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VOL. 71 NO. 1 JANUARY, 1932

Cover: CLEVELAND MUNICIPAL STADIUM
Walker and Weeks, Architects
Photograph by Carl Waite

Frontispiece: HOUSE OF AMORY S. CARHART AT WARRENTON, VIRGINIA
Bottomley, Wagner and White, Architects

3-8 . . . EFFECT OF REDUCED POPULATION GROWTH ON CONSTRUCTION DEMAND
By Thomas S. Holden

8, 9 . . . PROSPECT FOR BUILDING AND CONSTRUCTION, FIRST QUARTER 1932
By L. Seth Schnitman

10-26 . . . THE PRIZE-WINNING BUILDINGS OF 1931
Reviewed by Talbot Faulkner Hamlin

27-36 . . . PORTFOLIO OF CURRENT ARCHITECTURE
House of Amory S. Carhart, Warrenton, Virginia, Bottomley, Wagner and White, Architects; Starrett-Lehigh Building, New York City, Russell G. and Walter M. Cory, Yasuo Matsui, Associate Architects; Kenwood Mills, Inc., Shop, Michigan Square Building, Chicago, Ill., Holabird and Root, Architects

37, 38 . . . MUNICIPAL STADIUM IN CLEVELAND
Walker and Weeks, Architects
Osborn Company, Engineers

39-43 . . . FINDINGS AND SUGGESTIONS OF THE HOUSING CONFERENCE
By Michael A. Mikkelsen

43-48 . . . TYPICAL TRENDS IN LOW-COST HOUSING—AND THE OPPORTUNITIES EXISTING FOR ARCHITECTS

49-53 . . . DIMENSIONS: PART ONE—KITCHENS
By A. Lawrence Kocher and Albert Frey

54-57 . . . PUBLIC WORKS AND THE DEPRESSION
Editorial by William Stanley Parker, Architect

57, 58 . . . ARCHITECTS SHOULD SUPPORT THIS BILL DEMANDING THEIR EMPLOYMENT FOR PUBLIC BUILDINGS

59-72 . . . TECHNICAL NEWS AND RESEARCH: TECHNICAL DEVELOPMENTS, 1931
A Summary by K. Lönberg-Holm

28-30 (adv.) . . . ARCHITECTS' ANNOUNCEMENTS AND CALENDAR—THE FEBRUARY ISSUE

36, 38, 40 (adv.) . . CURRENT BUILDING TRENDS
By L. Seth Schnitman

40, 42, 44, 46, 48, 50, 52, 54 (adv.) NEWS IN BRIEF

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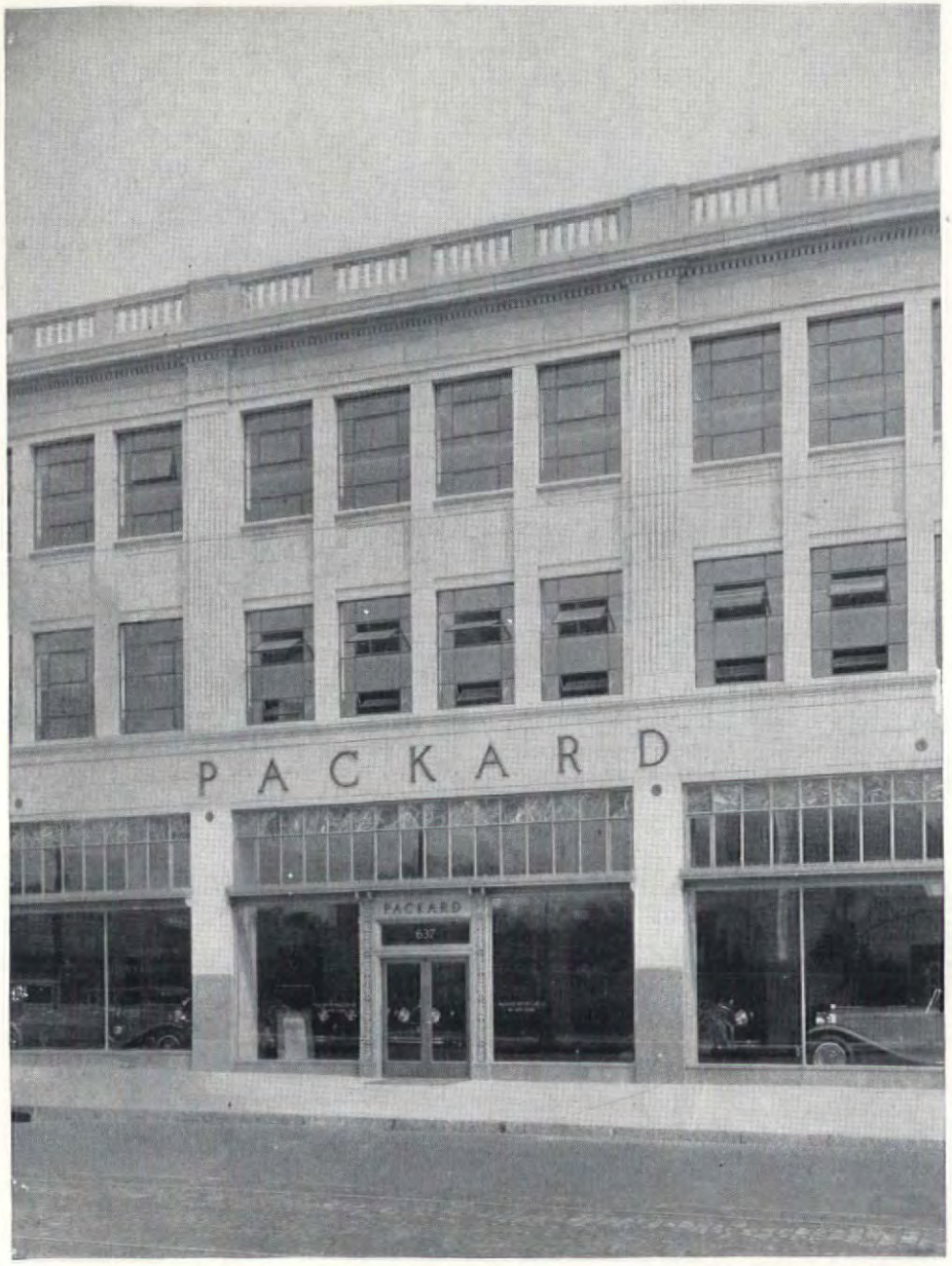

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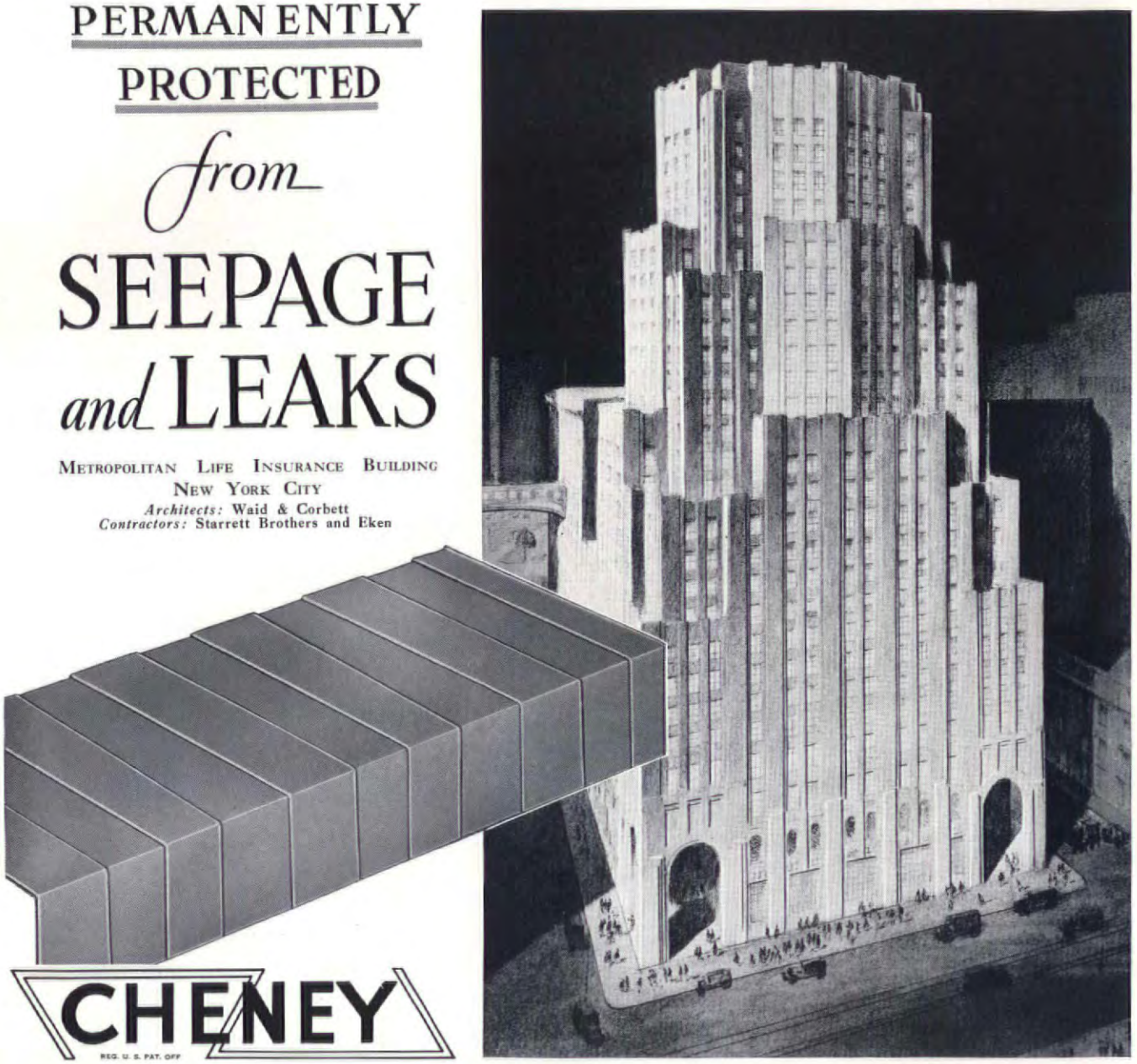

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EXHIBITIONS AND EVENTS

January 7	"County and Parkway Planning," a lecture by Major Gilmore Clarke of the Westchester County Parkway Commission. The New School for Social Research, New York.
Jan. 18-21	Thirteenth annual convention of the Associated General Contractors of America in Milwaukee.
January 20	"George Washington Bridge," a lecture at the New School for Social Research, New York.
January 22	Annual costume ball of the Society of Beaux Arts Architects, Waldorf-Astoria, New York City.
Jan. 25-29	Second International Heating and Ventilating Exposition, Cleveland. In conjunction with annual meeting of American Society of Heating and Ventilating Engineers.
January 31	Lecture by F. Kiesler, architect, at Brooklyn Art Museum. Subject: Ornament and Crime —The Life and Work of the Austrian architect, Adolf Loos.
Feb. 10-March	Exhibition of modern architecture at the Museum of Modern Art, New York City. American exhibitors: Frank Lloyd Wright, Raymond Hood, Howe and Lescaze, Bowman Brothers, Richard Neutra. European architects: Mies van der Rohe, Walter Gropius, J. J. P. Oud, Le Corbusier, Otto Haesler.

Frederic W. Mellor, architect, announces the removal of his office from 25 West 45th Street to 386 Fourth Avenue, New York City.

Myles E. Belongia has formed a partnership with Paul H. Smith, architect, formerly with the office of D. H. Burnham of Chicago, for the practice of architecture.

James A. Britton has moved his office from 344 Clyde Street, Brookline, Mass., to 174 Great Road, Maynard, Mass.

A decorative resource service for architects and decorators is announced by the Brownell-Lambertson Galleries, 106 East 57th Street, New York City.

EXHIBITION OF MODERN ARCHITECTURE

The Museum of Modern Art announces an exhibition of modern architecture which will open on February 10 at the Museum's headquarters, 730 Fifth Avenue, New York City, and continue for a period of about six weeks.

The exhibition, under the direction of Philip Johnson, will show by means of models and enlarged photographs, the work of Frank Lloyd Wright, Raymond Hood, Howe and Lescaze, Bowman Brothers, Richard Neutra, Miës van der Rohe, Walter Gropius, J. J. P. Oud, Le Corbusier, Otto Haesler and others.

After closing in New York, the exhibition will make a three-year tour of the United States. Included at present in the definite itinerary are the following cities: Philadelphia, Hartford, Los Angeles, Buffalo, Cleveland, Milwaukee, Cincinnati, Toledo, Rochester, Worcester and Cambridge.

ARCHITECTS

FELLOWSHIP IN ILLUMINATING GLASSWARE AT MELLON INSTITUTE

The Mellon Institute of Industrial Research, Pittsburgh, announces the establishment by the Macbeth-Evans Glass Company, Charleroi, Pa., of a fellowship in illuminating glassware. Dr. Rob Roy McGregor, a specialist in physical chemistry, has been appointed to this fellowship. Dr. McGregor received his professional training at McMaster University and at the University of Illinois and has been a member of Mellon Institute's research staff since 1927.

OLYMPIAD COMPETITION AND EXHIBITION

A competition of works by living architects belonging to the nations which have been invited to the games of the tenth Olympiad is to be held at Los Angeles. In conjunction with this competition there will be an exhibition of art, to be held at the Los Angeles County Museum, from July 30 to August 14.

Only architectural designs pertaining to sports, such as stadiums, sports grounds, playing grounds, covered courts, club buildings, boat houses, gymnasiums, swimming schools, and which answer to high artistic requirements, will be admitted. Prizes will be awarded for the best three designs for town planning and the best three architectural designs.

More definite information regarding the rules and regulations covering this competition may be obtained from the Secretary, American Olympic Committee, Woolworth Building, 233 Broadway, New York City.

BETTER HOMES AND BUILDINGS EXHIBIT IN PITTSBURGH

A permanent exhibition of the best materials, equipment and decoration in all types of buildings —with all exhibits completely "built-in"—has been established in the new Gulf Building in Pittsburgh. No booths, samples or unrelated exhibits are permitted. The exhibition covers three floors and is operated by the Gulf Building Company, a subsidiary of the Gulf Oil Company.

All matters of design, construction and arrangement are under the direct control of Schwab and Palmgreen, architects for the exhibit. The first exhibition floor will be opened to the public about May 1.

ANNOUNCEMENTS

JAMES HARRISON STEEDMAN FELLOWSHIP IN ARCHITECTURE

The seventh annual competition for the James Harrison Steedman Memorial Fellowship in Architecture, worth $1,500 and open to all graduates of recognized schools of architecture in the United States, has been announced by the governing committee composed of J. Lawrence Mauran, chairman, Louis LaBeaume, and Gabriel Ferrand, professor of design in the Washington University School of Architecture.

The fellowship gives the recipient a year of study in Europe. According to the conditions of the contest, all candidates must be American citizens of good moral character and must have had at least a year of practical work in the office of an architect practicing in St. Louis. Application blanks must be procured from the School of Architecture and returned not later than January 21. The actual competition will be conducted by the faculty of the School of Architecture this spring. After completion of the year of study abroad, the Steedman fellow is required to present a thesis as part of the work toward the degree of Master of Architecture.

LE BRUN TRAVELLING SCHOLARSHIP

The Executive Committee of the New York Chapter of the American Institute of Architects, as Trustees of the Travelling Scholarship, founded by Pierre L. Le Brun, announces a competition for the selection of a beneficiary. The program will be issued about January 15, calling for drawings to be delivered about March 15.

The sum of $1,400 is to be awarded to defray the expenses of a European trip, lasting not less than six months. Any architect or architectural draftsman, a citizen and resident of the United States, not under 23 or over 30 years of age, who shall, for at least three years, have been either engaged in active practice, or employed as an architectural draftsman and who is not and has not been the beneficiary of any other travelling scholarship, shall be eligible to compete.

All those wishing to enter the competition should arrange at once for nomination by a member of the American Institute of Architects. Nomination blanks can be obtained from the Secretary of any Chapter, A. I. A., or from the Le Brun Scholarship Committee. Nominations should be sent, so as to be received before January 15, to Le Brun Scholarship Committee, Room 530, 101 Park Avenue, New York City.

COMPETITIONS

January 7	Closing date of competition for a monument at Appomattox Court House, Virginia, to commemorate the termination of the Civil War. Address the office of the Quartermaster General, Munitions Building, Washington, D. C.
January 15	Programs issued for Le Brun Travelling Scholarship Competition. Address Le Brun Scholarship Committee, Room 530, 101 Park Avenue, New York City.
January 18	Closing date for applications for the James Templeton Kelley Fellowship in Architecture. Address Niels H. Larson, Boston Society of Architects, 814 Statler Building, Boston.
January 21	Closing date for applications for the James Harrison Steedman Memorial Fellowship in Architecture. Address The School of Architecture, Washington University, St. Louis, Mo.
February 1	Closing date for entries in the annual Prizes of Rome competition. Address Roscoe Guernsey, Secretary, American Academy in Rome, 101 Park Avenue, New York City.
March 7	Mailing date of programs to approved candidates for the fifth annual competition for the A. W. Brown Travelling Scholarship. Address William Dewey Foster, 25 West 45th Street, New York City.

A. W. BROWN TRAVELLING SCHOLARSHIP

The fourth competition for the A. W. Brown Travelling Scholarship to be held under the direction of a committee of the American Institute of Architects, is announced. Programs will be mailed to approved applicants about March 7, drawings to be delivered on or about April 6. Application blanks may be obtained from the Secretary, William Dewey Foster, 25 West 45th Street, New York City.

This scholarship is the gift of Ludowici-Celadon Company and is a memorial to the late A. W. Brown, for many years president of that company. The amount of the scholarship is $2,000, to be used towards defraying expenses of a year of travel and study in Europe. Second, third and fourth prizes of $250, $150 and $100 are also offered.

The competition is open to any architect or architectural draftsman, under 32 and over 22 years of age, who is a citizen and resident of the United States; who has not held any other European scholarship; and who has been in active practice or employed in the offices of practicing architects for at least six years, or, if a graduate of an architectural school, at least two years since graduation.

The beneficiary will be required to spend the first two or three months of his time abroad as a student at the American School of Fine Arts at Fontainebleau, except under special conditions. He will also be required to complete, during his European study, two envois, which shall consist of measured drawings of buildings on which burnt clay has been used for roofing.

FEATURES IN THE FEBRUARY ISSUE

CHICAGO MUNICIPAL AIRPORT — PAUL GERHARDT, JR., CITY ARCHITECT

Hedrich-Blessing

RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

In addition to the two buildings illustrated on this page, the PORTFOLIO will feature an office building in Los Angeles by John and Donald B. Parkinson; a clubhouse in Cambridge, Mass., by Perry, Shaw and Hepburn; a memorial chapel in Allentown, Pa., by Frank R. Watson, Edkins and Thompson; and several houses by Barber and McMurry, Frost and Raymond, and Henry Dubin, architects.

The series of housing studies will be continued with an article on "The Blighted Areas of Cities and Towns," by Arthur C. Holden, architect. Mr. Holden sets forth a method of financing which will make possible the reconditioning of such districts and pave the way for architectural developments. Henry Wright, architect, also will contribute an article on "The Fundamentals of Housing Costs in Renting and Owning."

The Technical News and Research Department will present two studies this month: (1) Hospitals for Treatment of Mental Diseases, and (2) Planning Requirements for Surgical Operating Rooms, a checklist prepared by Dr. S. S. Goldwater, hospital consultant.

AMONG THE CONTRIBUTORS IN THE CURRENT ISSUE

JANE CALLAGHAN directed, with Dr. Lillian Gilbreth, the research on measurements for the Brooklyn Borough Gas Co.

TALBOT FAULKNER HAMLIN is professor of architecture at Columbia University and a practicing architect in New York City.

THOMAS S. HOLDEN is a graduate in architecture, Massachusetts Institute of Technology, with several years of practice in Boston and Ohio. He is a member of the President's Conference Committee on Types of Dwellings, a member of the executive committee of the National Building Congress and a member of the National Conference on Construction.

WILLIAM STANLEY PARKER, a practicing architect, is chairman of the Committee on Design of the President's Conference and president of the Architect's Small House Service Bureau in Boston.

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Sweet's, Pages C3217-C3219

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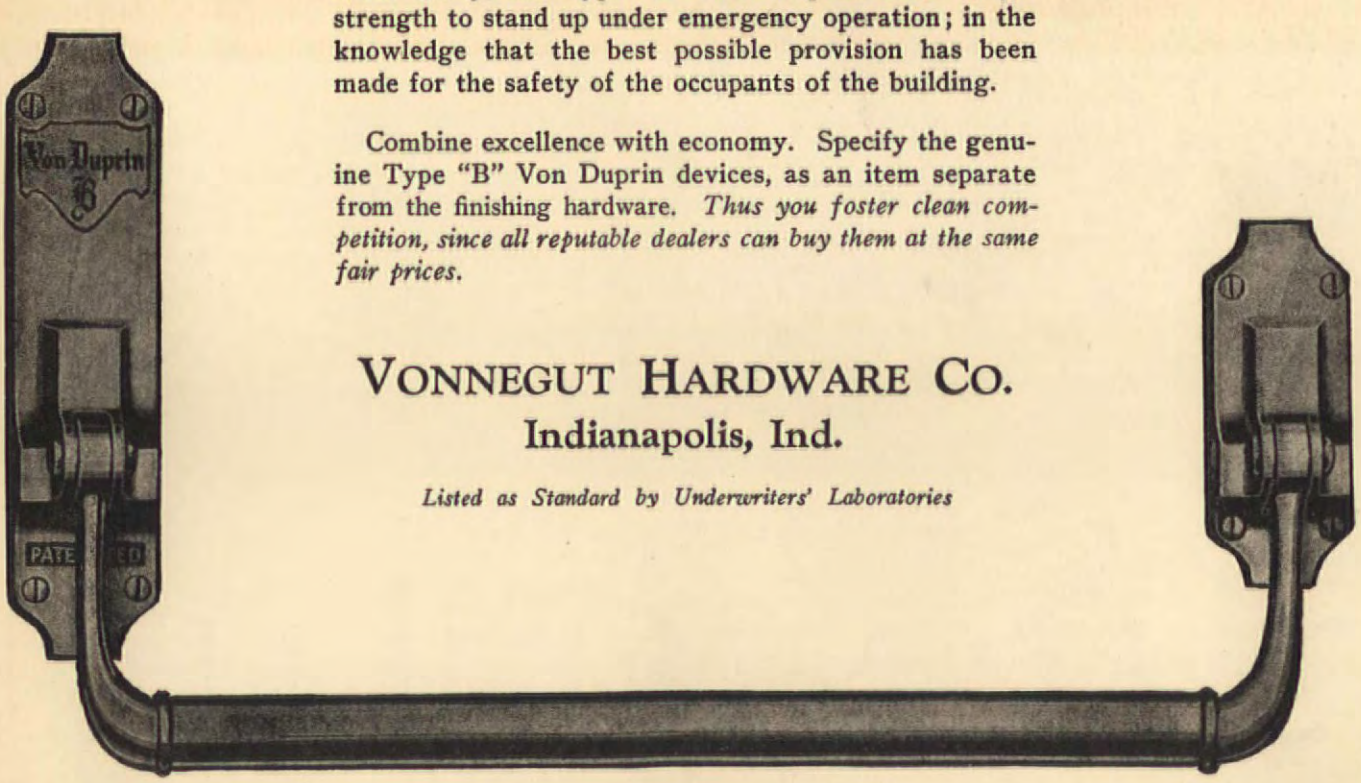

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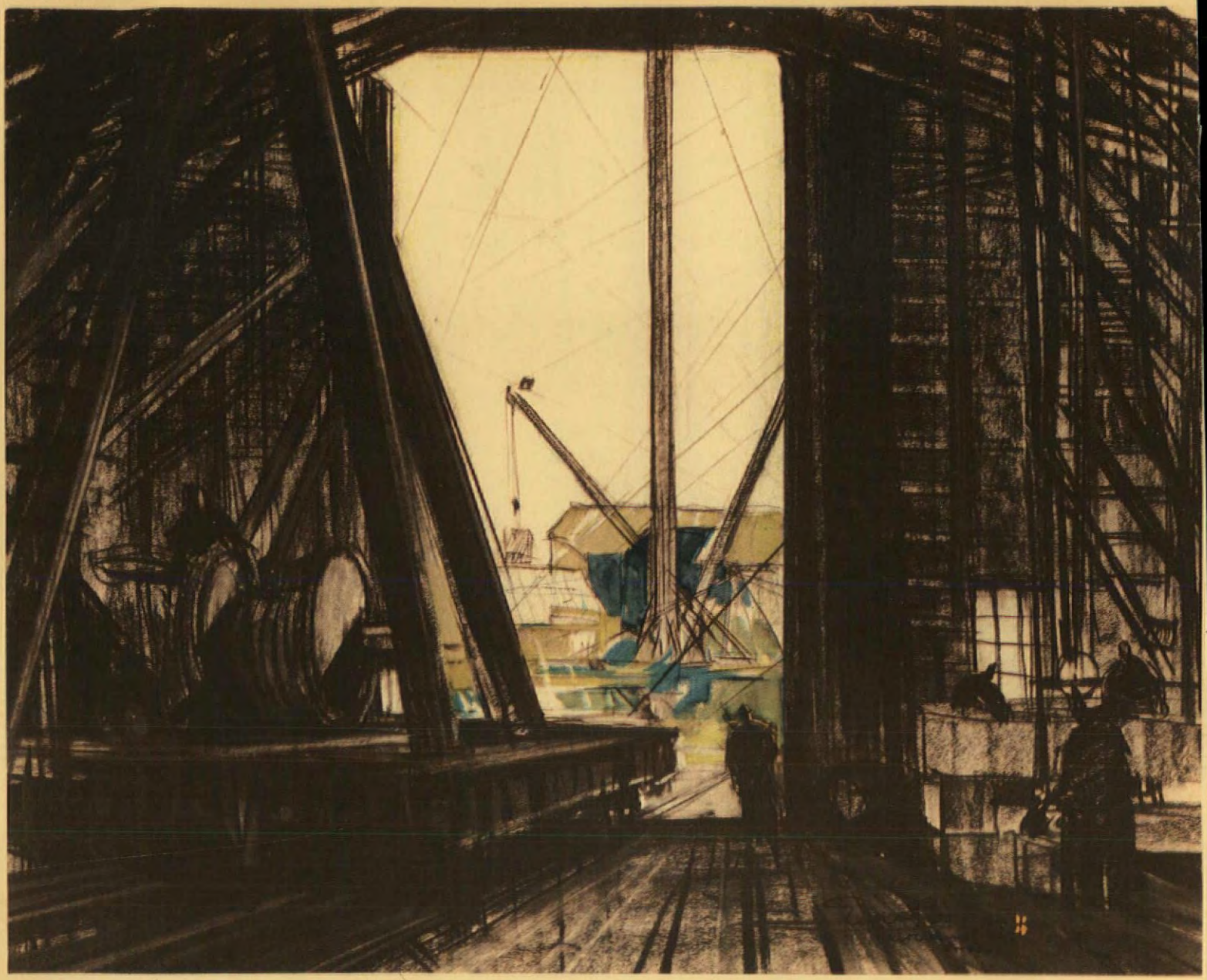

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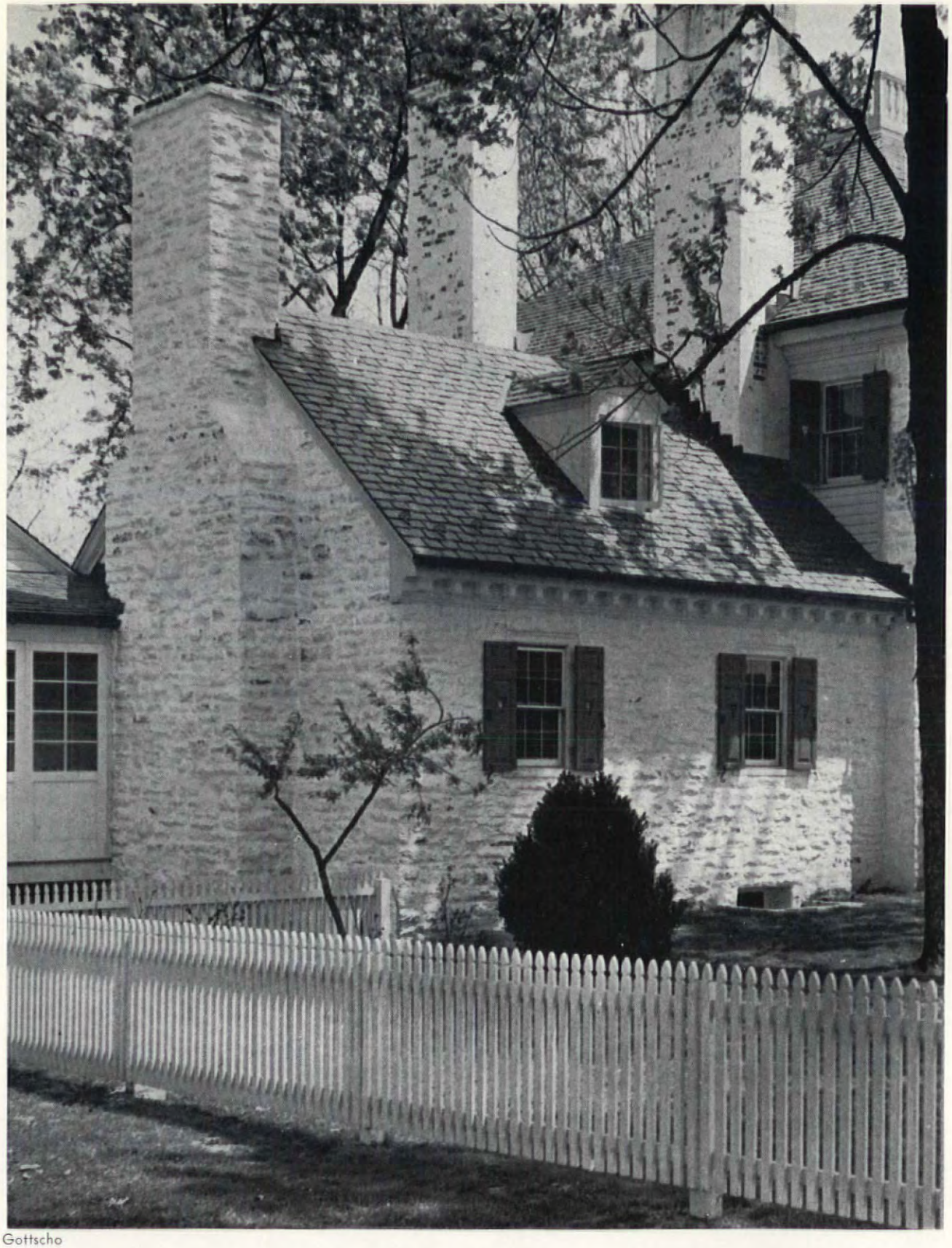

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HOUSE OF AMORY S. CARHART AT WARRENTON, VIRGINIA
BOTTOMLEY, WAGNER AND WHITE, ARCHITECTS

THE ARCHITECTURAL RECORD JANUARY, 1932
VOL. 71—No. 1

By THOMAS S. HOLDEN,
Vice President in Charge
of Statistics and Research,
F. W. Dodge Corporation

EFFECT OF REDUCED POPULATION GROWTH ON CONSTRUCTION DEMAND*

Factual study of the relationship between construction demand and population growth leads to the following conclusions:

1. If current population trends continue, the automatic increase of building demand, which has in the past enabled us to rely on individualistic speculative building projects to fill our needs and which has automatically lifted us out of depressions, tends to disappear.
2. Increased building activity will continue to accompany important new industrial, economic and social developments.
3. As opportunities for speculative real estate and building developments gradually dwindle away, the building industry will of necessity develop a sound economic plan, whose opportunities for substantial progress are real but impossible to estimate today.

The change in trend of population growth is a challenge and an opportunity. We have always relied upon the methods of the frontier trading post and the mining camp to build the towns and cities of America. We are not satisfied with the results. We should not mourn the passing of a dying era, even though the transition to a newer and better one is a little painful. We can rebuild our cities and towns into civilized communities if we will only have the patience to plan intelligently and pay as we go.

In short, the day of individualistic planning is on the wane. Building demand of the future will be carefully created on the basis of community planning and community cooperation. The architect who can take the lead in creating community plans and in developing community technique will be the one to whom business will naturally flow.

It has always been considered self-evident that building and engineering activities thrive best in growing communities, that population growth is an important factor in construction demand. That this has been true in the recent past is the conclusion arrived at by a thorough study and analysis of the construction and population statistics of 299 American cities for the census decade 1920-1930. In the case of 259 of these cities (omitting the 40 largest) direct comparisons of the building permit volumes of rapidly growing cities and practically stationary cities have been made.

Of the 259 cities covered in this study, whose population was less than 165,000 in 1920, there were 24 which lost population in the last census decade and 43 which gained population at very moderate rates, most of them less than 5 per cent and all of them less than 8 per cent. The combined population of these 67 cities had a net loss of 1/40 of 1 per cent in the decade. These 67 combined cities may be taken as representing a stationary section of our population whose quite sizable building volume has been recorded. The other 192 cities started in 1920 with populations of 165,000 or less, but all of them grew very rapidly, each of them increased more than 8 per cent and the group as a whole increased 37 per cent. The group of rapidly growing cities had a combined population 2.3 times the population of the stationary group on January 1, 1920, and 3.1 times the population of the stationary cities on January 1, 1930; in the intervening ten years they had 4.9 times the building volume of the stationary group of cities. Evidently population growth affected building demand in those cities. Consequently, it is reasonable to assume that any considerable diminution in the rate of increase of population of the country as a whole is likely to reduce construction demand unless there are offsetting factors of sufficient magnitude to balance this reduction. This study will first attempt to measure the reduced demand effected by the estimated population change in the current decade and will then discuss factors tending to equalize the construction program.

* A paper delivered before the American Statistical Association, Washington, D. C., December 28, 1931.

Measuring Effects of Population Growth

To measure the change in construction demand occasioned by the change in rate of population growth, it is necessary to divide the construction expenditures of the past decade into two parts, and obtain one figure for construction expenditures for the new people added to our population, and another one for construction expenditures made to

improve the standards and facilities of existing population. This has been done, as largely as possible on a factual basis.

The basis of the analysis has been the comparison of building permit records for the group of 67 cities whose combined population was practically stationary in the past decade with the records of the group of 192 cities which were of the same class as to size in 1920 and whose population grew very rapidly. If we assume that the population existing in these growing cities on July 1 of a given year spent, for their own improvements and irrespective of expenditures for new people, the same per capita amounts as were spent the same year by the people in the stationary group of cities, we arrive at an estimate of total expenditures that year for existing population; the remainder of what was actually spent was for the new people. By this method, we arrive at these figures: 61 per cent of all building expenditures for the years 1920-1929 in 259 cities for existing population; 39 per cent for the new people joining the communities each year. These figures were based on permit records* of the 259 cities whose population was under 165,000 in 1920.

On the basis of these results for 259 cities, the analysis was extended to include the building and engineering expenditures for the 40 largest cities outside the first group, and for the population in the small towns and rural communities outside the complete list of 299 cities.

The net result of estimates for these different sets of cities and smaller communities, too detailed to go into here, is the adoption of 35 per cent to represent the portion of total construction expenditures of the past census decade that resulted directly from population growth. The same process of analysis, applied to the numbers of new housing units, results in assigning 60 per cent of the total new units built in the last census decade to new population and 40 per cent to existing population. These figures on construction for new population reduce to $782.85 per person at 1913 cost levels for all construction, divided as follows: $503.27 per new person for new housing accommodations; $279.58 per new person for all other classes of construction. These figures may be considered as minimum measures of the demand occasioned by new population.

Construction Demand in the Current Decade

In setting up the table that appears herewith, it is assumed that the population increase of the current decade will be 9,000,000, compared with 16,648,220 for the ten years from January 1, 1920 to January 1, 1930. The dollar figures are the F. W. Dodge Corporation's estimates of total building and engineering work in the United States, expressed in terms of 1913 dollars to eliminate the effect of changing construction costs. The estimated total for the 10 years in current dollars was approximately $70,000,000,000, which reduces to $37,237,500,000 on the 1913 cost basis.

In the first three tables the total figure for construction expenditures for benefit of existing population is assumed to be the same in the years 1930-1939 as it was in the past census decade, and construction for new population is reduced by 46 per cent, the amount of the estimated reduction in new members of the population. The results indicated on these assumptions are: total construction expenditures would be reduced by 16 per cent; housing expenditures, by 28 per cent; non-housing expenditures, by 9 per cent.

It should be pointed out with all possible emphasis that these figures are not to be construed as forecasts of what will actually happen, but as measures of a handicap set to the construction program of this decade by one of the fundamental economic changes that has taken place. It may also be pointed out that in so far as these figures approximate actual construction requirements they indicate as necessary a rate of construction activity considerably above that which has prevailed in 1931. It should also be stated that the assumption of equal expenditure in 1913 dollars, as between the two decades, for existing population, implies a reduced expenditure per capita in this decade, which may not turn out to be true. In the case of housing, for example, we may make a different assumption from the one used in the table. If we assume that the enlarged existing population of this decade will build the same number of housing units per thousand people instead of the same total number of units, the estimated reduction in housing volume in this decade is 21 per cent instead of the 28 per cent given in the table.

It is obvious from all that has been stated thus far that the total construction demand of the past decade was in itself influenced to a greater degree by real and supposed advances in living standards, income and wealth than by new population, even though the numerical increase of population was greater than in any previous census decade. The question of what the existing population of this decade will spend in construction for its own benefit is obviously the most important one today. In Table 4 it is shown that existing population would have to increase its expenditure 25 per cent over the last decade to equalize the anticipated decline in construction for new population. To reach such a scale of increased construction expenditures, the existing population of this decade will either have to have a much larger national income than in the past one or allocate a larger portion of the same-sized income to construction.

Another consideration in appraising these estimates as a possible forecast of what will happen is the fact that the figure assumed for population growth in this decade, 9 million persons, is a net

** Analysis of building records is stressed in the text for the reason that they afford the broad statistical coverage of 299 cities. Permit records are rather generally undervalued and they generally omit public works and utilities. A similar analysis of construction contract records for 72 cities was made, resulting in practically exact confirmation of the analysis of permit records. This confirmation justified the application of the percentages established by analysis of permit records to the Dodge estimates of total construction volume in the entire country, which are based upon the more complete figures on construction contracts.*

EFFECT OF REDUCED POPULATION GROWTH ON CONSTRUCTION DEMAND

(All figures expressed in terms of 1913 values)

Table No.	Population Analysis of Construction Program	Past Census Decade 1920 - 1929	Current Census Decade 1930 - 1939	Increase or Decrease
1. Total Construction Expenditures	For existing population	$24,204,400,000	$24,204,400,000	0%
	For new "	13,033,100,000*	7,045,600,000*	-46%
	Total	$37,237,500,000	$31,250,000,000	-16%
	*$782.85 per new person			
2. Housing Expenditures	For existing population	$5,585,600,000	$5,585,600,000	0%
	For new "	8,378,400,000*	4,529,400,000*	-46%
	Total	$13,964,000,000	$10,115,000,000	-28%
	*$503.27 per new person			
3. Non-Housing Expenditures	For existing population	$18,618,800,000	$18,618,800,000	0%
	For new "	4,654,700,000*	2,516,200,000*	-46%
	Total	$23,273,500,000	$21,135,000,000	- 9%
	*$279.58 per new person			
4. Total Construction Expenditures	For existing population	$24,204,400,000	$30,191,900,000	+25%
	For new "	13,033,100,000*	7,045,600,000*	-46%
	Total	$37,237,500,000	$37,237,500,000	0%
	*$782.85 per new person			

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The above figures represent assumptions by which the effect of reduced population growth may be measured; they should not be taken as forecasts of what will actually happen.

aggregate of many changes in age and geographical distribution of population. Furthermore, statistics of construction activities, massed in impressive national totals, actually represent summations of activities which are definitely local in character. It must be remembered that we are trying to estimate a sum total of local changes without data on what those local changes are going to be.

Offsetting Factors

The many factors that may offset the declining tendency of construction volume occasioned by declining rate of population growth may be grouped under four headings, as follows:

1. More per capita expenditures for construction.
2. Changing composition and distribution of population.
3. Rapid obsolescence of buildings.
4. Economic planning of construction activities.

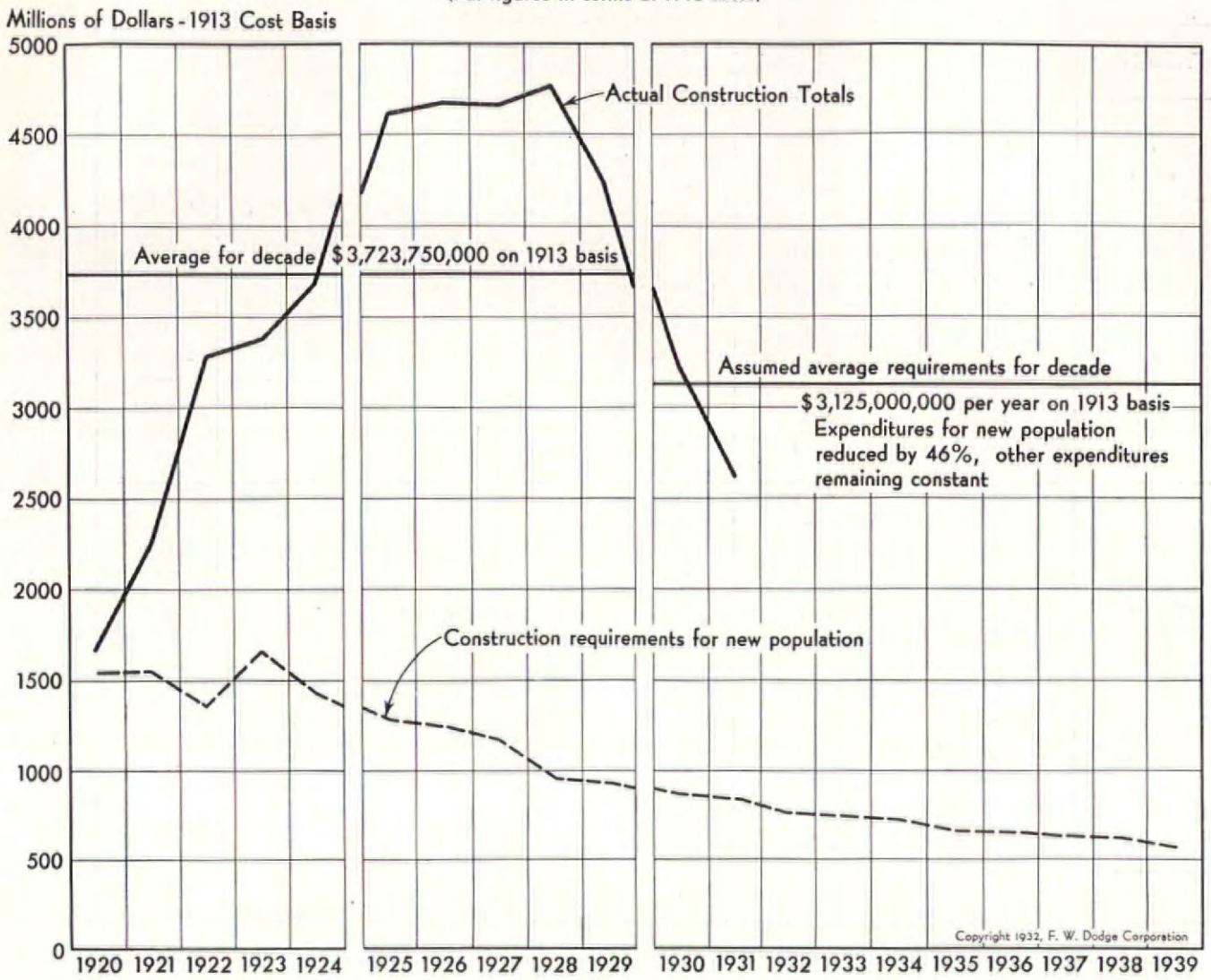
In the brief discussion which follows it will appear that while the first three factors will tend to influence the situation, their influence is likely to wane rather than increase in the long run, and that more and more we shall have to rely upon economic planning as we develop a sound program and a sound technique.

With respect to increased expenditures for construction improvements, the people of this country can have them in so far as desired improvements can be earned and paid for. This is frequently lost sight of. Since construction activities are financed on long-term credit, it is very easy to forget that over-extension of credit impairs the efficiency of the credit system. Sound improvements of the credit system will look to correction of defects in present credit machinery and elimination of excessive credit costs. Recent experiences in this country and in other countries should have taught our people that over-extension of credit for construction or any other activity is merely a method of borrowing next year's prosperity to sweeten this year's pot.

By improvements in buildings and reductions in building costs, such as have been taking place very rapidly in recent years, we have created a desire for better housing and better buildings for work, education and recreation. In so far as such im-

ACTUAL CONSTRUCTION VOLUME COMPARED WITH DEMANDS OF NEW POPULATION

(All figures in terms of 1913 costs)



The 1920-1924 period: Construction program to fill shortage. Requirements for new population represented 52 per cent of total actual construction; new population began to decrease in 1924 and the shortage was practically taken care of by the end of that year.

The 1925-1929 period: Speculative boom based on theories of rapidly advancing living standards and too liberal credits. Requirements for new population represented 24 per cent of total actual construction.

The decade 1920-1929: Turning point in population trends. In the ten years requirements for new population represented 35 per cent of total actual construction.

The decade 1930-1939: Requirements for new population estimated at 46 per cent less than in previous decade; if expenditures for existing population are just equal those of the 1920-1929 period, total construction would be 16 per cent less; this is subject to numerous offsetting factors discussed in the text. With the dwindling of opportunities for speculative booms and high-pressure selling methods will emerge opportunities for progress on a sound economic plan, the elements of which exist today and are described in the text. The year 1931 ran behind average assumed requirements of the current decade.

proved buildings may create in the minds of many people a greater preference for those improvements over other things for which they like to spend their money, increased construction demand will result. But we cannot assume that better buildings can be made the sole criterion of advancing living standards. Automobiles, radios and good clothes, social and educational advantages, and considerations of family security will continue to assert their claims for sizeable portions of our people's money. The opportunity for increased appreciation of good buildings is real, but there are limits to which the building market may be expanded in competition with other goods which legitimately claim consideration.

A factor frequently mentioned as destined to increase the market for new buildings is the speeding up of obsolescence in old buildings. This has always happened in an era of building improvement. Too rapid obsolescence implies waste and carries with it automatic checks that operate surely and sometimes drastically. Speculative over-production of building, as compared with actual current needs, helps to bring depressions. Competition of new buildings with old ones causes the old ones to be modernized as far as practicable, or to reduce their rental or selling prices. Extensions of cities and towns to embrace new building developments in new areas leave behind them blighted areas, depressed real estate values, unpaid mortgages, uncollected taxes and expensive public improvements while the community must undergo the added expense of new public improvements in the new areas. The country wants improved buildings, which inevitably compete with old ones, but speeding up the process at the expense of excessive waste does not offer opportunities that tend toward a stable foundation for the building industry.

Changing composition of our population has had its effects on building programs of the recent past. It has been pointed out that while our population increased 16 per cent in the past census decade, the number of families, according to census definition, increased 23 per cent. These figures reflect the relative increase of childless families and of other new family groups consisting of adults. This increase was to a considerable degree responsible for the boom in apartment buildings in the years 1925 through 1928. To the extent that the increased number of census families was occasioned by people who formerly lived with relatives and in boarding houses setting up establishments of their own it probably represented improved economic status of those people. These census changes in composition of families probably represent a phase of the fundamental economic shift from rapidly increasing population toward stable population. While we may have additional changes in composition of census families, the facts revealed in the 1930 census indicate that much of that kind of change has already taken place. To count on this splitting up of families into smaller units for increased construction demand is to count on something that is likely to diminish as our population approaches stability.

