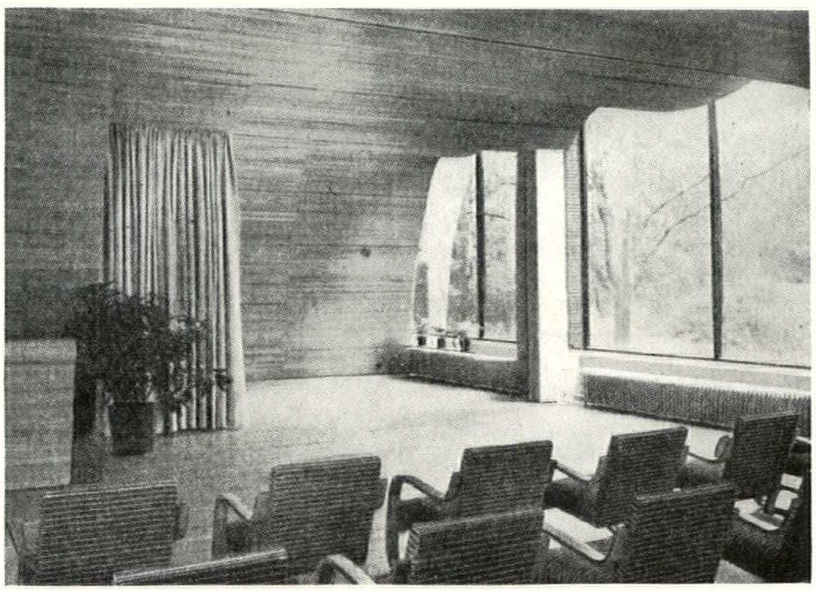
Architectural integration: Planning for television in the home is as yet an uncertain task. Provision must be made for a short-wave aerial, and this should be at the highest possible point to be most efficient. At present the images are best observed in low to dim light; the walls of the Rockefeller Center television room, for example, are draped in black. But as an RCA official observes—"It seems entirely likely that by the time television may be ready for general use, more brilliant images will have been achieved. In this, and in other directions, the art is still developing, and what may be a consideration today may not be a factor say a year from now."

At present the maximum distance for viewing the screen is about 10 feet, which makes the problem essentially a careful positioning of the television cabinet as a piece of furniture in the room. Obviously it should not be illuminated by direct light from a window. Enlarged images projected on a separate screen or on the wall constitute a different problem.

Inasmuch as television is intended to supplement radio broadcasting by adding sight to sound, improvements can also be anticipated in the transmission of sound. Very likely a much fuller range of tonal values will become obtainable, but this effect will be lost unless there is as precise a control of sound in the home as in the broadcasting studio. Progress in this direction implies the possibility of separate alcoves or rooms—"television theaters"—especially designed for the efficient reception of both sight and sound.



Courtesy Bouwkundig Weekblad Architectura



Courtesy The Architects' Journal

ACOUSTICAL DESIGNS

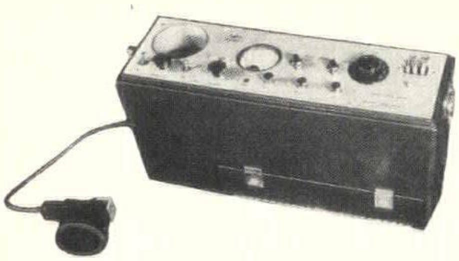
Since 1930 advances have been rapid in the science of sound. New instruments of measurement have made possible a precision control in the isolation or production of sound according to desired acoustical patterns. New materials have been developed with specific values of reflection, transmission, absorption. The architectural application, however, has usually been remedial in character, for generally the acoustical engineer is called in to "correct" conditions only after the building has been erected.

Greater precision in sound control demands a closer integration of architecture and acoustical design. So far the highest standards of performance have been set by broadcasting studios. These rooms must be designed for specific periods of reverberation, and out of these requirements radically new architectural shapes and proportions are evolving. The new studio designs are structural expressions of the mathematical equations for the control of sound.

Different requirements imply different design solutions. For ordinary speaking purposes a low period of reverberation, i.e., a "dead" room, is desirable. For music the reverberation period should be high and the auditorium relatively "brilliant." Reverberation time is essentially an index to the acoustical quality of a room.

Continued progress in the direction of better structural integration of acoustical requirements is promised by current research and laboratory work. These investigations are expected to lead to the rapid development of new facilities for producing sound and for controlling the distribution and reception of sound.

SOUND CONTROL: (1, 2) Broadcasting studios in the new AVRO building at Hilversum, Holland, by Merkelbach and Karsten, architects. (3) Lecture hall in new library at Viipuri, Finland, by Alvar Aalto, architect; the ceiling contours permit speakers to rise anywhere and be equally audible everywhere.



sound level meter — acoustical "ear"
(Electrical Research Products, Inc.)

CURRENT RESEARCH IN ARCHITECTURAL ACOUSTICS

Acoustical materials: The complexity of modern acoustical requirements is indicated by Paul J. Washburn of the Johns-Manville staff, who writes:

"The problems in broadcasting studios have taken a prominent part in our research program during the past two years, because of the large amount of work that has been going on and is being planned in this particular field. The improvement of speech in-put equipment as well as the transmitter stations has made it necessary for us to develop acoustical materials that will properly take care of new conditions. The speech in-put equipment today covers a wider range of frequencies with an elimination of the peaks than the older equipment. Consequently, it has been necessary for us to develop acoustical materials that have good absorption at certain frequencies, particularly at the lows, in order to eliminate the 'booming' effect of the bass instruments—yet it has been necessary not to absorb the high frequencies to a great extent, since the brilliant characteristic of studios depends largely on the highs. Practically all conventional materials have excellent absorption at high frequencies, and very little, if any, at low frequencies."