As to redistribution of population between various cities, between large cities and small towns, between urban and rural communities, that is a kind of change we have always had. In general population flows to areas of economic opportunity. We are likely to see a considerable redistribution of population in the current decade. Cities and towns that have hitherto gained population rapidly are likely to gain more slowly, and some of them may lose population. If the current depression has sent people back to farms, improved industrial conditions will later bring many of them back to the towns. We are likely to see increased competition for population among cities and towns, in which those communities offering the most in economic and social advantages will win. But, while we shall probably see a continued redistribution of population, with many opportunities for local speculative booms in real estate and building, it would seem likely that such changes will tend to subside as stability of population is approached.

The Building Industry Needs an Economic Plan

It is thus seen that the offsetting factors presented above, actual as they are and influential as they may be in the construction demand of the near future, are not of such enduring power as to guarantee continued construction activity on the scale we had in the past decade. To argue from this, however, that the construction industry is a waning industry is to argue that the American people will be content with achieving the kind of stability that precludes progress, that they will be content with the housing, the commercial and industrial buildings, the schools and bridges and highways and the communities they now have. But we do seem warranted in these conclusions:

1. If current population trends continue, the automatic increase of building demand, which has in the past enabled us to rely on individualistic speculative building projects to fill our needs and which has automatically lifted us out of depressions, tends to disappear.
2. Increased building activity will continue to accompany important new industrial, economic and social developments.
3. As opportunities for speculative real estate and building developments gradually dwindle away, the building industry will of necessity develop a sound economic plan, whose opportunities for substantial progress are all but impossible to estimate today.

We Can Build Civilized Communities If We Plan Intelligently and Pay as We Go

The kind of economic plan in consideration here is no doctrinaire program of action to be set in motion all at once by any national organization. The fundamentals of such a plan have been the

subject of study for many years. On the all-important subject of housing, the recent President's Conference on Home Building and Home Ownership brought together on a scale hitherto unknown in this country experts and expert information, in preparation for which 31 committees with 400 members worked for a year. In reports of the Conference committees and in their very valuable appendices of research data will be found the fundamentals of the economic plan for the building industry. This plan will evolve gradually as its principles are more and more put into practice. Its essence is that national organizations can be most effective in disseminating information on current designing and business practice, and on standards and objectives to be aimed at. Actual programs of action belong to neighborhoods, communities, towns and cities. Such programs would build on the basis of surveys of actual requirements and would utilize the best available thought and practice in technical improvements in building design, construction and finance, control of subdivision layouts, community planning and rehabilitation of blighted areas and slums, and wise regulation of property taxes. By such means can each community satisfy the legitimate desires of its people and create a sound demand for new construction in such volume as to register advances in the American standard of living. By such an economic plan property values may be stabilized. But inherent in a successful plan there is another set of obligations devolving particularly on the commercial and industrial sections of communities. If they wish to attract and keep the kind of population they want, and particularly if they want to promote home ownership on a sound basis, they will endeavor to secure for their communities such diversity of enterprises and such sound commercial structure as will give to larger and larger majorities of their people a sense of stability of employment and income. The change in trend of population growth is a turning point in our economic history; it is a challenge and an opportunity. We have always relied upon the methods of the frontier trading post and the mining camp to build the towns and cities of America. We are not satisfied with the results. We should not mourn the passing of a dying era, even though the transition to a newer and better one is a little painful. We can rebuild our cities and towns into civilized communities if we will only have the patience to plan intelligently and pay as we go.

●

PROSPECT FOR BUILDING AND ENGINEERING WORK

FIRST QUARTER, 1932

By L. SETH SCHNITMAN

The chart on page 6 shows total actual construction expenditures for the year 1931 to have been about 20 per cent below the assumed average annual requirements for the current decade. It was necessary for the purposes of that chart to reduce all figures to the 1913 cost basis; for the purposes of this chapter these figures are translated back into current dollars. Thus the 1931 construction volume at current costs approximated $4,000,000,000 as contrasted with an assumed average requirement of about $5,000,000,000. Further it has been indicated that the decade which will end with 1939 may likely produce a construction total, in 1913 dollars, only 16 per cent smaller than the epoch-making decade that ended with 1929. This, of course, is not a definite forecast but offered rather as an approximation of requirements for the present ten-year period.

On the basis of the same calculations total expenditures for new housing in 1931 were about 25 per cent below the assumed minimum average requirements or the current decade. At current costs the year 1931 showed approximately $1,250,000,000 to have been expended on housing throughout the United States, as against an assumed average requirement in this decade of about $1,650,000,000 at present values. In this connection housing is taken to include only one- and two-family houses and multiple-family dwellings or apartments, not hotels.

Although the gain in the total number of inhabitants during the current decade may not exceed 9,000,000, or about half the numerical increase during the previous decade, the population study clearly points out that even a stationary population requires new housing and structural facilities. Whether the year 1932 should begin to manifest a return to more normal activity in the provision of new housing is now difficult to say but one thing is certain: underneath prevailing conditions there is a demand gradually accumulating from which revival will eventually spring.

The figures of the National Association of Real Estate Boards last June showed that of 381 cities

reporting, 17 per cent had an actual shortage of single-family dwellings and 12 per cent had a shortage of apartments. It seems likely that these shortages indicated last summer have increased in the intervening months.

Although a revival of small house building is in the making, there are serious retarding factors which are operating to make difficult a statement, with any degree of definiteness, as to when that revival will set in. Continued real estate deflation, mortgage-bond defaults, foreclosures, high real estate taxes, threat of lower wage scales among building tradesmen—these are some of the more important direct influences retarding the revival. These factors are generally known, they are receiving careful consideration, and week by week the troubles inherited from the last boom are being gradually cured. One can scarcely say when the retarding factors will be removed, but when enough of them have been corrected building will be ready to increase on the basis of a sound demand.

F. W. Dodge Corporation has always stated in its annual estimates that an estimate for twelve months ahead is hazardous and that to be of value such forecasts should be revised at least once a quarter. Consequently in the light of present confused conditions it seems wiser to confine the present estimates to the first quarter of 1932, giving comparisons with quarters of 1931.

First Quarter Estimates

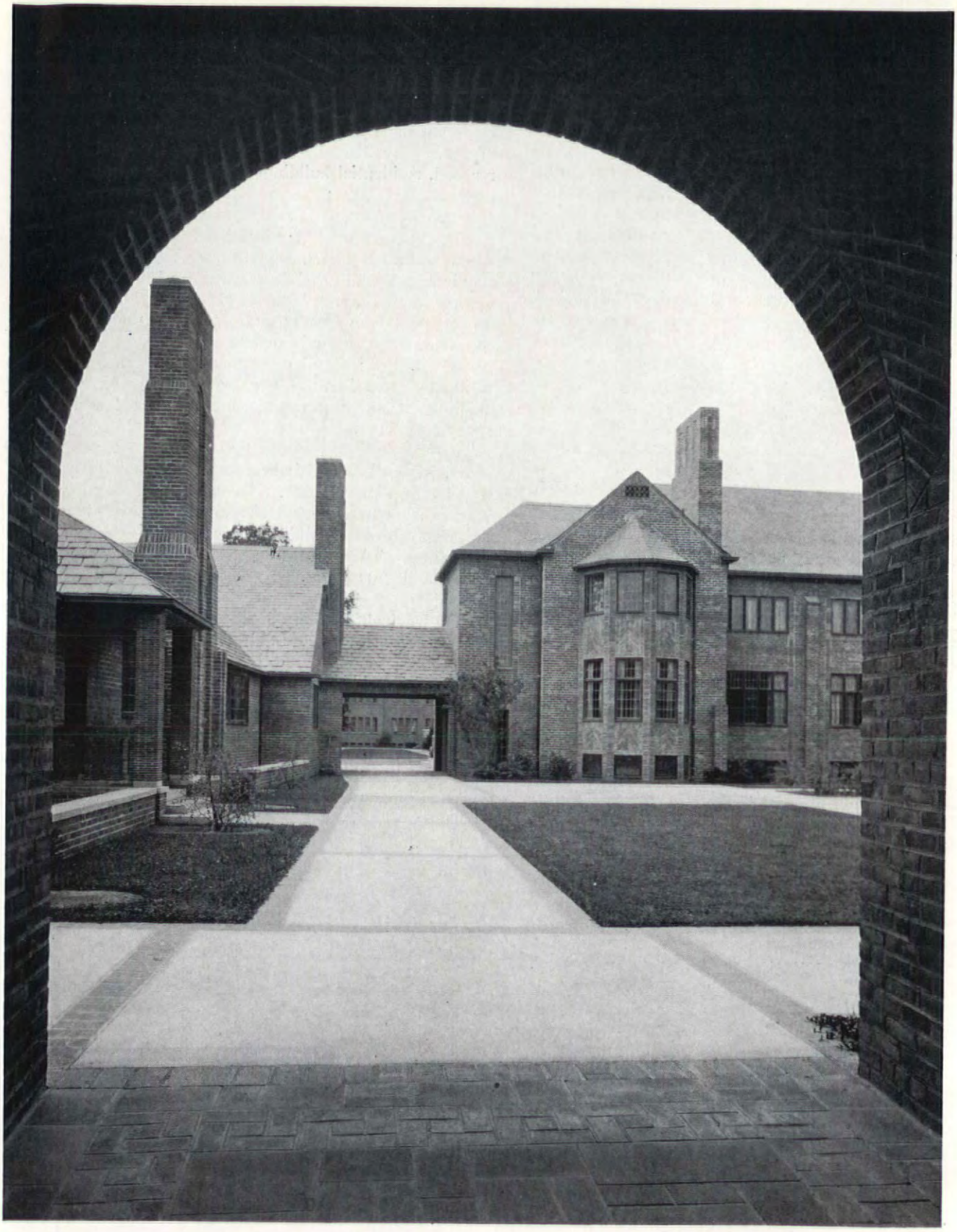
The first quarter of 1932 may produce a construction volume of $850,000,000 for the entire country, inclusive of low-cost new and alteration projects. Of this amount not more than $600,000,000 will represent the Dodge coverage in the 37 states east of the Rocky Mountains. If this total should be reached, residential building will probably approximate $180,000,000; nonresidential building will account for about $200,000,000 and public works and utilities should approximate $220,000,000. These indicated totals, representing the best that may be expected, in each instance mean losses from the corresponding quarter of 1931. On a percentage basis the first quarter estimates therefore show the following indicated losses from the same period in 1931: total construction, 20 per cent; residential building, 20 per cent; nonresidential building, 25 per cent; and public works and utilities, 30 per cent.

These estimates for the first quarter, if projected forward, would indicate a year's total fairly well below that of 1931. To estimate the entire year on this basis would overlook the possibility that a small-house building revival might occur in the spring. To estimate on the basis that such a revival will occur would be to stake too much on a highly uncertain possibility. The beginnings of such a revival, if there is to be one, would be likely to appear after March 15.

Construction Prospect 37 States East of the Rocky Mountains, First Quarter, 1932
(With 1931 Comparisons by Quarters)

TYPES OF CONSTRUCTION	1932	1931				
	First Quarter Estimates	First Quarter	Second Quarter	Third Quarter	Fourth Quarter*	Total Year 1931*
Total Construction	$600,000,000	$833,342,800	$959,151,900	$770,213,100	$520,290,100	$3,082,997,900
Total Nonresidential	$200,000,000	$274,561,200	$318,889,700	$317,196,800	$196,588,200	$1,107,235,900
Commercial Buildings	65,000,000	92,634,000	80,568,800	78,925,700	65,481,300	317,609,800
Factories	22,000,000	37,995,700	36,425,100	26,136,400	15,075,100	115,632,300
Educational Buildings	46,000,000	60,415,500	69,339,200	66,473,700	32,464,500	228,692,900
Hospitals and Institutions	20,000,000	25,606,300	35,288,600	34,256,600	21,850,400	117,001,900
Public Buildings	27,000,000	29,250,900	45,200,500	71,508,700	30,583,300	176,543,400
Religious and Memorial	6,000,000	9,859,700	*18,354,500	17,368,600	7,155,300	52,738,100
Social and Recreational	14,000,000	18,799,100	33,713,000	22,527,100	23,978,300	99,017,500
Total Residential	$180,000,000	$233,205,900	$257,540,700	$178,648,100	$143,830,500	$813,225,200
1- and 2-Family Houses	115,000,000	137,592,300	189,947,700	139,107,700	108,463,100	575,110,800
Apartments and Hotels	65,000,000	95,613,600	67,593,000	39,540,400	35,367,400	238,114,400
Total Public Works and Utilities†	$220,000,000	$325,575,700	$382,721,500	$274,368,200	$179,871,400	$1,162,536,800

* December partly estimated.
† Public works and utilities, inclusive of highways, bridges, power plants, water and sewage systems, etc.



GOLD MEDAL AWARD, ARCHITECTURAL LEAGUE OF NEW YORK
BOYS' SCHOOL AT CRANBROOK, MICHIGAN — ELIEL SAARINEN, ARCHITECT

". . . romanticism achieves an expression of the most ingenious cleverness."

THE PRIZE-WINNING BUILDINGS OF 1931

REVIEWED BY

TALBOT FAULKNER HAMLIN, Architect

If anyone doubted the underlying romanticism of Americans, a little study of this album of photographs of recent prize-winning buildings in the United States should convert him at once.

It is strange to see even Eliel Saarinen, the creator of the Helsingfors Railway Station and the Second Prize Design in the Chicago Tribune Competition, falling so soon under the spell. In the Boys' School at Cranbrook, Michigan, awarded a gold medal by the New York Architectural League, romanticism achieves an expression of the most ingenious cleverness. Charm is always a dangerous architectural ideal: here it has led even Saarinen to use that old friend, decorative half-timber!

Architects as well as laymen, we are all still romantic, and if we all do "go functional," it will not be because of sound basic rational thinking, or any desire for a deep economy, but because we may develop a new romanticism of the machine, and worship it instead of life. Architects and laymen, both; for it is impossible to distinguish the awards made by architects as a class, from those made by Chambers of Commerce and similar bodies. Are the architects merely more sensitive to popular taste than other artists? Can one imagine the Author's League giving a prize to Harold Bell Wright or Zane Grey, or even Edgar Wallace? Surely architectural bodies in awarding prizes should not only demand high standards, but should, in preference, strive to encourage the new, the young, the creative rather than the merely tasteful. The judgment of architects should lead, not follow, popular demand. Even commercially it might not be a disadvantage to their own pocketbooks to do so, for the true artistic creative advance cannot be copyrighted; it soon becomes common property.

Obviously, the amount of available material limits these awards; and no outside critic can realize the complex tangle of psychologies filling even the most trivial jury room. The result is bound to be a compromise. And no one can cavil at the awards to the Empire State Building (Shreve, Lamb and Harmon), the Hollander Building (Shreve, Lamb and Harmon), or the Adler Planetarium (Ernest Grunsfeld). Yet taken as a class the whole group of commended buildings —judging largely from the photographs—seems strangely and discouragingly dull. Surely, one hopes, they do not completely represent the sum total of America's architectural development for the year.

Nyholm

GOLD MEDAL AWARD
ARCHITECTURAL LEAGUE OF NEW YORK

BOYS' SCHOOL AT CRANBROOK, MICHIGAN
ELIEL SAARINEN, ARCHITECT

If these buildings are not representative of American architecture, they may have a value in representing American average taste, and an examination of them all may give some general idea of the direction in which our taste is moving.

The first and most obvious quality is that American taste has ceased to be local. With one exception—the foreman's house of the Brownell Ranch in Woodland, California, by Ellsworth Johnson and Warren Charles Perry—any of the premiated buildings would be equally at home in Maine or California, Michigan or Texas. If it is thus impossible to tell from the buildings themselves their locale, it is obvious that in buildings—as, apparently, in many commodities—the preference of the juries was for the standardized product in the Nationally Advertised Package.

Now this is perhaps inevitable, movies and magazines and syndicated articles being what they are, but it is neither rational nor desirable. A newsstand may look the same from coast to coast, and the silver screen flicker daily with precisely the

Wallace

CHESTNUT STREET ASSOCIATION MEDAL, 1929

WHITMAN'S STORE IN PHILADELPHIA — EDMUND B. GILCHRIST, ARCHITECT

". . . it is marble and metal and glass, not the historical style, that set the character."

Wallace

CHESTNUT STREET ASSOCIATION MEDAL, 1929
RETAIL STORE FOR S. F. WHITMAN AND SON, INC., IN PHILADELPHIA
EDMUND B. GILCHRIST, ARCHITECT

same moving shadows in Spokane and St. Augustine, yet the climates of Washington and Florida are different, the locally obtainable materials are different, and types of life and human attitudes differ so widely from region to region that it would seem impossible that such diverse ideals should find expression in such uniform buildings. This standardization of taste is increasing hourly, yet it is a sterile movement.

The second generality is that taste, while not radical in matters of style, seems to be at least freed of archæological trammels. What archæological design there is, is so varied in period that no particular trend can be deduced. Classical detail, medieval detail, modernist detail all jostle each other in this portfolio. Can it be that the public has at last become satiated with all style propaganda, classic, medieval, functional, good and bad alike?

Another quality in popular taste is an obvious delight in glittering modern materials—the glitter of metal, the rich and varied luster of marble in great areas, the suave and mysterious transparence and reflection of plate glass. This quality is manifest in the shimmering verticals of the Empire State Building and in the rich black and silver of the Hollander; it is the obvious appeal of the marble and metal of the Greene shop in Dallas (DeWitt and Washburn); in Edmund Gilchrist's Whitman shop in Philadelphia it is marble and metal and glass, not the historical style, that set the character. Between the interesting metal of the exterior (though perhaps not logical or functional in form), and the shiny black reflecting surfaces and interestingly placed electric lights of the interior lunch room, how pale, how stilled, how without excitement or thrill appears the delicate Renaissance of the intermediate shop room.

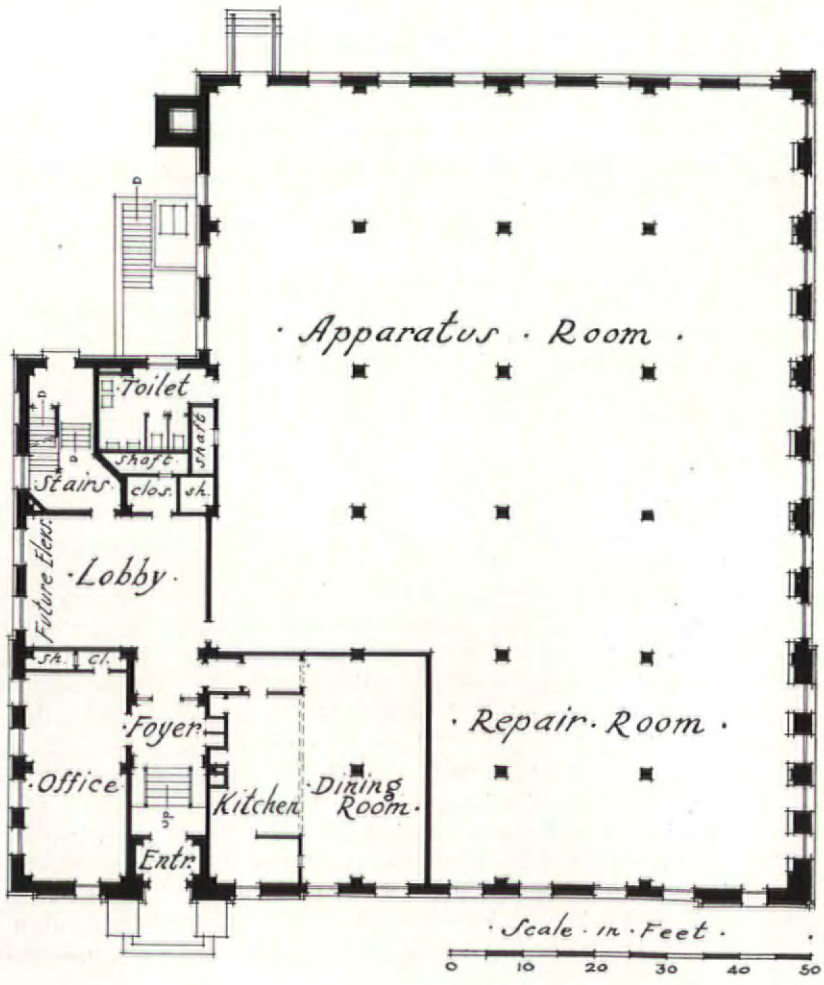
The last, and by far the most important quality of popular taste that is evident in this group of buildings, is an almost wistful search for beauty and especially beauty of composition. This taste is not interested in logic, in matters of construction, in theoretical expressiveness; it is apparently, and surprisingly, deeply interested in form relationships. Surely the Brooklyn Chamber of Commerce in its award to the New York Times Branch Building by Albert Kahn, Inc., was moved not only by beauty of execution and material, and was entirely unmoved by obvious artistic inconsistencies, like the varying horizontal movements, and the strong masonry expression of the whole, which so thoroughly belies the actual construction. What moved this jury was beauty of abstract proportion, and also undoubtedly an appearance—all too rare in our cities—that the whole building had been thought out and "taken care of" in adequate form. Likewise a certain basic satisfactoriness of proportional relations is behind the award of the Los Angeles Chapter of the A. I. A. to the Memorial Club House (Weston and Weston) for the Hollywood Post 43 of the American Legion, rather than any deeper considerations of material or detail. Another similar search for a form quality—in this case a desire for monumentality—must be the basis of the Detroit Chapter's Award to the Kresge Administration Building, by Albert Kahn. Could it be anything else than big compositional facts—the existence of entrance and end motives and connecting wings, with the shadow and variety they produce—which could account for the commendation (and by architects) of a whole so obviously incoherent, of a building whose upper and lower portions are so diverse, so disconnected?

MEDAL AWARD OF CLEVELAND CHAMBER OF COMMERCE

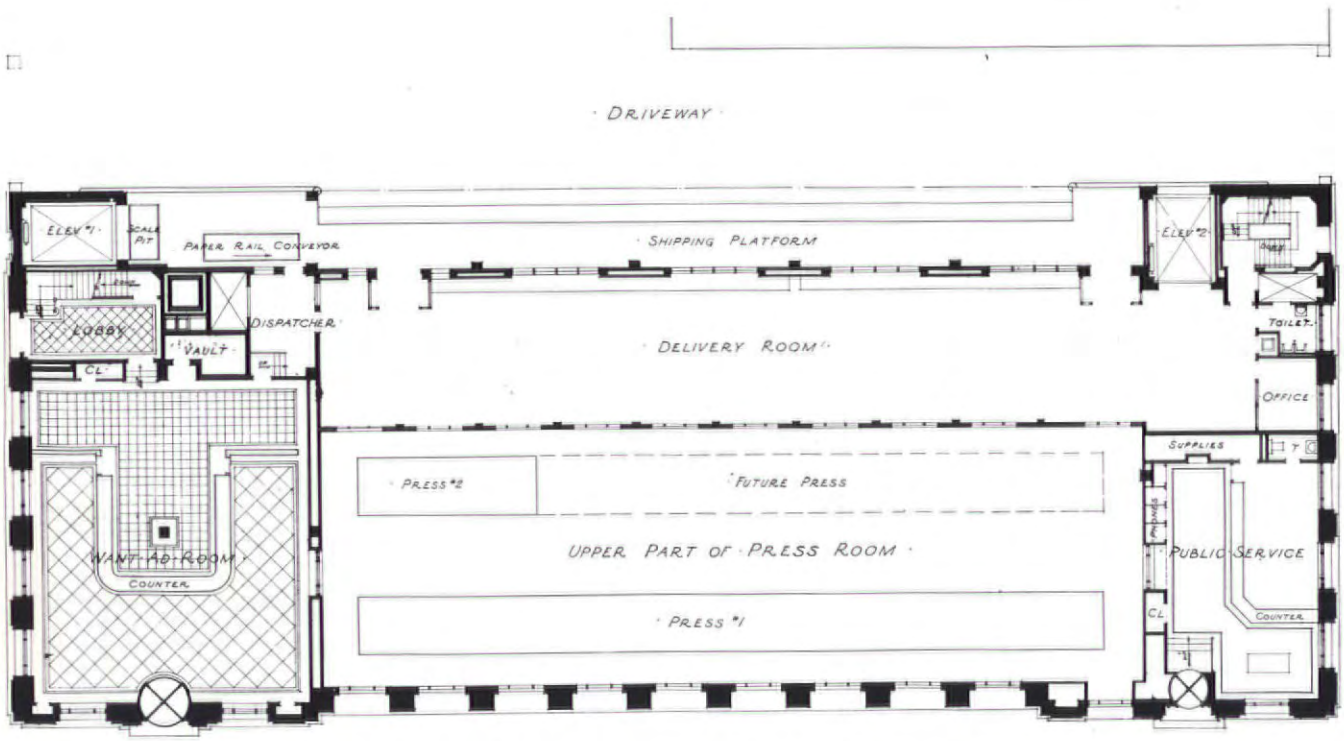
FOR COMMERCIAL BUILDINGS NOT OVER THREE STORIES IN HEIGHT

MICHIGAN-DIAMOND OFFICE BUILDING FOR THE OHIO BELL TELEPHONE COMPANY IN CLEVELAND

HADLOW, HUGHES, HICK AND CONRAD, ARCHITECTS



N. Y. Times Studio

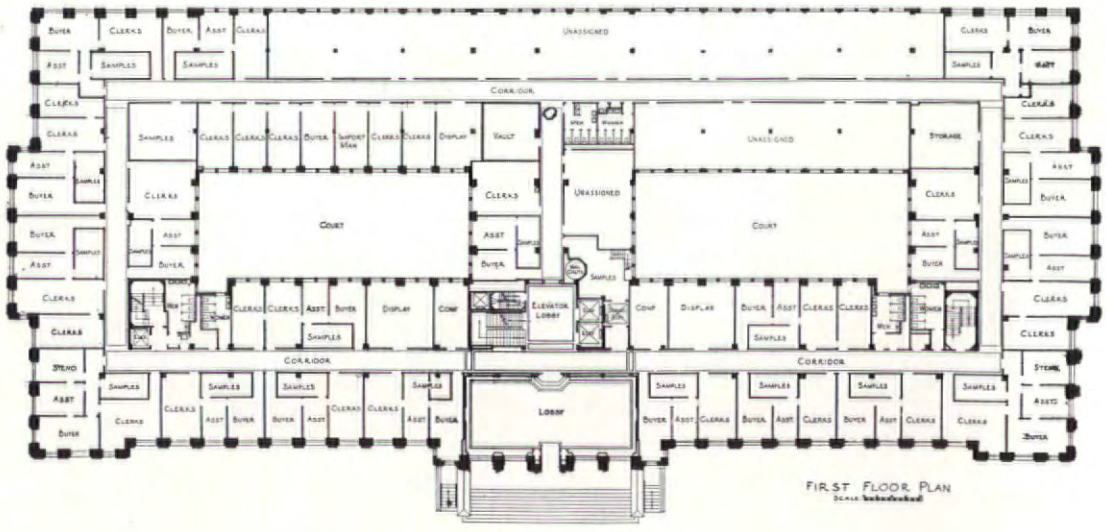


BROOKLYN CHAMBER OF COMMERCE AWARD

BROOKLYN BRANCH BUILDING FOR NEW YORK TIMES — ALBERT KAHN, INC., ARCHITECTS

". . . What moved this jury was beauty of abstract proportion."

Ellison

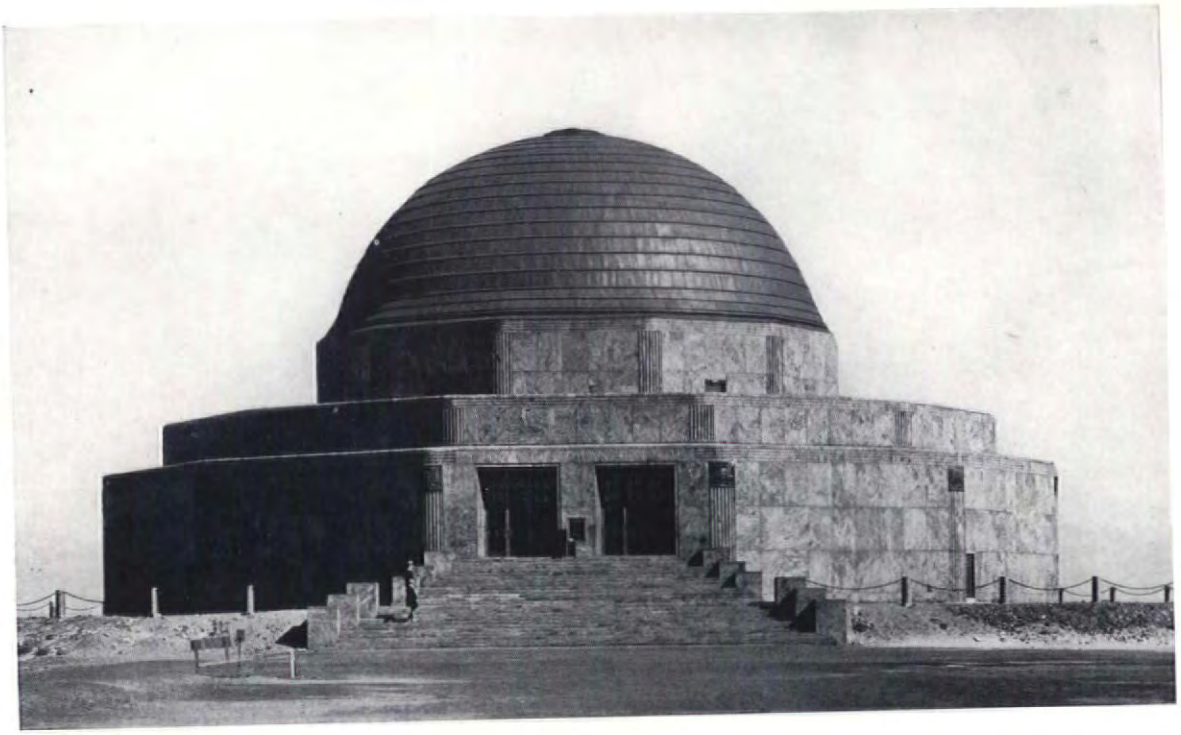


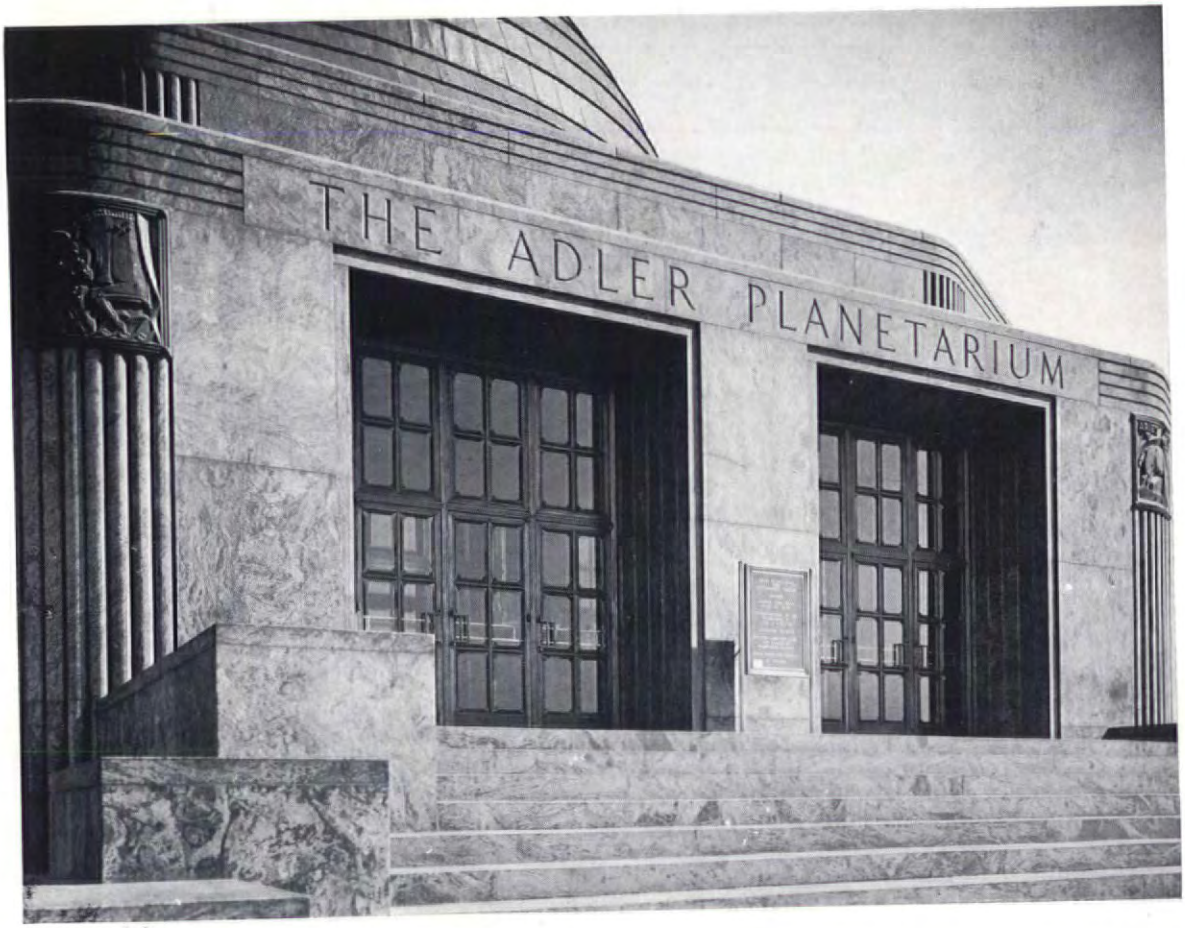
FIRST FLOOR PLAN

HONOR AWARD OF THE DETROIT CHAPTER, A. I. A.

S. S. KRESGE ADMINISTRATION BUILDING, DETROIT — ALBERT KAHN, INC., ARCHITECTS

". . . another search for a form quality — in this case a desire for monumentality."

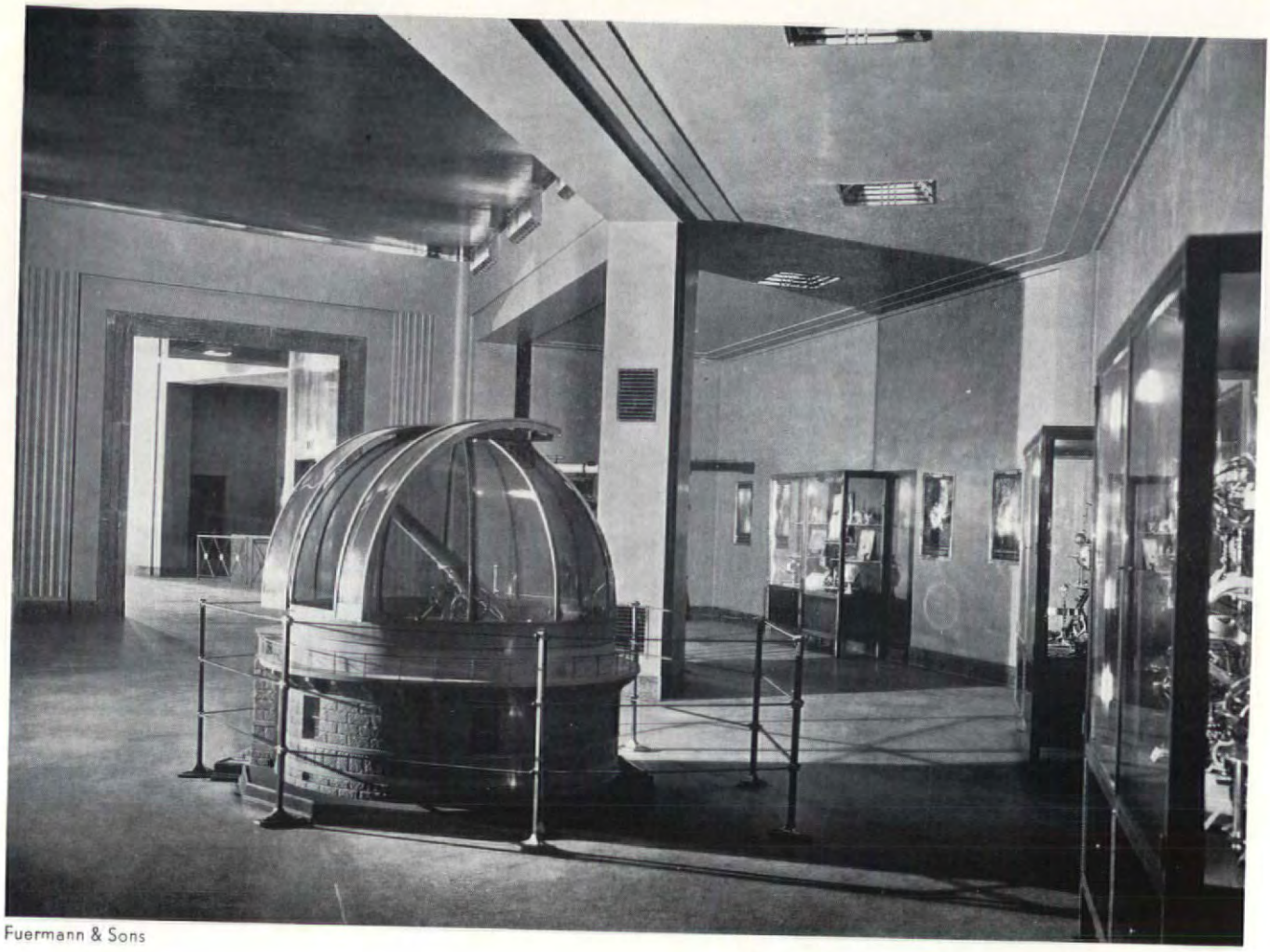




Fuermann & Sons

GOLD MEDAL AWARD OF THE CHICAGO CHAPTER, A. I. A.
ADLER PLANETARIUM, CHICAGO — ERNEST A. GRUNSFELD, JR., ARCHITECT

". . . simple, dignified, beautifully planned."

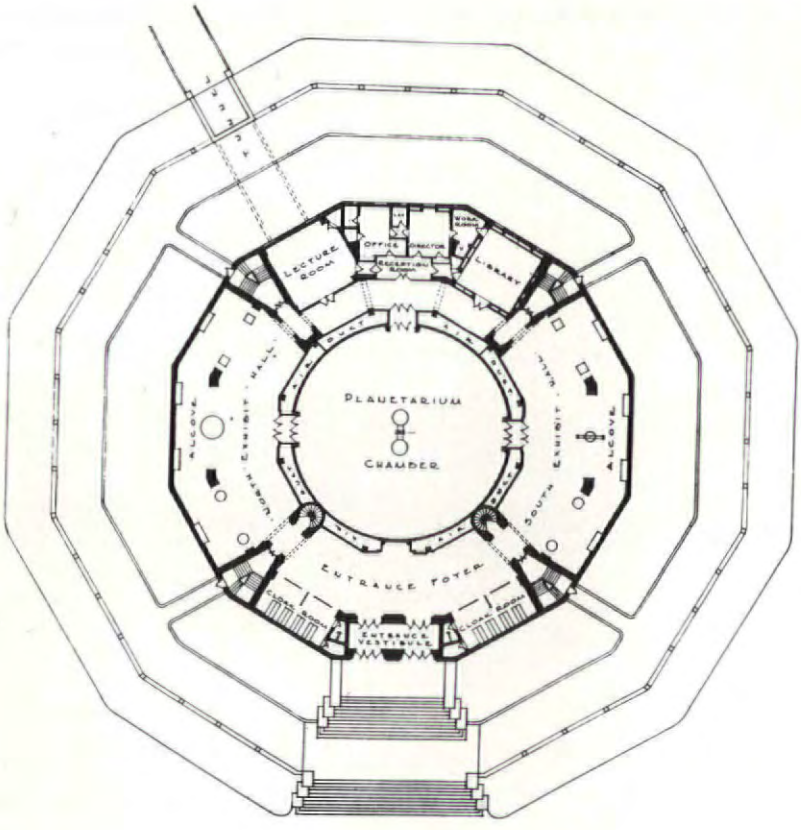


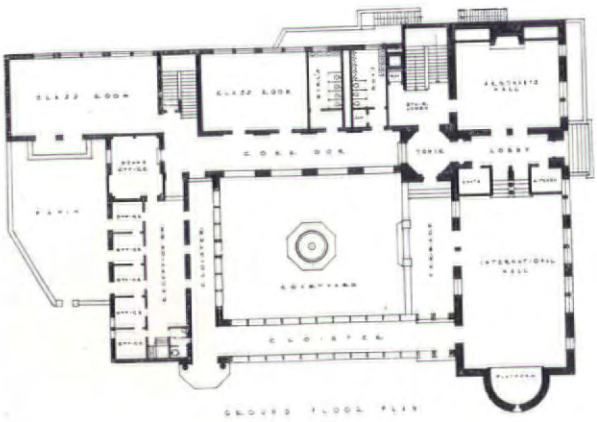
Fuermann & Sons

GOLD MEDAL AWARD
CHICAGO CHAPTER, A. I. A.
ADLER PLANETARIUM IN CHICAGO

ERNEST A. GRUNSFELD, JR.
ARCHITECT

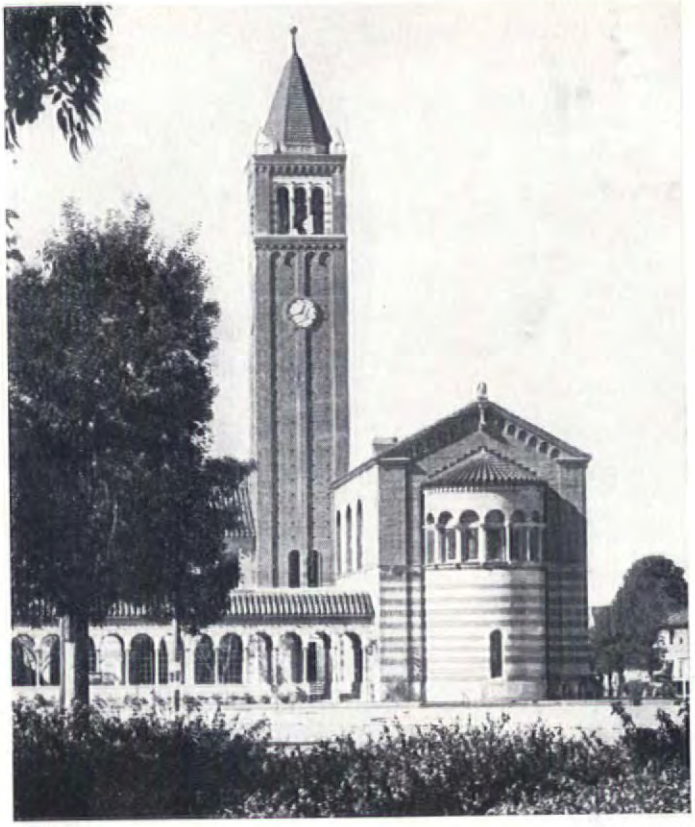
". . . mere size, and the current and unwise deification of the sky-scraper have not influenced this decision."





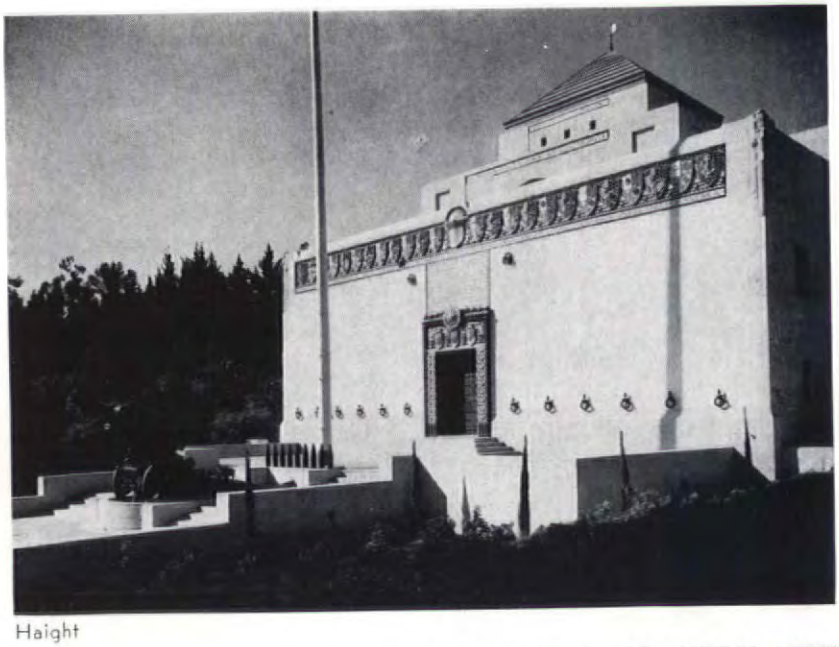
GOLD MEDAL AWARD
LOS ANGELES ART ASSOCIATION

SEELEY WINTERSMITH MUDD MEMORIAL
HALL OF PHILOSOPHY, UNIVERSITY OF
SOUTHERN CALIFORNIA
RALPH C. FLEWELLING, ARCHITECT



Clarke

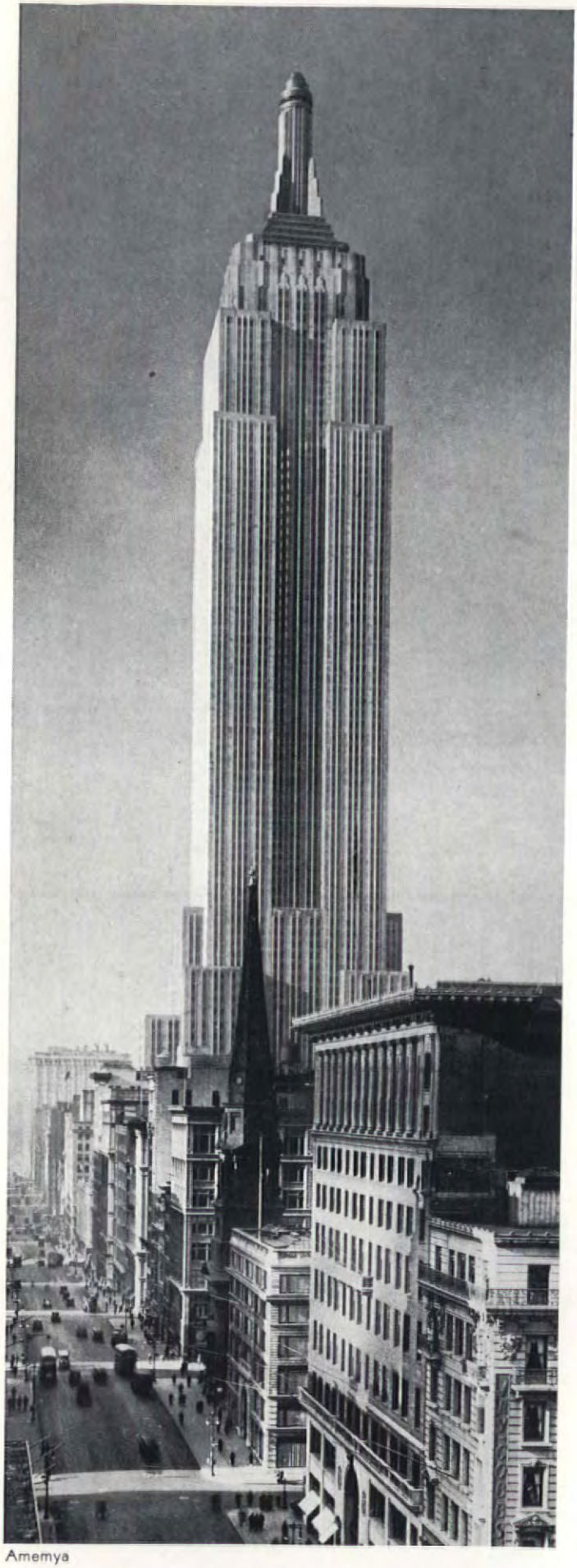
". . . its Italian Romanesque detail is polished and suave."



Haight

BRONZE MEDAL, LOS ANGELES ARTISTS FIESTA
HOLLYWOOD POST 43, AMERICAN LEGION, MEMORIAL CLUBHOUSE
WESTON AND WESTON, ARCHITECTS

". . . a pleasant handling of the concrete wall, and pleasant, unexciting proportions."



Amemya

The Buildings Themselves

Four buildings stand out from the mass as exceptional: the Empire State and the Hollander Building, New York, both by Shreve, Lamb and Harmon; the Adler Planetarium by Ernest Grunsfeld; and the Grand Street Apartments by Springsteen and Goldhammer.

The tower of the Empire State Building is obviously an artistic creation of high value. Its acceptance by the people as a whole is remarkably unanimous and complete, and such expressions of popular approval, when so strikingly universal, are seldom far wrong. It uses masonry, but obviously as a skin, not as a support. The proportions of the setbacks are fine; there is strength and dignity in them. The verticals of bright metal are superb; the manner in which they pick up the color of the sky, or flash back the brilliance of the sun, as though the whole tower were hung on a framework of light itself, has not only that feeling of delicacy which is peculiarly the spirit of steel construction, but also a deeper quality, an authentic beauty that is a new note, a new creation.

But this tower supports a question, and is supported on an anticlimax. Surely the so-called mooring mast—a pure extravagance, perhaps for publicity's sake, which can never be used effectively for its avowed purpose, and which the designers must have realized could not be so used—surely that does not belong with the sureness, the definiteness below it. Rich and interesting as the detail is, there is something inconclusive and soft in the silhouette that expresses this dubiousness of function. By day or night, under sun or cloud or ringed with electric lights, the mast seems unreal.

And the street and avenue façades are a disappointment. As in the case in so many high buildings, a soaring and carefully composed grandeur above disintegrates near the ground level. Great tower scale and pleasant street scale seem difficult to reconcile. The Empire State Building architects recognized this inevitable discrepancy, and by placing the tower as it is, freed it from the building around its base. They created thus a great street façade of pleasing height, a whole block long on Fifth Avenue, and several hundred feet on each of the side streets: apparently, an ideal problem for any architect. And then, apparently the creative drive faded; perhaps speed in designing—the curse of American commercial architecture—prevented adequate study; perhaps the tower absorbed the designers' interest over-much. In any case, there lay the opportunity, and it was lost. Superficial and obvious, its generally merely satis-

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GOLD MEDAL AWARD
ARCHITECTURAL LEAGUE OF NEW YORK

EMPIRE STATE BUILDING, NEW YORK
SHREVE, LAMB AND HARMON, ARCHITECTS

factory proportions, its rich materials cannot redeem its heavy-handed detail, its basic lack of that creative imagination that distinguishes the tower. To the thousands passing, it brings no lift, no "kick"—it is just another building to walk past —adequate perhaps, but humdrum.

The Hollander Building award of the Fifth Avenue Association is delightful notice that the layman is aware of other things than size. Here again the masonry is obviously a skin; it is a modern building from curb to roof. Its proportions, simple as they are, are studied, restful, right, and the metal and glass sweep of the front is rich and delightful. The minor details of the ornament are, perhaps, not of the originality and perfection an idealist might demand; they are generally of a so-called "modernist" type that is becoming as stereotyped, as eolectic, as any classic acanthus; yet they modulate the metal surfaces pleasantly, and are well placed. In color, pattern and general richness the whole design has achieved an exquisite unity that is a distinct contribution to city street-front design.

The Chicago Chapter has won itself honor in awarding its medal to the Adler Planetarium. Here again it is a delight to see that mere size, and the current and unwise deification of the skyscraper have not influenced the decision. Grunsfeld's building has definitely "arrived." Simple, dignified, beautifully planned, it has as well that perfection of space relation which warrants the application to it of the term "classic."

There is not much to say of the other commercial and public building awards. Flewelling's Hall of Philosophy at the University of Southern California is full of a placid and academic charm, its Italian Romanesque detail is polished and suave. But somehow its cloister looks arranged—a piece of stage scenery, or a museum specimen—and not like a place for American students, even graduate students, to bask in the sun and to talk.

The Hollywood American Legion Building has a pleasant handling of the concrete wall, with exposed form-marks to give it texture, and pleasant, unexciting proportions. But its faience detail, however technically excellent (it received a ceramics prize in 1929), is sentimental and ostentatious. Perhaps it enshrines with unconscious and cynical perfection the bombastic declaration of purpose so painstakingly lettered above the door.

The pedestrian quality of some of the remaining premiated buildings is perhaps to be expected. One hopes, of course, for more. Even if there is no originality of detail, no startling greatness of conception, at least there should be adequacy. The

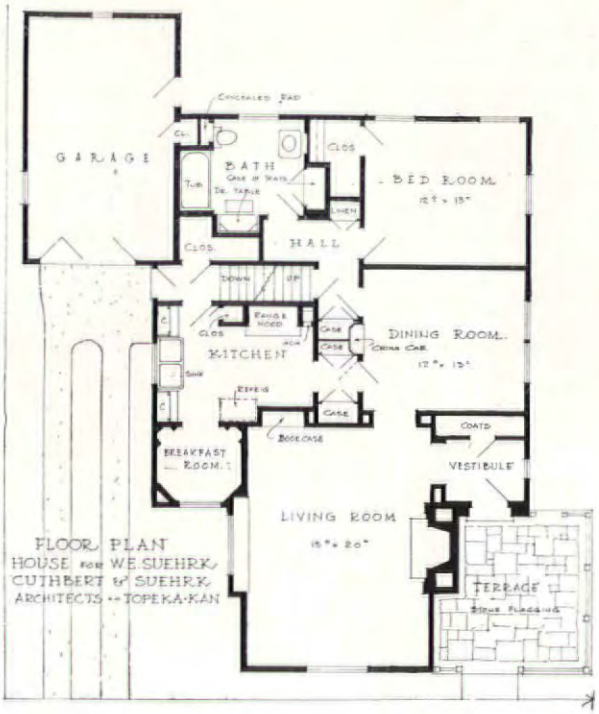
GOLD MEDAL AWARD
FIFTH AVENUE ASSOCIATION

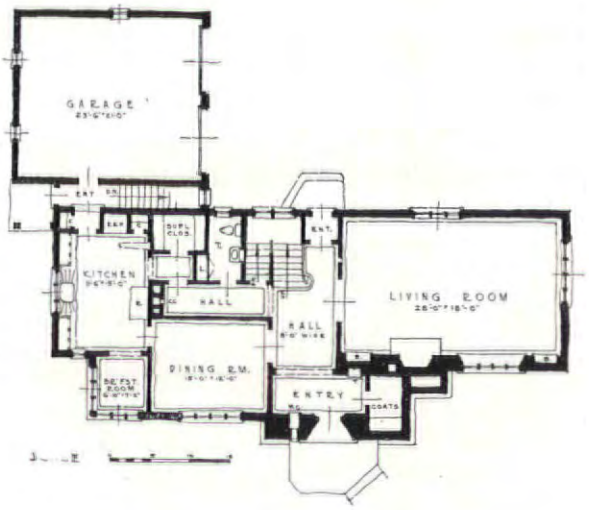
L. P. HOLLANDER CO. BUILDING, NEW YORK
SHREVE, LAMB AND HARMON, ARCHITECTS

Fischer

Wolp

HONOR AWARD, KANSAS CHAPTER, A. I. A.
HOUSE OF W. E. SUEHRK, TOPEKA, KANSAS
CUTHBERT AND SUEHRK, ARCHITECTS

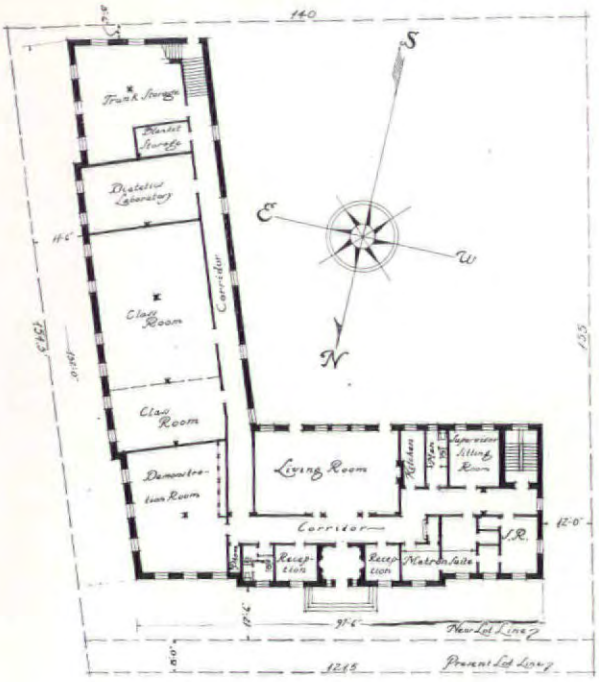




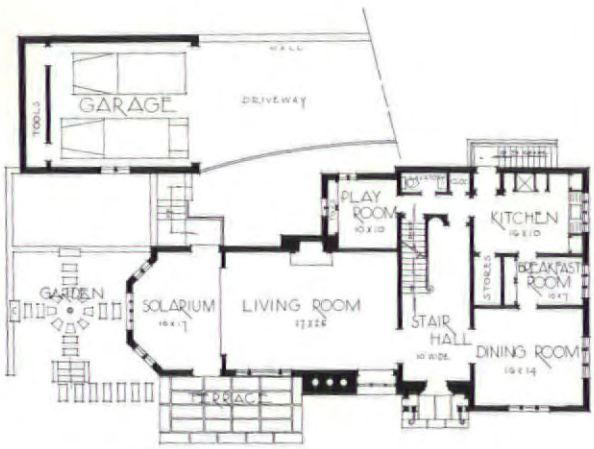
HONOR AWARD OF THE KANSAS CHAPTER, A. I. A.
HOUSE OF MRS. ALICE MOSSES, GREAT BEND, KANSAS — MANN AND CO., ARCHITECTS

Manning Bros.

HOUSE BEFORE REMODELING



HONOR AWARD, NORTH CAROLINA CHAPTER, A. I. A.
E. D. LATTA NURSES' HOME, ASHEVILLE, N. C.
LORD AND LORD, ARCHITECTS



FIRST FLOOR PLAN

HONOR AWARD OF THE NORTH CAROLINA CHAPTER, A. I. A.
HOUSE OF LOUIS LIPINSKY, ASHEVILLE, N. C. — HENRY I. GAINES, ARCHITECT

HOUSE AFTER REMODELING

HONOR AWARD
DETROIT CHAPTER, A. I. A.

HOUSE OF JOHN B. FORD, JR., DETROIT
ROBERT O. DERRICK, INC., ARCHITECTS

Gottscho

1930 MEDAL AWARD, NEW YORK CHAPTER, A. I. A.
GRAND STREET APARTMENTS FOR AMALGAMATED HOUSING CORPORATION, NEW YORK
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS

". . . an award that looks toward the future and not the past."

Ellison

HONOR AWARD, DETROIT CHAPTER, A. I. A.

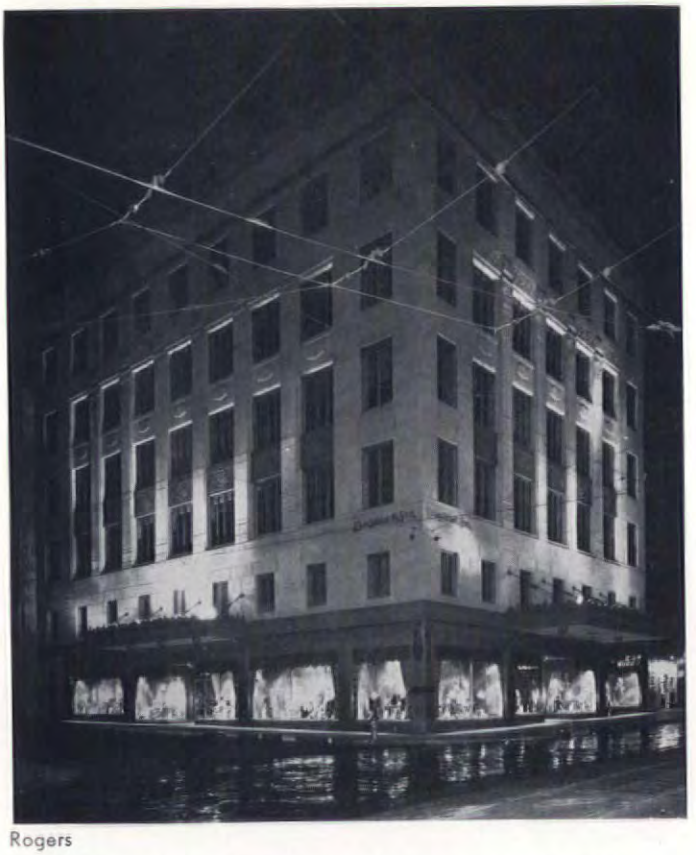
HOUSE OF EDSEL B. FORD, GROSSE POINTE SHORES, MICH. — ALBERT KAHN, INC., ARCHITECTS

". . . a splendor sentimental and bookish."

spectacle of local chapters of the American Institute of Architects dignifying with honor awards buildings not only banal and reminiscent in detail, but full of the most egregious and inexcusable ineptitudes is shockingly disheartening.

The cult of the dull, the ordinary, is nowhere better seen than in the house awards. The splendor of Edsel Ford's mansion is a splendor sentimental and bookish, unrelieved by personal charm. The small houses in general are similarly uninspired. The picturesqueness of skintled brick, hit-or-miss stone and false half-timber is here held up to our admiration. Only the foreman's cottage of the Brownell Ranch is an exception. The use of vertical boards and battens is convincing because it is obviously one logical way of using wood, not because of its Victorian flavor, and the simple, straightforward plan suggests directness; the forms seem natural for the problem and the site.

It was inevitable that sooner or later the "modernist" fashion should achieve its fit architectural expression. In the "modern" Tyng house at Southampton there is a complete and expensive example. It is the fashionable interior decorator's approach to design. Just as one hears of so and so saying, "I've had my bedroom redone modern," and one sees at once a picture of typical modern knick-knacks and decorators' furniture superficially assembled, so here all the fashionable modernist architectural *clichés* are assembled in the same spirit. It is modernism as style, pure and simple, put on and off like a dress. Waist-lines are higher this year and skirts are longer. Well, what of it? Of the deep underlying bases of modern architecture, not a trace. It is a *grande dame* of ten years



Rogers

HONOR AWARD, "NEW BUILDINGS" — COMPETITION SPONSORED BY DALLAS RETAIL MERCHANTS ASSOCIATION AND NORTH TEXAS CHAPTER, A. I. A.

DREYFUS AND SON STORE, DALLAS, TEXAS

ALONZO H. GENTRY AND LANG AND WITCHELL, ASSOCIATED ARCHITECTS

ONE OF THREE HOUSES TIED FOR FIRST PLACE
SMALL HOUSE COMPETITION

FOREMAN'S HOUSE, BROWNELL RANCH, WOODLAND, CALIF.
JOHNSON AND PERRY, ARCHITECTS

Gottscho

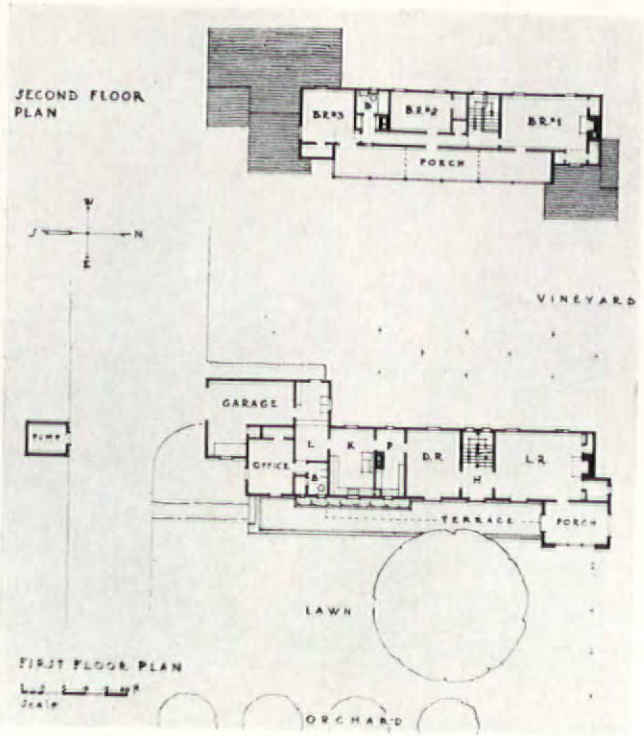
SILVER MEDAL AWARD
ARCHITECTURAL LEAGUE OF NEW YORK

HOUSE OF L. H. TYNG, SOUTHAMPTON, LONG ISLAND
PEABODY, WILSON AND BROWN, ARCHITECTS

Rogers

HONOR AWARD — "REMODELED BUILDINGS"
NORTH TEXAS CHAPTER, A. A. A.

W. A. GREEN STORE, DALLAS, TEXAS
DEWITT AND WASHBURN, ARCHITECTS



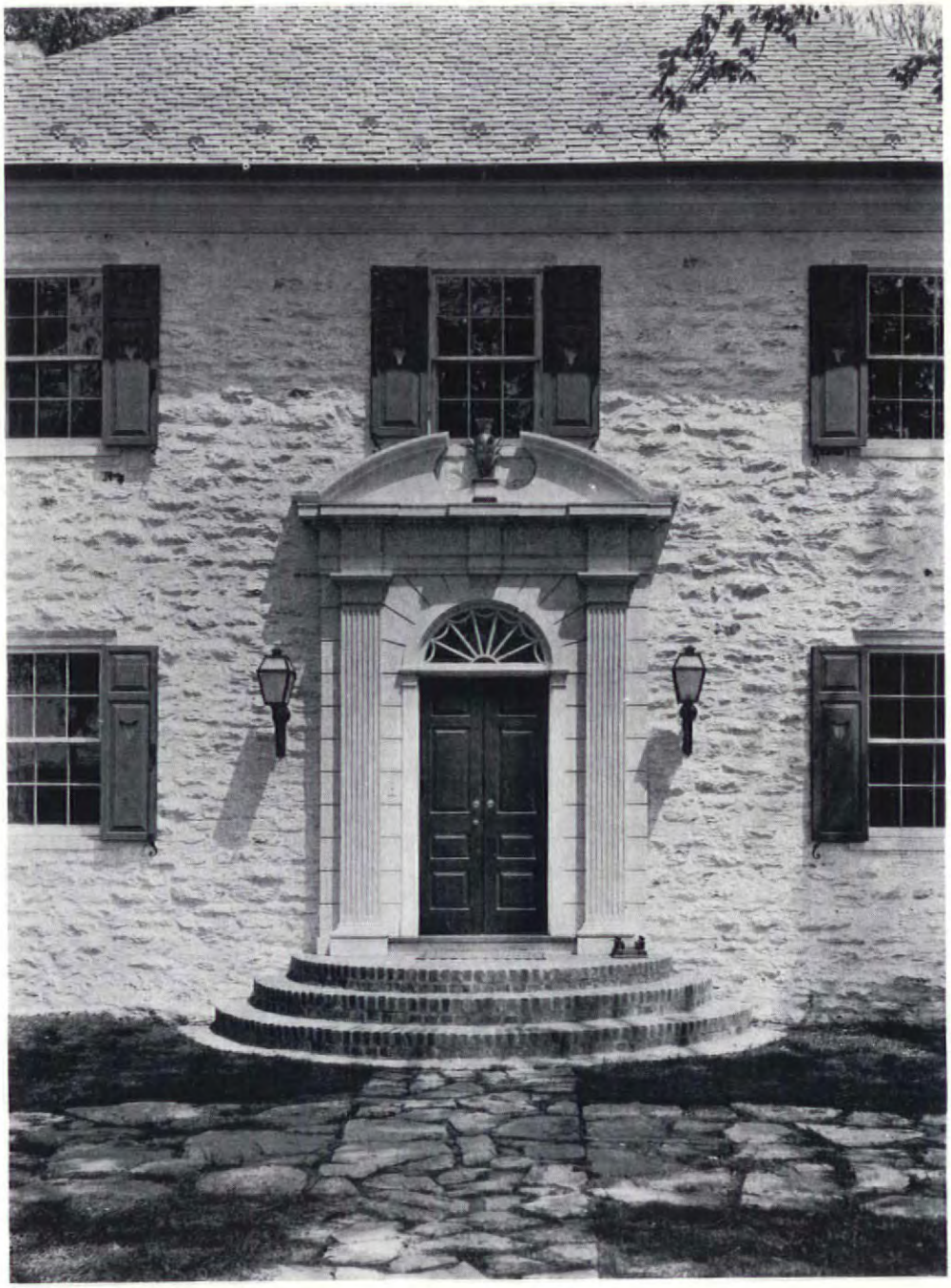
ago dressed up to go to the current Beaux Arts Ball—*Costume Moderne.*

The New York Chapter Tenement House Award to Springsteen and Goldhammer's Grand Street apartments is on a different and a more encouraging plane. Here it is obviously not the dress that is important, but the person. It is not horizontal banding or parabolic arches that are commended, but plan and land usage; it is light and air and green of growing things. The dress is open to criticism; larger windows might be desirable, and in the court recesses with the fire-escapes the group is just plain tenement. Sun in a city, the sweep of air, and the elimination of dirty and unkempt backyards—these are realities that are beyond criticism.

The plan has been criticized as too basically conservative, of begging the real question of city housing, of giving apartments at $12 a room when the crying need was for housing at $6 a room. Of course that is true. What the Europeans call the minimal house is still in America an unsolved problem. But that is a problem for financiers and sociologists to solve before the architects can even experiment, except on paper. Architecturally, here at last is an award that shows a jury looking below the surface, judging realistically. Here, at last, is an award that conjures up a little hope for a city of the future more open, more airy, more sunny, contriving to get within its building lot lines some of that greenery and openness which the greed of real estate speculation, the stupidity of early town planners, and the complete subservience of municipal politics to commercial interests have combined to deny us in our American city layouts. Here, at last, is an award that looks toward the future and not the past.

PORTFOLIO OF CURRENT ARCHITECTURE

JANUARY 1932



Gottscho

HOUSE OF AMORY S. CARHART AT WARRENTON, VIRGINIA
BOTTOMLEY, WAGNER AND WHITE, ARCHITECTS

OTHER BUILDINGS ILLUSTRATED IN THIS PORTFOLIO:

STARRETT-LEHIGH BUILDING, NEW YORK CITY — Russell G. and Walter M. Cory, and Yasuo Matsui, Associate Architects.

KENWOOD MILLS, INC., SHOP, IN THE MICHIGAN SQUARE BUILDING, CHICAGO — Holabird and Root, Architects.

Gottscho

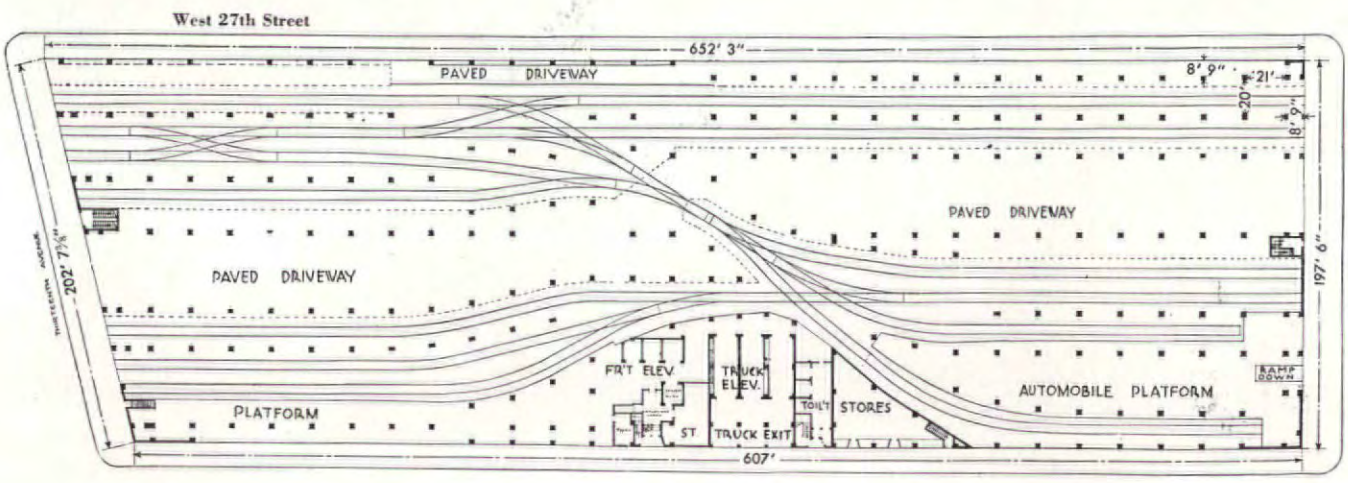
HOUSE OF AMORY S. CARHART
WARRENTON, VIRGINIA
BOTTOMLEY, WAGNER AND WHITE, ARCHITECTS

Landscaping by Charles F. Gillette, Interior decoration by Ernesta Beaux.

Gottscho

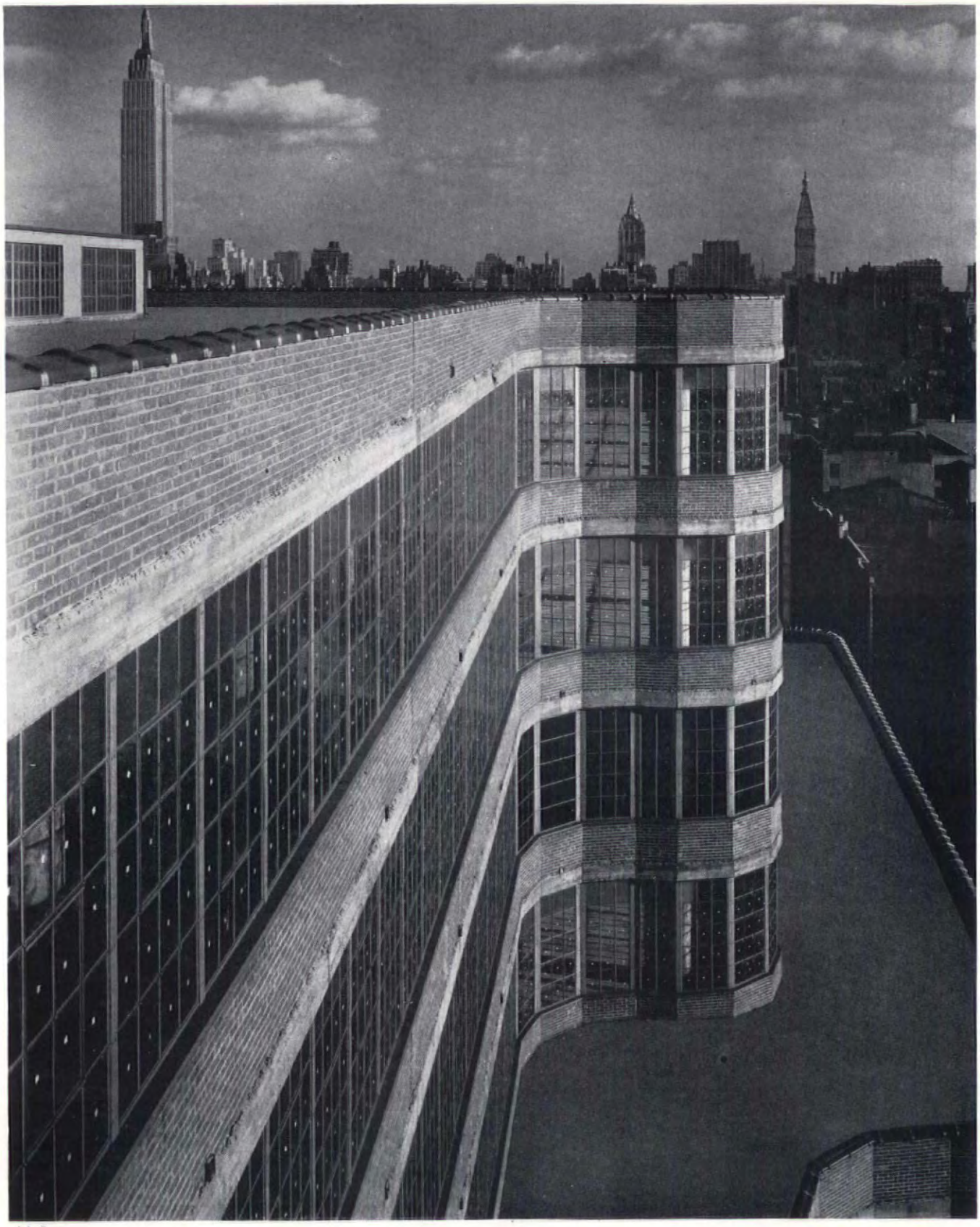
Exterior finished in whitewash, applied heavily over stone walls and wood siding. Faded green blue shutters, dark bottle green doors, dark Virginia slate roof.

HOUSE OF AMORY S. CARHART
WARRENTON, VIRGINIA
BOTTOMLEY, WAGNER AND WHITE, ARCHITECTS



STARRETT-LEHIGH BUILDING, NEW YORK
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS

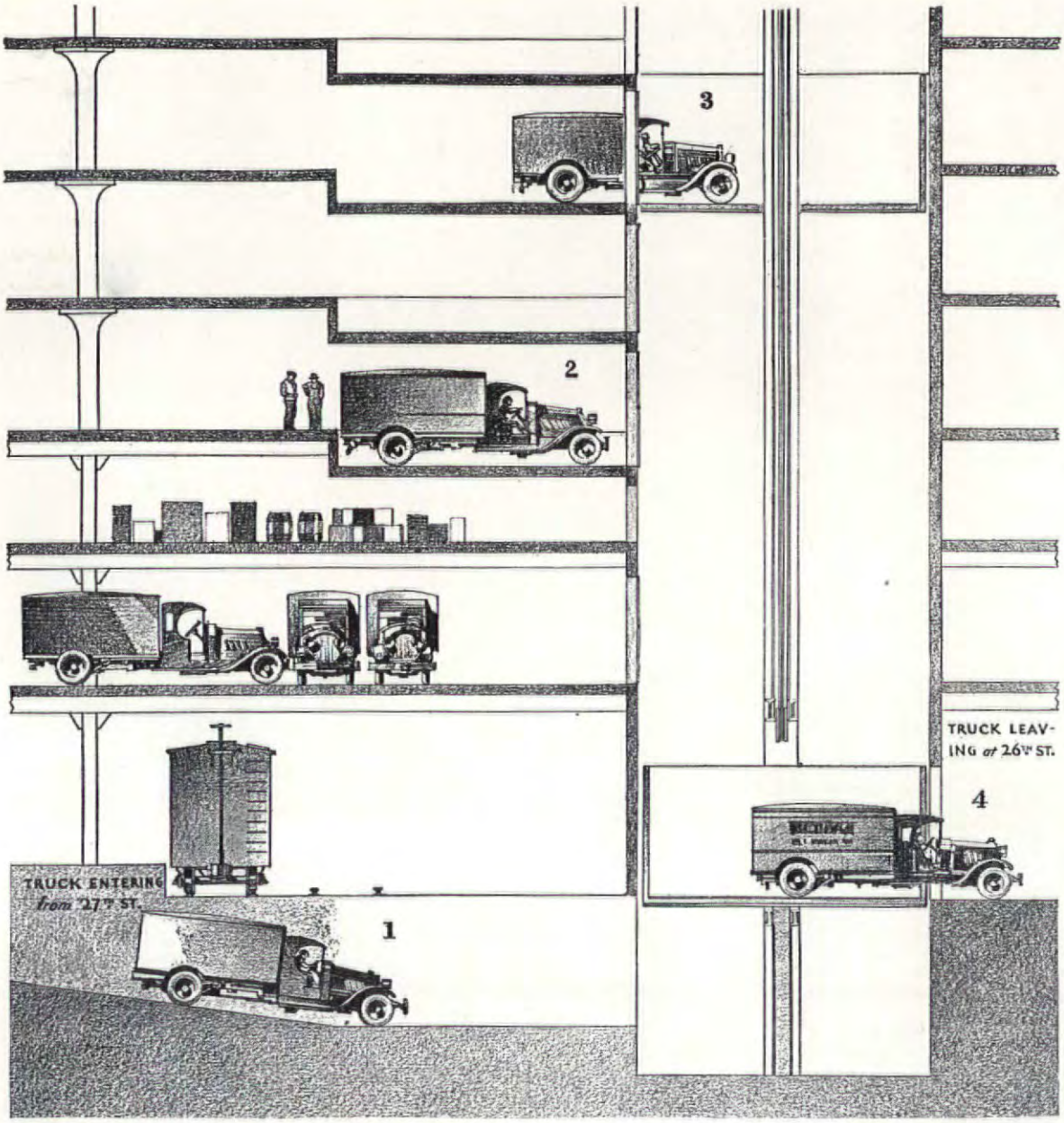
This building is a manufacturing and distributing center erected over the Lehigh Valley Freight Terminal tracks in New York City. The ground floor is used entirely for handling of freight.

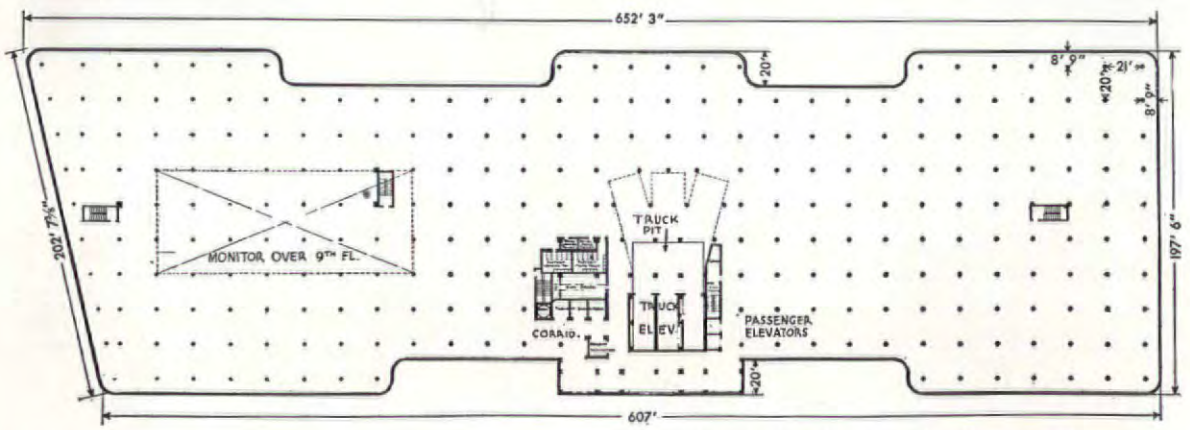


McRae

There are 124,000 square feet on each of six floors, with as much as 652 feet of straightaway for line production. Supporting columns are 20 to 21 feet on centers, with 13'4" floor heights.

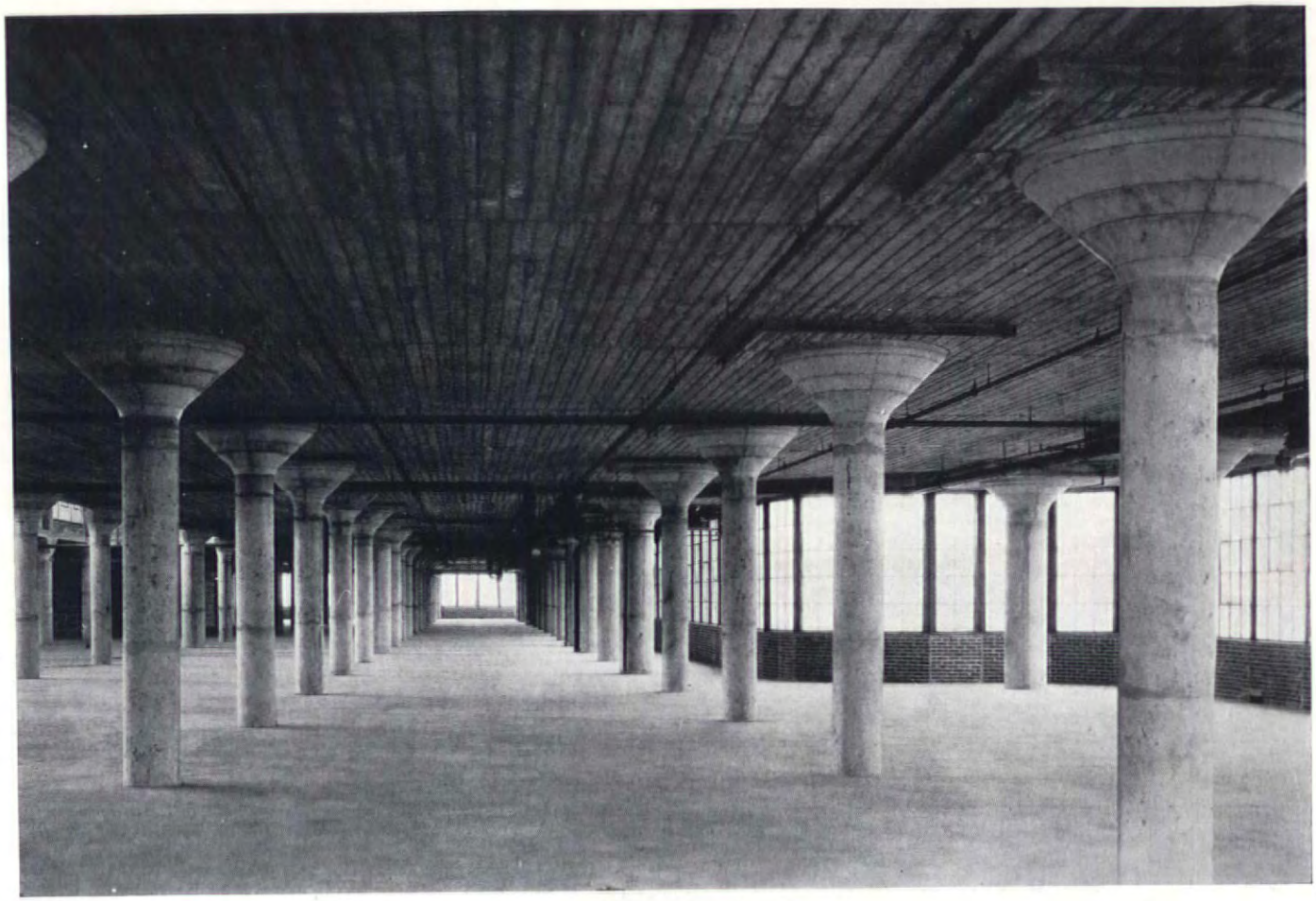
STARRETT-LEHIGH BUILDING, NEW YORK
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS





STARRETT-LEHIGH BUILDING, NEW YORK
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS

All traffic is handled inside the building. Trucks enter from street, (1) underpass the railroad tracks and are taken to desired floors by elevators; (2) they back into pits of 9-truck capacity; (3) after loading or unloading, they descend, and (4) exit without having had to turn around.



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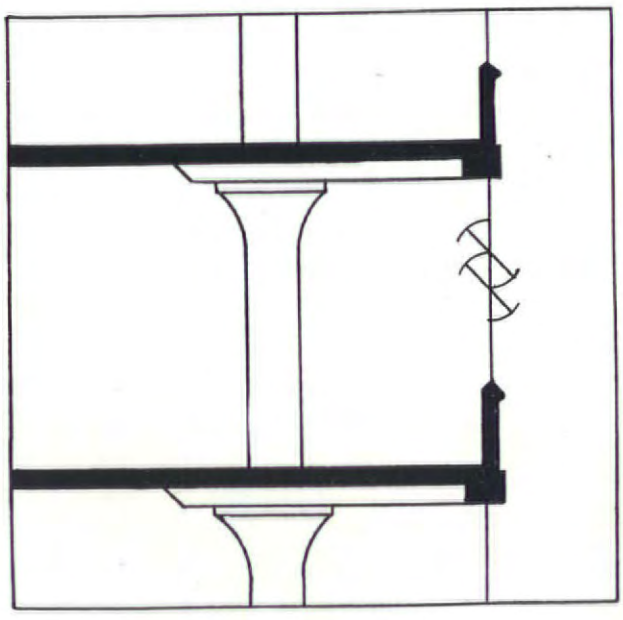
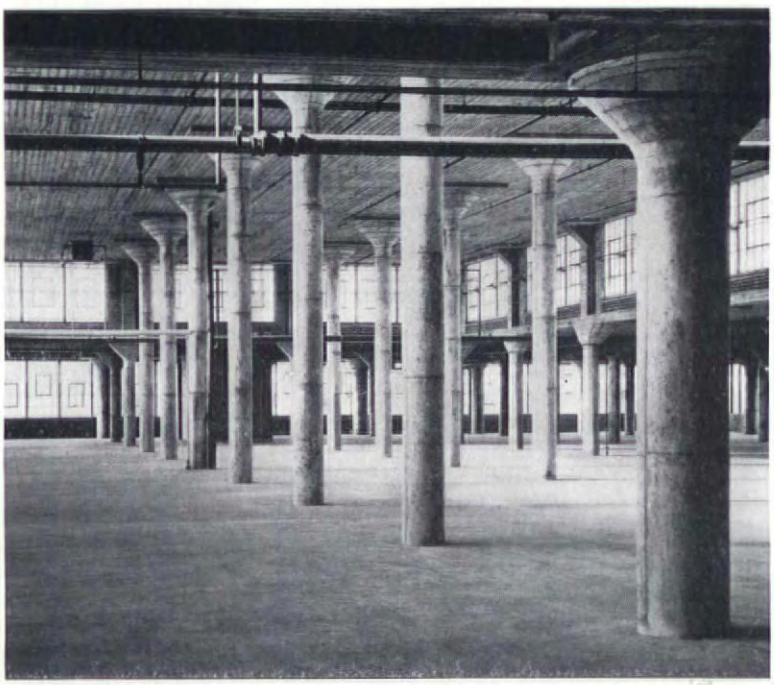
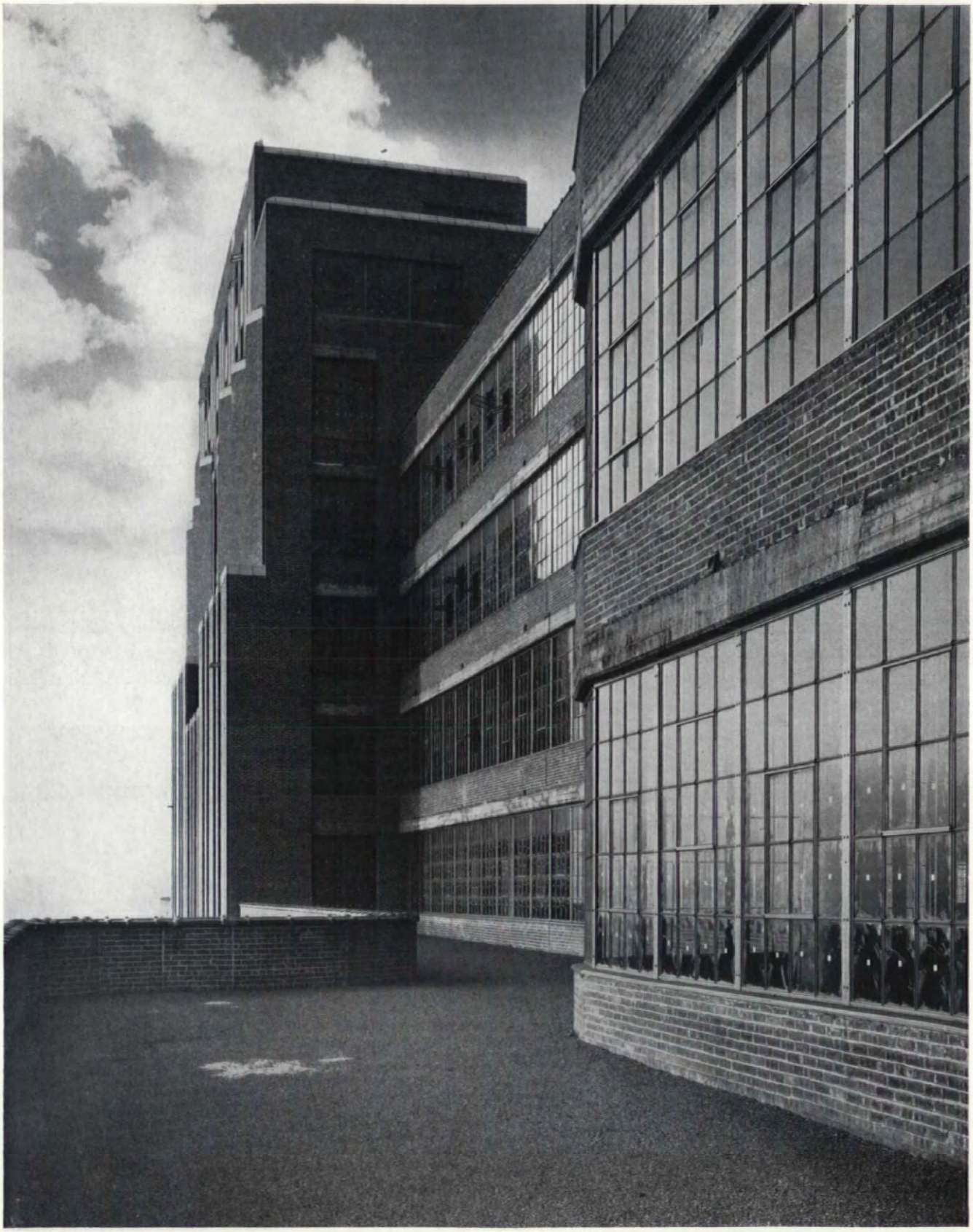




Floors are of concrete slab construction. The outer row of columns on all floors is set back 8'9" from the outer walls. This permits use of continuous windows which creates a comparatively shadowless interior.