Acoustical models: Recently, according to the *Industrial Bulletin* of Arthur D. Little, Inc. (No. 113: June 1936), the acoustical engineers have been experimenting with "model" sound—the higher inaudible frequencies ("supersonics") with their smaller wave lengths are used for the study of reflections and echos in small-scale replicas of halls and auditoriums. F. R. Watson of the University of Illinois, in his "ripple tank" tests, has been using a pool of mercury shaped to conform to the contour of auditorium walls—disturbance of the mercury produces wave patterns which can then be observed. Vern O. Knudsen of the University of California, who experimented several years ago with "spark" photographs of auditorium models in collaboration with L. P. Delsasso, writes that further work in this field is planned for the coming year. Prof. Knudsen also observes in his letter—

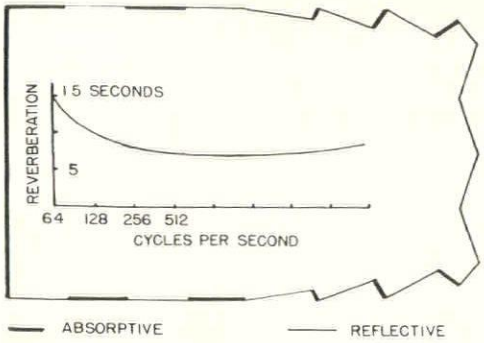
"The use of acoustical models in studying the reflection of sound in buildings should be encouraged. The acoustics of buildings since the days of W. C. Sabine has been almost entirely a matter of materials, and the matter of shape has been very much overlooked. The uniform distribution of sound throughout the entire seating area of an auditorium is an important matter. It is also important that the reflected sound unite with the direct sound with very little time lag—preferably not more than four hundredths of a second, which would correspond to a difference of path length of 45 feet. Important contributions to this phase of architectural acoustics will come from the study of the distribution of sound in laboratory models."

Electro-acoustics: Another approach appears in the development of sound-producing apparatus. The relative advantages are pointed out by Frank Massa of the research staff of RCA Manufacturing Company, Inc.—

"The problem of sound reflections was far more important in the days before public address systems were invented than it is today. At that time, only the speaker's voice furnished the entire sound energy which was available for distribution throughout the auditorium. To utilize this limited power to the greatest possible advantage required carefully designed walls which directed every possible bit of radiation to the area occupied by the audience. Of course, even in an ideally perfect auditorium the 'coverage' was limited by the intensity of the speaker's own voice.

"Today our problem is somewhat different. By employing public address systems, we are concerned primarily with the distribution of the direct sound radiation from the loudspeakers. The reflected energy from the walls of the auditorium is of secondary importance except that it must be relatively small in order not to interfere with the direct sound. As a matter of fact, our greatest efforts are directed toward securing proper directional characteristics in our loudspeakers in order that all frequencies may be uniformly spread over the entire area occupied by the audience. Very little sound is sent out by the loudspeakers in other directions, so that the ratio between direct and reflected sound arriving at the audience is quite high. In this way we do not depend so much on reflections to secure proper sound distribution.

"The use of electro-acoustic apparatus in sound reproduction has given the architect much more freedom in the design of his auditorium. It has also permitted the construction of assembly halls and theaters much larger than could be built in the past."



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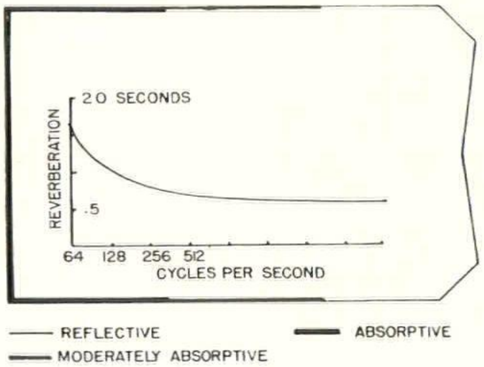

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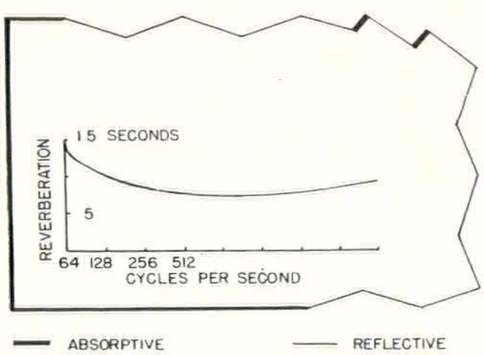

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The new architectural forms evolving out of the specialized requirements of sound broadcasting and recording are described by Michael Rettinger, acoustic engineer, Los Angeles.

RADIO STUDIOS DESIGNED FOR CONTROL OF SOUND

Music is not just one absolute tone after another, but a sequence of tone relationships modified at every moment by the player and the room together. The all-but-imperceptible tone adjustments that constitute musical "color," "depth" and "personality" are to a great extent predicated on the surroundings in which the music is rendered.

Specification of acoustics: The region about the orchestra should have much of the power and brilliancy of the concert hall, but without that reverberation which, while perhaps pleasing to two ears, is undesirable in the case of monaural hearing. The problem, therefore, resolve itself into the production of a moderate amount of localized liveliness around the orchestra, and into a minimization of multi-reflected sound striking the microphone. An added requirement is sufficient diffusion of sound in the room, particularly about the orchestra, so as to avoid interference patterns at sustained passages and to gain a steady rate of decay of sound level, especially important for the higher frequencies which are more directive in character.

Studio sound control: Diffusion is most effectively secured by dispersive corrugations in the orchestra region, so that at once the directive cones of sound are split up. With properly oriented panels one can also secure a desirably directed efflux of sound from the more "live" end of the studio toward the microphones. Absorptive panels at reversed angles about the orchestra are desirable to avoid an increase of sound energy at the pick-up due to reflections which otherwise would strike the microphone with a distorting time-lag and with an undue reverberant effect. (The larger the ratio between totally reflected and direct sound at the microphone, the more does the listener gain an impression of "distance" in the sound-pattern.)

The rear wall—region of orchestra—should consist of splays, both to obtain "liveliness" and to avoid multiple echoes in the longitudinal direction of the studio. All splays and corrugations should be at least 4 feet wide and should project from the wall no less than 18 inches in order to be effective with the more common wave lengths of sound. If alternate hard and soft layers are used for the wall treatment, these layers should be staggered so that each absorbent layer will face a reflective one across the studio, and vice versa. It is inadvisable to apply such a treatment on the rear wall, since the surface should always be kept as absorbent as possible.

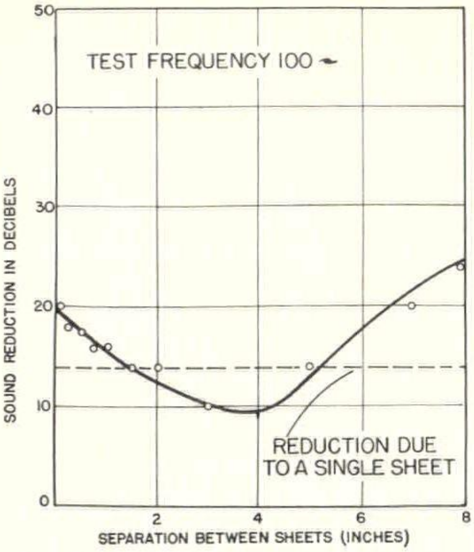
Sometimes studios employ resonating panels to achieve proper acoustic conditions. Such panels must be handled adroitly, so as to avoid a tone-bias when several panels vibrate with the same fundamental frequency.