STARRETT-LEHIGH BUILDING, NEW YORK
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS



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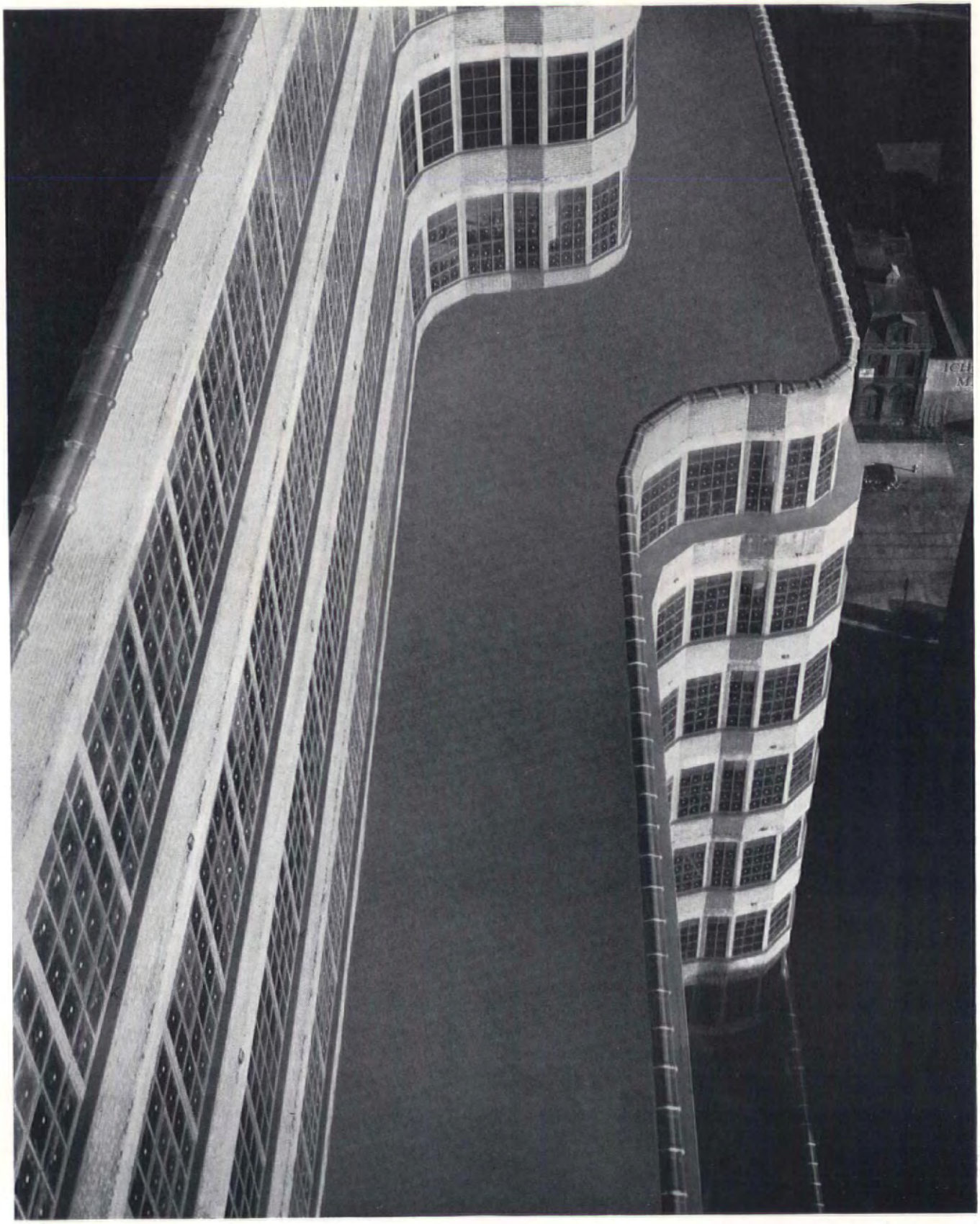
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS



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STARRETT-LEHIGH BUILDING, NEW YORK
RUSSELL G. AND WALTER M. CORY,
YASUO MATSUI, ASSOCIATE ARCHITECTS

Hedrich-Blessing

KENWOOD MILLS, INC., SHOP
MICHIGAN SQUARE BUILDING, CHICAGO
HOLABIRD AND ROOT, ARCHITECTS

Waite

MUNICIPAL STADIUM IN CLEVELAND

WALKER AND WEEKS, ARCHITECTS — OSBORN COMPANY, ENGINEERS

The Cleveland Stadium has been designed to accommodate outdoor gatherings comfortably. Facilities are provided for large crowds to witness baseball and football games, track meets, boxing matches, conventions, concerts and grand opera, pageants, circus performances, and other spectacles.

In 1928, by vote of the citizens, a bond issue of $2,500,000 was provided to cover the cost of the project. After a preliminary study of existing stadiums, the lake front of the Mall, northwest of the Cleveland Court House, was selected as offering best facilities for the gathering of large crowds. Construction of the stadium was started June, 1930, and completed July, 1931.

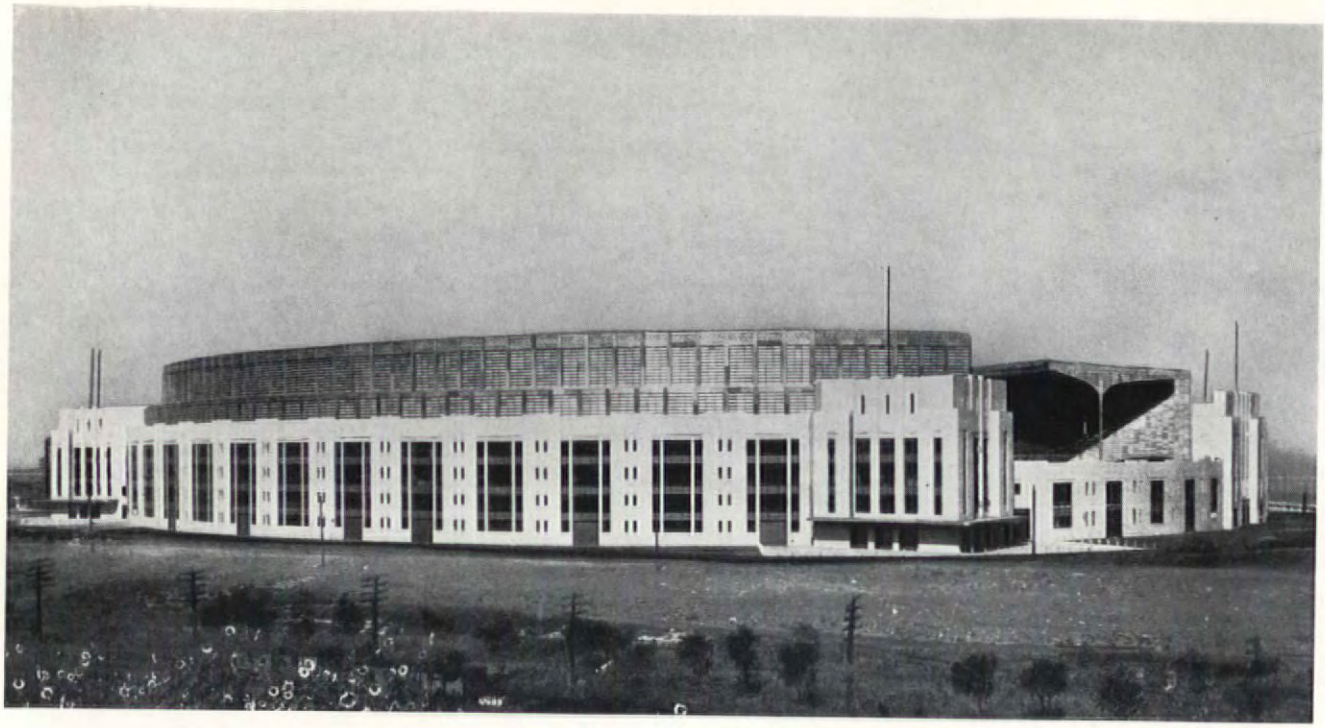
In general the stadium is of reinforced concrete and structural steel, faced with brick. It is two-deck throughout, with the exception only of the bleacher section. The roof is cantilevered forward to afford the front-row seats protection against weather.

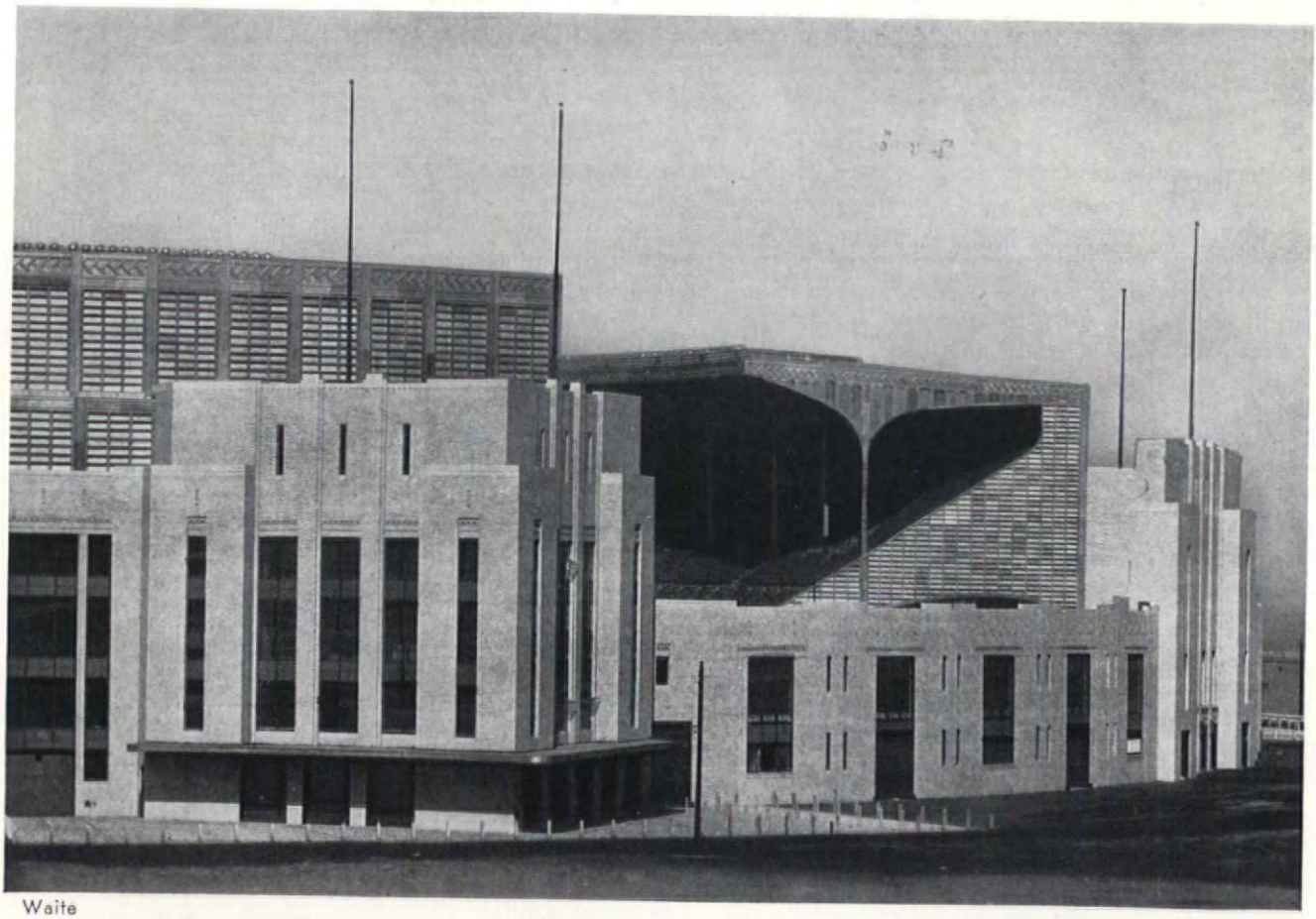
The "egg-shaped" building is 800 feet over-all, extending east to west, and 720 feet wide, north to south. The field within is 527 feet long and 446 feet wide, with a perimeter of 2400 feet and a field of 183,000 square feet. The masonry wall is 61 feet above grade, the outside roof line 101 feet above grade and the inside roof line 116 feet above the field. There are 51 rows of seats in the main deck, 34 rows in the upper deck of which the first 3 rows are loose chair boxes; there are 52 rows in the bleachers. There are 48 turnstile entrances, 33 exits, 42 lower-deck portals, 38 upper-deck portals, 16 lower-deck ramps and 8 upper-deck ramps.

This new stadium is one of the few having permanent grandstand seats. The total permanent seating capacity of grandstand and bleacher sections is 78,189. There are 37,396 seats in the main deck of the grandstand, 29,380 in the upper deck, and 10,913 in the bleachers. Seating capacity can be expanded to accommodate 90,000 for football games, and 110,000 for prize fights.

One of the architectural features of the stadium is the use of sheet aluminum for the upper exterior walls which inclose the entire structure. This ventilated superstructure is made up of louvers with mullions dividing them into panels and surmounted by a rather flat sheet metal cornice. At each column, about 15 feet apart, broad pilasters extend from bottom of louvers to top of cornice; these pilasters project beyond the face and above the cornice.

A fair idea of the magnitude of the superstructure can be had from the fact that more than 130,000 pounds of aluminum were used in its construction, this material being approximately one-third the weight of steel in the equivalent gauges. In this superstructure, 8,000 aluminum wood screws, 25,000 aluminum nails, 60,000 specially designed aluminum bolts, 150,000 aluminum rivets, and 100,000 pounds of light steel for reinforcing the aluminum sheets, were also used.





Waite

MUNICIPAL STADIUM IN CLEVELAND
WALKER AND WEEKS, ARCHITECTS
OSBORN COMPANY, ENGINEERS

FINDINGS AND SUGGESTIONS OF THE HOUSING CONFERENCE

By MICHAEL A. MIKKELSEN

Among the noteworthy features of the President's Conference on Home Building and Home Ownership, held in Washington December 2 to 5, were (1) the quantity and diversity of information presented, (2) the number of topics pointed out as demanding further research before a scientific housing program can be formulated, and (3) the number of legislative adjustments and cooperative activities recommended.

The problem of home ownership is essentially an economic problem. It arises from the relationship between the family income and the cost of owning a home. In general terms it may be illustrated somewhat as follows.

The Committee on Objectives and Standards reports that, under existing credit facilities and customary business practice in the building industry, the cost of a home should not, as a rule, exceed twice the assured annual income of the family, and that the cash payment should equal 25 per cent of the purchase price. The purchase price is to include all special assessments for street improvements—grading, paving, sewers, and so on.

There are probably few urban places where a house, properly planned and containing sanitary conveniences, can be built on a lot with a full complement of paid-for street improvements, and sold at a profit for less than, say, $4,500.

To buy a home at this price the family would have to have an assured annual income of $2,250 and be able to make a down payment of $1,125. An annual income of that amount places the family among the high-income groups. The Committee on Types of Dwellings recognizes this in considering how far down the economic scale it is possible to reach with new dwellings. It suggests that "the group with annual incomes of from $1,800 to $2,200 be taken as the objective."

That group is not reached at the present time. The Committee on Large-Scale Operations states that "practically no new dwellings, and certainly no desirable types of houses, have been constructed in recent years at costs within the means of two-thirds of our population." This statement agrees with an estimate by Dr. Edith Elmer Wood (p. 52, *Recent Trends in American Housing*, Macmillan, 1931) to the effect that two-thirds of American families have incomes of not more than $2,000.

Basing her estimate upon a study of various authentic sources, Dr. Wood says:

> "It is the writer's belief that the following will be found not far from true: "One third of American families have incomes not to exceed $1,200.
> "One third of American families have incomes between $1,200 and $2,000.
> "One third of American families have incomes in excess of $2,000."

The question is sometimes asked, Will not a general increase in wages and salaries, say in the next era of prosperity, help to solve the home ownership problem? A general rise in wages and salaries, productivity remaining unchanged, would increase the cost of production and the cost of living, and would bring about no real change in the relationship between the family income and the cost of owning a home. The only practical avenue of approach toward a solution of the problem under the American economic system is through reducing the cost of homes.

One of the most extravagant cost items is that of junior mortgage financing. Besides, if a family has to save until it has 25 per cent of the purchase price in hand, the purchase may be delayed beyond the time when the children would be most benefited by living in a private dwelling. The conviction was therefore expressed that it should be made as easy for a family to buy a home as to buy an automobile, paying down 15 per cent of the purchase price.

Is it possible to devise a safe, economical and adequate credit system for the purchase of low-cost homes on this basis? Apparently no study was given to the question, possibly to avoid hampering President Hoover's personal initiative in the home ownership credit field.

Educational Influence of the Conference

Despite the fact that the Conference failed to suggest a radically improved credit system, and despite the further fact that it deferred the formulation of a complete housing program, it nevertheless marks the beginning of a new chapter in housing progress. For the first time in America, it brought together all existing first-hand data on each of the many phases of the problem of home building and home ownership.

It is bound to exercise an influence upon the speculative builder of low-cost dwellings, who in his effort to keep down costs has been debarred from seeking the advice of architects, engineers, and other specialists. His mistakes have been more often mistakes of ignorance than of dishonest intent and he himself has frequently sustained the loss which they entailed. In the committee reports

he will find practical instruction on design, plan, equipment utilities, construction, decoration, landscape treatment, land subdivision and the like.

However, the most important educational achievement of the Conference is its convincing demonstration that housing progress is conditioned by planned communities and cooperative activities —that the economic laws which govern the welfare of the community also govern the welfare of the combined real estate and building industry. The means outlined for bringing order out of confusion in the small house situation apply to all types of building.

Although the twenty-five fact-finding committees and the six correlating committees had a total membership of about 400 specialists, each committee found that "a good part of its recommendations had to grow out of the practical wisdom and professional experience of its members," because studies fundamental to strictly scientific conclusions did not exist. "Most of the information essential to effective action is still not available."

National Housing Institute Proposed

The aim of the Conference was to promote the building and ownership of low-cost private dwellings. But this aim, it was found, can not today be achieved except in a planned community, where localities are zoned and developed for specific uses—private dwellings, apartment houses, commercial buildings and so on. The Conference therefore recommended a research agency to ascertain "what under existing conditions are the factors that prevent good housing from becoming available for every one."

Excellent research work, it was stated, is being done in parts of the housing field by the U. S. Bureau of Standards, the Division of Building and Housing of that Bureau, the U. S. Public Health Service, the Bureau of Home Economics in the Department of Agriculture, and the Bureau of Labor Statistics in the Department of Labor. Many contributions to the literature of housing have come also from the Bureau of the Census, the Children's Bureau, and various other branches of the Federal Government.

Nevertheless, in the opinion of the Committee on Research, a permanent research foundation for housing should not be a branch of the Federal Government, but should be privately endowed.

Accepting the principle of independence in research, the logical next step was to entrust the research agency with educational functions. A National Housing Institute, privately endowed, was therefore suggested, to consist of the following divisions, in addition to its administrative department:

1. A Research Division.
2. A Service and Information Division.
3. A Demonstration (or local organization and programs) Division.

Whether a privately endowed foundation of the sort advocated is actually in prospect, *The Record* has no knowledge. However, as Secretary Wilbur's message from the President to the Conference declared that its work is to be continued, it seems to be a reasonable assumption that the private philanthropy which made the Conference possible will also be available for the proposed National Housing Institute.

Home Information Centers

One of the functions of the Institute would be to promote the organization of local housing programs and the establishment of Home Information Centers in every community. The purpose of each Home Information Center would be to provide all the information necessary to enable any inquirer to decide for himself:

(a) whether or not to locate in the community, and
(b) in what part of the community to make his home.

The information to be furnished concerning the community would include composition and trends of the population, location of schools, recreational facilities, stores, utility services, traffic flow and traffic facilities, adequacy of transportation service, banking, building and loan and other craft facilities, labor and material costs, zoning regulations, police and fire protection, assessment methods, per capita cost of local government, charitable organizations, health regulations, churches, servants' wages, industrial plants, sanitation provisions, conditions of real estate market, extent of vacancies, rent charges, number and types of new housing construction.

Decentralization

The basic evil in bad housing is land overcrowding. Hence, one of the first reports one naturally turns to is that of the Committee on Industrial Decentralization and Housing. This enumerates the major developments in power generation and transmission and in transportation since 1910 that have made it economically advantageous for many industries to locate in small communities, and adds that to some extent decentralization of industry is under way. However, as yet concentration is apparently larger in volume than is decentralization, as the following table from the report indicates.

Percentage Increase in Wage Earners in Manufacturing in Communities of Different Sizes

	1919-29	1909-10
United States	—2.1	36.1
Under 25,000	—6.0	21.1
25,000 — 50,000	4.1	53.4
50,000 — 100,000	—7.4	37.1
100,000 — 250,000	—13.4	68.9
250,000 — 500,000	—33.3	31.8
500,000 — 1,000,000	—21.4	127.1
1,000,000 and over	14.2	20.4

During a decade in which there was a decline of 2.1 per cent in total number of industrial wage earners, the cities of over 250,000 had an increase of 6.9 per cent while those of less than 250,000 had a decrease of 6.2 per cent. "Clearly the wage

earners employed in manufacturing are not being decentralized."

Note is also made of the fact that "with a few outstanding exceptions (Detroit and Los Angeles, for example), the wage earners in manufacturing living in the larger cities are a smaller proportion of the gainfully employed living in these cities than ever before. Trade, the professions and clerical work are absorbing most of the people who are crowding to the cities. This clearly indicates that the decentralization of population involves more than decentralizing manufacturing."

Percentage of the Total Population Living in Cities of Specified Sizes

Cities of:	1930	1920	1910
1,000,000 and over	12.3	9.6	9.2
500,000 and over	17.0	15.5	12.5
250,000 and over	23.5	19.8	16.8
100,000 and over	29.6	26.0	22.1
Less than 100,000	26.6	25.4	23.7

The report concludes that there are two distinct kinds of decentralization, one toward the suburbs of urban centers, the other toward the smaller towns. "A major obstacle to the former has been the general absence of comprehensive regional planning, and the chief obstacle to the latter has been the established transportation system and the railroad rate structure."

We know little of the action of the complex group of forces which has produced the present distribution of industry. So long as this is the case we cannot hope for any considerable control over them. The Committee therefore feels that one of its most important recommendations must be for further research in this field.

Planned Neighborhoods

The relationship of the family to the city is less intimate than is its relationship to the neighborhood in which it lives. Family life is adjusted primarily to the recreational, cultural and political activities of the neighborhood. Hence, all the committees which dealt with housing progress in its broader aspects came to the conclusion that planned neighborhoods are essential to good housing—planned neighborhoods within the framework of the city plan and the regional plan.

Thus the Committee on Design made it clear that design "includes or touches upon all the factors that create a dwelling—economic, social and financial as well as physical. . . . Design extends beyond the walls of the individual dwelling into the lot, and it covers the relation of the house to the lot; it deals with the relation of the house to adjacent houses, to the street, to the block and to the neighborhood. . . . The true unit of design is the group, not the dwelling."

The Committee on Design also gives an interesting answer to the statement frequently made that the traditional organization of the neighborhood is weakening under the conditions of modern life. The answer is "that the most natural, the most stable and the strongest position for the individual in this complex world is to become a member of a strong, successful residence group. . . . This organization gives to the individual a sense of security that is a liberating influence. . . . Home ownership or anything akin to it is possible only on such a basis. The very idea of home ownership means permanence, stability, security. The best security for home ownership is a high-standard dwelling located in a desirable neighborhood, protected against deteriorating influences."

The Committee on City Planning and Zoning concludes that a neighborhood unit "should have for its focal point the elementary school with its playground. There, too, a library, clubs, churches and some other community buildings might be concentrated. It would be the center of all local recreational and social activities. These places that serve as centers of the activities of children, being at the center of the area and well removed from the major traffic streets which form the boundaries of the unit, would provide a comparative freedom from the danger and disturbances common to such areas. . . . Neighborhood stores and commercial amusements would be found where they most naturally belong, at major traffic street intersections. Here also would be found facilities for mass transportation. On them also, when they are properly treated as by giving them parking characteristics and when the lots are sufficiently large, are possible sites for group or apartment houses."

The Committee points out that in practice, city planning has been predicated upon endless growth of the city with expansion at the edges and a constant deterioration near the center. Neighborhood planning is quite as necessary for rehabilitating blighted districts as it is for controlling the growth of the suburbs.

The cost of the lot on a fully improved street accounts normally for some 20% of the purchase price of an inexpensive private dwelling. Any appreciable reduction in the cost of improved lots would therefore help toward promoting home ownership. For this reason, a series of studies by the Committee on Subdivision Layout showing the relative improvement costs of lots in subdivisions differing only with respect to the street pattern, is valuable.

The area taken for the neighborhood units is 200 acres. The buildable area in each study represents 60.37% of the total area. While the traffic area in the standard gridiron plan is 26.70% of the total, it is only 17.30% in the "model neighborhood unit" plan; the recreation area is 12.93% in the gridiron plan and 22.33% in the "model neighborhood unit" plan. The cost of the lot and its improvements in the "model neighborhood unit" is $690.39 as against $1,314.40 in the gridiron plan. These figures should not, of course, be accepted for any purpose except that of illustrating the possibility of affecting lot costs through the street layout. "This study," according to the Committee, "seems to give further evidence in support of the fact, now in any case becoming generally accepted, that the cost of improving land can be consider-

ably reduced by thoughtful planning and functional layout."

The buildable area of the neighborhood unit of 200 acres provides dwellings for 2,050 families, housed as shown in the following table:

Distribution of Population as to Type of Dwelling

Dwellings in:	Per cent	Number provided	Sq. ft. land per dwelling	Area in sq. ft.
Single-family houses...	40.2	825	3875	3,186,900
Two-family houses.....	11.2	230	1940	446,200
Multifamily houses.....	42.5	870	1400	1,218,000
Apartment houses.....	6.1	125	1100	137,500
	100.0	2050		4,988,600

By multifamily houses the Committee means three-family houses.

It is interesting to note that housing improvement is coming more and more to be sought through neighborhood planning, zoning, public control of acreage subdivision, and restrictive covenants in deeds than through building codes.

Large-Scale Operations

The main hope of substantially reducing the cost of owning or renting homes seems to lie in large-scale operations which control the development of the raw land and the construction of buildings for an entire neighborhood unit. This procedure is now employed with commercial success for well-to-do people. It has also been used in notable instances for wage earners and clerical workers by private philanthropy.

According to the Committee on Large-Scale Operations, the following may be said for mass production of this kind:

"1. It is economical. The land is treated in large blocks, and is developed in one continuous operation to its final use for completed housing, thus avoiding a multitude of commissions, carrying charges, and in the case of outlying projects, the usual premature investment in public plant and utilities.

"2. It is modern. The community plan can be adapted specifically to the purposes it will serve, providing for gardens, a playground, and a recreational center, and in larger schemes for shops, schools, and other community buildings.

"3. It is efficiently designed. Under large-scale operation methods, a group of houses or a large block of apartments is designed as a single unit, thus utilizing to the maximum all space inside and outside the walls of the house, and making possible beauty of design, through the relation of the masses. This has been amply demonstrated in such communities as Mariemont, Ohio, and Sunnyside Gardens, Long Island. Small-scale operations are wasteful, because they must work within the frame of the single lot, almost always deep, narrow, and therefore highly inefficient.

"4. It is a good investment. Large-scale operation will offer a safeguard to investments. It dispenses with a multitude of small financial operations, reduces the volume of detailed work and permits careful scrutiny and appraisal. By creating neighborhoods of a homogeneous character, it guards against the possibilities of deterioration through spotty or inadequate development and it preserves values for a longer time than does our present method.

"5. It offers low rents. Loans on a greater percentage of value, with longer periods of amortization and a smaller interest rate are possible in large-scale operations. This and other factors mentioned above should mean a large saving in the monthly payments of those who rent or purchase such houses."

The Committee specifies certain changes in legislative and other regulatory restrictions that would have to be made in order to promote large-scale operations. The changes have to do with corporate ownership, corporation taxes, zoning and building codes. But a more difficult problem is to provide capital at low interest rates for equity financing. The Committee argues that government aid is needed to this end. "More necessary than all other requirements for the application of large-scale operation is a plentiful supply of money at low-interest rates."

The Committee estimates that by lowering costs of construction "to reach a new field of even 10% of our population (the farm population being excepted), expenditure of 5½ billion dollars will be required. This group represents those whose incomes are next below the one-third of the population who receive the highest income."

The new buildings erected would not enter into competition with private enterprise in the building industry. At the present time, the typical moderate-priced house in the suburbs of northern and eastern cities is built to sell at not less than $6,000.

The Committee appeals for public aid in financing noncompetitive low-cost construction in the following language:

"It is common knowledge that at the coming session of Congress the question of large federal expenditures for public work to relieve unemployment will be considered.

"Our committee does not desire to express an opinion as to the wisdom or expediency of the Federal Government using these means to relieve unemployment. It is of the opinion, however, that if a program of expenditures by the Federal Government for these purposes be determined upon, it would be a sounder use of public funds to invest them in housing, which is likely to provide its own carrying charges and eventually return the money to the public treasury, than in an extravagant program for roads, post offices and other public works which will require additional expenditures for upkeep and add maintenance charges to already overburdened taxpayers. Should the Federal Government enter the housing field, it might supply one-half of the equity financing. Such an amount would be matched by private investment and, assuming a 50 per cent mortgage from an insurance company, the funds so advanced would make available for employment from private capital three

times as much money as would go into an ordinary governmental program."

The Nucleus of a Program for the Building Industry

The basic means suggested by the Conference for promoting home building and home ownership are, for the most part, already in existence. Some of them exist only in a few places while the others need to be improved.

They are periodic local real-estate surveys, community, city and regional planning, local information centers, zoning and control of subdivision layout. These measures, together with an improved mortgage loan credit system, constitute the basic elements of an economic program for the building industry.

Is it possible for the building industry to create a program? Two promising agencies for collaborative study exist—the Construction League and the National Conference on Construction.

If slum clearance could be undertaken, it would go a long way toward reviving the building industry. This topic has not been discussed in the present brief review of the Conference. It deserves full treatment by a recognized authority and will be dealt with in an article by Arthur C. Holden in the February issue of THE RECORD.

●

TYPICAL TRENDS IN LOW-COST HOUSING

AND THE OPPORTUNITIES EXISTING FOR ARCHITECTS

The studies of the Committee on Design of the recent Housing Conference required an inspection of some half dozen representative cities between the Allegheny and Rocky mountains. This inspection revealed certain significant trends in the field of new dwelling construction. The drift of things as shown in the accompanying portfolio of photographs is that of midsummer 1931. It reveals an acceleration of a recognized preponderance of house building by speculative or building agencies, or repetitive types of houses, in neighborhood groups, even invading the higher-price districts. Mass production in effect, with all of its deficiencies and few, if any, of its advantages.

Housing is a field where men who have learned to understand the small house can extend their service and improve the quality of American suburbs, without danger of interference with existing architectural practice and with the full backing and approval of the profession at large.

●

Most of the attainments of community design during the war were wasted through isolation or lack of appreciation. The Bridgeport war housing project, however, has been preserved and has stood out for ten years as a striking example of community grouping and good taste in economical house construction. Unfortunately, its example has been ignored.

Quality Photo Service

BRIDGEPORT, CONNECTICUT

MINNEAPOLIS

KANSAS CITY, MISSOURI

THE BUNGALOW TYPE has predominated in cities of the Central States but builders have become ashamed of its awkward bulkiness. Here is a recent design trend in Minneapolis, St. Louis, and Kansas City, where the cross front roof gable appeared almost simultaneously. The street effect hides the bulkiness of the broad roofed area in back.

ST. LOUIS

MINNEAPOLIS

THE STONE DOOR PERIOD is just passing, with the advertised front chimney following in its wake. No self-respecting 1931 bungalow appeared without the latter feature. Even the higher-priced field has been invaded by the front chimney and superimposed gables.

AN ARCHITECT'S DESIGN provides the inspiration for a whole block of builder's "designs." The builder has taken seriously the demand for more architectural expression.

These pictures are much more than examples of the builders' lack of skill; they reveal strong competition tending toward a uniform plan, quality and price in a given city, with slight relation to varying needs or purchasing capacities; rapid interchange from one city to another of innovations, particularly in faddish exterior features; and, finally, the fatal tendency of the untrained builder to make up in lavishness what he lacks in good taste.

And yet these builders are generally doing an honest job within their limitations; furthermore, no small number of them are just falling short of producing generally commendable results. It is through this latter group that the architect might provide the lacking touch which keeps such construction beyond the pale of really tolerable design. How can he go about it?

The approach will be not by telling the builder about his business, or trying to have him swap his designs for others, but rather by suggesting the things by which his well-tried and almost good efforts may be adjusted into satisfactory shape.

KANSAS CITY, MISSOURI

THE EQUALIZING EFFECT OF BUILDER COMPETITION is shown here. These expensive new bungalows adjoin a neighborhood in which the second view is characteristic of the product of past years.

THIS 1931 BUNGALOW is even more remarkable on the inside. Mission fireplace, ornamental "coved" ceilings, a bathroom with sunken tub and archways for each fixture, a rathskeller and conditioned air are only a few of its "feature" appeals. The side view shows the expansion of the rear roof for the sleeping porch. The other views show the franker treatment of the superimposed sleeping porch characteristic of the suburbs of Kansas City.

ST. LOUIS — HOUSE "A"

HOUSES "B" AND "C"

GOOD INTENTIONS THWARTED. The subdivider did a first-class job of expensive curving streets and generous lots. To assure the character of the buildings he built "A" and "C" as model houses, only to have "B" located between them and "D", "E" and "F" built down the street.

HOUSES "D", "E" AND "F"

ANOTHER ST. LOUIS BUILDER fared better in his experiment. Across the street from a row of indifferent bungalows he built a number of houses in good taste. His products met with approval and the other builder was forced to reduce prices.

BUFFALO — HOUSES "A" AND "B"

THE COMPLETE EVOLUTION, within a short period, of the usual narrow lot bungalow to the two-family flat, all in the same immediate district. House "B" is a one-family bungalow; ("A") the rear of this house is elevated to provide rooms for rental (this is an "income" bungalow).

GROUP "C"

Group "C" shows the back of a row of the "A" type.

GROUP "D"

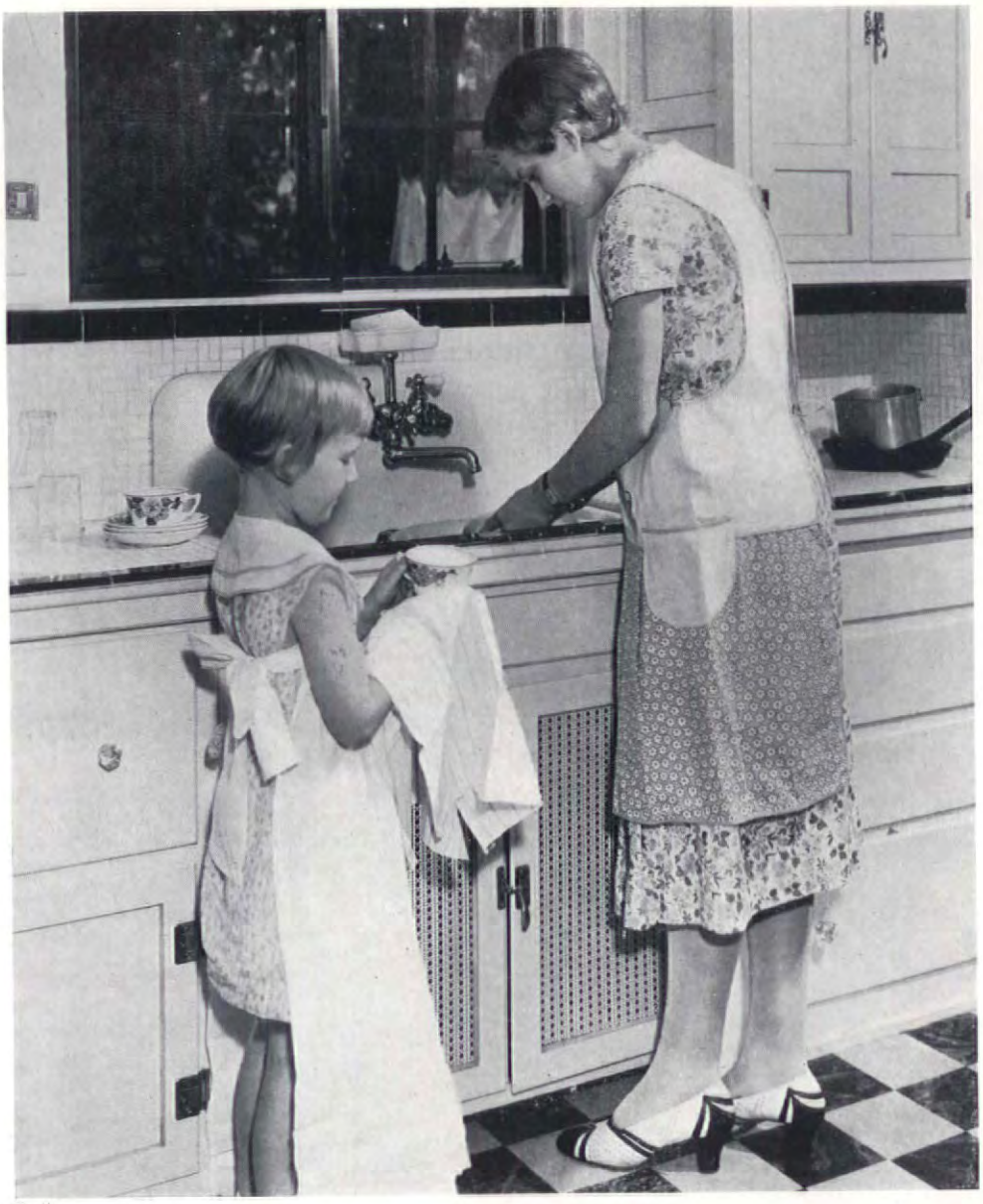
Group "D" is an entire row of 50 full fledged two-family dwellings masquerading as bungalows.

GROUP "E"

Group "E" shows the same type in a little more expensive form. The brick portion is a rudiment of the brick sun porch: it is no longer a porch, for the extra stairs for the second floor have crowded the living room half out into the former sun room area and the second floor balcony thus straddles the living room below. The two little side windows—one in frame, the other in brick—are the windows over a fake brick fireplace in the living room.

DIMENSIONS PART ONE KITCHENS

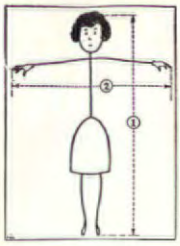
By A. LAWRENCE KOCHER AND ALBERT FREY



Galloway

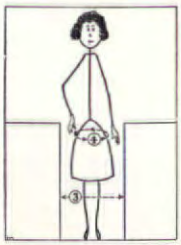
The dimensions and working heights of practical equipment are determined by human scale.

This series of articles presents data that will enable the architect and draftsman to find readily the average and available dimensions of equipment such as plumbing fixtures for kitchens, bathrooms, schools and other buildings. Chairs, tables, theater seating, office desks, typewriter tables and elevator sizes will be included. It will be a listing of the typical (not necessarily complete) equipment sizes as an aid in planning. A simplified and at the same time accurate indication of equipment illustrated has been adopted as suited to drafting room practice. Assistance has been received from the U. S. Bureau of Standards, the American Standards Association, Sweet's Architectural Catalogues, Brooklyn Borough Gas Company, and home economics investigators.

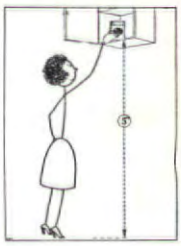


Height of top shelf.

Reach (from finger tip to finger tip).



Space needed to move about freely.

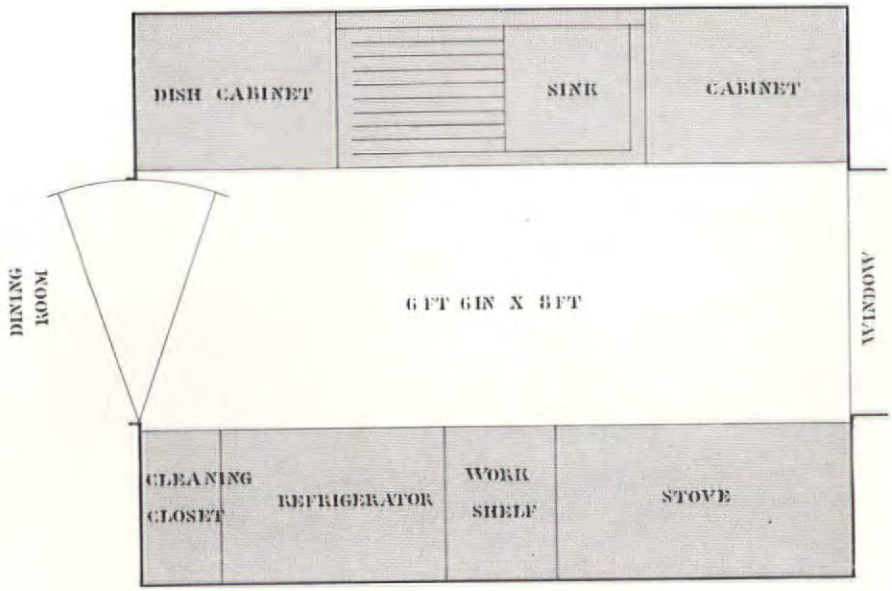


Elbow to floor when seated.

Courtesy, Miss Jane Callaghan,
Brooklyn Borough Gas Company

Height of work surface adjusted.

METHOD FOR PLOTTING heights of work surfaces and kitchen arrangement.

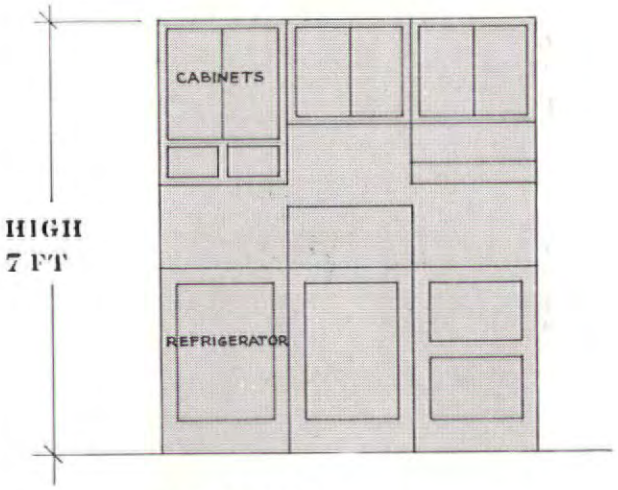


PLAN OF KITCHEN OF MINIMUM SIZE, suited to small family or apartment. "The size of the kitchen is determined by the equipment it must contain to carry out the activities of the family." From report of Committee on Kitchens and Other Work Centers, the President's Conference on Home Building and Home Ownership.

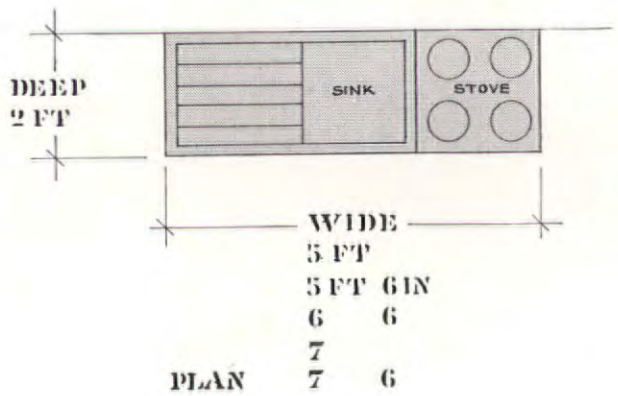
A MINIMAL KITCHEN

Kitchen				Pantry	
Design	Width	Length	Sq. ft.	Width	Length
Wall	4′8″	8′3″	38.5		
	4′8″	8′	37.3		
	4′6″	9′	40.5		
	4′8″	9′3″	43.5		
	5′	9′6″	47.5		
Small Apartment	6′9″	7′	46.6		
	7′	8′6″	59.5		
	5′6″	7′	38.5		
Apartment or Small Single House	6′6″	8′6″	55.25		
	6′6″	8′	52.		
	6′8″	8′	53.3		
Larger One-Family House—no maid	6′6″	10′6″	68.25		
	7′	12′	84.		
Rural	9′	11′6″	103.5		
(With breakfast nook)	7′6″	18′	117.		
(With breakfast nook)	9′3″	20′	192.5		
Rural With work room. Dimensions do not include workroom	7′6″	12′	90.		
	8′6″	13′	110.5		
	9′	11′	99.		
	8′6″	11′	93.5		
Rural	7′	12′3″	85.75	6′	7′6″
Apartment (with maid)	7′	9′	63.	7′	8′
	7′	8′	56.	6′	7′
	7′	8′	56.	6′6″	8′
Detached House (with maid)	7′	8′	56.	4′9″	8′
	7′	12′	84.	6′	9′

TYPICAL KITCHENS AND SPACE REQUIREMENTS as listed by the Committee on Kitchens and Other Work Centers of The President's Conference on Home Building and Home Ownership.

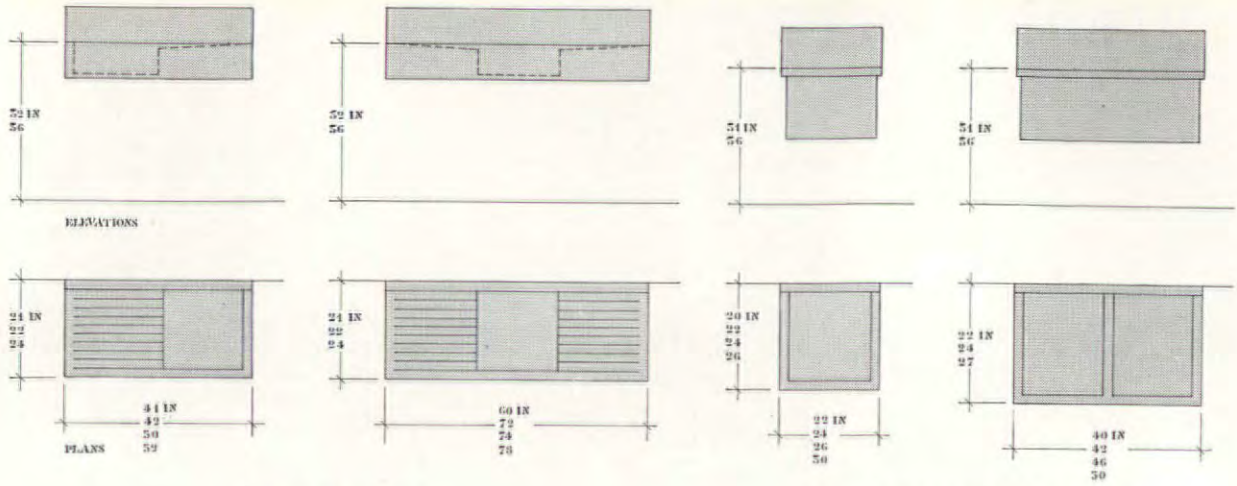


ELEVATION



PLAN

KITCHEN UNIT

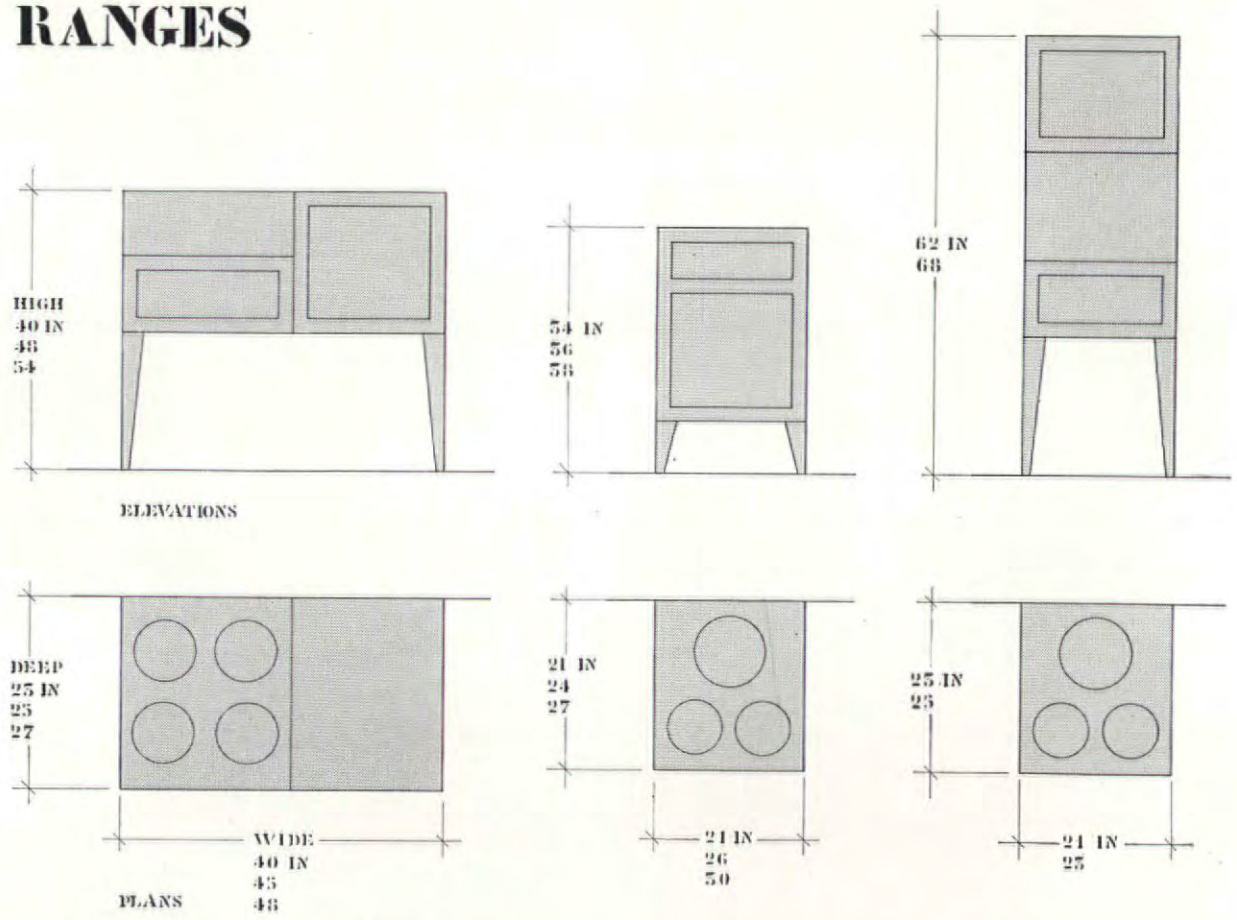


KITCHEN SINKS

LAUNDRY TRAYS

TYPICAL KITCHEN SINK has a single or double drainboard. The height for the sink rim varies from 32" to 36". Thirty-four inches is recommended as a safe height for most workers.*

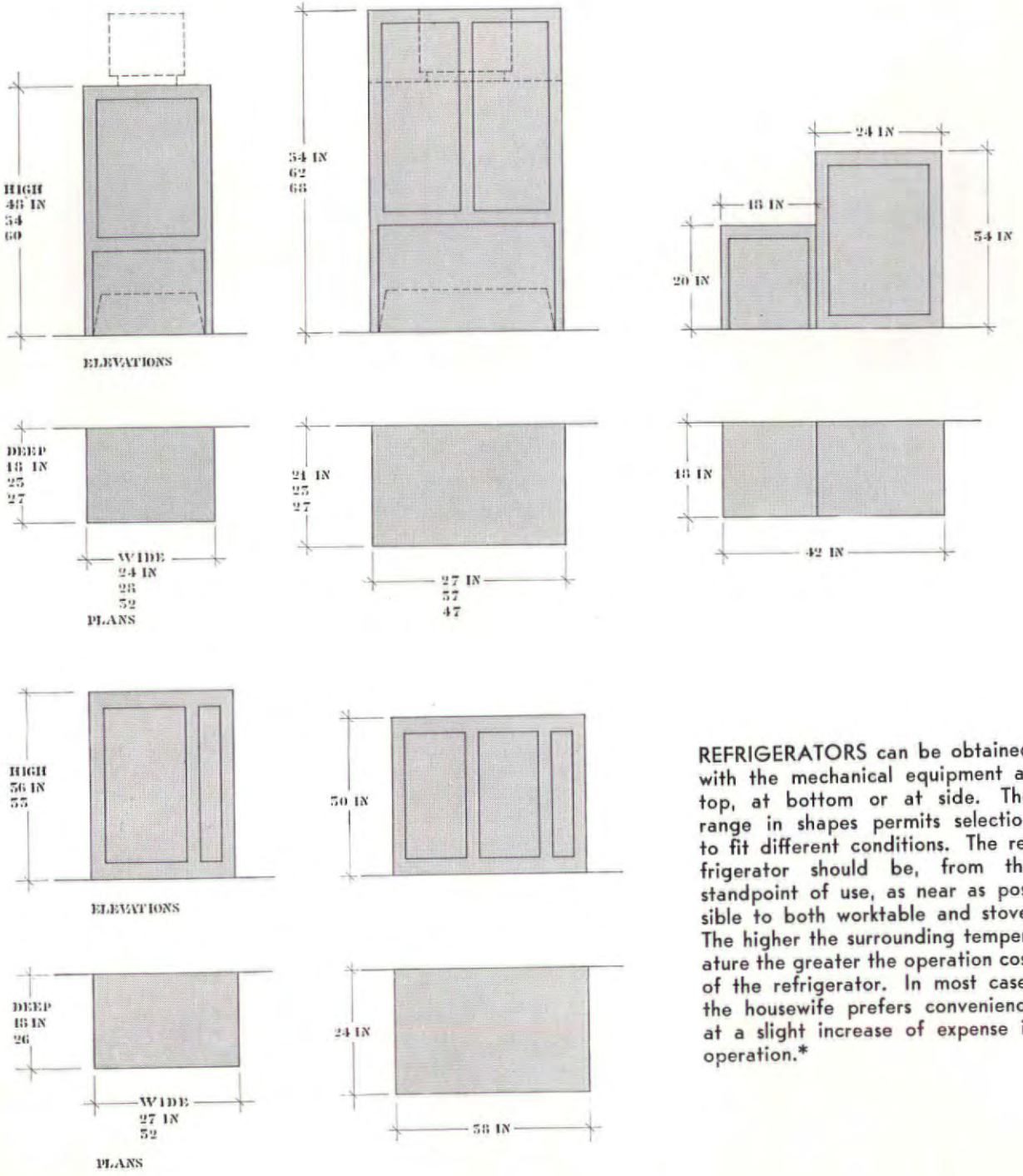
RANGES



KITCHEN RANGES are available in a variety of sizes and combinations. The location of the oven above, at side or below the cooking level makes compact or open planning possible. The range should be at right angles to the sink, or directly across if the kitchen is narrow.†

* "Planning the Kitchen." Cornell Bulletin, June 1926, p. 9.
† The President's Conference on Home Building and Home Ownership, Committee on Kitchens and Other Work Centers, p. 52

REFRIGERATORS



REFRIGERATORS can be obtained with the mechanical equipment at top, at bottom or at side. The range in shapes permits selection to fit different conditions. The refrigerator should be, from the standpoint of use, as near as possible to both worktable and stove. The higher the surrounding temperature the greater the operation cost of the refrigerator. In most cases the housewife prefers convenience at a slight increase of expense in operation.*

BOOK LIST

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* "Space and Placement Requirements for the Kitchen and Its Equipment," Mary Mason.

Galloway

STATE OF NEW YORK OFFICE BUILDING, NEW YORK CITY
WILLIAM E. HAUGAARD, ARCHITECT

Galloway

INTERNAL REVENUE BUILDING, WASHINGTON, D. C.
JAMES A. WETMORE, SUPERVISING ARCHITECT

PUBLIC WORKS AND THE DEPRESSION

AN EDITORIAL BY WILLIAM STANLEY PARKER, ARCHITECT

The way out of a depression is evidently as difficult as any labyrinth could provide. So many statements of desirable public policy are made which by themselves seem quite clearly sound, yet when they are viewed as a whole each completely defeats one or more of the others and all are thereby shown to be unworkable. That leaves us with the depression in our lap, just where we started.

If we are optimists we will refuse to accept the conclusion that nothing can be done about it and start another analysis of the various statements in an effort to find the ones that contain some hidden fallacy not originally observed. Let us consider a few.

Individuals are wisely advised to put by for a rainy day. Savings bank deposits record the extent to which this advice is taken to heart. We are told, however, by wise politicians and others, that no community should follow the same course as an accumulated fund held in reserve would be too great a temptation to those desiring its benefits and it would be used up unwisely before the time came when it would really be needed. One who has watched legislation and the ways of legislators understands quite clearly what is meant, and is ready to accept the conclusion as sound.

Much is said about the use of public works in times of depression in general business. It is pointed out that for public work to compete for labor with private enterprise in boom times only tends to increase the inflation in prices. It is likewise shown that the public can get more public improvements for its money in periods of depression, while at the same time creating much needed employment. It is hard to see any serious flaw in these statements.

Taxes are intensively considered in current discussions. The rapid rise in taxes and the reasons therefor (some if not all of the reasons) are pointed out. The critical burden on real estate seems clearly proved in most localities. The taxpayer makes a good case out of his argument that the limit has been reached, that real estate is frequently over-assessed, that it is bad enough in boom times but now with all sorts of income factors reduced any increase in taxes is unthinkable. Who feels so inadequately taxed that he will rise to refute this statement?

Finally the dole is cast on the daily heap of discarded policies and the unanswerable argument is presented that the antidote for unemployment is jobs. Of course! Agreed!

Well, now where are we? In times of depression private business is slack—this factor being the cause or the effect, or both, of the depression—so jobs are not being created by private industry but rather are being curtailed. The only other jobs are those created by public works and we are agreed that under such conditions we should create jobs by increasing our public improvements of various kinds. Fine, let's do it! But—we must of course pay for the improvements. This can be done either with accumulated reserves or bond issues; but we have agreed that accumulated reserves are impracticable, and as for bond issues, they will inevitably increase taxes and we have agreed this must not be done. So there we are! Back where we started, and a little more depressed.

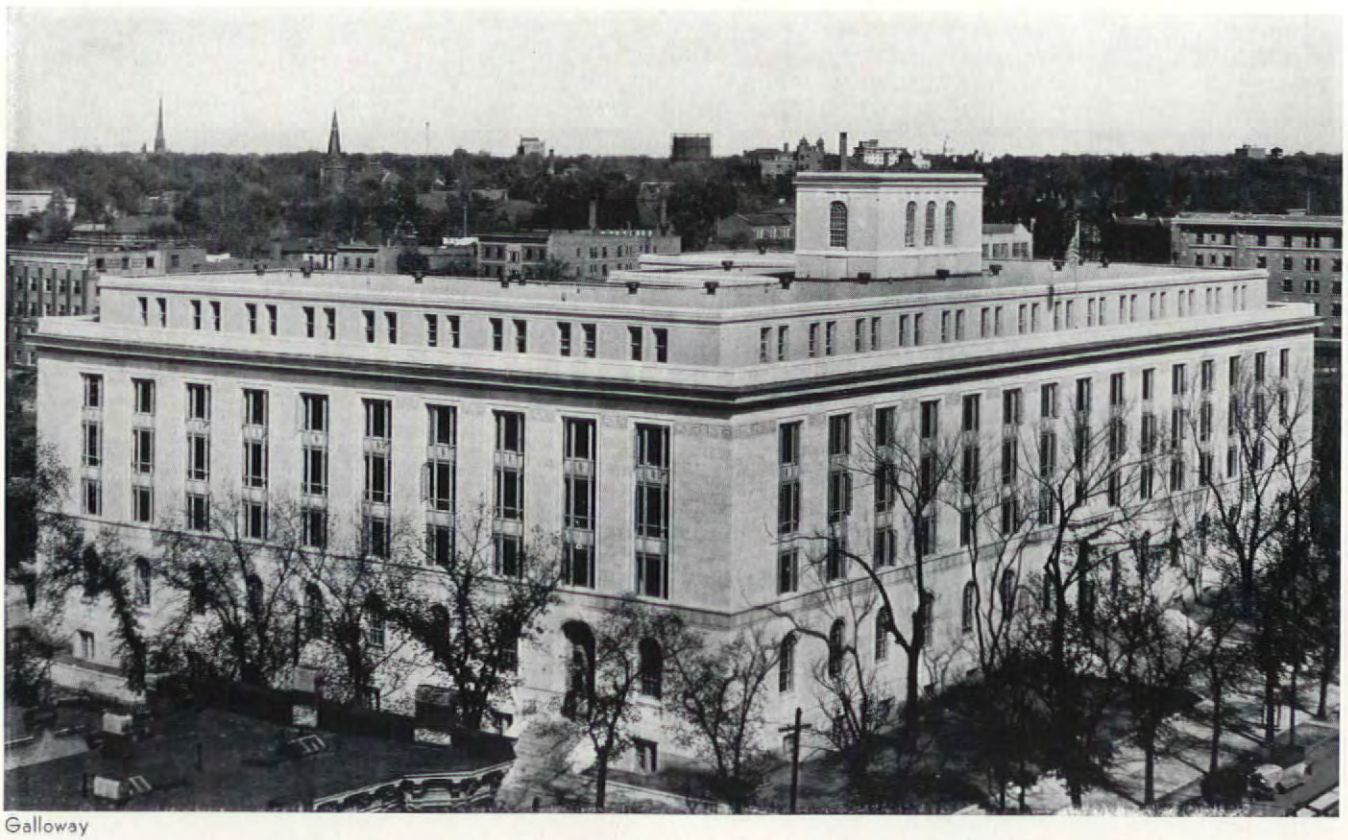
Where is the flaw in this vicious circle that brings us back so unerringly to our starting point? I do not believe it lies in the statement that we should increase public works to create jobs in times of depression. These, of course, must be understood to mean legitimate public improvements which are already needed or which will surely be needed in the immediate future. This policy necessarily involves some long-range planning so that the needs of the community may be defined for some stated period of years and various projects listed in the order of their probable need. It also involves self-restraint in times of plenty, postponing certain projects that are not urgent so that they can be thrown into the market when the creation of jobs is a paramount need.

We come then to the question of how to pay for them. Certainly increased taxes in times of depression are doubly hard to face. We are seeing every day now the proof of the argument that taxes must not be raised and that expenses must be cut to the bone in order to offset reduced tax receipts. The Government is following the lead of private industry and planning to discharge Government employees, thus increasing the unemployed, in order to balance the developing deficit. Similar attitudes are evident in State and Municipal governments as well as in federal activities. If there is a flaw in this policy it seems to be pretty generally overlooked.

Is the flaw, then, in the argument against public reserves to be accumulated in times of general prosperity and available, under carefully defined restrictions, for release in times of depression to pay for public improvements without thereby increasing taxes? Unless we can find a flaw some-

Galloway

DEPARTMENT OF AGRICULTURE BUILDING, WASHINGTON, D. C.
RANKIN AND KELLOGG, ARCHITECTS
JAMES A. WETMORE, SUPERVISING ARCHITECT



Galloway

NEW UNITED STATES CUSTOMS BUILDING, DENVER, COLORADO
JAMES A. WETMORE, SUPERVISING ARCHITECT

where we must accept the policy of waiting with folded hands until some hidden and secret activity develops of its own subtle accord and finally leads us into another period of prosperity. Not quite with folded hands however and not quite without increased taxes, because our welfare departments will be active, spending large sums in relief.

Millions for jobs but not one cent for relief! Perhaps that is a wise formula after all.

What then is the validity of the argument against accumulated reserves? It is based upon human frailty. It is due to lack of confidence in our own ability to manage our own affairs. It is a vote of censure on politicians by politicians. And yet an element of reserve for contingencies is in every tax levy. Why should we be afraid to tackle the problem of a continuing reserve for less immediate contingencies? Has any one ever attempted to draft an act that would provide such a reserve? What proportion of the tax levy should be set aside in such a fund so that in the seven to ten year interval between depressions enough would be accumulated to be of some value? What protective hedges should be built about the reserve so as to insure its proper use at the proper time?

I do not propose to attempt an answer to any of these questions in this brief space. For the moment I seek only to raise for consideration a question of policy which, it seems to me, has been too readily accepted in the past and which seems to contain the weakest spot in the chain of current policy that binds us to inactivity. There may be a weaker link in the chain elsewhere; if so, I hope some one will point it out.

●

ARCHITECTS SHOULD SUPPORT THIS BILL DEMANDING THEIR EMPLOYMENT FOR PUBLIC BUILDINGS

A bill has been introduced in the House of Representatives by Hon. Robert A. Green of Florida, asking that the designing of public buildings be entrusted to the nation's ablest architects, and that the activity of the Office of the Supervising Architect of the Treasury Department be limited to supervision. The bill, which is sponsored by the Committee on Public Works of the American Institute of Architects, has been referred to the Congressional Committee on Public Buildings and Grounds.

The Bill Now Before Congress:

"To direct the Secretary of the Treasury to contract for architectural and engineering services in the designing and planning of public buildings.

"Be it enacted by the Senate and House of Representatives in Congress assembled:

"That the Secretary of the Treasury is hereby authorized and directed to employ by contract, and at the established rates of compensation, outside professional or technical services of competent persons, firms or corporations, for the architectural and engineering designing and planning of such Federal buildings as are now or may, in the future, be placed under the jurisdiction of his Department, without reference to the Classification Act of 1923, as amended, or to Section 3709 of the Revised Statutes of the United States.

"Section 2. That such employment shall be based at all times on the highest grounds of proven professional ability in order that our Federal architecture may truly represent our national genius and keep pace with the rapid development of the arts of architecture and engineering. Architects or engineers shall not be employed without prior submission to the Secretary of the Treasury of satisfactory evidence of their qualifications and experience.

"Section 3. That wherever circumstances warrant, such services shall be contracted for by the employment of the ablest architects and engineers resident in the general sections of the country wherein such Federal buildings are to be erected.

"Section 4. At the discretion of the Secretary of the Treasury, the employment of outside architects or engineers may be omitted in connection with public buildings of a total cost for building and site of not more than Fifty-Thousand Dollars ($50,000).

"Section 5. That all such individuals, firms or corporations shall render their services subject to the approval and under the direction of the Supervising Architect of the Treasury, whose duty it shall be to act for the Government in all matters regarding sites, the allotment and subdivision of space, the control of technical detail, the letting of contracts, and the supervision of the erection of said Federal buildings.

"Section 6. Nothing in this act shall be construed to affect the duties of the Supervising Architect of the Treasury in regard to maintenance, alterations, repair, or supervision of either existing or proposed public buildings.

"Section 7. That the cost of compensation for outside professional or technical services shall be charged to the appropriation for the construction of the building for which such services are rendered.

"Section 8. All acts or parts of acts inconsistent with the terms of this act are hereby repealed.

Reasons for Supporting This Bill

Under this proposed legislation, according to a statement by Louis La Beaume of St. Louis, chairman of the Institute's Committee on Public Works, the Supervising Architect would become such in fact as well as in name. Savings in the Federal building budget and greater vitality of architectural design would also result.

"The purpose of this bill," Mr. La Beaume points out, "is to bring to the service of the Government the ablest professional ability in the nation. The country is entitled to these services, and the employment of skilled architects and engineers outside of the Federal Bureau will inevitably result in the creation of a more vital architecture appropriate to the regions in which Federal buildings are to be erected.

"It cannot be denied that to restrict the designing of our Federal buildings to a single department, no matter how efficient, must inevitably narrow and stereotype the expression of our architectural ideals. Moreover, we share the belief of a large body of public opinion that the rapid growth of governmental bureaucracy, which we have witnessed during the past few years, should be checked.

"We oppose the further encroachment of the Government into the field of private initiative. The Government of the United States is no more qualified to design our buildings than to paint our pictures or write our books.

"This bill would leave the Office of the Supervising Architect of the Treasury to function solely as a supervising bureau, guarding the interests of the Government in all the practical necessities of its building operations, and retaining its control in regard to the maintenance, alterations, repair, and supervision of all public buildings.

"In any emergency such as this, speed as well as efficiency must result from the prompt allocation of various projects to architects resident in the general sections in which public buildings are to be built.

"Moreover, the employment of architects outside the Treasury Department must bring to the service of the Government the abilities of men familiar not only with local conditions and customs, with climatic factors influencing design, and with regional methods of construction, but of men thoroughly conversant with the use of appropriate and economical materials.

"The validity of these arguments has been recognized by the Office of the Supervising Architect of the Treasury in the contracts already made with architects outside the Department. These employments have been made under a permissive clause in the Keyes-Elliott Appropriation Bills, under which the Federal Building Program of the Treasury Department is going forward.

"When these appropriations are exhausted, the discretionary power granted the Secretary of the Treasury, for the employment of outside architects, will lapse. It thus becomes important for the entire building industry, and the tax payers, to secure the passage of this legislation now."

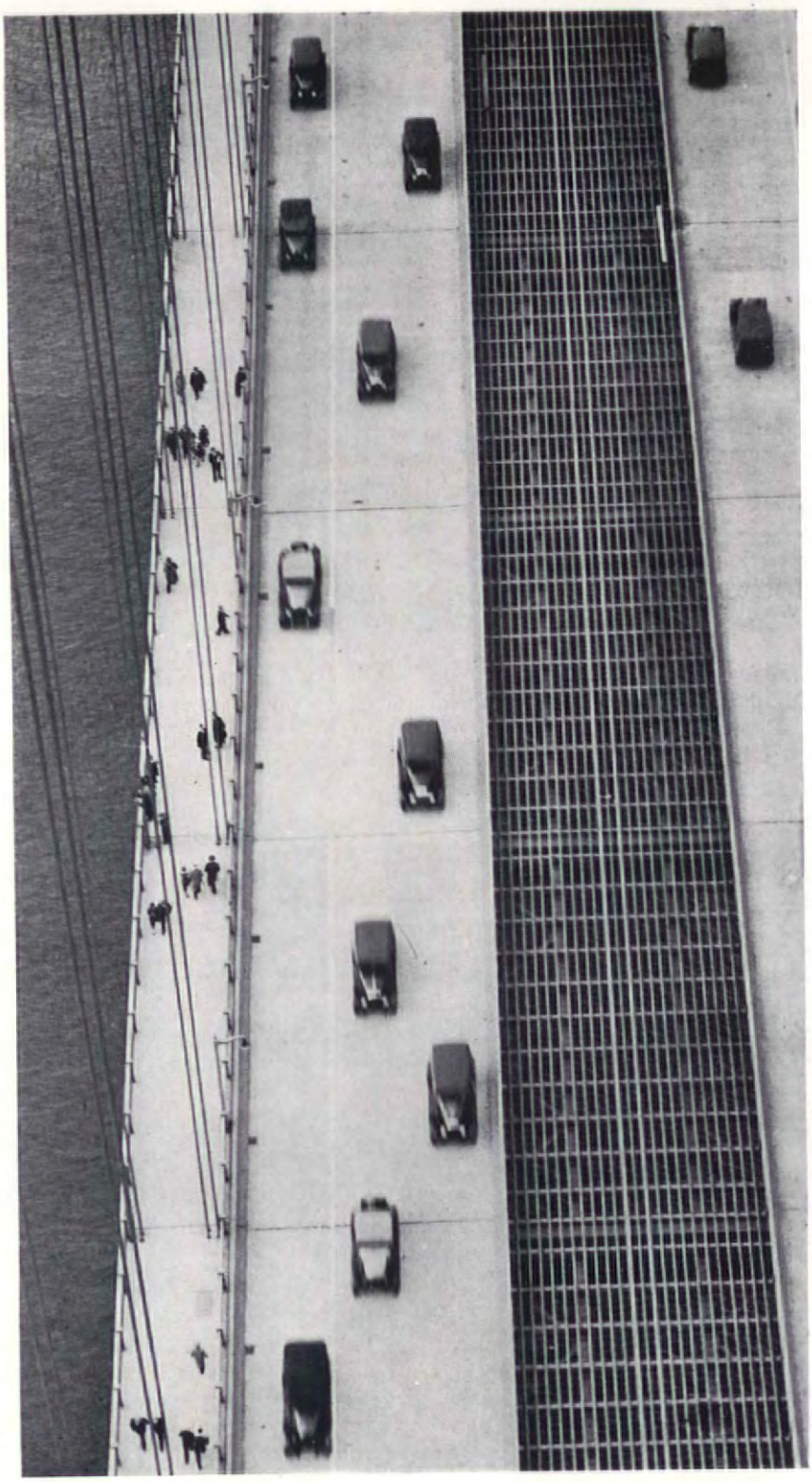
The Committee on Public Works

In addition to Mr. La Beaume, the Committee on Public Works are Charles Butler, New York; Charles D. Maginnis, Boston; Frederick L. Ackerman, New York; G. Frederic Ashley, San Francisco; James O. Betelle, Newark; N. Max Dunning, Chicago; R. K. Fuller, Denver; Frederick G. German, Duluth; Myron Hunt, Los Angeles; Ellis F. Lawrence, Portland, Ore.; Allison Owen, New Orleans; Harry I. Schenck, Dayton; Nat G. Walker, Fort Myers, Fla.

TECHNICAL NEWS AND RESEARCH

TECHNICAL DEVELOPMENTS 1931

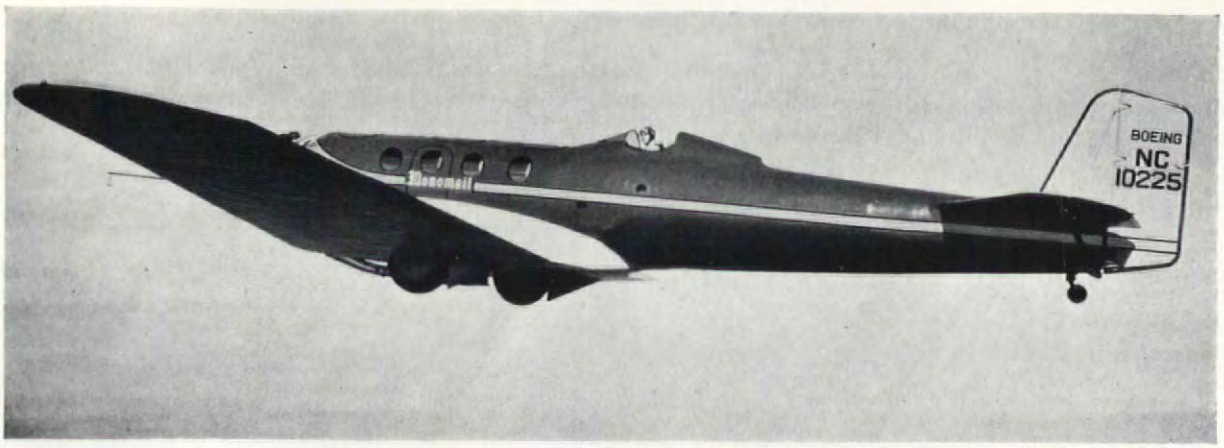
A SUMMARY by K. LÖNBERG-HOLM



GEORGE WASHINGTON BRIDGE
NEW YORK

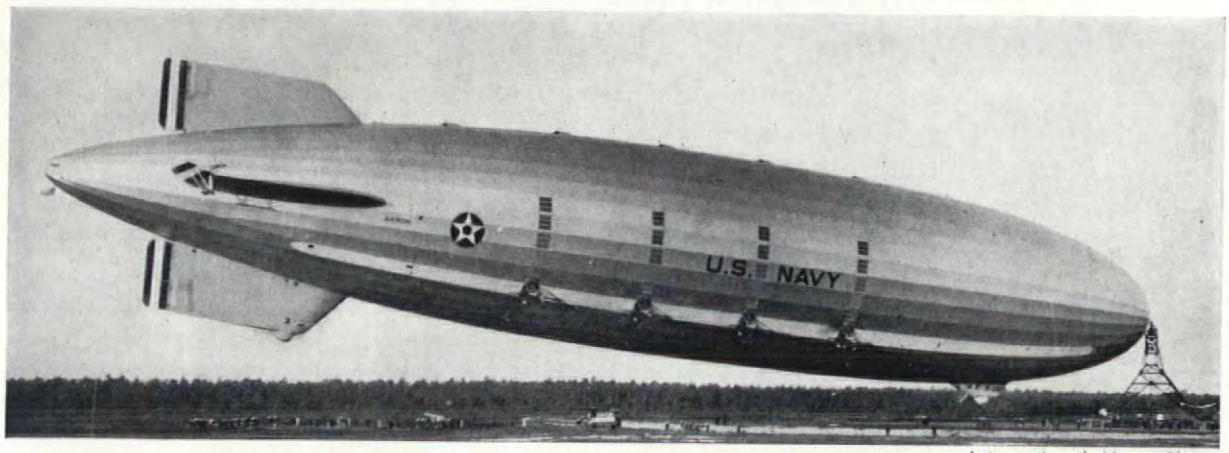
Main span 3500 feet. Suspended from four 36"-diameter cables.

Underwood and Underwood



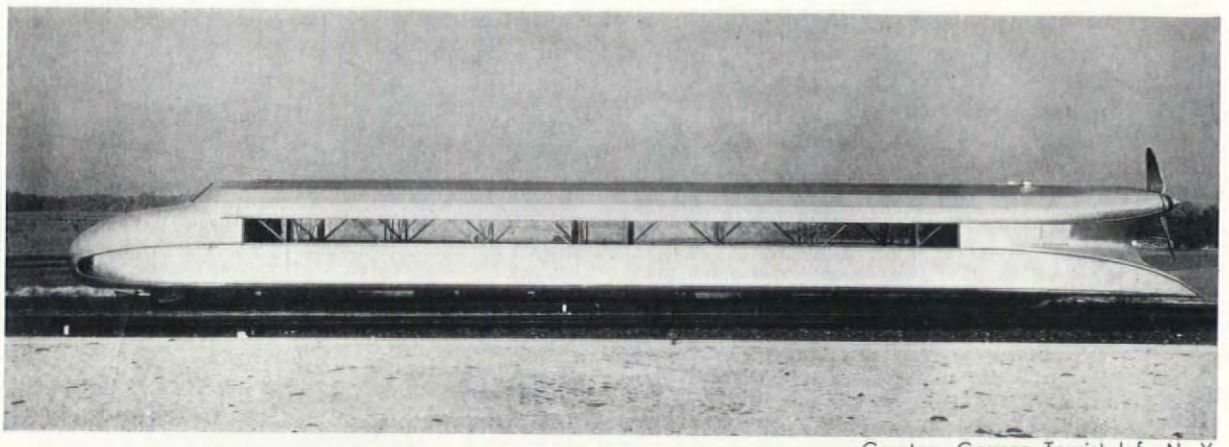
Courtesy Boeing Airplane Co.

Boeing Monomail. All-metal, low-wing, heavy-payload plane for six passengers, cargo and mail. Top speed 160 miles per hour fully loaded. Retractable landing gear.



International News Photos

U. S. S. Akron. Over-all length 785 feet. Maximum diameter 132.9 feet. Maximum speed 83.8 miles per hour. Cruising range 10580 miles. Duralumin framework.



Courtesy German Tourist Inf., N. Y.

German propeller-driven railway car for 40 passengers. Maximum speed 110 miles per hour. Length 90 feet. Weight 18 tons. Steel tubing and aluminum construction.

HORIZONTAL TRAFFIC

Speeds and payloads of high-speed traffic instruments have been increased by use of light metals and through refinements in design which have resulted in greater aerodynamic efficiency. Recent tests at the Westinghouse Laboratories have shown that by means of streamlining, the air resistance of a body can be reduced to 1/20 of its original value. This design trend is opposed to the past tendency of obtaining higher speeds through increased power. Increase in speed has been accomplished without sacrifice of payload and with saving in fuel, time and overhead expenses.

TECHNICAL DEVELOPMENTS IN 1931

By K. LÖNBERG-HOLM

This article is a summary of indicative trends and research work, new means of communication, new tools, new materials and construction methods of interest and value to architects. These developments have helped to reduce dead load and waste, reduce or eliminate human drudgery in routine work, save time, reduce distance, relieve congestion and increase control, comfort and safety.

Most significant perhaps are the developments in the field of electronics. Equipment utilizing control systems actuated by electronic tubes has increased in number. Applications of photocells—"electric eyes"—are used in industrial control, traffic control, light control, visual reproduction and in household operations. Gaseous lighting has progressed. Radio and visual and sound-reproducing apparatus have become standard building equipment.

City and community planning as well as building design are conditioned by these new technical factors.

GENERATION OF POWER *

Mercury-Vapor Turbines

A 20,000-kilowatt mercury-vapor turbine generator will be installed in a power plant now being built in Schenectady by the General Electric Company. It will be the first outdoor steam plant and will have coordinated industrial requirements for process and heating steam and utility sources of electric power. A second installation will be made at the same time in the Kearny plant of the Public Service Company of New Jersey.

The mercury-vapor process will enable the station to generate more than twice as much electric power per pound of process steam than is possible with the highest steam pressure. The greatest thermal efficiency now achieved in a condensing steam plant burning coal is 27 per cent. In the new station the power will be produced with an efficiency of 85 per cent. The apparatus will be placed outdoors with the turbine on a low level to reduce building costs, which for steam power plants amount to 25 to 33 per cent of the total investment, and to allow freedom for future additions. Operators and accessory equipment will be located in a low substructure. Outdoor stations are believed by the engineers to be the logical trend in power-plant development, as the greatest part of the capital is made available for working machinery. A 10,000-kilowatt mercury-vapor turbine has been in operation in Hartford, Conn., since February, 1930. The records of this installation show a substantial saving in fuel over usual steam generating equipment.

The efficiency of any heat engine may be increased by increasing the temperature range through which it works. Mercury boils at a much higher temperature than water, and the properties of mercury are such that high temperatures can be obtained without high pressure. The mercury is boiled and vaporized over a fire just as water is boiled and vaporized in a steam boiler. The mercury-vapor drives a mercury turbine. At the exhaust end of this turbine the mercury-vapor is still hot enough to boil water and make steam at pressures which are in common use. A large part of the power generated from the mercury turbine is therefore obtained at high efficiency since the heat in the exhaust is not lost but is used in steam production. The design for the new station is based on an output of 330,000 pounds of steam per hour from the mercury condenser.

Concentration of Power

The trend toward high-capacity steam-generating units of compact design with increased steam production per square foot of ground area occupied and per cubic foot of building has resulted in marked economy of building area, especially important in cities where high real estate values prevail. A recently developed Combustion Steam Generator contains all the elements required for fuel burning, steam generation and maximum heat recovery in a single unit, available in a range of standardized sizes providing capacities from 150,000 to 400,000 pounds of steam per hour. A number of these units have been installed in industrial plants.

District Heating

A marked trend toward the purchase of heat as well as electric power from central supply companies for buildings of all types and sizes is indicated by the building of the Kips Bay Station in New York City—one of the largest steam-generating units in the world—constructed by the New York Steam Corporation, in order to meet the increasing heat load of buildings in the Grand Central area. Similar extensions of steam-heating service are being carried out in other cities.

*Appreciation is expressed for information received from the editors of the following publications: COMBUSTION MAGAZINE, ELECTRICAL WORLD, and POWER.

NEW MATERIALS, PRODUCTS AND FINISHES *

Production of Steel Without Manganese

Manganese is not available in the United States in suitable quantity and form to supply the needs of the steel industry were the supply from abroad shut off. Work has been undertaken at the Watertown Arsenal to investigate manufacture of steel suitable for cannon without using any manganese. It was assumed that this would be the worst condition to be met. Zirconium was used to replace manganese as far as its functions of neutralizing oxygen and sulphur are concerned. The physical properties of this steel were found to compare favorably with those of similar alloy steels containing normal manganese.†

Duprene

A rubber-like compound produced from acetylene. Isoprene made from the acetylene gas is converted into Duprene. Reported to be more resistant than natural rubber to the chemical action of gasoline, kerosene, oils and other solvents harmful to natural rubber. Various applications where rubber has been used in the past. E. I. du Pont de Nemours and Company.

Keldur

A resilient, nonelastic plastic used for isolation of impact and vibrations of low frequencies. Applications: mattresses for heavy machinery, pads for blowers and motors. Manufactured in sheets one yard square. Standard thickness, ⅜ inch. Not adversely affected by oils, alcohols, gasoline and petroleum products. Attacked by concentrated mineral acids and alkalis. Deteriorates by immersion in water or steam. Must be protected from ercessive heat and loses its resiliency when chilled. Keldur Corporation, Newark, N. J.

Insulated and Reinforced Plyboards

Ferroclad insulation: insulating material of any standard make and thickness reinforced with outer protective layers of 20- to 24-gauge black, galvanized or furniture steel. Also nonferrous metals. Maximum-size sheet, 42 by 120 inches. Truscon Steel Company.

Met-L-Wood: poplar or balsam plywood faced with metal on one or both sides. Monel, aluminum, stainless or galvanized steel, 20-24 gauge. Fabric bond with casein glue. Lock seam along edges. Maximum-size sheet, 56 by 144 inches. Present applications: automobile bodies, airplane cabins, store fixtures. Met-L-Wood Corp., Chicago, Ill.

Armorply: similar construction. United States Plywood Company, New York City.

Cemesto-Board: Celotex insulating board in thickness from ½ to 2 inches with ⅛" outer layers of asbestos cement. Also made with one facing. Insulating properties of Celotex. Waterproof bonding material. The asbestos cement applied as a wet lap and cured under pressure. Standard size, 4 by 8 feet. Applications: roof decks, walls, partitions. The Celotex Company, Chicago, Ill.

*Appreciation is expressed for information received from the editors of CHEMICAL AND METALLURGICAL ENGINEERING and ASBESTOS.

†METAL PROGRESS, September, 1931.

Plymetals

Niclad: a thin layer of pure nickel rolled on steel plate. Applications in chemical industry.

Stainless steels are used in plymetals at great reduction in cost and often with improvement in physical and fabricating properties of the resultant product.

Self-Lubricating Materials

Powdered nickel, copper and tin are used for production of porous, self-lubricating bearings. These compressed products assume the characteristics of a sponge as regards their capacity to absorb and hold oil (from four to six per cent of their own weight) but carry loads which approximate in magnitude those possible with cast bearings.

Impregnation of wood with lead, tin or other metals and alloys yields a material which, like remetals and alloys yields a material which has new properties for various purposes. The greatly increased hardness of the wood, as well as its capacity for absorbing oil, makes it suitable for bearings and special applications where expensive and exotic woods have been used in the past.

Pyrex Glass Building Blocks

Hollow building blocks of *Pyrex* glass have been developed by the Corning Glass Works, Corning, N. Y. The blocks will be on the market in March, 1932. Tests show that these blocks have the high fire-resistance and the structural properties of *Pyrex* glass used for construction of baking dishes. The blocks have surface patterns designed for controlled distribution of light. (See GLASS. The Architectural Record, October, 1930.)

Rapid-Drying Finishes

Use of resinoids (synthetic resins) instead of natural resins in the lacquer and varnish industry has resulted in accelerated drying and more uniform and durable products. (Example: *Bakelite* varnish, lacquer and enamel.) These synthetic resins permit the use of cheaper solvents and smaller quantities of nitrocellulose, the costly element in lacquer. Some of these synthetic resins of the incompletely polymerized type can be developed to form film by themselves when applied in mixtures with solvents and pigments.

Colvulc

A rubber coating which can be applied in liquid or paste form to wood and metal without the necessity of vulcanizing. Applications: protective coating for mechanical equipment, ducts, tank-lining, pipes. Colvulc Rubber Company, Norfolk Downs, Mass.

WELDING *

Structural Steel Welding

The report of the Structural Steel Welding Committee of the American Bureau of Welding, epitomizing a five-year program of study and tests of various types of welded joints, has been made available in book form. The purpose of the investigation was the determination of: (1) safe design values under static loading for various types of fusion-welded joints as commercially welded in structural-steel fabrication shops, and (2) the degree of uniformity of the strength of welded joints that may be expected from such shops throughout the country.

The following conclusions are stated:

1. No harmful effect on the base metal due to welding was disclosed.
2. For designing welded joints in buildings subjected to quiescent loads, the unit stresses permitted in the American Welding Society's "Code for Fusion Welding and Gas Cutting in Building Construction" are endorsed, provided welders are qualified. These permissible unit stresses are, in pounds per square inch of weld throat, 11,300 shear, 13,000 tension and 15,000 compression.
3. The tests indicated that joints commercially welded by qualified welders may be expected to possess strengths within 12 per cent of general average results.

Welding in Building Construction

Data for estimating amount of welding in a steel building frame and time required to perform welding have been assembled. A survey of existing structures in the United States shows 46 bridges and 183 buildings in which welding has been used as a means of fabricating the steel frames. The Dallas Power and Light Company's 19-story office building is the tallest building thus far welded.

A series of tests for loads, fire protection and sound conduction are being conducted at the Bureau of Standards in Washington on welded-steel floor panels of the battledeck steel floor type. Complete records of these tests are not yet available, but indications are that this type of floor construction will be one of the most serviceable. Experience has shown that plates spanning two or more of the stringers can be used and that full strength of the combined plate and beams can be developed by individual welds through holes punched approximately one foot on centers. This procedure is reported to eliminate a large part of the shrinkage stresses caused by continuous seam welding.

Economies

Saving in steel: In connections on most types of construction; in tension members, because no allowance has to be made for rivet holes or weight of rivets; in truss work by the elimination of gusset plates as well as saving in tension members; in tension flanges of girders and other built-up sections. Statistics show that savings in steel on particular jobs amount to from 10 to 43 per cent when arc welding is used in place of riveting.

Saving in labor: Punching of holes eliminated except where required for erection purposes; one welder takes the place of a riveting gang; reduced handling—in certain cases structural members may be shipped directly from the mill for field welding, thus avoiding transportation and handling charges from mill to shop.

Saving in space: Absence of projecting rivet heads.

Examination of Welds

X-ray examinations of welds are widely used for studying welding technique and have been applied commercially to inspection of welds in boiler and tank construction. Such methods have not been utilized in fabricating building frames. It is generally conceded that examination by eye is sufficient to insure safe construction but that rigid inspection and supervision is required.

A 100-Per-Cent-Welded Structure

An all-steel-and-glass one-story (550′ x 150′) tank shop recently completed at Pittsfield, Mass., for the General Electric Company was entirely arc-welded. Eighteen-gauge sheet-steel roof decking weighing 7 lb. per sq. ft. gave a total roof load of 45 lb., including insulation and finish, and allowing 30 lb. live load. The sheets were welded together and in turn welded to structural purlins placed 8 feet on centers. A layer of 1″ Arborite insulation was laid over the roof.

The welding involved approximately 1,500 tons of steel. Welding operations were completed within three days of steel erection. Seven welders were employed, each supplied with current from a separate motor-generator welding set. Sixty-five-foot columns and 74-foot trusses were shipped shop-fabricated in one piece. One-eighth-inch steel plate sections formed with slip joints and insulated with ½-inch fibrous insulation covered inside with 20-gauge sheet metal welded in place were used for pilasters between the window sash.

Welded Boilers and Piping

In the late summer of 1931, the American Society of Mechanical Engineers issued a code governing the manufacture and inspection of welded boiler drums. In the short time since the A.S.M.E. code was formulated and the manufacturing facilities became available, a large number of welded boiler drums has been sold.

There has also been a marked increase in the use of electric and gas welding for piping for heating systems. Welded fittings of many types are now manufactured as substitutes for screwed and flanged connections.

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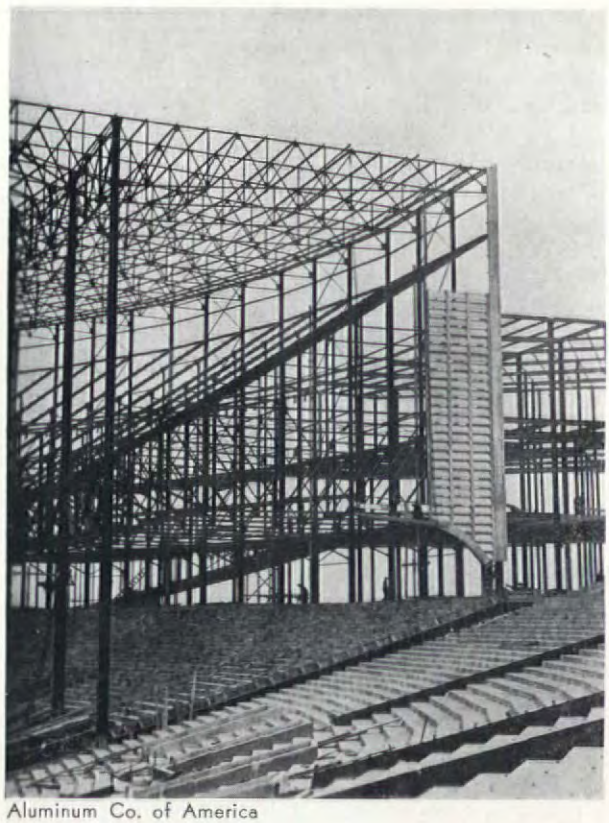
*Appreciation is expressed for information received from Frank P. McKibben, Consulting Engineer.



Aluminum Co. of America

Erection of louvered sidewalls constructed of aluminum alloy 4S for Cleveland Municipal Stadium, Walker and Weeks, architects. The section shown above is 6 feet wide and 21 feet long and weighs 65 pounds.

ALUMINUM

New Alloys and Finishes

A new aluminum-manganese-magnesium alloy (4S) has a tensile strength of 26,000 lb. per sq. in. in the annealed condition and 43,000 lb. per sq. in. in the hard temper. It is a medium-strength alloy with high corrosion resistance and good forming properties.

An alloy wire which can be woven has been developed, and wire screen cloth fabricated from it has been placed on the market. High reflectivity of aluminum to ultra-violet should allow beneficial sun rays to pass through screen.

Oxide finishes impregnated with mineral colors are now available, and although they have little more than a year's test against the weather, they are giving promise of having practical application.

Structural Applications

The technique of welding aluminum has been advanced by research. Curtain walls for the eighth floor of the Federal Reserve Bank Building, Pittsburgh, Pa., (Walker and Weeks, architects,) constructed with 3-inch steel channels and a combination of extruded aluminum shapes and sheets for the exterior, are 3½-inches thick, with rockwool insulation and plaster backing and have an insulation value equal to 32 inches of masonry, yet weigh only one-sixth as much. Shop-fabrication and reduction of assembly time on location effected important savings.

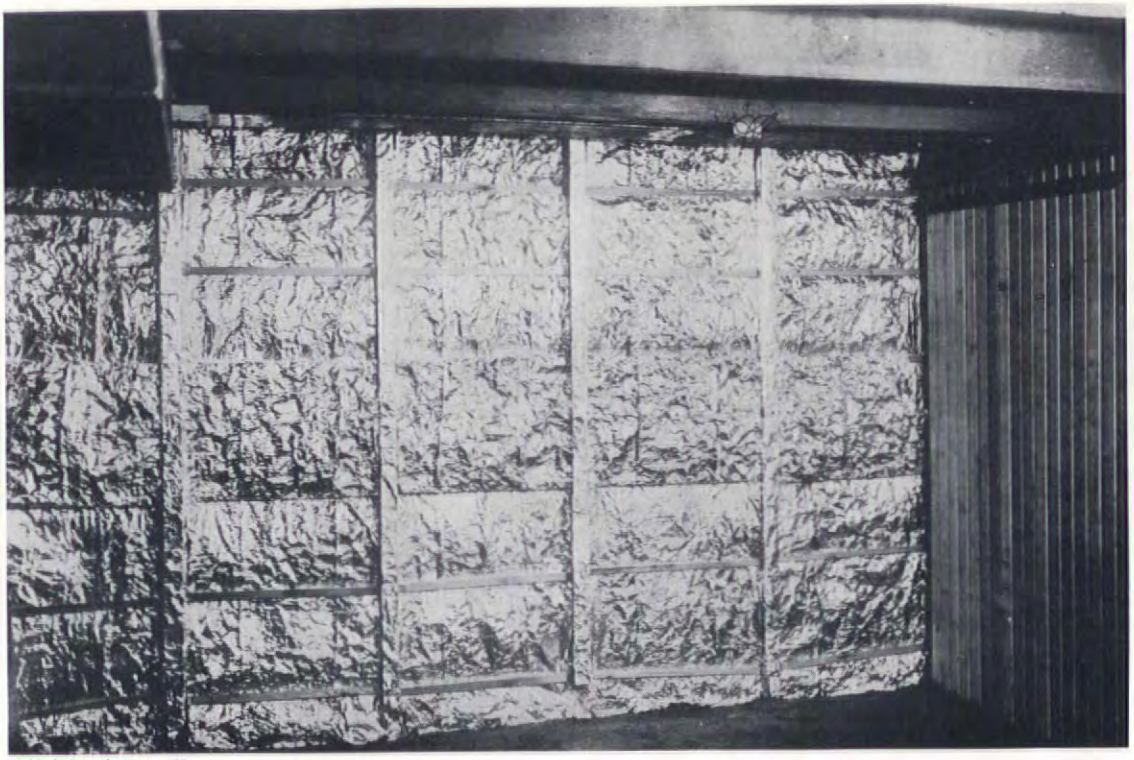
The Aluminaire house, designed by A. L. Kocher and A. Frey and built for the New York Architectural League Show, April, 1931 (later reerected on Long Island, N. Y.), has aluminum columns and girders. Corrugated insulated aluminum sheets are used for the exterior walls. The dead load of the finished structure is less than 10 lb. per sq. ft. of floor space.