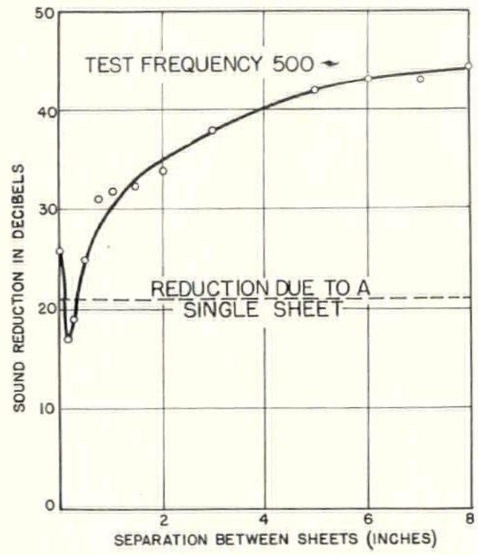
Typical studio plans: European opinion favors the ratio 1:2:3 for the height, width and length of the room. The National Broadcasting Company favors the ratio 2:3:5. This writer recommends a ratio of 1.3:2:3, which gives the American ceiling height and retains the European dimensions for width and length.

Figure 1: In this plan of a recording studio the reflective splays on the side-walls have a threefold significance. (1) If properly oriented, they provide a desirably directed efflux of the sound generated within this more live region in which the band is located. (2) Directive cones of high-frequency sounds are broken up, and there is a more uniform decay of sound in the room. (3) The over-all diffusion of the sound is increased because of the decrease in the mean free path given by 4V/S, where V represents the volume and S the total surface in the room. This shorter mean free path means more reflections per second at any point in the room, since the number of reflections per second is given by 34,400S/4V.

Figure 2: In this studio there is a live region about the orchestra, a moderately live region in the middle, and a dead region at the far end of the studio. Hence, there is no abrupt change in the reverberation time from live to dead end, which again brings about a more uniform decay of the sound in the room. The splays are necessary to avoid "flutter" in the longitudinal direction, as this dimension is usually more than the minimum distance of 35 feet required to produce an echo.

Figure 3: In this studio the orchestra is located in one corner. Such location is desirable when the orchestra consists of a large number of string instruments which otherwise could not be suitably arranged. Because of the large number of live splays in this room, the absorbent portions must be made very absorbent to bring the reverberation time down to a suitable value.





The sound insulation values are given in terms of the decibel. For example, a window which transmits 1/10th of the sound which falls on it has a sound insulation of 10 decibels; if it transmits 1/100th, 20 decibels; 1/1000th, 30 decibels, and so on.

The results of a recent study of window soundproofing, made by the National Physical Laboratory in England, are reported in the accompanying article by K. M. Constable.

WINDOWS MADE PROOF AGAINST INTRUSION OF NOISE

The sound insulation of single homogenous partitions (e.g., a sheet of glass or a solid concrete wall) depends almost entirely on their weight per square foot. The nature of the material is of secondary importance, provided it does not contain holes or cracks. A window of 21 oz. glass will admit roughly 200 times as much sound as an equal area of a 4½" brick wall.

Double glazing: Double windows have been used for a long time to provide thermal insulation; they also, as a rule, represent an advance on a single window from the point of view of sound insulation. A badly designed double window, however, can afford actually less insulation than single glazing. Results published by Dr. J. E. R. Constable of the Physics Department of the National Physical Laboratory in England show that the sound insulation of double windows depends largely on the spacing of the components (*Philosophical Magazine,* 1934, Series 7, Vol. xviii, p. 321).

Spacing for insulation: Some of the test results are indicated in the charts which show the variation of sound insulation with different spacings for low and medium frequencies. The insulation afforded by a single sheet of the same glass is also shown for comparison. The insulation of two sheets in contact is equivalent to a sheet of double thickness, viz., 5 db. greater. As the spacing of the two sheets is increased, the stiffness of the air between the two sheets begins to play a part, and the insulation first decreases, passes through a minimum, and then increases continually. For example, at 100 cycles per second this minimum occurs at a spacing of 4 inches and windows having this spacing easily transmit low frequencies. The curves prove that two sheets can actually have less insulation, particularly at low frequencies, than a single sheet if the intervening distance is insufficient. Calculation shows that if heavier glass is used the minimum occurs at narrower spacing and the average insulation at any spacing is increased.

Treatment for sound absorption: The insulation of a double window can be increased by lining the jambs between the sheets with acoustic absorbent. In another paper (Physical Society *Proceedings,* 1936, London, Vol. 48, p. 690) Dr. Constable has calculated and measured the effect of the character of the jamb surfaces exposed between the two panes. He showed that the more sound absorbent are these surfaces, the greater is the insulation provided by the window. For example, the insulation of a double window with bare brick wall between the components can be increased 8 db. by covering the surfaces with sound-absorbent felt. When it is recalled that a decrease in sound intensity by 10 db. corresponds to halving the loudness of a sound—a convenient figure to remember—it will be realized that this is an improvement well worth the very small extra cost. Lining the side walls with fiberboard (Celotex) gave an improvement of about 5 db.

Dissimilar components: A negative fact that is often stated in connection with the design of double windows is the recommendation to make the components of unequal thickness or to subdivide one of them. In a paper by Kreüger and Sager (*Proceedings,* Royal Swedish Institute for Engineering Research, No. 132, 1934) results of measurements upon a large number of windows are given and it is shown that there is no advantage in making the components dissimilar.

Recommendations:

(1) The spacing between the components of a double window should be as wide as possible. The full width of the wall should be used where possible. If 21 oz. glass is used, the spacing should be greater than 4 inches, otherwise the window will be useless against low-frequency sounds, such as the roar of street traffic. A proportionately smaller spacing may be used for heavier glass.

(2) The side walls between the components of a double window should be covered with sound-absorbent material such as acoustic felt or fiberboard.

(3) There is no need to render the components dissimilar by using glass of unequal weight or by subdividing the sheets of glass by glazing bars. The glazing bars, if used, should not be common to both sheets.

(4) Since soundproof windows only function as such when firmly closed, some form of artificial ventilation is a necessity. As windows are usually constructed to open so that their inner surfaces can be cleaned, it is important that they should be fitted with a latch having a wedge action to insure a tight closure against the rebate, which should be lined with a soft material such as rubber, felt or chamois leather.

concealed radiator for radiant heat

Introduced by American Radiator Company, 40 West 40 Street, New York, under trade name "Arco Radiant Convector," for use in conditioning systems.

The new unit is designed to retain all the advantages of the standard convector, including those of recessed or concealed radiators, space economy, accessibility for cleaning, and unobtrusive appearance. A live radiant heat panel of cast iron replaces the front section of a regular fin type convector heating unit so that this panel can be fitted flush to a specially prepared opening in the inclosure. Construction of the rest of the unit and of the inclosure is standard and the cast iron panel offers a uniform flat surface in the front of the inclosure. The plate is finished in a priming coat of gray and can be painted with the inclosure. Installation practice is the same as for the company's regular convector units.

balanced heating control

Introduced by C. A. Dunham Company, 450 East Ohio Street, Chicago.

A new adjustable regulating valve provides means of changing the size of the orifice without disconnecting the radiator. Used with the Dunham differential vacuum heating system, which circulates subatmospheric steam of varying temperatures, it permits balancing and regulating individual radiators. It is also adaptable to existing heating systems. After the valve is once installed the adjustments to secure correct balancing can be made without interruption to heating service.

air lock heating control

Developed by The Beaton and Corbin Mfg. Co., Southington, Conn.

This system is intended for one-pipe steam installations. An automatic venting valve, placed at the end of the radiator opposite the end where the steam comes in, regulates the amount of air which must be exhausted before the steam can enter. By means of a simple adjustment the valve can reduce the radiator capacity to about 60%.

all-in-one air conditioner

Manufactured by Airtemp, Inc., subsidiary of Chrysler Corporation.

The new unit has 3 horsepower capacity, but is so compact that all machinery, including compressor, motor, condenser and cooling coils are contained in one cabinet which covers only 20 by 33 inches of floor space. It is 7′ 6″ in height. Designed to sell at a comparatively low price, it is intended to put air conditioning within the reach of the small shop owner. Its semi-portability permits the merchant to take the unit with him from one building to another. Only simple electrical and water connections are required. The unit provides for overhead distribution and circulates 1,200 cubic feet of conditioned air per minute.

Installation: The unit can, if desired, be adapted to a duct installation to care for the conditioning of several individual rooms. There is also provision for bringing in outside air for ventilating purposes. It can be located behind partitions, nested in shelves, arranged along the wall or put back to back in the middle of the room, depending on the type of room. Multiple installation is made practicable with one or more units to handle outside air. Each unit works independently in the interests of flexibility and economy of operation. Single units may be used to supplement existing systems where addition of rooms or new departments necessitates additional cooling.

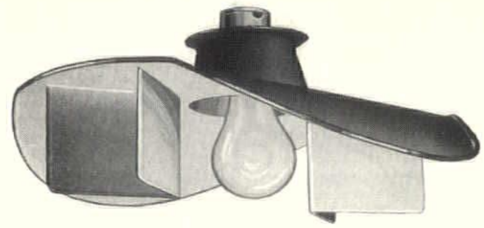
doorless telephone booth

Developed by Burgess Battery Company, Acoustic Division, 111 West Monroe Street, Chicago. De luxe model styled by Alfonso Iannelli, architectural sculptor and product designer; supplements an industrial booth designed for use in subways, noisy mills and factories (see report, Technical News and Research, April, page 338).

The new booth is intended to harmonize with the furnishings of hotels, depots, drug and department stores. It is open around the base and requires no door. This feature facilitates natural ventilation and easy cleaning. Noises which enter the booth are instantly absorbed by the Burgess *Acousti-Pad* lining. Sounds from within can only be picked up by the telephone transmitter.

Specifications: The steel booth is furnished in three standard exterior colors—gray, mahogany brown, and flat white for any subsequent finishing by interior decorators. The interior wall finish is a warm cream color with white ceiling. The overall height is 85 inches; width 32 inches; depth 42½ inches. A concealed ceiling light is provided with pull chain socket. Two shelves are provided for holding the telephone instrument and directories.

doorless telephone booth



luminaire for vertical lighting

luminaire for vertical lighting

Announced by the Westinghouse Electric and Manufacturing Company. Intended for the illumination of book aisles, stockroom bins and stacks and wherever a distribution of light on a vertical plane is required.

The new bin and stack luminaire consists of a reflector and socket cover, with socket. The reflector is designed to direct more light to working plane. It has two triangular vanes located opposite each other to provide proper eye shields, or light cutoff, up and down the aisles between the bins. The sides of the reflector are slightly dipped to redirect light into the bins and cut off stray light that would otherwise be lost.

Specifications: 24-gauge Armco iron is covered with one ground coat of porcelain enamel all over, two white coats inside, one green coat outside and black head to provide the reflective power. The bead is rolled tight and sealed in the enameling process. A 16-gauge steel outlet box cover, arranged to take a standard sign receptable socket with nickel-plated interior and polarized screw terminals with cover, is attached to the reflector by two cadmium-plated screws with protecting washers. This cover is pierced and slotted for attachment to a 4″ outlet box. It is finished in green baking enamel. The back connected sign receptacle allows for easy wiring and the nickel-plated interior eliminates lamp freezing. Standard 60, 75 or 100-watt inside frosted lamp can be used as desired.

improved duplex receptacle

Announced by The Bryant Electric Company, Bridgeport, Conn.

Separate feeds for each outlet permit separate control. One side can be wired for switch control and the other left always alive for ordinary use in connecting radio, vacuum cleaner, lamps, and so on. The entire body and back plate are heavy molded bakelite. Wide mounting ears made integral with the yoke permit level flush installation with plaster walls; they can be easily removed if not needed.

remote control power switch

Announced by Thomas A. Edison, Inc., under trade name "Polatrol."

This device, a polarized magnetic switch, is intended for the operation of street lamps and hot-water heaters. It utilizes the multiple street lighting circuits which are replacing the old series circuits, and brings certain off-peak power loads within the control of the power station. Direct current pulses sent down a circuit composed only of the primary neutral and one of the main power wires will close or open the Polatrol, and put into operation either lighting circuits or water heaters fed from the secondary side. Each can be controlled independently.