Removable motor-operated aluminum skylight-roofs were installed over the roof garden of the new Waldorf-Astoria Hotel in New York City (Schultze and Weaver, architects).

Aluminum and Ultra-Violet Radiation

Aluminum properly prepared is an efficient reflector of ultra-violet radiation and has found use in dual-purpose lighting. (See *Lighting for Health Maintenance,* pages 298-300, THE ARCHITECTURAL RECORD, October, 1931.) Various etching treatments have been developed to increase its reflectivity for both visible and ultra-violet radiation (75-85 per cent for visible, 65-80 per cent for ultra-violet). The best reflecting surfaces are produced on pure aluminum and sheet of commercial purity known as 2S. Etching with sodium hydroxide and sodium fluoride followed by nitric acid, and etching with hydrofluoric acid and nitric acid, has been found particularly effective.*

*Ultra-violet and Light Reflecting Properties of Aluminum, by A. H. Taylor and Junius D. Edwards. JOURNAL OF THE OPTICAL SOCIETY OF AMERICA, Vol. 21, No. 10, October, 1931.



Alfol Insulation Co.

ALUMINUM FOIL INSULATION

Insulation of boiler shaft wall aboard a ship. This type of insulation is built up of successive layers of crumbled or plain aluminum foil .0003 inch in thickness at approximately 3/8" intervals and weighs only 3 oz. a cubic foot. Conductivities as low as 0.20 B.t.u. have been obtained at a mean temperature of 110 degrees F.

Aluminum Foil Insulation*

Trade name "Alfol." The use of aluminum foil in air-cell type of temperature insulation is based on the insulating value of air spaces bounded by bright metallic surfaces. Bright polished aluminum reflects about 95 per cent of the radiant heat which falls upon its surface and retains its high reflectivity after long exposure to the atmosphere even at high temperatures. The thin layer of transparent oxide which forms on the surface protects the metal without any appreciable decrease in reflectivity.

The insulation is built up of successive layers of aluminum foil .0003 inch in thickness at intervals of approximately 3/8-inch. With plain sheets this spacing is obtained by means of strips or corrugated sheets of other insulating material. Generally, however, crumbled foil is used, providing its own spacing with a minimum of contacts. The foil is protected by sheathing of heavier aluminum or other material.

Thermal efficiency: Tests show that insulation using plain foil has insulation value better than cork for the same thickness, while crumbled foil has values approximately those of cork.

Weight: A cubic foot of aluminum-foil insulation weighs 3 oz., as compared with 10 lb. for cork and 17 lb. for magnesia. The French liner "Atlantique," now under construction, is using about 4 tons of Alfol insulation on equipment which would have required 380 tons of cork and magnesia to give equal insulating efficiency.

Low heat storage: Important in insulation of equipment and spaces which are intermittently operated, since it saves time in attaining the desired temperature and reduces energy losses occurring in heating up and cooling off.

Incombustible: Aluminum foil melts above 1200° F. Verminproof, resistant to most industrial fumes and vapors. Impermeable to moisture. Can be treated with lacquer to increase its resistance to corrosive gases and salt water. Easily assembled and applied without causing dust.

Present uses include insulation of pipe lines, tank cars, household refrigerators, refrigerator cars, ships, water and oil tanks and refrigerator rooms in meat and fish industries. Metal houses built in Germany have outer walls of copper and sheet steel with 2" Alfol insulation.

*For detailed information see "Aluminum Foil as a Basis of Insulation," by Max Breitung, REFRIGERATING ENGINEERING, July, 1931. Appreciation is expressed for information from J. D. Edwards, assistant director of research, Aluminum Research Laboratories.

CONCRETE

Ready-Mixed Concrete

The use of ready-mixed concrete especially in congested sections of cities is rapidly increasing. Tests made at the Fritz Engineering Laboratory of Lehigh University to determine the effects on the properties of concrete, from transporting it for 2½ hours in a truck whose container consisted of a closed rotating drum without mixing blades, showed that the strength and other properties of the concrete improved progressively throughout the test period.†

Lightweight Concrete

Various properties of structural concrete, in which haydite (burned shale or clay) is used as the aggregate either alone or with sand, were investigated in a series of tests of reinforced concrete slabs and beams at the University of Illinois. The light weight of haydite concrete (approximately 100 lb. per cu. ft.) permits reduction in dead load compared with ordinary concrete, thus allowing a reduction in size of members or an increase in span, as well as decreasing loads on columns and footings. The effect of the low modulus of elasticity of haydite concrete is to lower the neutral axis in beam and slab construction and to require a higher percentage of steel for balanced reinforcement. However, the depth of members may be decreased so that the saving in concrete quantities will offset the increase in steel requirements.

Combining the effects of light weight and low modulus of elasticity and taking advantage of possible reduction in slab depth, it was found that the substitution of "C" haydite for gravel concrete will permit a decrease of 12 to 9 per cent of concrete with an increase of 5 to 8 per cent of steel. With all-haydite concrete there may be 20 to 15 per cent reduction in concrete with 11 to 17 percent increase in steel. In rectangular beam design the conditions are still more favorable to the use of haydite. The reduction of dead load effects considerable savings in structural steel tonnage.*

ELECTRON TUBE CONTROL

Standardized production of complete electronic control devices in unit form has simplified the adaptation of electron tubes to industrial and building applications. The following are types of electron tube installations now in operation.**

Photoelectric Tubes as Relays

A photoelectric tube has the property of passing electric current when visible or invisible light falls on its electron-discharging cathode. The cathode, when illuminated, emits electrons which pass on to the anode and thus permit passage of an electric current. The current which it passes is proportional to the amount of light striking it. Amplified by other tubes, the current can be used to actuate a relay that in turn controls the operation of electric devices. The photoelectric relay can therefore be used for control purposes where means for interrupting or changing the intensity of light can be provided. The tubes can be made selective, responding only to predetermined wavelengths.

Counting

Counting devices have been installed in theaters, vehicular tunnels, on highway bridges and in many industrial processes. Applications in the General Electric Company's plants involve a conveyor in refrigerator production. As the refrigerator units pass along, they intercept a beam of light from a source on one side of the conveyor to a photoelectric tube in a suitable housing on the other side. The electric impulses actuate an electric counter.

Operation of Doors

By directing a focused beam of light across the path to a doorway, a photoelectric relay can be made to actuate a mechanical door opener on the approach of a person wishing to pass through. This has found practical application in hotels and restaurants where waitresses may easily pass back and forth between dining room and kitchen without physical effort or hazard in opening the door. The operation can be timed to meet specific requirements. Similar installations have been made for garage doors.

Safety and Protection Devices

Photoelectric devices installed on department-store elevators make it impossible for elevator operators to close doors or to start cars as long as any person is within a beam of light which shines across the threshold. The Westinghouse Electric & Manufacturing Company has developed a traffic control system using photocells. The system which has been adapted to various forms of street intersections and traffic conditions is operated by interruption of a light beam by vehicles. In a German automatic train control a small searchlight on the locomotive throws a beam on a signal-post mirror which reflects the light to a photoelectric relay on the engine, producing a visible signal in the cab and stopping the train if the engineer ignores the signal. A selective photoelectric receiver which detects signals of diffused light of low intensities has been developed for aiding aviation and airplane landing, especially in dense white fog. The sensitivity of this device is from 6 to 13,000 times as great as that of the eye in the range of background intensity from darkness up to moonlight.*

Other uses: Burglar and fire-alarm devices.

†CONCRETE, September, 1931. *CONCRETE, February, 1931. Appreciation is expressed for information from N. M. Stineman, Editor CONCRETE.

**For further information see: GENERAL ELECTRIC REVIEW, December, 1931, published by General Electric Company; current issues of ELECTRONICS, published by McGraw-Hill Company, New York City, and Recent Technical Developments, THE ARCHITECTURAL RECORD, December, 1930.

*A Study of Light Signals in Aviation and Navigation; a paper by I. Langmuir and W. F. Westendorp, presented at the 1931 Annual Convention of the American Society of Mechanical Engineers.

Material Handling

The Logan Conveyor Company has applied photoelectric relays to the control of material conveyors where installations are necessary to switch the product from one conveyor line to another. Small flags are placed in different positions on each container carrying the material over the conveyor line. One photoelectric relay and two light sources are placed near each switching point in such a manner that only the flags in predetermined positions will intercept the two light beams simultaneously. The relays in turn operate equipment which sends the moving material to its proper destination.

A similar method has been developed by the Cleveland Crane & Engineering Company for distributing mail sacks at railroad terminals.

Lighting Control

Photoelectric control has been applied to the street-lighting circuits in Glens Falls, N. Y., and to a part of the street-lighting circuits in Albany, N. Y. At a predetermined degree of darkness, the photoelectric tube actuates a relay which in turn operates the switch controlling the street lights. When natural light is sufficiently restored the operation is reversed. A time-delay prevents instantaneous operation or fluttering in response to passage of clouds over the sun or a flash as of lightning.

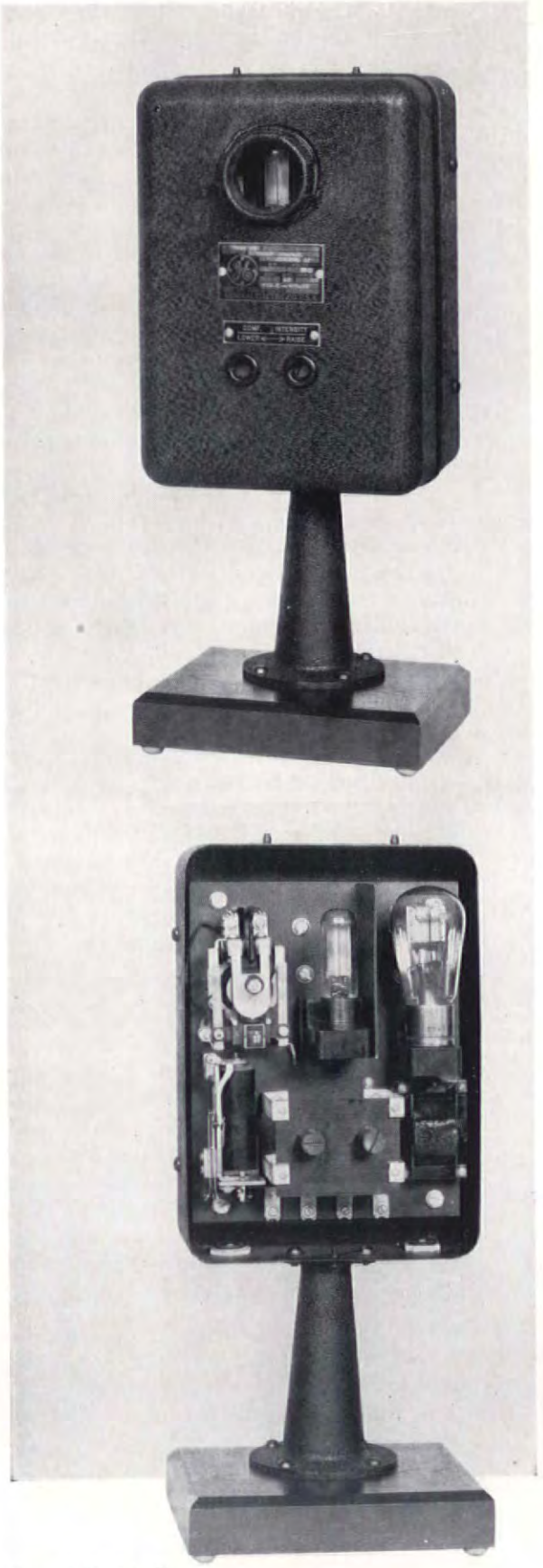
Recent tests in an industrial plant showed a saving of 50 per cent of the electricity required in the customary hand-controlled shop lighting system through the use of photoelectric control which maintained predetermined lighting intensities.

Thyratron Tubes as Valves

The utility of a Thyratron tube depends upon its ability to pass current of large amounts whose magnitudes may be accurately controlled. This control may be exercised in either of two ways: (1) by the application of a voltage of predetermined magnitude to the grid of the tube to start or stop current flow, or (2) by changing the phase relationship between the grid and anode (with alternating current applied to the grid) to govern the average amount of current. This means that the tube can be used to start or stop electrical operations or to control them during operation.

Start-Stop Control

An industrial application is found in control for intermittent line and spot-welding machines, making possible high speeds of interruption without the inertia, wear and contacts of the mechanical type of control. The control is obtained by means of a motor-driven cam switch in the grid circuit of the tube. The motor is run at the speed at which it is desired to make the welds and the cam switch intermittently imposes a voltage on the grid, thereby causing the tube to pass current intermittently. The passing of current acts as a short circuit on one winding of a series transformer, varying the impedance of the other winding which is in series with the welding transformer.



General Electric Co.

Photoelectric lighting control unit mounted for indoor use, showing photoelectric tube in center and amplifying tube to the right.

Control of Electric Equipment During Operation

Thyratron control is used in the wire-drawing shops of the General Electric Company at Schenectady to keep the wire in proper tension while it is being reeled. As the wire is drawn at a constant rate, the speed of the rereel spool must be constantly decreased to compensate for the increasing diameter of the surface on which the layers of wire are being wound. The spool is driven by a motor supplied with power by the rectifying action of a Thyratron tube. A small reactor is included in the grid circuit of the tube; its reactance determines the phase relationship between the grid and anode, thus governing the amount of current rectified by the tube and consequently the speed of the motor. The wire runs over a rider pulley mechanically connected to the reactor core. The loop on which the pulley rides decreases when the rereel motor is running too fast; the core is drawn into the reactor, increasing its reactance and causing the Thyratron tube to pass less current, thus slowing down the motor. Conversely, if the loop increases in length the speed of the motor is increased.

A similar application has been made in the processing of rubber by the B. F. Goodrich Company to synchronize the speeds of motor-driven conveyors in a chain.

Control of Lighting

Thyratron tubes are used in the control for stage and house-lighting in theaters and auditoriums and in the control of mobile color lighting, floodlighting, show-window lighting, advertising signs, etc. Control systems have been installed in the Chicago Civic Opera House, the new Earl Carroll Theater in New York City and the new R.K.O. theaters in Schenectady and Albany, N. Y. The manipulating is done with knobs or switches at a comparatively small control desk which, in theaters, can be placed in front of the curtain where the operator can see the effects produced. The scheme of control is that of shifting the phase relationship between the grid and anode of the Thyratron tube. The controlled Thyratron output supplies varying amounts of direct current to reactors whose a.c. circuits control the lights. A few watts suffice to control circuits of several hundred kilowatts.

Oscillator Tubes as Calipers

The use of oscillator tubes in process control permits continuous measurements of materials produced in sheet form and measurements to extremely fine dimensions without contacting or disturbing the measured product.

For example, when producing rubber in a continuous sheet, the sheet is passed between two plates of a condenser. The capacity of the condenser and consequently its impedance varies with the thickness of the rubber sheet. The changing impedance changes the current in the tuned circuit to which the condenser is connected. A meter directly indicates the thickness of the sheet. The device easily measures to .0001 inch, the thickness of a rubber sheet whose entire thickness is about .0013 inch. With a slight change of electrical connections the caliper can be used for measuring metal foil.

The condenser method has been applied to ultramicrometers used in paper mills to measure moisture content of manufactured paper. A certain percentage of moisture is desirable for high-speed printing. When a rayon ribbon is held above a swiftly-moving sheet of newsprint, the ribbon's length varies with the moisture content of the paper. These minute changes in ribbon length are indicated by the meter in per cent of moisture content.

ELEVATORS

Speed

Elevators having a rated speed of 1200 f.p.m. are now in operation.

Space Saving

Larger buildings have made it practical to use larger cars, particularly for serving lower floors, and the standard sizes for office buildings are now 2500 lb., 3000 lb., 3500 lb., 4000 lb., and in some cases 4500 lb. For department stores elevators of 3500 to 5000 lb. capacity are used.

Double-deck elevators have been installed in the Cities Service Building in New York City. This Otis system is analogous to adding cars to a train and may be extended to triple-compartment units. The cars are so arranged that the elevators stop at adjacent floors simultaneously. Two lower levels are required. Passengers going to odd floors use one compartment; passengers going to even floors use the other. Under the most favorable conditions it is possible for elevators of this type to handle more than double the amount of passengers in a given time that a single-deck elevator serving the same number of floors could handle. These elevators are adaptable to the highest speed.

Two elevators, an express and a local, are operated in the same shaft in the Westinghouse office building in Pittsburgh, Pa. This Westinghouse development has automatic safety devices to prevent collision.

Elevators for Handling Automobiles

Warehouses and loft buildings have been equipped with large elevators which automatically maintain the level at the landings and which permit heavy trucks to be loaded and unloaded at the various floors. Some of these elevators have duties of 30,000 lb. at 250 f.p.m. A number of garages for parking automobiles have been built with high-speed self-leveling elevators with various methods of getting the automobiles on and off the cars. Some of these elevators run at speeds of 500 f.p.m.

ELECTRICAL COMMUNICATION

Sound Equipment for Hotels

The radio distribution system designed by the Bell Telephone Laboratories and installed by the Western Electric Company in the new Waldorf-Astoria Hotel in New York City (Schultze and Weaver, architects) makes six programs available simultaneously. Programs may be obtained from any combination of three sources: radio picked up from the air or wired directly into the hotel from broadcasting studios, phonograph records, and programs picked up by microphone in any of the public rooms in the hotel. These programs are then distributed to the public rooms and to the guest rooms and apartments. Programs originating in the hotel may be transmitted over telephone lines to radio broadcasting stations without the addition of other speech input equipment.

Each of the 137 hotel apartments is equipped with antenna and ground connection so that its occupants may use their own radio receivers if desired. The program distribution system serving the 2000 guest rooms consists of six separate channels which may be used independently of each other with any of the program sources mentioned above. Each guest room has individual volume control and program selector switch. The maximum volume obtainable by the guest is limited so that the volume in any guest room will not be objectionable in adjoining rooms.

Microphones can be connected at 72 locations in the hotel where events are likely to occur. Concealed loud-speakers are distributed in the public rooms. The ballroom has a permanent installation of sound picture apparatus. Portable sound picture equipment can be used in any of the public rooms.

Remote Control for Residence Radio System

A Teletektor Radio Control System announced by the Stromberg-Carlson Telephone Manufacturing Company will stop and start either radio or phonograph, control volume, switch loud speakers on and off and tune in on a selected number of stations from any place in the house.

The radio chassis is placed in a concealed steel locker or cabinet. Concealed wiring is run to outlets in rooms where speaker and control may be desired. Speakers can be stationary or a transportable speaker can be plugged into conveniently located outlets. The control is placed in a 10" x 3¾" shallow outlet box with push button control. A pilot lamp and a tuning meter aid in tuning. The boxes can be mounted flush or can be plugged into outlets. An automatic record-shifting phonograph can also be operated from the control.

Teletypewriter Service

Exchanges for interconnection of teletypewriters—machines which typewrite electrically over wires—have been developed. A two-way nation-wide switched system which provides typewritten communication similar to telephone service has been opened by the American Telephone and Telegraph Company and its Associated Companies in the Bell System. The teletypewriter operates at a maximum speed of 60 words a minute. Six copies can be made by each machine. The present rates compare favorably with other electrical communication.

The teletype equipment of over 9000 customers of the Western Union and Postal Telegraph Companies has also been linked together in one system.

The teletypewriter system installed by the Western Electric Company in the new Waldorf-Astoria Hotel comprises two main groups: one group handles the business attendant upon arrival and departure of guests; the second group handles paging and messages.

An experimental radio teletypewriter circuit has been set up by the Aeronautics Branch, U. S. Department of Commerce in order to test the feasibility of teletypewriter transmission from wire circuits to remote points by radio.

Ultra-Short Radio Waves

Successfully transmitted two-way conversation across the English Channel. An antenna one inch in length, a wave length of seven inches and power of one-half a watt were used. This development opens up a new range of frequencies for radio use.

Television

There are at present 28 stations in the United States experimenting with visual broadcasting on short wave lengths between 100 and 150 meters. Four bands of frequencies, each 100 kilocycles wide, have been assigned for this purpose.

A complete visual broadcasting station W2XAB is operated forty hours a week by the Columbia Broadcasting System, Inc., for experimental pictures. Synchronized sound is transmitted simultaneously from short wave station W2XE.

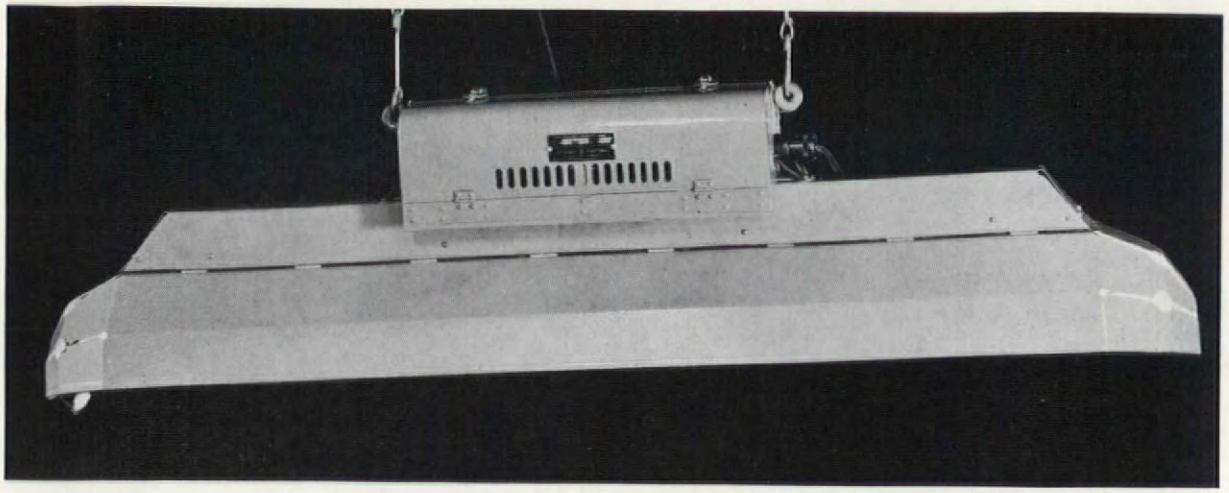
The television camera has been improved and outdoor scenes may now be televised. A new projector type receiver throws the televised image on a screen. Commercial models project a picture from three inches to a foot square. It is not essenti atlhat the room be darkened.

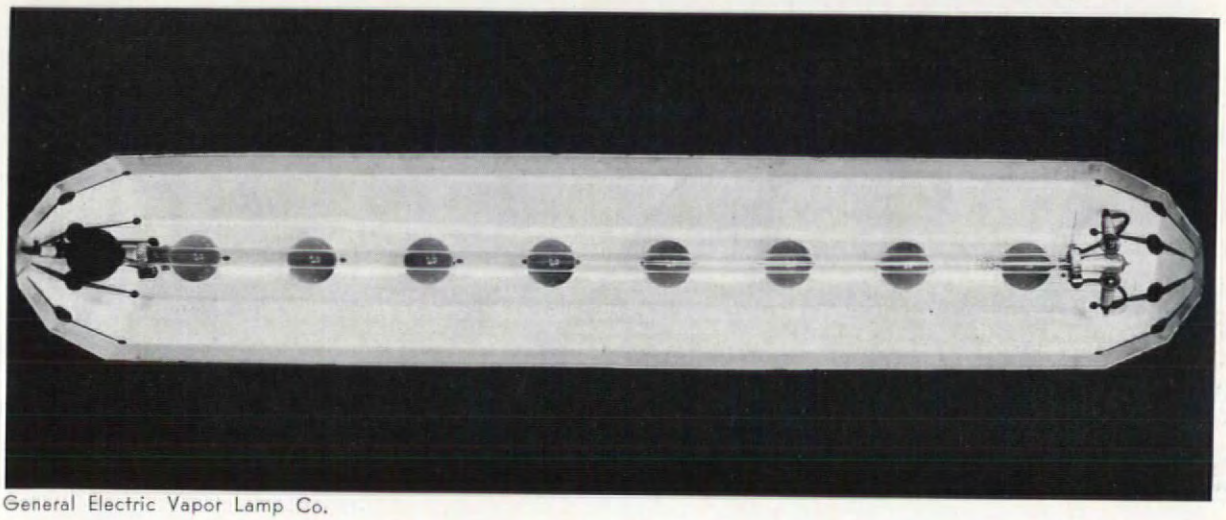
Reproducing and Recording Sound Equipment*

Various types of portable 16-mm. reproducing equipment have been placed on the market for use in schools, churches and industrial concerns. This equipment reproduces sound from disc records in synchronism with the projection of motion pictures from 16-mm. film. An amplifier and loud speaker are supplied as part of this trunk-mounted equipment.

An automatic level recorder which automatically records various sound levels over a period of time may be used in determining sites of schools, hospitals and residential districts where noise is an important factor.

*Appreciation is expressed for information from G. T. Stanton. Electrical Research Products, Inc.

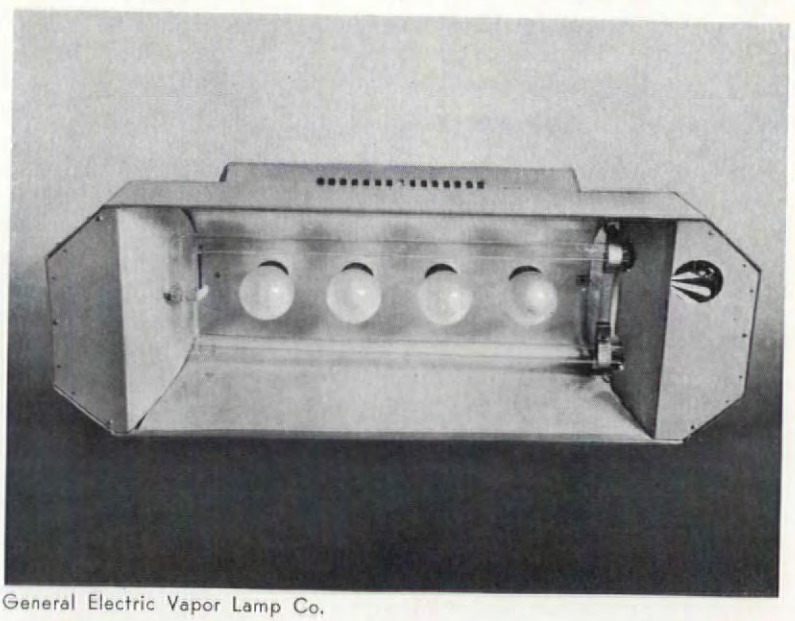




General Electric Vapor Lamp Co.

COOPER HEWITT-MAZDA COMBINATION UNIT

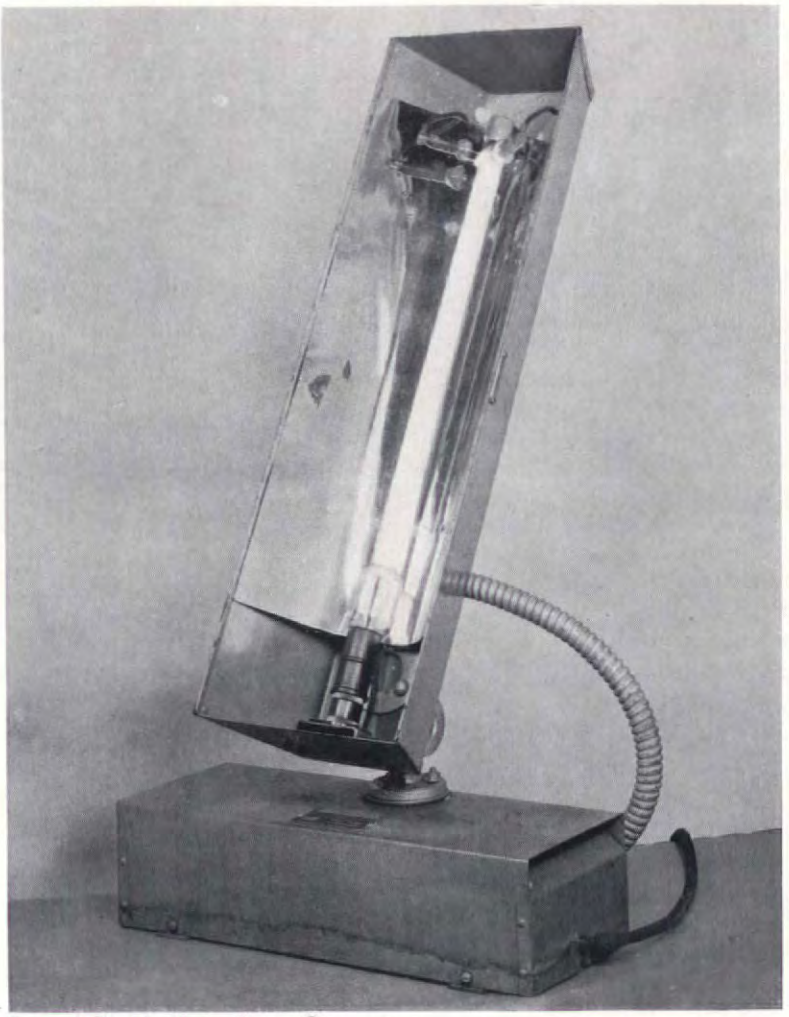
For industrial use. Lighting from combined sources of one 450-watt mercury-vapor tube and eight standard incandescent lamps. Over-all length, 60 inches. The transformer is housed above the reflector.



General Electric Vapor Lamp Co.

MERCURY-VAPOR-INCANDESCENT COMBINATION UNIT

Designed for the Simonds Saw and Steel Company's windowless factory, Fitchburg, Mass. This combination provides light subjectively white in color.



General Electric Vapor Lamp Co.

HOT-CATHODE NEON FLOODLIGHTING UNIT

Widespread and flat distribution of light permits this unit to be used near the areas which are to be floodlighted. Neon red color.

GASEOUS-CONDUCTION LAMPS*

The Spanner-Germer-Doring Lamp

A cold-cathode 110-volt gaseous illuminant which can be connected directly with any 110-volt d.c. or a.c. socket without use of transformer. The lamp —developed in Germany and recently shown in the United States—is claimed to be three to five times more efficient than the best filament-type incandescent lamp. Straight tubes and tubes curved back to produce a bulb which can be screwed into any household socket were shown. The mercury-vapor used in the tubes can be mixed with other elements to produce various colors. A mixture of the vapors of mercury, zinc and sodium gives a light much like daylight. There is no liquid in the tube but merely gas at low pressure. Barium oxide is used in the cathodes. When electrically excited, the oxide discharges electrons, which, as they flash through the tube, tear off electrons from the atoms of the gas and convert them into ions. The ions glow when they reacquire lost electrons.†

2-Watt Neon Glow Lamp

Announced by the General Electric Vapor Lamp Company for 110-, 115- or 120-volt d.c. or a.c. service, and for applications where economy and low levels of illumination are required, such as guide lights in bedrooms, nurseries, stairs, exit lights for theaters and auditoriums, night-lighting and silent indicators for hospitals and signal lamps for calling systems and isolated lighting circuits.

The bulb contains neon gas. The characteristic orange-red neon light is obtained as a negative glow discharge from rigid metallic electrodes sealed within the bulb. On d.c. only the negative electrode glows. The bulb is mounted on a base which fits standard sockets. Useful life, approximately 3000 hours. Price 75 cents.

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*A comprehensive summary of recent developments in electric lighting was published in the October, 1931, issue of THE ARCHITECTURAL RECORD.

†ELECTRONICS, October, 1931.

HEATING, COOLING, AIR CONDITIONING *

Panel Heating With Electricity

An experimental house has been designed and built by the Westinghouse Electric & Manufacturing Company's Laboratories in East Pittsburgh to develop economical methods of heating and ventilating, more conducive to health and comfort than present methods.

Most present methods of heating for winter comfort depend upon heating the surrounding air. To some extent this air heats surrounding walls, but there is always a temperature difference between the air and the walls, especially those of present-type masonry construction with high specific heat.

At normal humidity and temperature, approximately 44 per cent of human body heat is lost by radiation, heating surrounding bodies independently of the surrounding air. By heating walls and ceiling, this loss of radiation can be controlled. Body heat losses through evaporation and convection are controlled by regulating humidity, temperature and circulation of air.

The inside walls of this experimental house are constructed of pivoted aluminum panels which can be turned as louvers to aid control of air circulation. The panels are painted ivory on the room side and left bright on the other. An electric heating-unit is attached to the back of each panel, and similar units are distributed evenly on the upper side of the aluminum ceiling. The heat elements are controlled by individual switches, and it is possible to heat any one panel or series of panels, the ceiling alone or selected sections of the wall surface. With the panels at body temperature the air can be kept as low as 60° F. without any discomfort. Means of cooling are being studied. The present structure is windowless.

Use of Gas

Transportation of natural gas to large centers of population has increased the use of this fuel in buildings. The pipe-line of natural gas from the fields of Texas to Chicago was completed in the latter part of 1930 and extension of natural gas lines to other sections of the country is going on at a rapid pace. It is estimated that 1,747,500,000,000 cubic feet of natural gas, equivalent in heating value to 87,375,000 tons of coal, were consumed in 1931.

The American Gas Association Inc. is conducting a field research project in residential cooling and summer air-conditioning with the heat energy of gas as motive power. With this system cooling and dehumidification can be accomplished separately, with each independent of the other, as different from the conventional compression systems of air conditioning. Silica-gel, which has a great affinity for water vapor, is used as the dehumidifying agent. The cooling necessary is only that required for the removal of sensible heat originating in the conditioned area. This can be accomplished by means of evaporative cooling or indirect cooling using city water. By separating the operations of cooling and dehumidification it is hoped to make summer air-conditioning available at low cost and at the same time to obtain a balance for the large winter load in gas consumption.†

Combination Steam and Electric Heating Unit

An electric and a steam heating element placed in one cabinet can be operated in conjunction with each other or separately. The main purpose of this combination is to furnish auxiliary electric heat when the central heating plant is not in operation. A motor-driven fan for air circulation may also be operated independently of the heating elements. Air-washing and humidification attachments can be included in this unit. The Air-Way Electric Appliance Corporation, Toledo, Ohio.

Mechanical Stokers

Of small coal capacity for residential heating plants have been developed to a point where they closely parallel the larger types of industrial stokers in efficiency and performance. Most of them are electrically driven and are semi-automatic.

Conditioned-Air Refrigeration

Three new types of refrigerator units for commercial refrigeration in stores and display rooms have been developed by the General Electric Company. Forced-air cooling of the compressor case and condenser is used. One model incorporates forced-air cooling of the evaporator with a consequent circulation and humidification of the air in the refrigerator cabinet.

The units are of the remote design and can be placed up to 50 feet from the cabinet. The use of forced-air circulation over the evaorators of units used in fresh-food cabinets and display cases makes it possible to maintain low temperatures and high relative humidities, thus improving storage conditions. Cut meats can be kept in good condition from two to four times as long as has been possible with other types of equipment. Forced-air evaporators have the additional advantages of air purification, rapid elimination of odors, rapid cooling and increased capacity.

Air-Conditioning in Trains

Passenger trains have been equipped with air-conditioning systems, including dining cars, club cars, Pullman coaches and sleeping cars. Ice and mechanical refrigeration are used.

*Appreciation is expressed for information received from the editors of the following publications: HEATING AND VENTILATING, HEATING, PIPING AND AIR CONDITIONING, and ELECTRICAL WORLD.

†Gas Makes Its Entry into the House Cooling and Summer Air-Conditioning Field, by Eugene D. Milener; paper presented at the Annual Convention, Natural Gas Department, May, 1931. American Gas Association, Inc., New York City.

The handsome new building of the McGraw-Hill Publishing Co., Inc., in New York City. Its interiors are painted with 2200 gallons of Barreled Sunlight.

Raymond Hood, Godley and Fouilhoux, architects.

Interiors *of the* new McGraw-Hill Building *are painted with* BARRELED SUNLIGHT

IN many respects, a pioneer; in all respects, a model of modern building practice, the new McGraw-Hill Building occupies a proud place among the recent architectural achievements of the world's largest city.

Walk through its corridors. Glance into the offices. Pause in the reception rooms. You will be impressed by the distinction of furnishings and decorations.

Observe particularly the efficient working light in composing, engraving and binding rooms.

You will find light . . . lasting cleanliness . . . beauty — wherever each, or all, is needed. For ceilings and walls are painted with Barreled Sunlight.

. . .

Flawlessly smooth, Barreled Sunlight stubbornly resists dirt. Washable as tile, it is readily cleaned. Unusually durable, it survives repeated washings with no apparent damage to its original handsome surface.

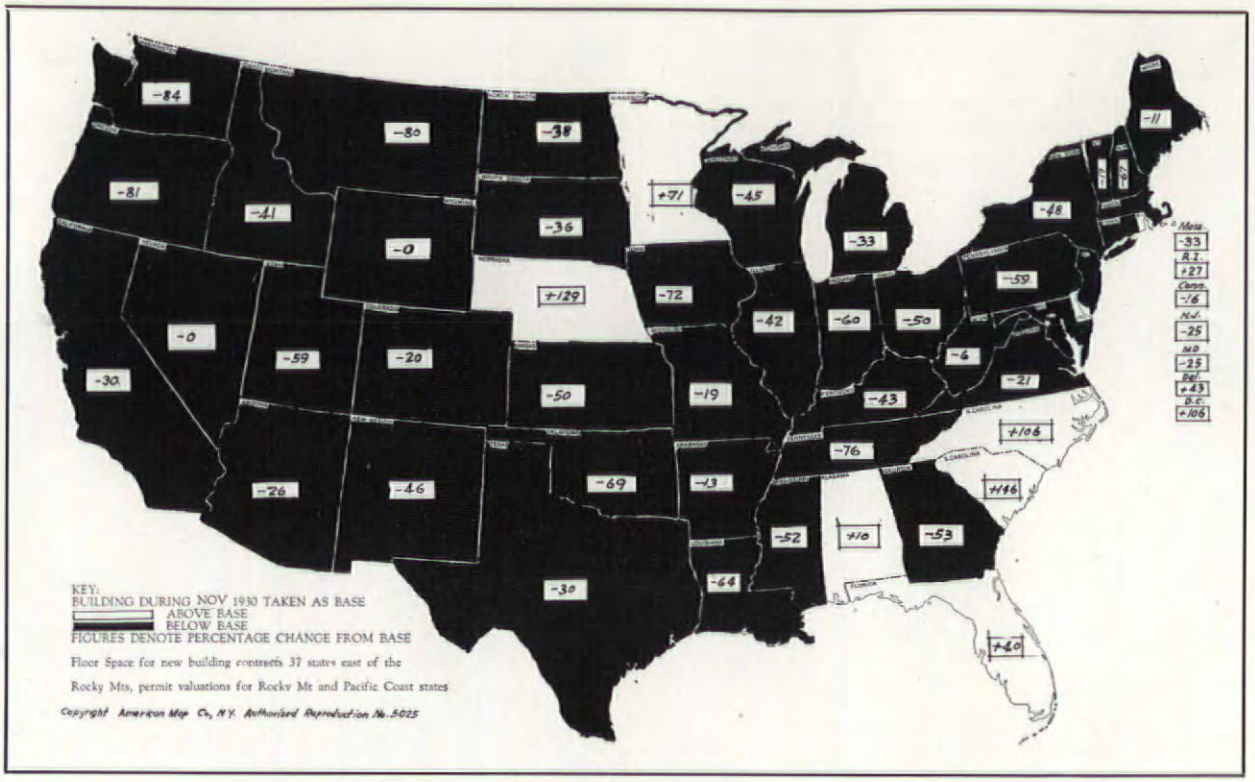
Barreled Sunlight is an all-oil product and is easily tinted any harmonious shade.

Our catalog in Sweets will give you complete information. For your own files, let us send you our booklet, "For Interiors of Lasting Beauty and Cleanliness." Write U. S. Gutta Percha Paint Co., 22-A Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

Barreled Sunlight is now available in two forms. Interior and Outside. Write for complete information on Outside Barreled Sunlight— its more pronounced whiteness, richer lustre and marked durability. (Note that both forms of Barreled Sunlight are readily tinted any desired shade.)

Barreled Sunlight

REG. U. S. PAT. OFF.



CURRENT BUILDING TRENDS

By L. SETH SCHNITMAN

The November building map showed nine states east of the Rocky Mountains where current building contracts, on a floor space basis, were larger than in November, 1930: Rhode Island, Delaware, District of Columbia, Nebraska, Minnesota, North Carolina, South Carolina, Florida and Alabama. In the preceding month, only six states showed larger building contracts than were reported in October, 1930. In September, thirteen states showed contract gains over the corresponding month of the previous year.

Of the states to show improvement in November, the District of Columbia, North Carolina and Florida showed gains in October and September over their respective totals for 1930.

The retrenchment in building and construction continued through November. Total construction contracts let showed a loss in dollar volume of 40 per cent when compared with November, 1930; the loss from October amounted to 38 per cent as contrasted with a customary seasonal decline of less than 15 per cent.

Residential contracts awarded during November showed a loss in dollar volume of 25 per cent as contrasted with October; the decline from November, 1930, amounted to 44 per cent. Losses from both the previous month and November last year were general among the residential types, with the largest losses shown in apartments. For the elapsed months of 1931 the loss from 1930 in residential buildings awards has, with the November record, been extended to 25 per cent. It is now apparent that for the full year 1931 the loss from 1930 will approximate 27 per cent. The eleven-month record on apartments and apartment hotels showed a decline of 30 per cent from the corresponding period of last year; for hotels the decline amounted to 76 per cent; while for one- and two-family dwellings the decline was only 18 per cent.

Nonresidential building contracts awarded in November showed a decline of 41 per cent from October and a loss of 39 per cent from November of last year. Losses from both the preceding month and November, 1930, were shown for each of the seven major classifications of nonresidential buildings, except public buildings which scored advances over both periods.

For the eleven months of 1931 nonresidential contracts showed a loss of 36 per cent from the corresponding period of 1930. The decline in commercial buildings was 49 per cent, while factories showed a loss of 53 per cent; all other important nonresidential classifications declined also except public buildings which advanced 39 per cent.

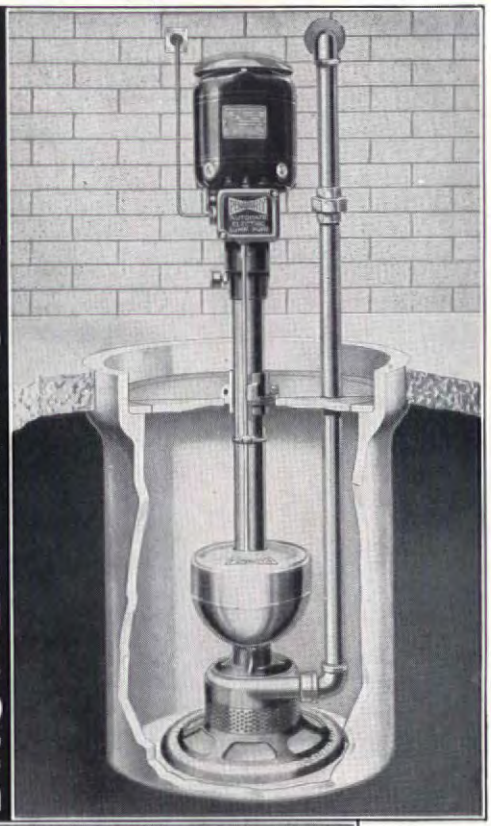
November contracts for public works and utilities showed a loss of 42 per cent from October and a decline of almost 40 per cent from November, 1930. Losses from a year ago were shown in almost all of the important branches of civil engineering work.

For the elapsed months of 1931 contracts for

(*Continued on page* 40)

A few reasons why— many Architects specify..

BRONZE THROUGHOUT



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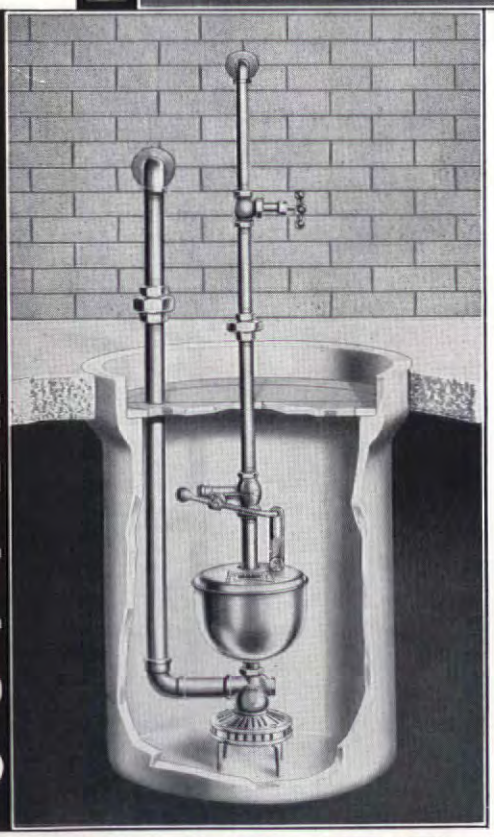


TRADE PENBERTHY PRODUCTS MARK

TO dispose of seepage below sewer level —or where sewerage facilities are not available—many architects prefer one of the units illustrated here. Local conditions determine whether the electric or hydraulic unit will be most economical—but both pumps have many characteristics that appeal to the architect.

Both the Penberthy Automatic Electric Sump Pump and the Penberthy Automatic Hydraulic Cellar Drainer are immune to corrosion—they are copper and bronze throughout. Both are thoroughly dependable under the most severe operating conditions, and are economical of electricity and water power. They are fool-proof, require no kid-glove handling, and are easy to install.

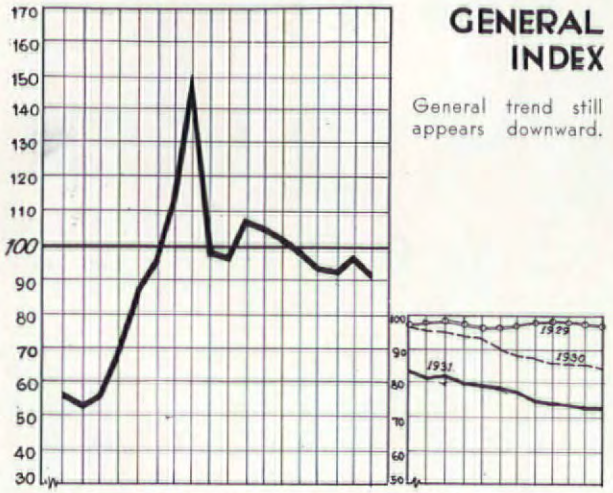
Manufacturing a complete line of both electric and hydraulic units in a full range of types and sizes, the Penberthy organization is especially well qualified to recommend the correct equipment for any specific case. Leading jobbers throughout the country stock both electric and hydraulic units.

PENBERTHY INJECTOR COMPANY
Established in 1886 — DETROIT — Canadian Plant Windsor, Ont.