Household application: Electric water heaters with 30-gallon tank capacity may be installed to take advantage of the special low off-peak power rates. Such heaters in the past have been controlled by clocks and have required 80-gallon storage tanks.

low-cost panelboard

Announced by the Westinghouse Electric and Manufacturing Company.

This new Nofuze panelboard is designed for application in industrial plants, schools, hotels and all types of commercial structures. Because it uses the multibreaker unit recently developed for load centers (see *Technical News and Research* section, September issue, page 241), the cost is only slightly higher than for conventional switch and fuse type panelboard.

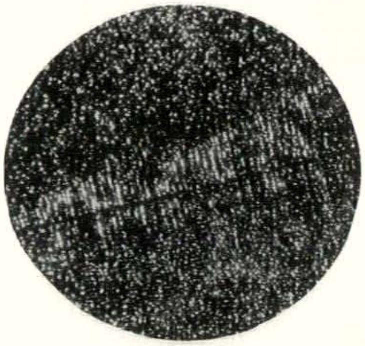
Specifications: The panelboard is designed for 115, 115/230 volt a-c service in a range of 4 to 40 circuits in 2-circuit steps. Bus arrangements for single-phase, 3/2 wire, and 3-phase 4-wire services are provided. Branch circuit ratings of 15, 20, 25, 35 and 50 amperes are available. The multi-breaker units employed permit a compact design, the box dimensions being held to 15″ wide by 4″ deep, permitting mounting in spaces where other panels could not be used.

neon indicator fuse

Manufactured by Indicator Corporation, 32-36 Green Street, Newark, N. J., and marketed under the trade name "Indicator 6 Fuse." Cost equivalent to 6 ordinary fuses.

When an overload occurs on the line, the fuse blows like any other fuse, but a tiny red neon tube flashes through an opening in the molded plastic top. A slight turn of the knob to the right engages a new fuse link; the neon lamp ceases to glow and the trouble is rectified. There are 6 fuse links, so the device remains in the socket until used 6 separate times. A short circuit or permanent overload is quickly detected by the neon lamp glowing again after the knob has been turned.

BUILDING MATERIALS



ordinary galvanized sheet

"Armco Galvanized Paintgrip"
(40 diameter microphotographs)

paint-gripping metal sheets

Produced by The American Rolling Mill Company, Middletown, Ohio, and marketed under the trade name "Armco Galvanized Paintgrip." Introduction of the sheets follows several years of research on the part of Armco's metallurgists and the technicians of the Parker Rust-Proof Company.

This new kind of galvanized sheet metal can be painted without special treatment of the surface by the user. In the past zinc-coated sheets have been prepared for painting by roughening the surface either by etching with acid or chemicals or by weathering. However, this practice has not proved satisfactory, because it is the tendency of certain zinc compounds to dry up the elastic constituents which are essential to the life of paints and lacquers. As the elasticity disappears, the paint becomes brittle and shows a tendency to crack and peel as expansion and contraction occur with temperature changes. The new sheets are chemically treated to produce a finely crystalline phosphate coating which in itself is neutral to paint (being neither acid nor alkaline) and keeps the paint from direct contact with the zinc surface. This coating is an integral part of the sheet and is slightly granular in nature.

flexible planks of wood veneer

Developed by The Celotex Corporation, 919 N. Michigan Avenue, Chicago, and marketed as an interior finish under the trade name "C-X Texbord."

The planks are made by applying cabinet wood veneers of walnut, mahogany and avodire to a Celotex base only ¼" thick. Each unit is an individual plank with a grain and figure different from that of every other.

Flexibility: This new wood finish can be used for both old and new construction. In modernization it permits economical application because it can be applied directly over plastered walls and because it does not make necessary the removal of baseboards, moldings and casings at doors and windows. The planks are flexible enough to conform to the wall surfaces and permit bending around archways and moderate curves.

Application: C-X Texbord comes in units 6", 9", 12" wide, and 8' and 10' long. The planks have beveled edge shiplapped joints. All attachment to the wall is made *under* the shiplap joint so that no nailheads are apparent and there are no nail holes to be plugged by finishers. The completed installation appears to be of solid wood grooved in plank formation. The usual necessity for batten strips is entirely eliminated.

moisture-protected sheathing

Developed by The Celotex Corporation, Chicago, and marketed under the trade name "Celotex Vaporseal Insulating Sheathing."

This new material has the same intrinsic characteristics as the regular Celotex, being integrally waterproofed and treated against termites and dry rot by the special Ferox process and offering the insulation value common to Celotex. An asphalt coating protects the Celotex against conditions of excessive moisture without reducing the insulation value; at the same time it increases its structural strength. A bright aluminum coating on one side offers an additional vaporseal.

siding clapboard of asbestos

Developed by Johns-Manville, 22 East 40th Street, New York, and marketed under trade name "J-M Asbestos Clapboard."

This new clapboard is a companion product to the "J-M Cedargrain Asbestos Siding Shingles" which have been on the market for the past four years. The clapboard is made of the same materials as the shingles—asbestos and portland cement—and has the same inherent qualities of permanence, fireproofness and ease of maintenance. Its surface texture, however, is different and it has a white color. It measures 9½ inches wide, 8 feet long and 3/16-inch thick, and is designed for an exposure of 8 inches.

termite-resisting lumber

Developed by the California Redwood Association and marketed under trade name "Foundation Redwood."