PENBERTHY PUMPS REMOVE SEEPAGE WATER

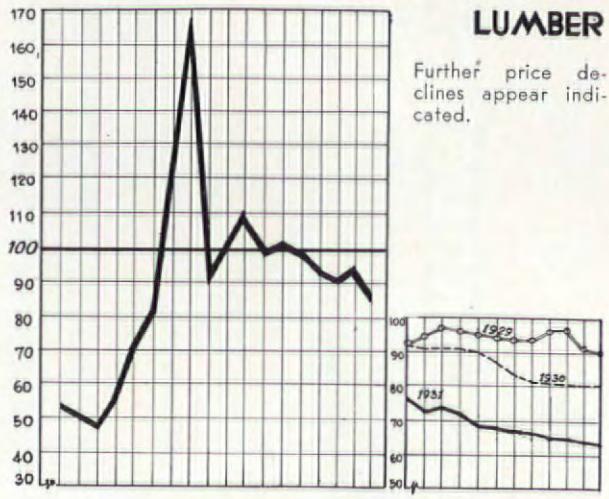
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average—100



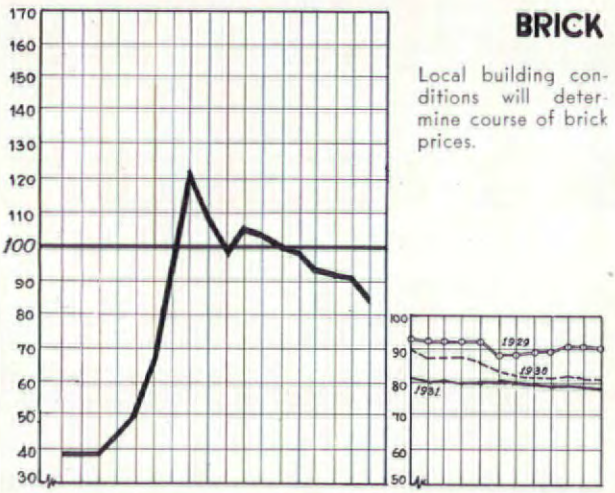
GENERAL INDEX

General trend still appears downward.



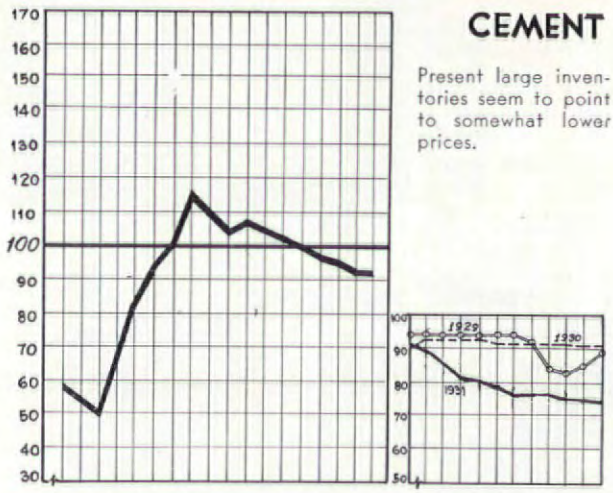
LUMBER

Further price declines appear indicated.



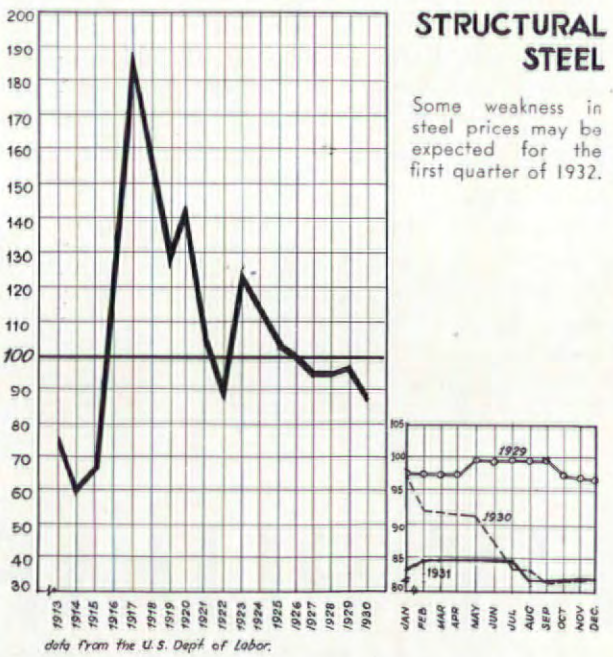
BRICK

Local building conditions will determine course of brick prices.



CEMENT

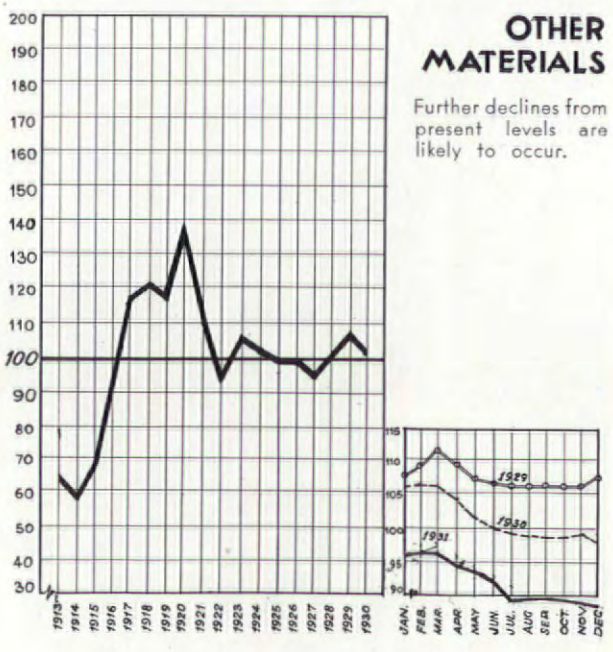
Present large inventories seem to point to somewhat lower prices.



data from the U.S. Dept. of Labor.

STRUCTURAL STEEL

Some weakness in steel prices may be expected for the first quarter of 1932.



OTHER MATERIALS

Further declines from present levels are likely to occur.

"What's the matter, Sonny, can't you read?"

SONNY can read all right. But he likes to walk on the grass. It's just naturally more comfortable than the hard sidewalk.

Hard sidewalks and hard floors tire everyone. When the heel comes down on an unyielding surface, muscles and nerves receive a minute shock. Multiply this over and over again and you have a fundamental cause of fatigue. But when the heel comes down on a "springy," resilient surface, it's cushioned. There is no jarring impact.

That's one of the many reasons why Sealex Floors have found favor with architects. They are in harmony with the modern decorative trend which stresses comfort as an accessory to good taste.

Architects find also that Sealex Floors possess many desirable practical advantages. They are easy to clean—economical to maintain—and durable.

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CONGOLEUM-NAIRN INC. KEARNY, N. J.

SEALEX
LINOLEUM FLOORS

CURRENT BUILDING TRENDS

(*Continued from page 36*)

public works and utilities declined 30 per cent. Bridges and highways suffered a decline of 15 per cent, while other work suffered a 42 per cent loss.

Of the thirteen districts east of the Rocky Mountains, only the Central Northwest reported larger construction contracts in November than in the same month of 1930; gains were scored here in each of the three major construction groups.

Residential gains over November were shown for New England and the Central Northwest. Nonresidential building advances were scored in the Metropolitan area of New York, Middle Atlantic, Southeastern, and Central Northwest districts. Increases in public works and utilities were registered in New England, Upstate New York, Central Northwest and Southern Michigan.

The records for contemplated construction show losses from a year ago in each of the thirteen districts. On these data, a nearby turn for the better in contract-letting is not probable.

Contracts During First Half of December

Construction contracts for the first half of December were running only slightly under the rate shown for November. Compared with a year ago, however, current contract awards for all classes of work were about 40 per cent lower in dollar totals.

Public works and utilities contracts in December as a whole may possibly exceed the total for this class reported in November, but it appears improbable that the current December, 1931, will reach the total of December, 1930.

Residential awards during the first half of December were running somewhat below the rate of November; compared with the corresponding period of 1930 current work was more than 40 per cent behind.

Nonresidential awards during the first half of December were at a rate substantially below the rate of the previous month; at the same time, current awards were less than half as large as those reported for the corresponding half month of 1930.

The Kansas City and Texas territories, however, showed gains for the first half of December as compared with the like period of 1930. The increases in the Kansas City district were provided by nonresidential awards and public works and utilities; while for Texas the gain was produced solely by public works and utilities.

Residential building gains over a year ago were shown in New England and the Central Northwest; nonresidential increases were shown only in the Kansas City territory; while gains in public works and utilities were registered in the Southeast, Central Northwest, Southern Michigan, St. Louis, Kansas City and Texas.

BUFFALO CITY HALL
DIETEL AND WADE, ARCHITECTS, ASSOCIATED WITH SULLIVAN W. JONES

NEWS IN BRIEF

BEAUX-ARTS BALL

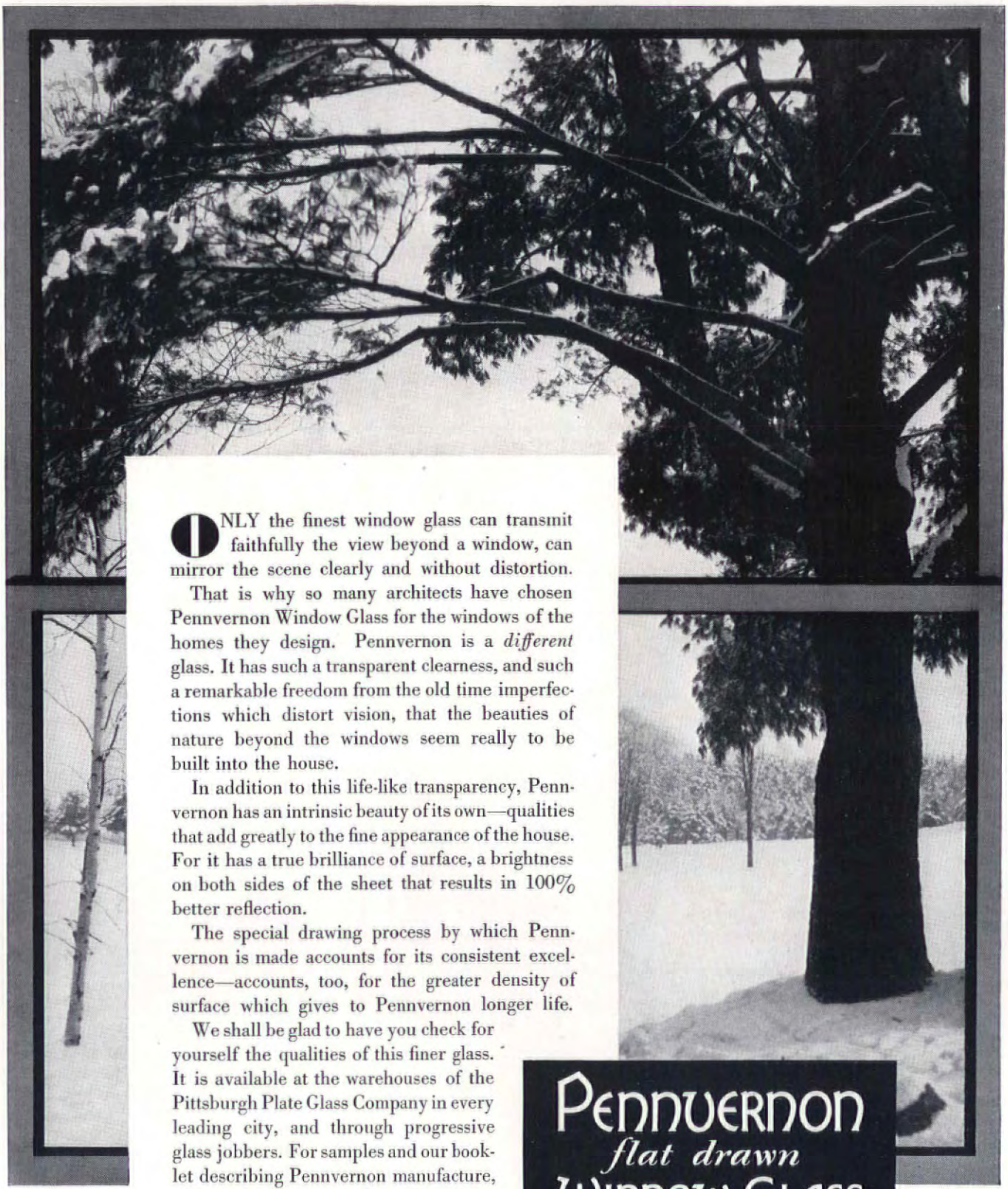
The committee for the Beaux-Arts Ball, "A Pageant of Old New York," and "The First Inaugural Ball of George Washington," which will be held at the Waldorf-Astoria January 22, have made awards in the nation-wide competition among architectural schools and ateliers for the invitation and program cover designs.

First prize of $100 was awarded to J. O. Mahoney, of Yale University. Five other prizes of $10 each were awarded to Miss Martha Andrews, of the Beaux-Arts Atelier, who was placed second; D. G. Browne, of the Atelier Licht; A. C. Davoll, of the New York Architectural Club; O. G. Joseph, University of Southern California, and M. R. Chamberlin, George Washington University.

FRANK LLOYD WRIGHT HONORED AGAIN

Together with Edna St. Vincent Millay and Deems Taylor, Frank Lloyd Wright has been selected by the Hall of Living Leaders of the Thomas Jefferson High School in Brooklyn to be represented in the hall of fame. The field of selection includes poetry, music and architecture.

No Window View *is clearer* than its GLASS



ONLY the finest window glass can transmit faithfully the view beyond a window, can mirror the scene clearly and without distortion.

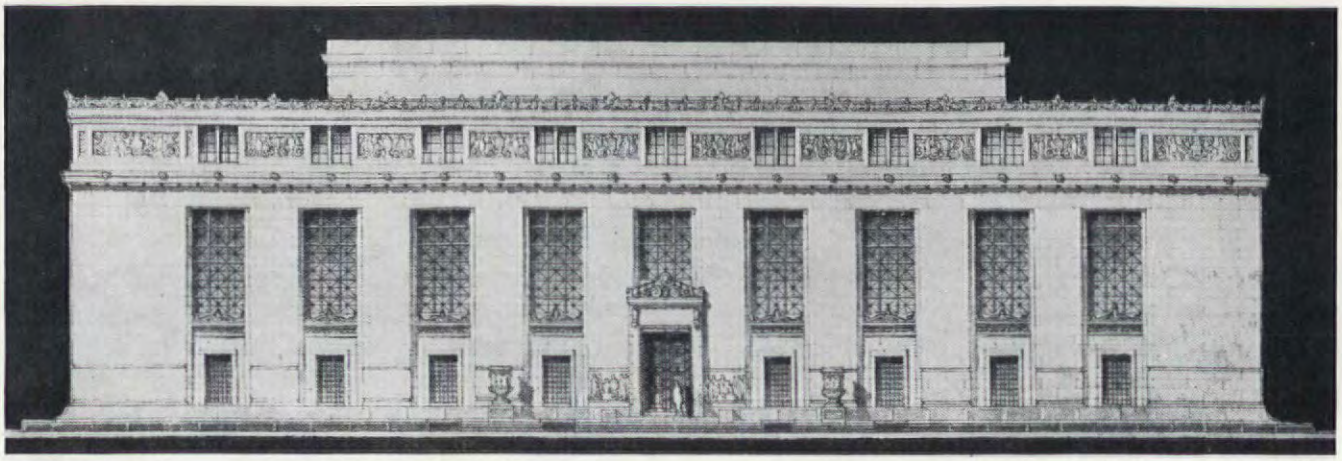
That is why so many architects have chosen Pennvernon Window Glass for the windows of the homes they design. Pennvernon is a *different* glass. It has such a transparent clearness, and such a remarkable freedom from the old time imperfections which distort vision, that the beauties of nature beyond the windows seem really to be built into the house.

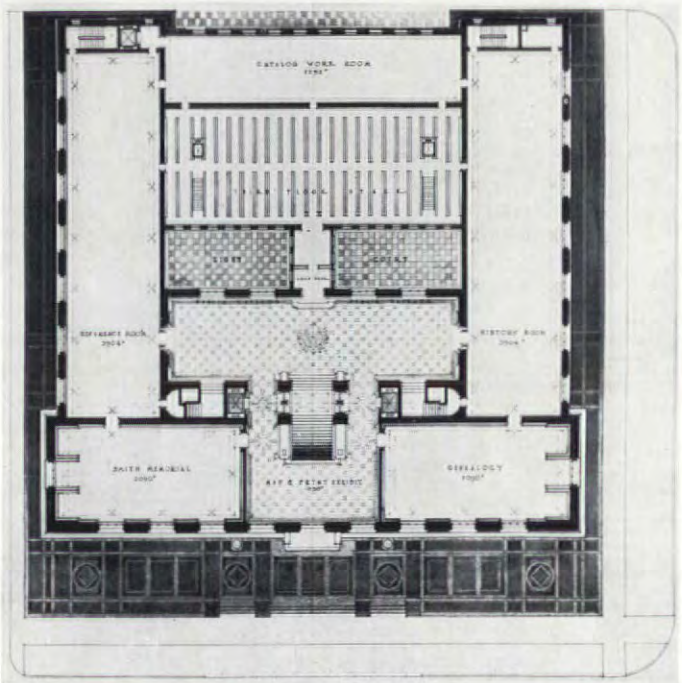
In addition to this life-like transparency, Pennvernon has an intrinsic beauty of its own—qualities that add greatly to the fine appearance of the house. For it has a true brilliance of surface, a brightness on both sides of the sheet that results in 100% better reflection.

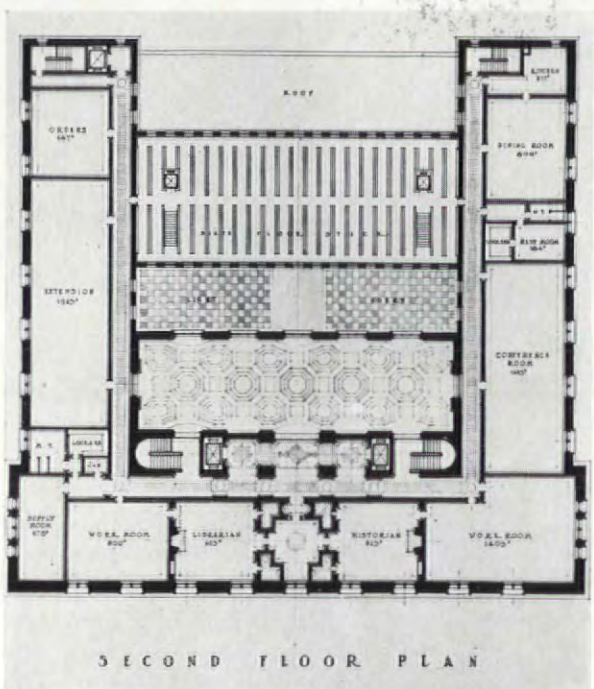
The special drawing process by which Pennvernon is made accounts for its consistent excellence—accounts, too, for the greater density of surface which gives to Pennvernon longer life.

We shall be glad to have you check for yourself the qualities of this finer glass. It is available at the warehouses of the Pittsburgh Plate Glass Company in every leading city, and through progressive glass jobbers. For samples and our booklet describing Pennvernon manufacture, address the Pittsburgh Plate Glass Company, Grant Building, Pittsburgh, Penna.

PENNVERNON
flat drawn
WINDOW GLASS







FIRST AWARD IN THE NEW INDIANA STATE LIBRARY COMPETITION

Designed by Pierre and Wright, architects. The building provides for the State Library and the Historical Bureau. Size of building: 160 by 180 feet. Capacity: 500,000 volumes.

HARRODSBURG MEMORIAL COMPETITION

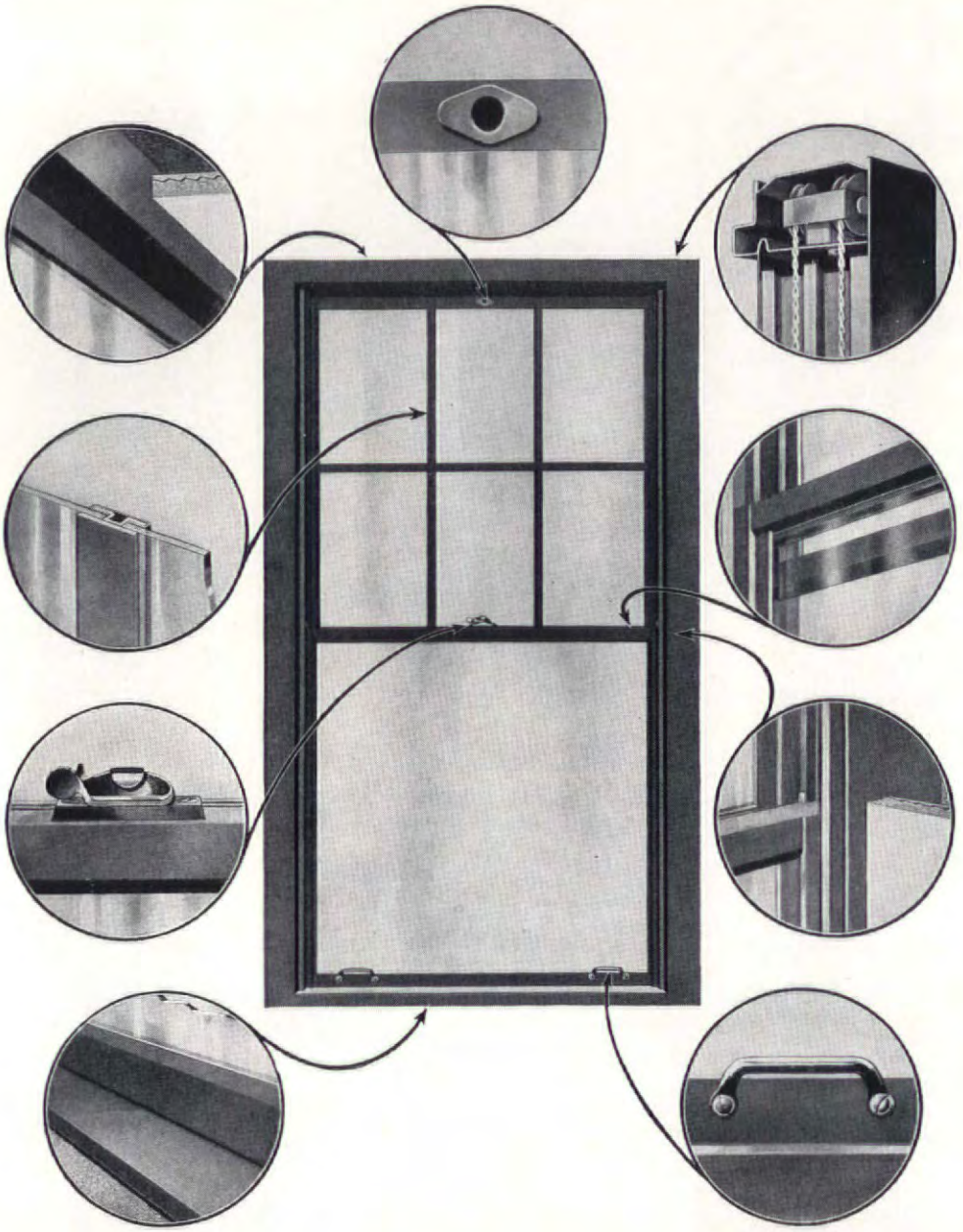
Winning competitors for the design of a Memorial of the First Permanent Settlement of the West at Harrodsburg, Kentucky, to be constructed by the Quartermaster Corps of the Army, have been announced by the War Department. The winners are Francis Keally, architect, and Ulric Ellerhusen, sculptor.

The jury of award consisted of Robert Aitken, Mrs. James Darnell, Frederick Law Olmsted, Edward W. Bonn, Jr., and George G. Will. Victor Mindeleff, architect, acted as professional adviser. Designs were submitted by 73 competitors.

FRENCH TRAVELLING SCHOLARSHIP

Robert Camelot of Paris has been awarded the French Travelling Scholarship of the American Institute of Architects, according to Charles Butler of New York, chairman of the Institute's Committee on Education.

M. Camelot will study American stadiums and playgrounds. For three months he will act as visiting professor of architecture at Massachusetts Institute of Technology in the absence of M. Carlu, who is detained in Paris by illness. Later he will visit the principal cities of the United States and Canada.



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Designing data on request.

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VIEWED from any angle, the Peerless Double-Hung Steel Window is architecturally correct. It is neat, clean-cut and of pleasing proportions, thoroughly in keeping with the finest buildings.

Tubular construction of the sash, frame members and combination jamb and weight well imparts remarkable strength to the sections. Concealed spring bronze weatherstrips at jamb, head, meeting rail and sill assure perfect weathering and permit a guarantee that the air infiltration shall not exceed of one-half cubic foot per foot perimeter of sash per minute at a 25 mile wind velocity. Vents operate in bronze vertical slides, the galvanized steel against bronze making the opening and closing easy and smooth.

Only the finest workmanship enters into the construction. No solder, no rivets and no slot-and-tenon connections are employed. All corners are coped and lapped to their full depth, then securely welded. Due to the design and the accuracy obtained in forming the sections, no adjustments are required during installation.

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The Prometheus keeps food hot at a minimum cost as it is thoroughly insulated. Doors are of double construction, filled with asbestos. Space between the walls is thoroughly insulated. That also keeps the exterior cool.

Has a three-heat switch. Cannot overheat. A thermostatic cutoff can be furnished to disconnect current automatically if left on accidentally. Pilot light shows whether current is on or off.

Has a beautiful finish. Trim is heavily chromium plated and polished. Doors are vitreous porcelain when white finish is desired. Will not crack or turn yellow. Shelves are removable for cleaning.

Heating elements last indefinitely, but if accidentally damaged they can be easily and inexpensively replaced. Built in many models.

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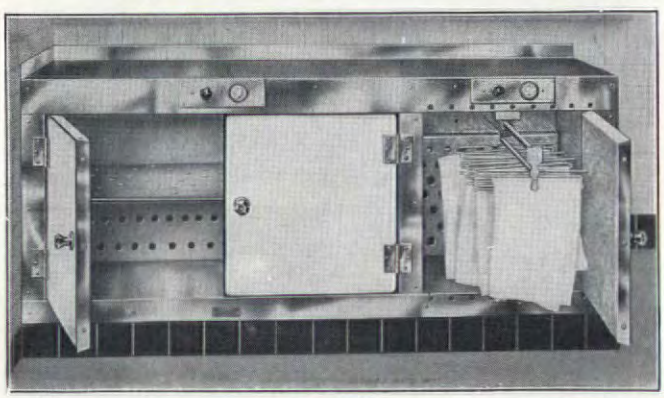

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SUNLIGHTING BUILDING INTERIORS

Two huge roof mirrors flash the sunlight down a skylight shaft and into the building in this invention by Jacques Arthuys, a Parisian. Smaller angled mirrors on each floor catch the strong descending rays and flash them along the ceilings of rooms and corridors.

The apparatus has already been installed in the *L'Intransigrant* publishing plant in Paris. The only upkeep is said to be washing the mirrors.

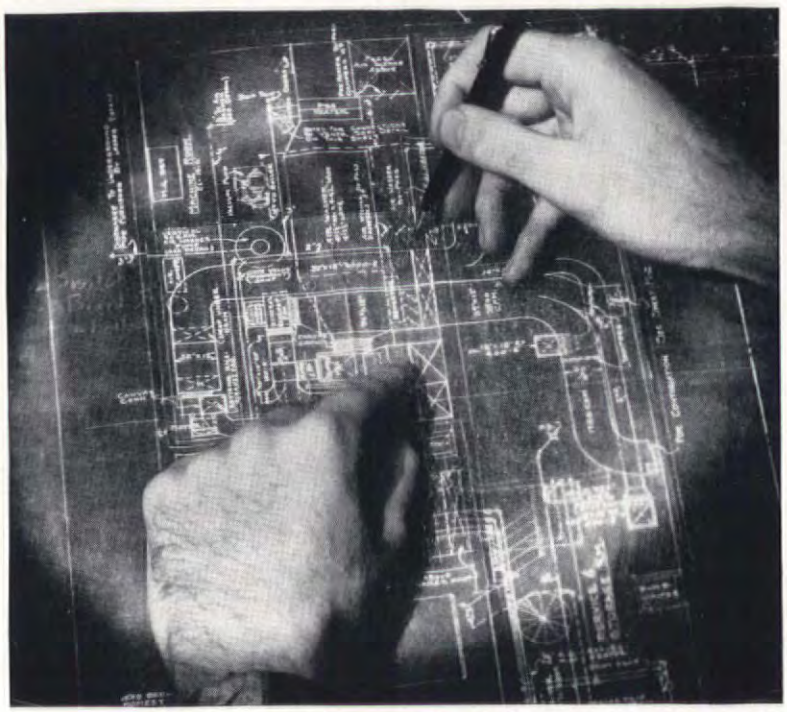
CHART OF EARLY AMERICAN ARCHITECTURE

A chronological chart of examples of early American architecture in and near Boston has been prepared by the Committee on Education of the Boston Society of Architects. The list is limited to buildings at least 100 years old. The present edition is published as "subject to revision" and readers are urged to call attention to errors and omissions so that a more complete and larger republication can be secured, according to an announcement by Robert P. Bellows, architect, 8 Beacon Street, Boston.

COLUMBUS MEMORIAL COMPETITION

The report of the jury in the Columbus Memorial Competition announced Donald Nelson and Edgar Lynch as architects of the second prize design. The announcement should have included Bennett, Parsons and Frost as associated architects, and Oscar J. W. Hansen as associated sculptor.

The Barber-Colman Electric System of Temperature Control



Control of by-pass dampers on a Split System installation. Left hand indicates location of duct thermostat beyond the fan. Right hand points to location of reversing damper controller on by-pass dampers.

THERMOSTATIC CONTROL OF DIRECT-INDIRECT RADIATION

DIRECT-INDIRECT RADIATION, known also as the "Split System," provides a supply of air for ventilation purposes, utilizing direct radiation for the heating. In this type of system Barber-Colman *electric* Room Thermostats and *electric* Motor-Operated Valves furnish effective and economical control of the direct radiation, while the ventilating system will be controlled by Barber-Colman *electric* equipment as follows: Motor-Operated Steam Line Valves on the heating and reheating coils; Motor-Operated Damper Controllers on the intake, exhaust, and by-pass dampers; and *electric* Thermostats of the insertion or "duct" type to control the operation of the valves and the damper controllers. When so equipped this system will deliver accurately tempered air for ventilating purposes, automatically maintained at 70 degrees F. The controls will regulate the admission of steam to the heating coils and will govern the proper mixing of the heated and unheated air. Barber-Colman *electric* controls on the complete system, comprising the direct radiation and the air-conditioning equipment, will function automatically and dependably, and with an appreciable economy over other methods of control.

A 48-page catalog describing the Barber-Colman Electric System of Temperature Control will be mailed upon request. Write for your copy today.

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ROCKFORD, ILLINOIS, U. S. A.

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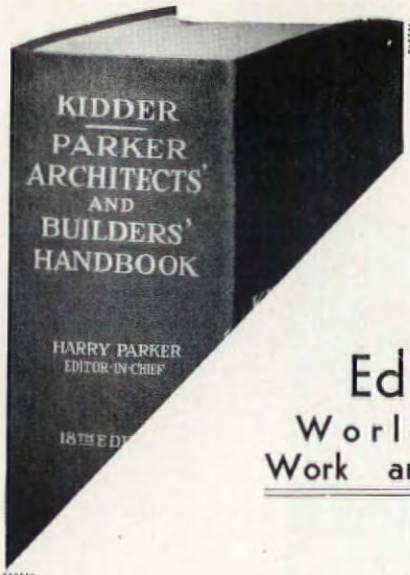

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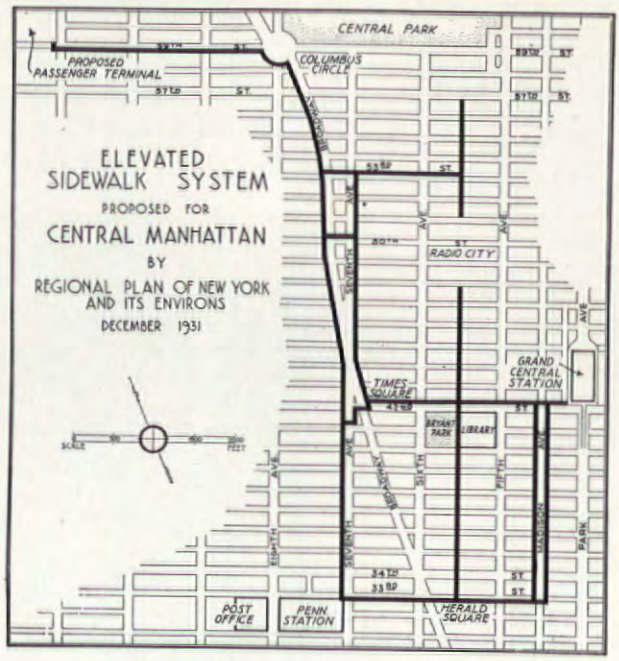


ELEVATED SIDEWALKS FOR NEW YORK

Provision for pedestrians on a separate level in congested areas, with architectural possibilities of second story entrances to buildings, and a limited use of two-level roadways where overcrowded buildings or favorable topography makes them expedient, have been suggested by the Regional Plan of New York and Its Environs. The proposed system of elevated walks is shown in the above plan.

VACANCIES IN RESIDENTIAL BUILDINGS DURING 1931

Less than 5 per cent of single-family houses were vacant in two-thirds of the cities reporting in a recent survey of vacancies in residential buildings made by local organizations and reported to the Department of Commerce.

The survey, conducted in 37 cities, shows that single-family houses are more in demand than flats or apartments. In none of these cities did the vacancies exceed 9.5 per cent of the single-family houses. Vacancies in apartments ranged from 6.8 per cent to 27.2 per cent; in flats from 4.4 per cent to 20.2 per cent, and in two-family houses from 3.4 per cent to 20.1 per cent. In no city were total vacancies in all types of residential property more than 11.2 per cent, the survey shows.

The data were compiled by the Division of Building and Housing of the Department of Commerce from surveys made by local organizations in various cities.

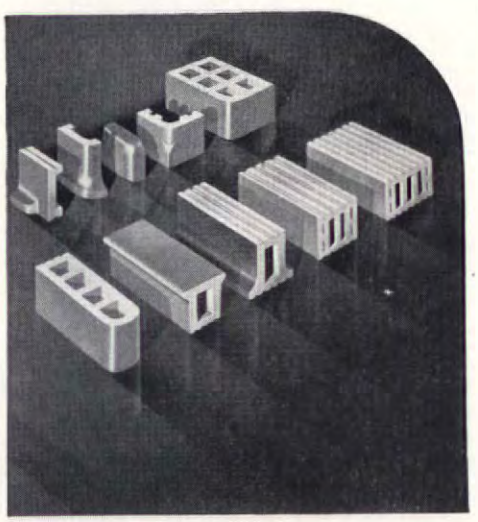
TO BUILD STEEL FRAMES FOR HOMES

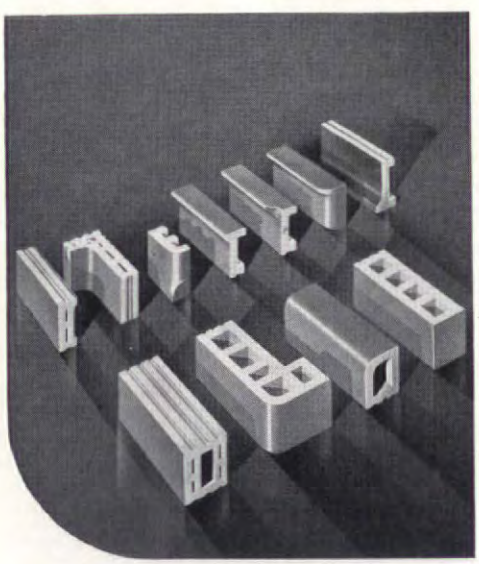
The manufacture of steel frames for steel homes is planned by the A. O. Smith Corporation of Milwaukee, according to press reports, which state that a program for 100,000 homes as the first unit of manufacture is under consideration. The plan, it is understood, is to manufacture all steel frames to be assembled on the building lot.

NATCO VITRITILE— EXPRESSING ARCHITECTURAL IDEALS IN MASONRY

The architect, alone of all workers in artistic fields, must confine himself to giving his artistic creations form; the task of giving them substance must be entrusted to the hands of workmen. Natco Vitritile is designed and manufactured with this unique restriction in mind. Every resource and facility of the great National Fireproofing Corporation—its many years of experience, its 23 plants, its extensive research work, its staff of graduate ceramic engineers—is directed toward making Natco Vitritile a true medium for the expression of architectural ideals in masonry.

Both artistic and structural needs have been intelligently anticipated, competently met. Glaze materials gathered from the four corners of the earth are expertly combined, and applied to the raw tile by costly, specially designed machines. In the most advanced types of kiln the glazes are subjected to the intense controlled heat that gives them immortality, makes them immune to time, dirt, grease, chemicals, and temperature. A rich range of shades and tones, plain and mottled, gives ample latitude in color design.





The comprehensive line of Natco Vitritile units (the illustrations show only a few) comprise units that meet all normal structural needs. Interioror or exterior load bearing walls, dwarf walls, wainscoting and partitions may all be erected quickly, easily, economically.

Plates, showing the shade ranges available; dimension drawings showing the units; and detail drawings showing construction methods, are contained in the Natco Catalog in Sweet's Architectural Catalogues, A-549-603. If you do not have access to Sweet's, send for a Vitritile Catalog and Shape Bulletin.

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USE OF NEW MATERIALS RECOMMENDED IN PRESERVING ANCIENT MONUMENTS

An international conference of experts on the protection and preservation of artistic and historic monuments was held in October in Athens, Greece, under the auspices of the International Museums Office, an activity of the League of Nations.

Suggestions for the use of modern materials, particularly reinforced concrete, for the maintenance of ancient monuments were recommended. The conference specified that wherever possible such work should be concealed in order to preserve the aspect and character of the restored monuments.

The conference also recommended that the surroundings should be given special consideration. The suppression of all forms of publicity, of the erection of unsightly telegraph poles and the exclusion of all noisy factories and even of tall shafts in the neighborhood of artistic and historic monuments was urged.

BUILDING TRADES TRAINING CENTER ADVOCATED

The need for a building trades training center was discussed at the last monthly meeting of the New York Building Congress. William E. Grady, Associate Superintendent of the Board of Education, and Franklin J. Keller, Director of the Vocational Survey Commission, were the principal speakers. Joseph M. Sheehan, Associate Superintendent of the Board of Education, also took part in the discussion.

STANDARD SPECIFICATIONS FOR ELEVATORS

The first edition of the American Standard Safety Code for Elevators was published in 1925. The preparation of this edition disclosed a lack of knowledge in regard to the design, construction and functioning of auxiliary devices. Consequently, in 1926 the Committee established a research fellowship at the Bureau of Standards and initiated a research program.

The revised Code was published last summer and is now available. It should be made the basis of the specification for every elevator installation. The expectation back of its preparation is that it will be adopted by States and municipalities, and that safety requirements for elevator installations will thus be uniform. This accomplishment will be greatly expedited by the use of the Code as the basis of architects' specifications. To facilitate such use the Committee has undertaken the preparation of a standard specification for elevators.

The Committee wishes to caution the architectural profession against the use of any alleged standard specifications for elevators not approved by the American Standards Association. This word of caution is spoken because of the character of specimens of such specifications that have come before the Committee.

Sullivan W. Jones, A. I. A., Chairman,
Committee on Safety Code for Elevators

MODERN BUILDINGS BRYANT EQUIPPED

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Bard Hall, Columbia-Presbyterian Hospital Medical Center, New York City
James Gamble Rogers, Architect; Marc Eidlitz & Son, Builders

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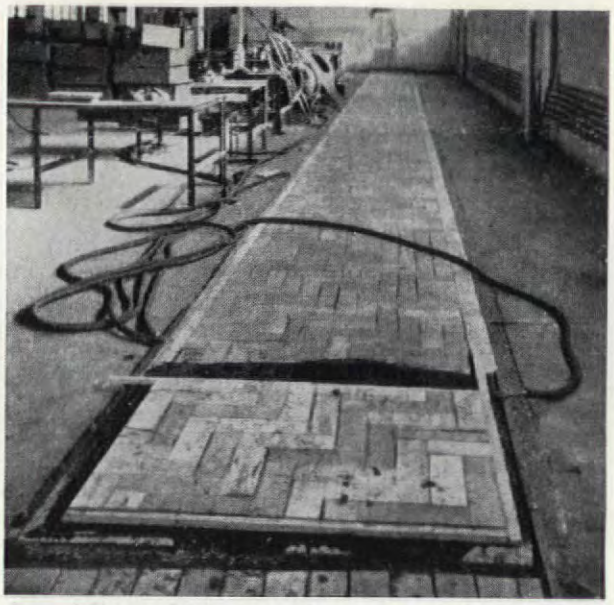

General Electric Review

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SHUTTLES FOR RADIO CITY

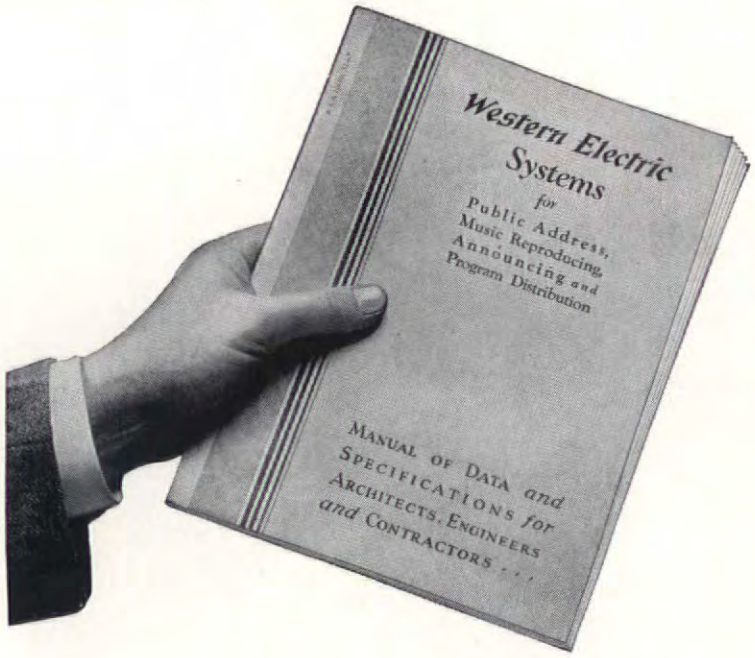
An endless chain system of electric cars running in miniature subways is reported to be one of the features in the Rockefeller Radio City development, now under construction in New York City (described in the April, 1931 issue of THE ARCHITECTURAL RECORD). This shuttle system will link the building center with the principal uptown transportation centers.

ADDITION TO AMERICAN WING AT THE METROPOLITAN MUSEUM

The Metropolitan Museum of Art, New York City, announces an addition to the American Wing, consisting of a room from Providence, R. I., and the Great Hall from the Van Rensselaer Manor House, at Albany, N. Y., dating from 1765. Both rooms are housed in a special one-story building, which also permits the installation of several Early American doorways not hitherto shown.

ARCHITECTURAL EXHIBITION IN TEXAS

The Museum of Fine Arts of Houston has just closed an exhibition of work by members of the South Texas Chapter of the American Institute of Architects. Homes in Alabama, Tennessee, and Fisher's Island, New York; a mausoleum in Kansas City; and office buildings, hotels, schools, and homes throughout Texas were part of the 200 drawings and photographs exhibited.



It tells how to specify . .

Amplified Sound

Here is a book that belongs in your files. It is a manual of data and specifications (A. I. A. File No. 31-i-7) covering Western Electric Systems for Public Address, Music Reproducing, Announcing and Program Distribution. It tells you how sound can be scientifically reenforced, how programs can be picked up, amplified and distributed in a structure of any size and in as many separate rooms as desired. It shows illustrations and schematic diagrams of installations for auditoriums, convention halls, churches, hotels, apartment houses, hospitals, schools. It describes other uses, too. If a copy is desired let the coupon bring you one promptly.

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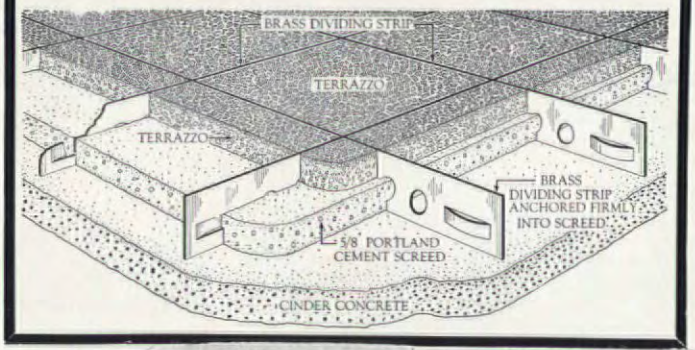

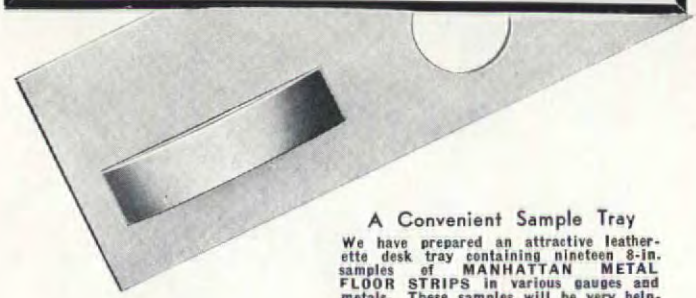

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ARCHITECTURAL SERVICE ADVOCATED

The need for proper architectural service is urged by the Morgan Woodwork Organization of Chicago in its better homes design campaign: "A good building is the product of a good architect, a good contractor, and good craftsmen using good materials."

BUSINESS SIDE OF ARCHITECTURE TO BE TAUGHT AT HARVARD

An "architectural clinic" will be held as a course at the Harvard School of Architecture during the second half of this year to acquaint the student with practical professional problems. The statement of Dean Harold G. Edgell in announcing the new course was, "The object of a school should be to turn out not draftsmen but architects, and architects who will practise on their own responsibility. To do this they must have some familiarity with the business side of architecture. They must know something of the point of view of the promoter, the real estate agent, the real estate attorney, the engineer, and a multitude of other individuals with whom the architect has to work before a building can be a practical success. The Harvard School of Architecture has succeeded in engaging the services of Mr. Charles H. Lench, of New York, to give such a course on the business side of architecture."

Mr. Lench is the architect of a large number of commercial buildings in New York. He is the author of a volume, just issuing from the press, on the promotion of commercial buildings. He has also lectured at Columbia University on "The Architect's Relation to the Promotion and Financing of Income-Producing Buildings."

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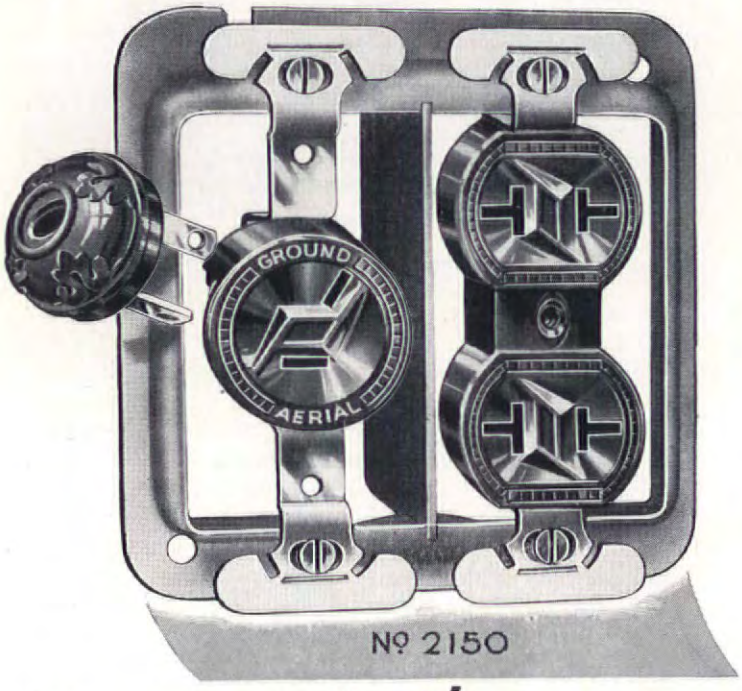

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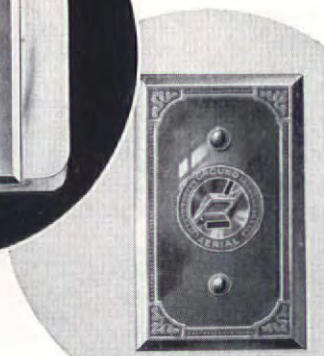
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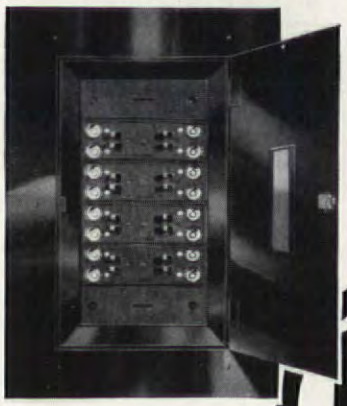

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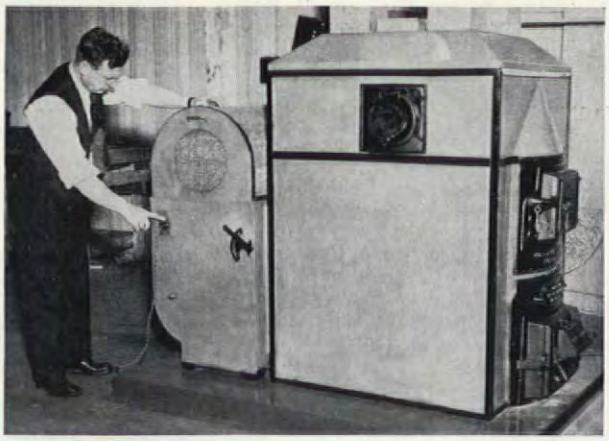

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This new unit, in combination with a warm air heater, constitutes a complete air-conditioning system that gives controlled heating and humidification during winter, controlled air circulation and air-washing the year round, and air-cooling during summer. The unit is about 40 inches high, occupies less than 10 square feet of space, and is designed primarily for attachment to warm-air heaters. It may also be installed as an independent auxiliary with other type systems.