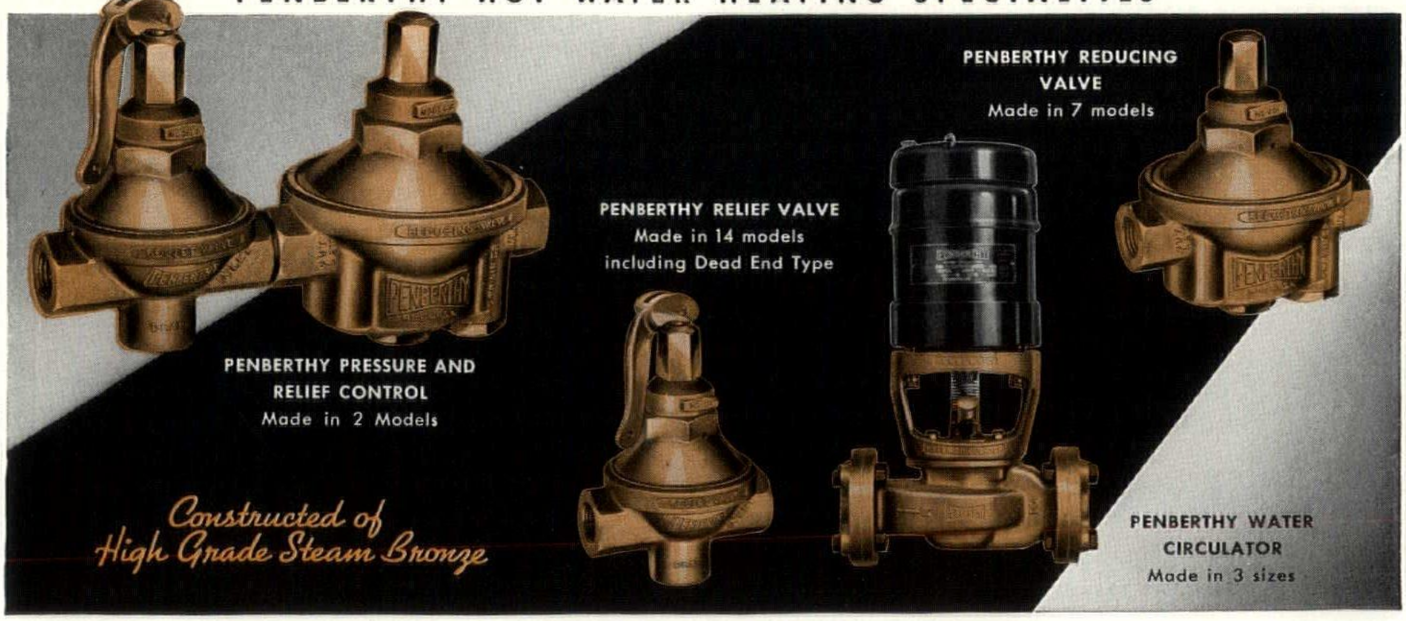
This new official grade of Redwood is designed to be highly resistant to decay and termite attack, and to insure durability under severe conditions of use. According to the Association's standard specifications: "In brief, it provides for lumber specially selected for resistance from the grade of No. 1 Heart Common, which in itself is a grade selected for resistance to decay and termite attack. Foundation Redwood not only must be specially selected and graded, but the grading must be performed under the supervision of official Association inspectors, and it must be grade-marked with the grade mark of the Association."

Thrifty

YOUR client gets a superior product at an attractive price when you specify one of the units shown above to keep his basement free from seepage water — or the specialties shown below to modernize his hot water heating plant. Thrifty clients particularly appreciate these thrifty products.

Penberthy Products are carried in stock by jobbers everywhere.

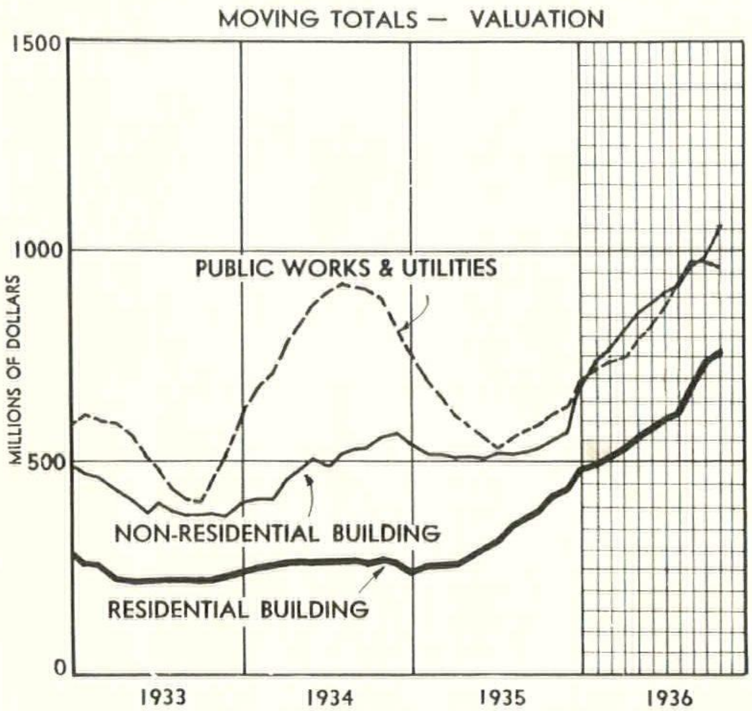
PENBERTHY HOT WATER HEATING SPECIALTIES

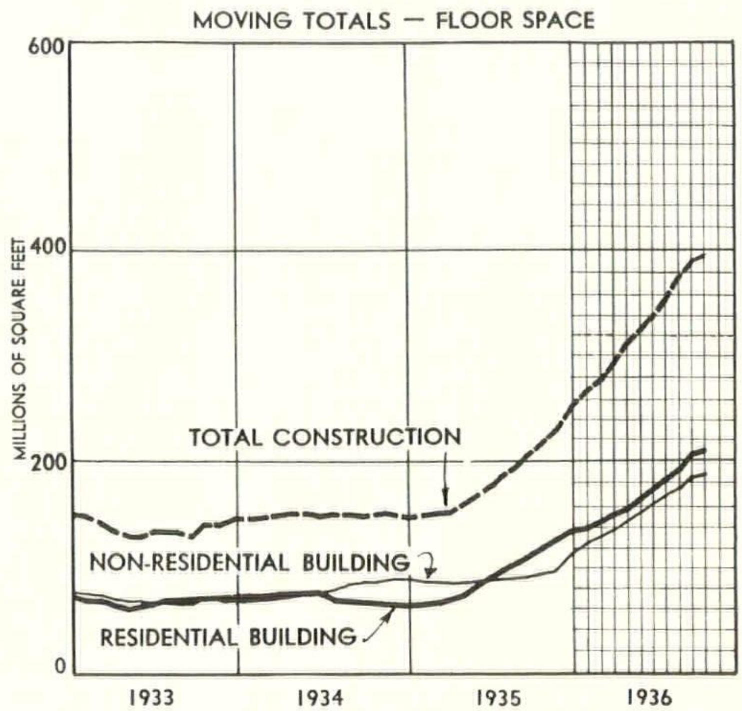


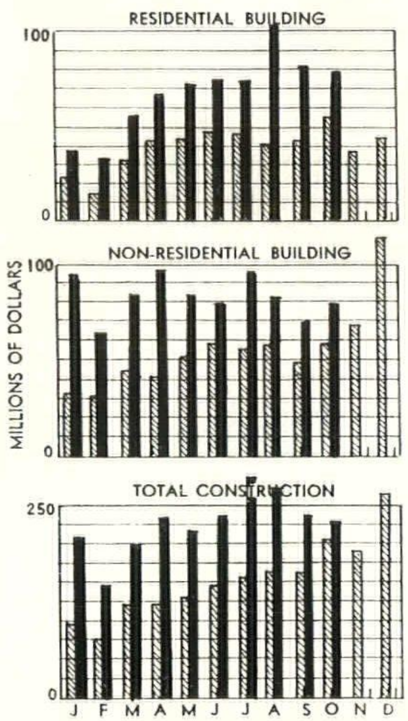
PENBERTHY INJECTOR COMPANY *Manufacturers of* QUALITY PRODUCTS *Since 1886*
DETROIT, MICHIGAN • *Canadian Plant,* Windsor, Ont.

CONSTRUCTION CONTRACTS IN THE 37 EASTERN STATES

On a dollar basis residential building still lags behind both nonresidential building and public works and utilities. This is an abnormal relationship, correction of which may likely occur late in 1937, or early in 1938.



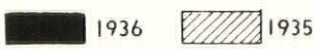


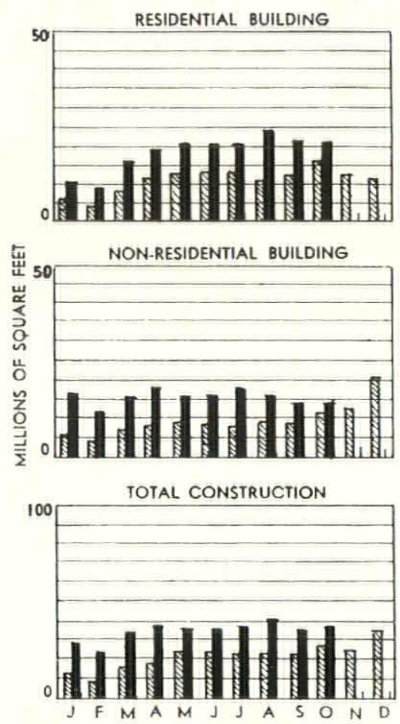


MONTHLY TOTALS

VALUATION

Charts shown to either side picture the actual month-to-month data on construction awards. Contracts have been charted on both a valuation and a floor space basis and cover both new and alteration work. It will be noted that the scales are different for each of the respective charts; hence each chart is to be read separately. Figures for the months of 1936 are shown in solid black; the months of 1935 are shown by the shaded bars. Thus the reader is enabled to make quick comparisons between the corresponding months of 1935 and 1936.

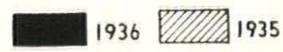


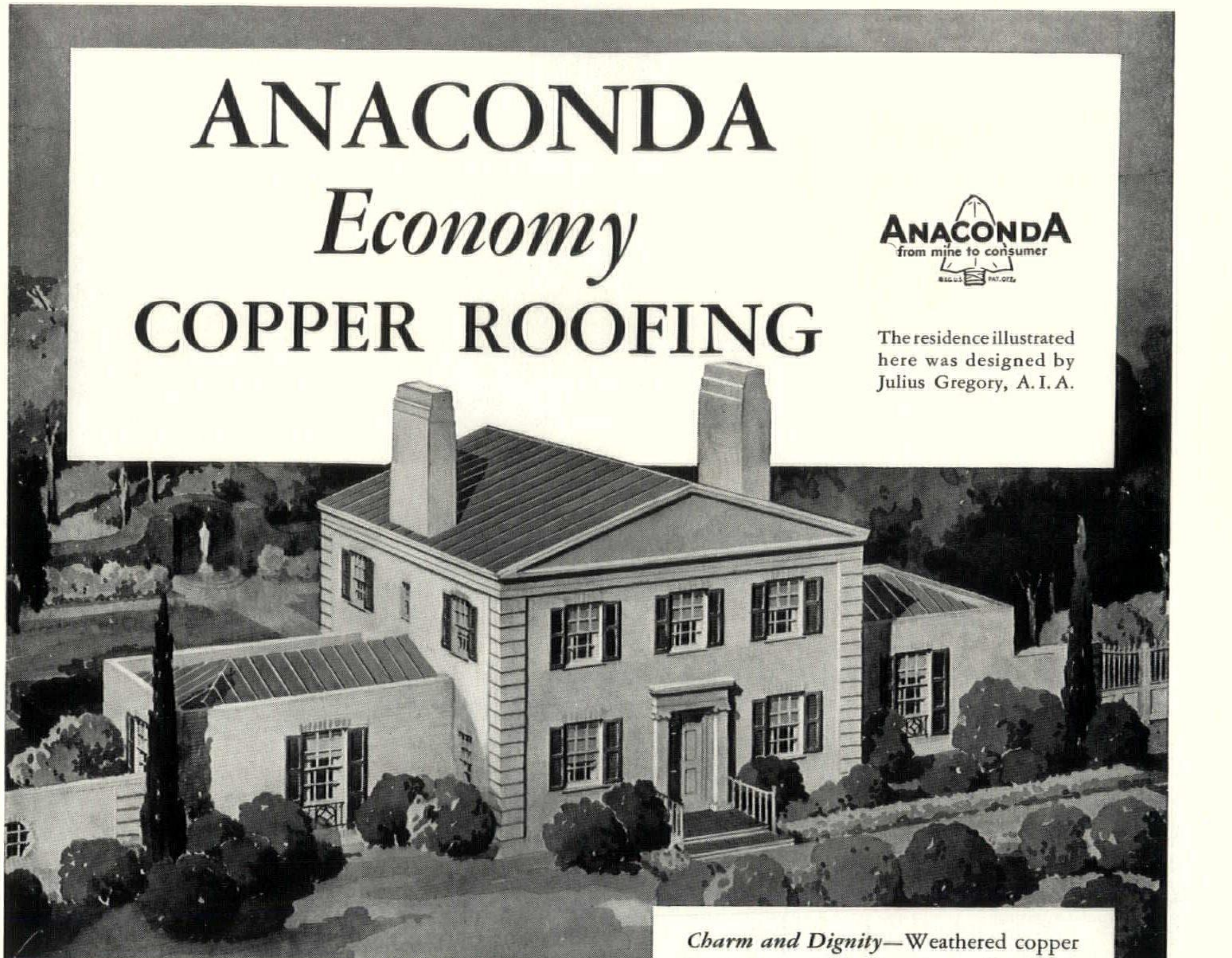


MONTHLY TOTALS

FLOOR SPACE

Charts shown above depict twelve-month moving total curves plotted on the end-month; i.e., the figure plotted for a given month represents the total for the twelve months ending with that month. This type of curve thus registers the trend of a given movement and effectively eliminates the seasonal element; a rise in the curve signifies that the figure for the current month was higher than that for the corresponding month of the previous year; and conversely, a decline in the curve signifies that the total for the current month was below that of the corresponding month a year earlier.





ANACONDA *Economy* COPPER ROOFING

ANACONDA
from mine to consumer

The residence illustrated here was designed by Julius Gregory, A. I. A.

ANACONDA *Economy* Copper Roofing offers the beauty and durability that is traditional of copper... *at a new low cost.* This is possible because *Economy* Copper Roofing weighs 10 oz. per square foot, instead of the 16 oz. copper formerly used. To compensate for the thinner gauge, it is furnished in 16-inch sheets which provide spacing of about 13¾ inches between standing seams. This width is in keeping with residential lines and gives the 10 oz. copper about the same rigidity and wind resistance as heavier material in wider widths. Its many other advantages (see panel at right) can be found in no other roofing material.

Charm and Dignity—Weathered copper harmonizes with landscaping at all seasons.

Fire-proof—Copper roofing eliminates the flying spark hazard.

Lightning-proof—When properly grounded, copper roofing protects the structure against lightning.

Light Weight—One of the lightest of roofing materials, copper does not need heavy, costly supporting structure.

Protects Insulation—Impervious to moisture, copper preserves the efficiency of under-roof insulating materials of cellular type.

36190

Anaconda Copper

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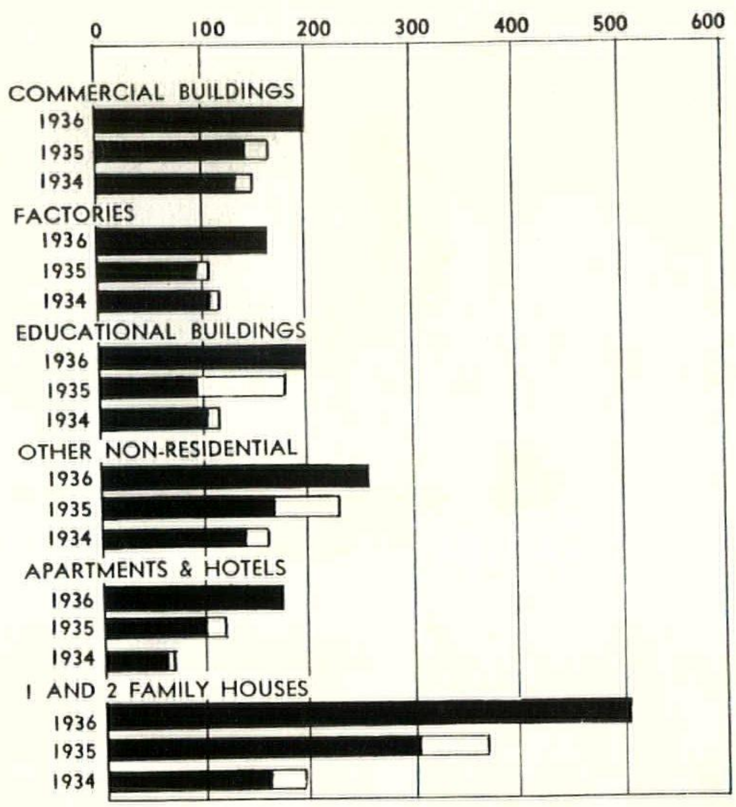
Offices and Agencies in Principal Cities • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

BUILDING IMPROVEMENT OVER 1935 APPROXIMATES 70 PER CENT

By L. SETH SCHNITMAN,

Chief Statistician, F. W. Dodge Corporation

Building improvement in 1936 has been substantial. All classes of buildings have participated to make the total for the first ten months about 70 per cent greater than the figure reported during the corresponding period of 1935. The recovery has been due as much to gains in private building as to increased activity on public projects. Improvement, too, has been rather well distributed geographically. Finally, 1936 marks the third year of building recovery; because of the rhythmic nature of the industry, this fact augurs well for even further gains.



BUILDING CONTRACTS IN 37 EASTERN STATES

Bars represent contract totals for each of the designated years. Figures on scale denote millions of dollars. Black portions of bars cover totals for the first ten months only.
*Heavy engineering projects not here considered.

Commercial building operations during the first ten months of 1936 totaled about $203 million in the 37 eastern states, for a gain of 45 per cent over the comparative 1935 figure. Improvement in commercial types was not confined to any single classification—public garages, service stations, banks, office buildings, stores, and public warehouses each contributed to the general betterment.

For factory building the ten-month figure amounted to $161 million for an increase of almost 80 per cent over the total shown during the initial ten months of 1935. Here, too, gains were general with the more important classifications participating in the improvement. The most significant increases occurred in the building of factories producing food products, textiles, and petroleum products.

Educational building showed a marked rise in the first ten months of 1936. With a total of $200 million this class of building—almost entirely public—scored a gain of about 133 per cent over the comparative 1935 volume.

Other nonresidential building types—hospitals, institutions, city halls, capitols, fire and police stations, prisons, military and naval buildings, post offices, religious and memorial structures and social facilities—accounted for an additional $250 million during the first ten months of 1936, for a gain of about 50 per cent over the figures for the comparable period of last year.

Apartment and hotel building operations in the 1936 ten-month period amounted to $168 million for a gain of about 80 per cent over the total covering the first ten months of 1935. In this improvement public housing undertakings played a part but the bulk of the gain was due to private building.

For 1- and 2-family houses a total of $500 million has been undertaken during the first 10 months of 1936, making a gain of about 67 per cent over the volume during the comparative 1935 period. By far the larger proportion of this class of work was undertaken privately.

Substantial increases in all classes of building loom for 1937. At this writing these will likely occur more in the classes of work usually considered as private than in public undertakings. The net result will probably be a larger building total than has been seen since 1930.

THE ARCHITECTURAL RECORD

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