In addition to its cabinet, the conditioner consists of a semi-cylindrical copper mesh filter; a high-speed, twin-fan air circulator; a series of water-spray nozzles, and an eliminator.

OHIO STATE REGISTRATION BOARD

At the October 27 meeting of the Cleveland Chapter of the American Institute of Architects, the following appointments by Governor George White of Ohio as members of the architectural registration board were announced: Gilbert Miller, Girard, Ohio; George McDonald, Cincinnati; Lester Redding, Mansfield; Ralph Kempton, Columbus; and David Owsley, Youngstown.

HARDWARE FOR HOMES

To overcome the lack of interest manifested by the general public in the selection of good hardware for homes, dealers and builders' hardware men have initiated a campaign to emphasize the value of their products. "Your House is as Good as its Hardware" has been selected as a slogan.

SHOCK-ABSORBING FLOORS

Wood floors with a built-in shock absorber that takes the jolts out of walking are a development announced by the Masonite Corporation, Chicago. The cushioned flooring, which is tongue-and-groove construction, consists of outer layers of tempered *Presdwood* and an inner layer of *Quartrboard,* the latter being a shock absorber and sound deadener between floors. The new flooring comes in three sizes, 6″, 9″ and 12″ square, and is reversible, light on one side and dark on the other.

THE ARCHITECTURAL RECORD

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Published monthly by

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VOL. 71 NO. 2 FEBRUARY, 1932

Cover: RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN
Holabird and Root, Architects
Photograph by Hedrich-Blessing Studios

Frontispiece: RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN
Holabird and Root, Architects

75-82 . . . . FACING REALITIES IN SLUM CLEARANCE
By Arthur C. Holden, Architect

83-88 . . . . NEW HOUSING FOR PHILADELPHIA SLUMS
Edmund G. Krimmel; John Graham, Jr., Purves and Day; Tilden, Register & Pepper; Architects Associated for Model Housing

89-116 . . . . PORTFOLIO OF CURRENT ARCHITECTURE
Racine County Court House, Racine, Wisconsin—Holabird and Root, Architects; Gideon F. Egner Memorial Chapel, Muhlenberg College, Allentown, Pa.—Frank R. Watson, Edkins & Thompson, Architects; House of J. W. Dean, Knoxville, Tennessee—Barber and McMurry, Architects; 137 East 57th Street Loft Building, New York City—Thompson and Churchill, Architects; House of W. Warren Barbour, Locust Point, Red Bank, New Jersey—Robert M. Carrere, Architect; Banks-Huntley Office Building, Los Angeles—John and Donald B. Parkinson, Architects.

117-120 . . . CHICAGO MUNICIPAL AIRPORT
By Paul Gerhardt, Jr., City Architect, Chicago

121, 122 . . . AN ALL-METAL OFFICE BUILDING IN RICHMOND
48, 50, 52, 56 . . Built at a cost of 19.1c a cubic foot
(adv.) By James Bolton, Department of Public Works

123-128 . . . DIMENSIONS: PART TWO—BEDROOMS, BATHROOMS
By A. Lawrence Kocher and Albert Frey

129-143 . . . TECHNICAL NEWS AND RESEARCH
PART ONE—INSTITUTIONS FOR THE MENTALLY AFFLICTED
By Lewis F. Pilcher, Architect
PART TWO—PLANNING THE SURGICAL FACILITIES
By S. S. Goldwater, M.D., Hospital Consultant

144 . . . . . CURRENT BUILDING TRENDS
34, 44, 46 (adv.) . By L. Seth Schnitman

29, 30 (adv.) . . ARCHITECTS' ANNOUNCEMENTS AND CALENDAR—THE APARTMENT HOUSE ISSUE

36, 38, 40 (adv.) . NEWS IN BRIEF

42 (adv.) . . . ARCHITECTS' LIBRARY

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RESTFUL LIGHT FOR TIRED EYES

When the army of business executives, clerks, stenographers and office boys moves into the Gulf Building, new home of the Gulf Oil Corporation of Pennsylvania, in Pittsburgh, they will note with delight the modern lighting globes provided for the comfort of their eyes. Macbeth Galax Globes in every office will shed a soft, diffused light, partly direct and partly indirect, dispelling shadows and reaching into every far corner. Scientifically designed to combine the advantages of both indirect and direct-diffused light, Galax Globes are made of one single homogeneous piece of glass of dual opacity, the upper part transmitting efficiently with slight diffusion, the lower part reflecting and glareless. At night, with the golden rectangles of hundreds of lighted windows forming an ever-changing pattern against the sky, the towering new Gulf Building will be a veritable cathedral of light. MACBETH-EVANS GLASS COMPANY, Charleroi, Pennsylvania. *Branch Offices located in the following cities:* Pittsburgh, San Francisco, New York, Toronto, Baltimore, Indianapolis, Philadelphia, Boston, Houston, St. Louis, Detroit, Buffalo.

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ANNOUNCEMENTS

Charles S. Peabody is withdrawing from the firm of Ludlow and Peabody, architects, 101 Park Avenue, New York City. Mr. Ludlow will continue the practice of architecture under the firm name of William Orr Ludlow.

Milton W. Morrison, architect, announces that he is practicing architecture, independently, in offices at 601 Forty-second Avenue, San Francisco.

Thomas M. James Company, architects, announce the removal of their offices to 164 Stuart Street, Boston.

Henry Chisholm, architect, announces the opening of a studio at Summer Street, R. F. D. 125, Mansfield, Massachusetts. His former address was 19 Chester Road, Belmont, Massachusetts.

Mr. Henry K. Holsman, 307 North Michigan Avenue, Chicago, is chairman of a committee of architects who are studying the reclaiming of blighted areas.

APARTMENT-HOUSE MEDALS

It has been the custom of the New York Chapter to offer a medal each year in the interest of stimulating better apartment-house design. For the year 1932 the award will be made as a result of an exhibition to be held in the exhibition room of the Architectural League, 115 East 40th Street, from February 29 to March 1.

Exhibits are requested in the form of photographs of buildings together with a typical renting plan.

The Committee will divide the exhibits into four classifications as follows:

1. Tower types of apartments.
2. Apartments developed on city plottages less than a block front in extent, both fireproof and non-fireproof.
3. Apartments developed by large-scale planning, ranging from entire block front to the occupancy of the entire block or more than one block.
4. Suburban apartment-house types.

Buildings finished within the period of three years from October 1, 1931, are eligible.

The medal is awarded to the owner of the building. The architect's name is to be mentioned.

Exhibits should be submitted to the office of the chairman of the Apartment-house Medal Committee—Arthur C. Holden, 670 Fifth Avenue, New York City.

RUSSIAN THEATER DESIGNS

An exhibition of models submitted by American architects at the international competition for a national theater in Kharkov, Ukrina, Russia, two years ago, will be held from February 8 to February 21, at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. Albert Kastner will exhibit his model which won first place in the Kharkov show. Among other Americans who competed were Oscar Stonorov, Albert Klaus, and Charles Daub, and Norman Bel Geddes of New York, and John Raben of Chicago.

EXHIBITION OF "NEW ARCHITECTURE"

The first exhibition of the American Union for New Architecture will be held from March 28 to April 11, inclusive, under the auspices of the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. All drawings, renderings, photographs or models of executed work or of projects submitted for exhibition by members and non-members of the Union will be passed upon by a jury of prominent architects, to be named later, not associated with the A.U.N.A. Any person wishing to enter the exhibition should communicate immediately with Richard C. Wood, executive secretary of the A.U.N.A., room 1405, 120 West 42nd Street, New York City.

EXHIBITIONS AND EVENTS

February 8-21	Exhibition of models submitted by American architects for a national theater at Kharkov, Ukrina, Russia, to be held at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City.
February 10-March	Exhibition of modern architecture at the Museum of Modern Art, New York City.
February 26-March 12	Exhibition of the Architectural League of New York at 215 West 57th Street, New York City.
March 28-April 11	Exhibition of work by members of the American Union for New Architecture at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. For information, address Richard C. Wood, Room 1405, 120 West 42nd Street, New York City.
April 25-May 5	Exhibition of the Westchester County Society of Architects in connection with the second annual Westchester Home Show, county center, White Plains, New York.
July 30-August 14	Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City.
October	International Congress for Modern Architecture at Moscow, U. S. S. R. Program: "The Functional City."

COMPETITIONS

February 29-March 1	Exhibition of apartment-house designs submitted in competition for the New York Chapter medal awards. To be held at the Architectural League, 115 East 40th Street, New York City. Exhibits should be submitted to Arthur C. Holden, Committee Chairman, 670 Fifth Avenue.
March 7	Mailing date of programs to approved candidates for the fifth annual competition for the A. W. Brown Travelling Scholarship. Address William Dewey Foster, 25 West 45th Street, New York City.

MARCH • NEW APARTMENT HOUSES

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VAN TASSEL APARTMENTS, TARRYTOWN, NEW YORK.
ANDREW J. THOMAS, ARCHITECT

Hedrich-Blessing
1301 ASTOR STREET APARMENTS, CHICAGO.
PHILIP B. MAHER, ARCHITECT

In March will appear the annual Apartment House Number of THE RECORD — an entire issue devoted to multi-family housing and pointing out many opportunities offered to architects in this type of construction. Henry Wright, town planner and architect, and Eugene H. Klaber, Chicago architect, are collaborators on a special article which will trace the evolution of the garden apartment and the row house and analyze the latest developments in these fields. An outline of procedure for large-scale housing projects, showing how the architect can aid in formulating and executing such plans, will also be presented.

Supplementing Mr. Wright's and Mr. Klaber's articles will be an extensive portfolio of recent apartment houses. These illustrations, representing all parts of the country, will feature elements of practical value to the architect. Among the architects whose work will be illustrated are Rodgers and Poor, Sukert and Cordner, Ernest Flagg, Springsteen and Goldhammer, Philip B. Maher, Irving Chanin, Andrew J. Thomas, Charles A. Platt, R. Clipston Sturgis, Holabird and Root, Sloan and Robertson, Schwartz and Gross, Edmund B. Gilchrist, Th. Engelhardt, Emery Roth and Marshall P. Wilkinson.

AMONG THE CONTRIBUTORS IN THE CURRENT ISSUE

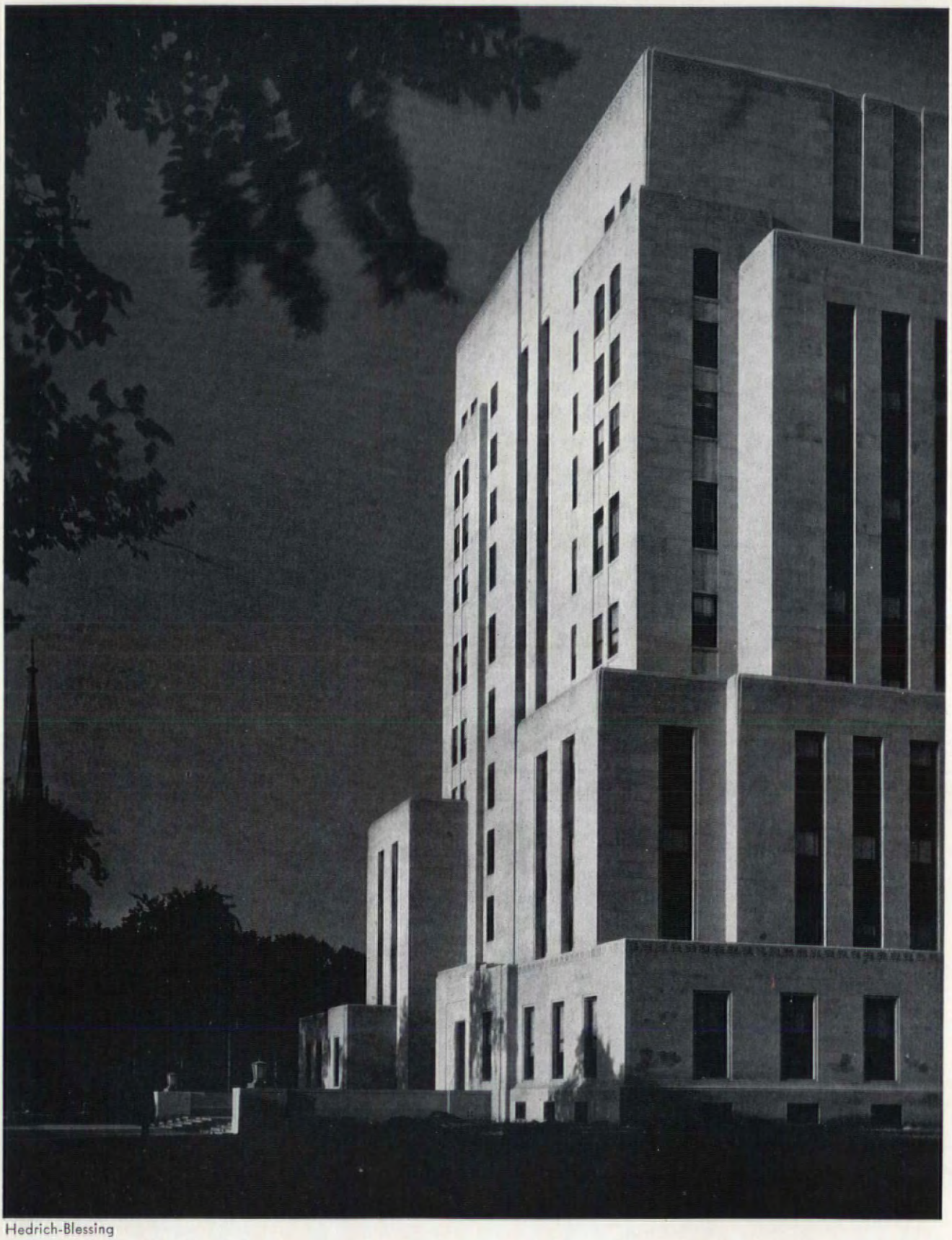
ARTHUR C. HOLDEN, a member of the architectural firm of Holden, McLaughlin and Associates, is well known for his economic and city planning studies.

PAUL GERHARDT, JR., city architect of Chicago, is the designer of the Von Steuben High School, Chicago, published in the May 1931 issue of THE RECORD.

JAMES BOLTON is chief of the Bureau of Surveys and Design, Department of Public Works, Richmond, Virginia.

LEWIS F. PILCHER is professor of architecture at Pennsylvania State College.

DR. S. S. GOLDWATER is a hospital consultant and administrator. His home is in New York City.



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RACINE COUNTY COURT HOUSE AT RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

THE ARCHITECTURAL RECORD FEBRUARY, 1932
VOL. 71—No. 2

FACING REALITIES IN SLUM CLEARANCE

By ARTHUR C. HOLDEN, Architect

In this day of large-scale business enterprise it is unnecessary to argue that great economies are possible through organization and combination. It is perhaps more pertinent to point out the extraordinary fact that as yet the field of real estate has been scarcely touched by the tendencies toward combination which have dominated the industrial world.

In preparing planning studies for the rehabilitation of the Lower East Side slums of New York City, Mr. Arthur C. Holden, a member of the architectural firm of Holden, McLaughlin and Associates, has proposed the formation of equity trusts as a logical means of financing such a large-scale project.

In a recent article (HARPERS, November, 1931), he indicated that the way out of the present crisis may lie in the formation of great real estate trusts for the more effective control and efficient management of real estate. In this present article he discusses the work which must be done to clear the way for the formation of such realty trusts. Much that appears impossible in slum clearance under our present system of conflicting small-scale property interests, he points out, may be accomplished through large-scale control.

Much has already been written about the impracticability of the piecemeal improvement of blighted districts. The risking of new capital in an isolated building in questionable surroundings is not a project which appeals to the imagination of investors. It is admitted, however, that part of this risk is removed where construction can be undertaken upon a scale large enough so that the project itself establishes the desirability of its own neighborhood. When it is possible to plan for the neighborhood on a large scale so that each individual improvement may be made a part of the general scheme of rehabilitation, the investment has a very real safeguard.

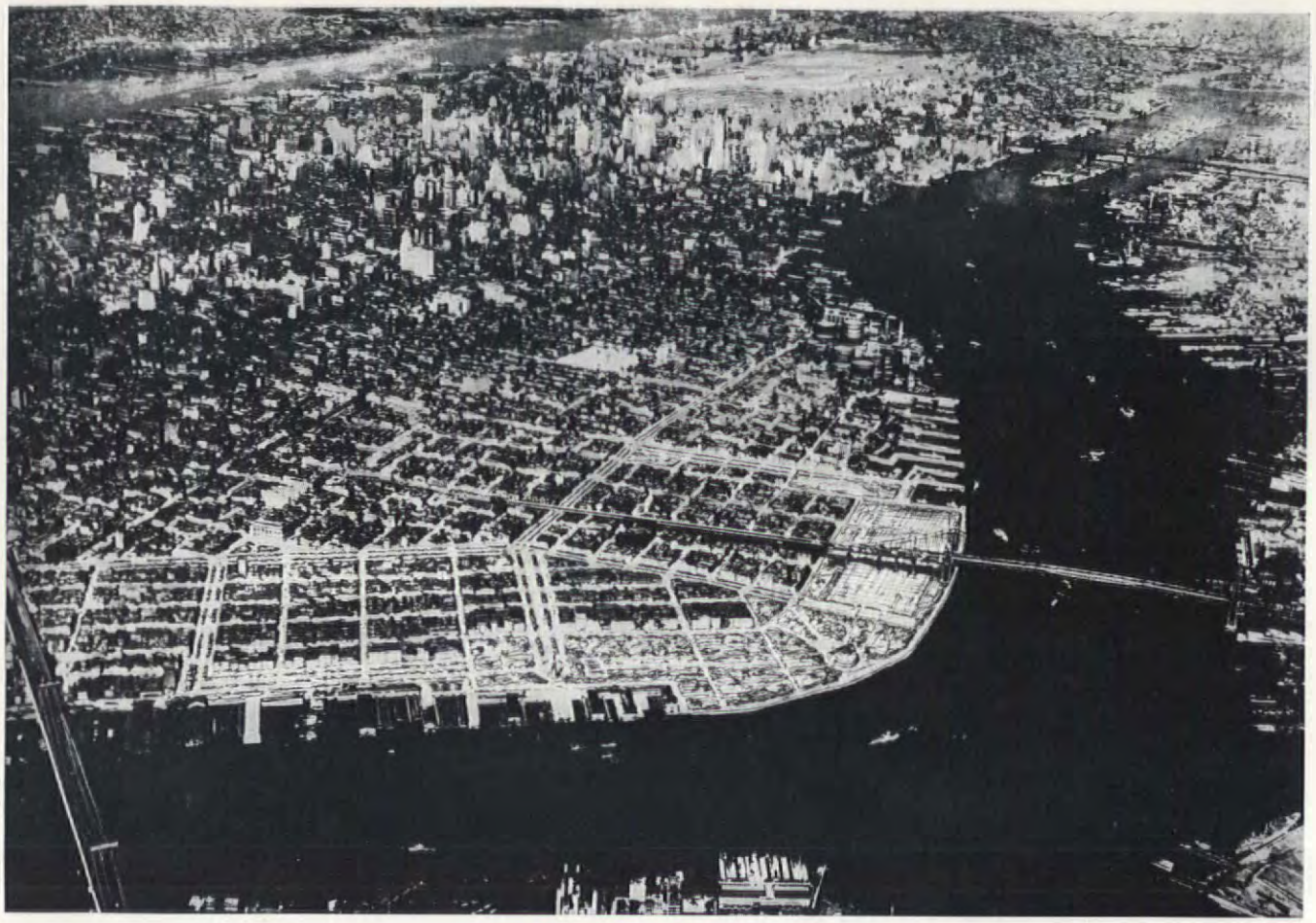
The State's Right to Limit the Use of Privately Owned Realty

The apparently unsurmountable difficulty lies in getting the great number of present owners of small parcels of real estate to cooperate on a great improvement project. Obviously there must be unified control of the property. The purchase of a large tract from a group of individual owners, each of whom is in the mood for recovering past losses through the profits of sale, is unthinkable because of the power which it places in the hands of the individual owner who refuses to sell. A most important step has already been taken in the attempt to get around this difficulty. Special legislation in New York State has been passed chartering special housing corporations under the supervision of a State Board of Housing and authorizing municipalities to extend to these corporations the right of eminent domain so that, where necessary, condemnation proceedings may be used for the assembly of property. To date condemnation has not been resorted to by any housing corporation.

The acquiring of land whether by open sale or by condemnation is such an expensive process and requires the tying up of such a large amount of new capital before any improvement is attempted that it has discouraged the hope that a systematic reconstruction may be undertaken on an economic basis.

Under the New York State Housing law and others modeled on it, the housing corporation which acquires property by condemnation must take the property no matter how high the award and yet the corporation finds itself limited by the law both in the rents which it may charge and in the dividends which it may pay. Both of these are reasonable provisions. Where the state takes property from one citizen and turns that property over to a corporation to own, obviously the exploitation of the property cannot be allowed. The use which the corporation makes of the property must be a public service and that service must be administered in the interest of the community. Housing laws recognize this principle.

The broad power of the state to regulate the use of property in the public interest has long been recognized. No citizen may maintain a nuisance upon his property, no citizen may build upon his



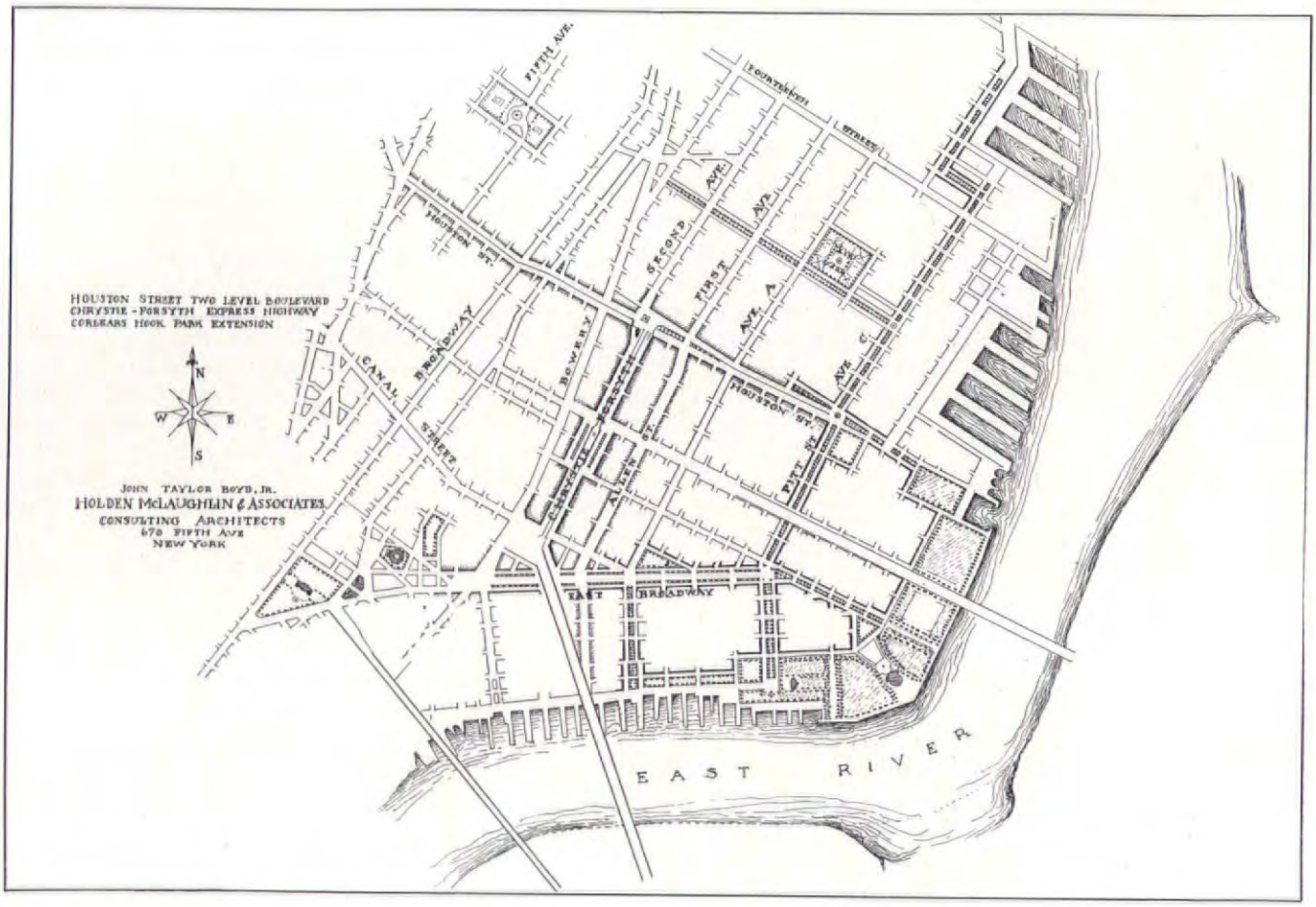
Airplane view of the Lower East Side of New York City, showing recommended arterial streets and waterfront park.

property in such a way that it is a fire menace or a menace to public safety. Today no citizen may build upon his property in such a way that he violates the established usage of the neighborhood, either as to the height of the building, the density of the land coverage, or the type of use to which the building is put. These principles have been written into our zoning laws and established by court decisions.

The state, however, has gone still further in the restrictions which it has imposed upon the control of private property. No citizen may build, even upon his own property except at his own risk, upon a site which falls within the boundaries of a street, road or public space that has been laid out on the official map of the community. The city can assure the preservation of a proposed site for a road or public space simply by putting it legally on the official map. When this is done the owner, so far as the city is concerned, is limited to such uses for that part of his own property as will make him a reasonable temporary return. Other states have followed New York by similar legislation although California has put a limit of five years upon the period during which property may be restricted by mapping. At the end of that period the municipality must take the property or abandon its plan.

The principles governing the regulation of private property by the state which have been established by legal sanction are of the utmost importance. Certainly, if the state can regulate property in a prohibitory way and if the state can take property necessary for public use and pay for it, it is to the interest of the state to obtain the public advantages sought in the way that is most economic and advantageous to the body politic. In practice it has been found that private owners have been willing to turn over their property at low cost or no cost at all in consideration of the advantages to be derived from improvements to be made by the state or municipality. On the other hand, if the state can obtain the same public advantage without any public expense whatever, it is justified in negotiating with private owners. The principle of special franchise for special public service has long been recognized.

Where the municipality through zoning and mapping has already limited the use which owners may make of their own property, it is not unreasonable for the state to permit the relaxation of certain of these restrictions provided the owners of adjoining properties agree voluntarily to develop their properties in such a way as to serve better the public interest. In simple words, if individual owners can be made to act together in such a way



Key plan for the rehabilitation. Areas between the arterial streets may be developed as district units or subdivided into units of desired size.

that individual rights will not be injured and at the same time the public interest will be better served, then the state can afford to grant owners, who agree to cooperate in such a way, special rights for development and a special franchise under which to act.

Benefit to Present Owners the Governing Motive for Assembly of Property

In the light of this logical proposal let us consider what might be accomplished through it for the rehabilitation of blighted districts. Perhaps the best-known blighted area in the world is New York's Lower East Side. Here is a district which during the period of unrestricted immigration served as the temporary home where hundreds of thousands of recent immigrants could find cheap lodging close to their own countrymen. Congestion made it possible for the antiquated tenement houses to earn rents greater than their condition warranted. The erection of more desirable buildings in other quarters of the city and the cessation of immigration have changed the economic status of the district. Now the necessity for improvement is recognized. Rents have declined. The property as a whole is unable to pay its own way. Many owners have been obliged to pay out money annually in order to keep their equities or have let their property revert to the owners of the mortgages rather than carry it at a loss.

The necessity of public improvements has been urged upon city officials, yet the property owners of the district have united in declaring that the economic depreciation of their property has made them incapable of bearing the cost of assessments for benefit. The city, on its side, although it has inaugurated several very important street widenings, has declared that wholesale improvements on the scale suggested could not be met out of the city treasury, unless a large share of these costs could be paid by local property owners who would enjoy the benefit.

Both city officials and present property owners are confident that improvements are necessary before the desirability of property in the district can be restored. Although he may be of a cooperative spirit, no property owner is willing to make the first sacrifice even though it entails the dedication of only a small strip of his frontage to a street widening. He is unwilling to see the property owners on the other side of the street make no sacrifice at all and yet derive a benefit even greater than himself who made the original sacrifice. It is comprehensible why a property owner in this state of mind feels that the city ought to do the job. On the other hand, it is reasonable for the officials of a city already close to the debt limit to

expect cooperation from its taxpayers. There is no question of the benefit that would be enjoyed by all present owners and the city as well if the conflicting interests of individual owners could be reconciled.

If the city is too encumbered to undertake the financial responsibility of rehabilitation it can delegate its powers to an agency capable of acting for it. For example, it would serve public interest for the city to grant to all owners within a given district the right to act together for their collective benefit and for the benefit of the city. The legal machinery would be difficult but not impossible. It would necessitate the creation of a district authority to act in the capacity of trustee for the interest of all owners. This agency might take the form of a real estate trust which would provide a pool into which each owner could put his individual interest in his property so far as ownership was concerned. He would then be a participating owner in the trust and would obtain in exchange for his isolated lot a proportionate share in the collective ownership enjoyed by the trust. Every owner, moreover, would retain the right to enjoy the fruits of ownership to an amount equivalent to the benefits which he was actually enjoying at the time of the pooling of interests.

The Mortgage Interest

No pooling of equities could be accomplished without consideration of the very large mortgage interests involved. Here again there are two factors to be considered: first, the income due as interest on the mortgages, and second, the repayment of the principal. The very nature of a mortgage, which has been made a legal investment for trust funds up to 50 and 60 per cent of appraised values, is a warning for caution. Savings, trust and life insurance institutions cannot afford either to take or to permit any action to be taken which would jeopardize their trust funds. Therefore, such action as is taken must be with their approval and must serve their advantage. Many of these institutions are faced with a problem today as to how best to handle depreciated properties which have already defaulted or are in danger of defaulting in their mortgage obligations. In an inactive real estate market, the forced sale value of property cannot be depended upon for security. If the holders of mortgages cannot sell at foreclosure at a price high enough to liquidate the mortgage, they are compelled to look to the real source of value, namely, the income-earning ability of the property. It is, therefore, to the interest of mortgagees to encourage any movement which will restore or improve the ability of mortgaged property to earn income. If the security of the mortgage can be improved by making it self-supporting, it may even be reasonable to grant a reduction of a point or half a point in the interest rate.

Fortunately, in the ordinary course of assembling properties by sale, the practice has grown up of spreading the mortgages upon the individual plots so as to form one new consolidated mortgage covering all the assembled property. A mortgage of this type may be held by a trustee and mortgage participation certificate issued to the various interested parties. It is possible at the time of making such agreements to take care of inequalities by discounting weak mortgages and readjusting the interest rate. In this practice there is the precedent for spreading and consolidating the old mortgage obligations upon depreciated properties. Indeed mortgage institutions may make an agreement to consolidate the mortgages a condition for allowing a mortgage to stand or for consenting to its renewal. At the present time the mortgage institutions hold the whip hand. So far as blighted areas are concerned, the additional security gained by consolidation is self-evident. It only remains to work out a pattern for consolidation which will secure the maximum benefits possible without loss of some of the very evident benefits in the system of dividing large mortgage funds into individual mortgages.

There is not space within the compass of this paper to discuss all the implications involved as well as the advantages to accrue through consolidation of mortgages in blighted areas. (It is proposed to take this up elsewhere and to discuss it in detail primarily from the point of view of the mortgage investor. Then it will be possible to bring into the discussion the comparative soundness of mortgage investments in old districts and in new districts with special emphasis upon district control as contrasted with lack of control or individual responsibility. Such a discussion will bring out the comparative insecurity of the individual mortgage upon even the well-constructed house in the hands of a financially strong owner, when unprotected by sound economic and social relationship to its neighborhood and to general housing needs.)

The Situation With Regard to Present Leaseholders

Where an assembly of property is undertaken for the purpose of reconstruction or reorganization the legal rights of present leaseholders are frequently found in conflict with the interest of property owners. Where property is assembled for a public purpose and condemnation is resorted to, leases are terminated under the law. Where, however, private property is assembled by purchase the situation is very different. Those interested in assembling property for Radio City in New York City were compelled to buy out present leaseholders. In several critical cases where long leases existed leaseholders were in a position to exact a price for the surrender of a lease greater than those interested in the assembly of the property were able to pay.

In spite of the fact that vacancies existed in equivalent properties located even as close as across a 60-foot street, there was no power to compel a holder of a lease to vacate his present premises and accept in exchange an equivalent property even though equally or more advantageously located.

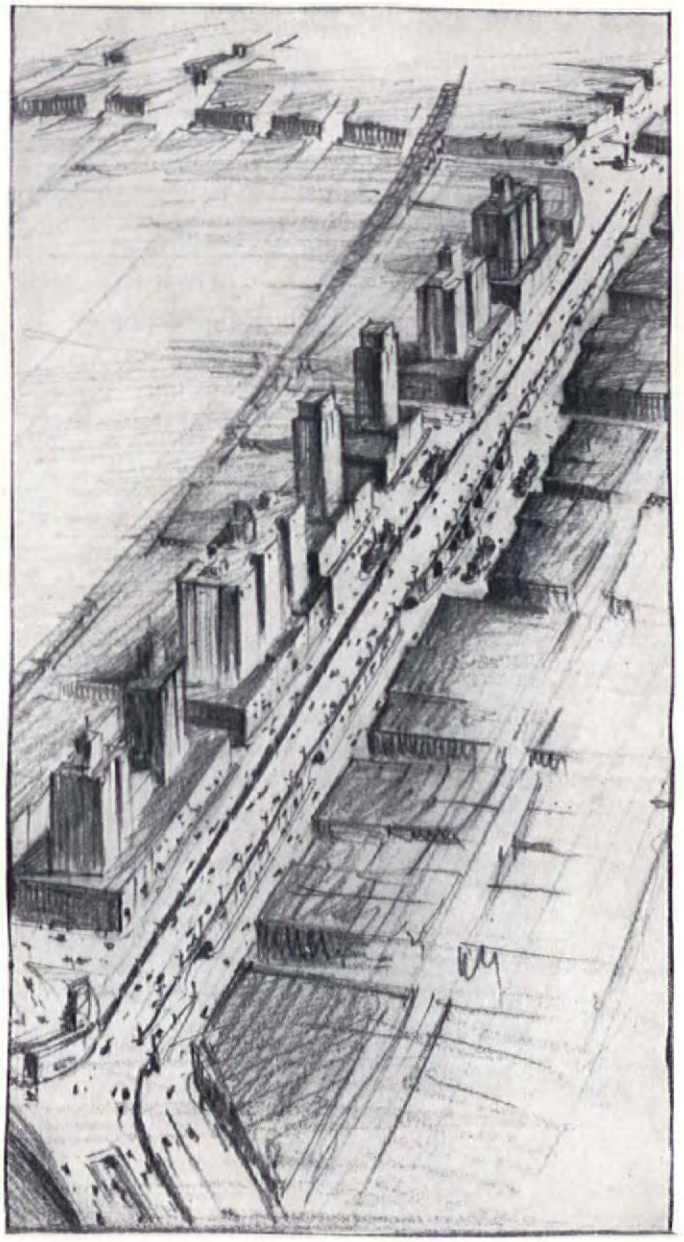
This difficulty can be circumvented by writing into leases clauses binding the tenant to accept substitute premises provided they are equally advantageous for his purposes or other clauses governing the surrender of the lease. In an enactment of enabling legislation, which will facilitate the chartering of district improvement associations or equity trusts to administer properties within a large area, provision should be made for an exchange of leaseholds to permit flexibility of administration and to prevent the exaction of a price for the surrender of a lease which, from an economic point of view, can jeopardize the success of the improvement.

The Transitional Stage

The immediate problem is the very critical transitional stage of the conversion of a blighted district into one which is economically and socially rehabilitated. During the transitional period there are two essential problems. In the first place the income interest of both owners and mortgage investors must not be jeopardized. In the second place, the cost of the transformation and in particular the cost of carrying the project during the transitional period must not roll up capital obligations greater than can reasonably be met by the economic operation of the property after the rehabilitation is complete. The immediate problem is, therefore, what are the owners of the equities and the mortgages of our blighted areas to be given in exchange which will satisfy their income requirements and give them a share in the ownership of the combined property? This should, of course, fairly represent their deserts and at the same time be economically possible.

The first difficulty will obviously be to overcome exaggerated notions of potential value. Market prices which in reality reflect desire rather than economic possibilities are frequently maintained only by the ability of owners to shoulder continuous losses in the expectation of ultimate profit through sale. In the case of certain advantageously situated properties greater expectations are justified even though these properties at the present may not be yielding a return on the investment. This potential value must be given reasonable consideration. It would be obviously unfair to establish arbitrary principles of valuation which would not allow due weight to be given to many varying considerations of ownership and real estate administration.

It is likely that detailed analyses will disclose many situations where present owners have been withdrawing greater sums from their properties than warranted by correct bookkeeping methods. In some cases properties which are actually losing money have been kept going by financial jugglery such as borrowing on junior mortgages or long delayed credits for materials required for maintenance. In other cases losses have been balanced by definite privileges enjoyed by individual owners, such as the possession of an advantageous site for a store location occupied by the owner, himself, at a merely nominal rental. There will undoubtedly be cases where scientific valuation will disclose operating deficits and possibly capital deficits so that it may be virtually impossible to set a valuation, unless it be a negative one, upon the equity. In cases of this kind the only solution may be for the Equity Trust to rent the property on carefully drawn long-term leases. In this way the burden of clearing the property of present encumbrances may



Perspective showing one of the suggested developments for the Chrystie-Forsythe Express Highway which will adjoin the Houston Street Two-Level Crosstown Boulevard. Industrial lofts and showrooms are recommended for the lower portions of the abutting buildings. Hotel towers may rise to the sunlight above. This new shopping center may also provide bus terminal and transfer station. Holden, McLaughlin and Associates, architects.

be placed upon the present owner. The privilege of converting the leases into equivalent trust shares at a future date can be reserved.

The Equity Trust should have the greatest possible freedom to secure immediate administrative control of all the properties within the district upon the most favorable terms possible. In order to arrive at terms which are equitable both for present owners and for the Trust a careful study of the present situation of all the individual parcels of real estate will have to be made.

System of Scientific Valuation

A system of valuation should be worked out which would be the result of appraisals made from different points of view, combined and weighted in such a way as to make the resultant final valuation equitable in the broadest sense of the word. The following considerations should govern:

1. The income record of the property should be reviewed over a period of years. The relation of gross to net income, as well as the administration and upkeep of the property during the period, should be studied. Its financial structure should be carefully analyzed.
2. The property should be considered for land value only, that is to say, location, area, frontage, etc.
3. The buildings or other improvements should be considered from the point of view of both original construction cost and present replacement value. Due allowance should be made for both depreciation and obsolescence.
4. The past record of taxation and special or general assessments against the property should be considered.

The results of each one of these considerations should be carefully tested by relating them to the total values of the blocks in which the individual parcels are situated and to the values established for the whole district under consideration. Resultant values should then be obtained not by averaging, but by carefully weighting the considerations in the light of the conclusions reached. It should be borne in mind that all values are relative and that the purpose of a valuation prior to the pooling of equities is to establish the ratio of the value of the individual equity to the whole rather than the setting of an absolute money value upon the individual parcel.

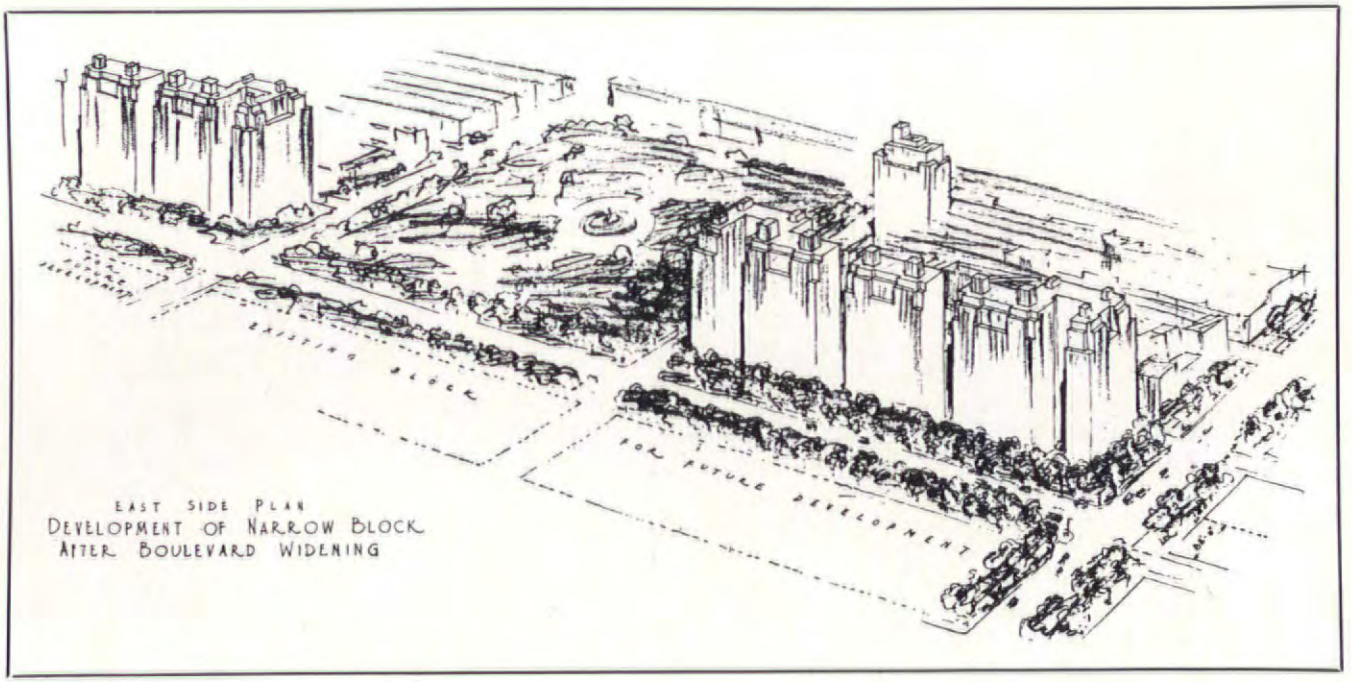
There are objections, of course, to the process of scientific valuation which I have suggested. It is said to be too cumbersome. It is said to be unnecessary. The suggestion has been advanced that it is far better to go out and buy the property in the open market in the usual way.

There are so many obvious reasons in favor of the establishing of equity valuations that it should not be necessary to name them:

1. To buy property in the open market requires a large amount of new capital. It should be illogical to contend that it is so easy to attract capital for the purchase of real estate that the delay and expense involved in analyzing the value of the real estate may be avoided.
2. It is essential before embarking upon a project for large-scale reconstruction to study carefully the economic structure of the project. This can only be done after a careful study of present values based upon present conditions.
3. If new capital is required in a reconstruction project a minimum amount of capital should be dissipated to compensate present owners for either the mistakes or the achievements of the past.
4. Only by a careful study of valuation and administration can the net rental equivalent of property be discovered and a method worked out of equitably compensating the owner for the use of his property during the transition period on the basis of income.
5. Through careful studies of valuation it is possible to determine the ratio of the value of individual parcels to the valuation of the whole district. It is possible after scientifically determining these ratios to issue certificates representing fractional shares in the whole property in exchange for the deeds to individual parcels and thus consolidate the entire property without capital expense except for the cost of the valuation studies.
6. The issue of Equity Trust certificates places in the hands of the original owners a form of security which should be readily marketable, and which could be exchanged without altering the capital structure of the real estate represented, as is the case where realty is exchanged by direct sale.

Economies of Administration

Scientific valuation as the basis for pooling equities opens up an entirely new method for the administration of real estate. Economies of administration and physical upkeep may at once be introduced. The Equity Trust becomes responsible to its participant owners for increasing income and lessening outgo. Its first task is to increase *net* income. It is concerned with the net income of the whole district. It need not waste its resources in the vain attempt to eke out income from individual parcels which have proved unprofitable. It is free to concentrate on those parcels that can immediately be made to produce greater profits. The objection on the part of mortgage owners to the demolition of unfit buildings is removed because the consolidated mortgage can be guaranteed by the whole district both as to principal and interest. As has already been pointed out, this guarantee should lead to the reduction of the interest rate and make possible the wiping out of discounts previously imposed because of the indefinite risks encountered through the chaotic and competitive individual op-



The new Tompkins Boulevard, showing a street-widening project developed with tall apartments upon a narrow block and with desirability assured by the proximity of the park. Holden, McLaughlin and Associates, architects.

eration usual in depreciated neighborhoods. Economies of this type are possible just as soon as the previously conflicting ownerships are merged in a common interest. It can be done with a relatively nominal investment of new capital.

A district which is now subject to continual expense for reappraisals and refinancing should not find the expense of one really scientific valuation burdensome; nor should such a district continue to suffer from the drains of wasteful individual management because of the preliminary cost of setting up an Equity Trust capable of centralized economical administration. Present owners should not be led to expect immediate benefit in the form of increased income due to the economies of group management. During the transitional period, distributions from new income should be kept to the minimum and efforts concentrated upon building up a working surplus out of earnings.

Use of New Capital

The Equity Trust offers other potential benefits which should be of far-reaching importance. In the average realty projects a large proportion of the invested capital is consumed in financing the purchase of land. This price must of necessity be high enough to induce present owners to forego their hope of future profits. Hence when land is purchased in the open market at least a portion of its potential earning power is discounted in advance. In the case of the Equity Trust there is no necessity for discounting potential earnings in advance. The participant owners are all alike interested in keeping both capital values and annual charges due to capital as low as possible.

The problem before the Equity Trust is land utilization, not land purchase. Every cent of new capital that is put into the Trust can be applied to improvements which will increase the earning power of land already acquired.

New capital must, of course, be attracted if a really comprehensive rehabilitation is to be undertaken. This new capital cannot be attracted into any project which is not basically sound from an economic point of view. Hence there must not only be a systematic, scientific valuation based upon the present situation, but there must also be a comprehensive plan for the replanning and rebuilding of the district and this plan must be founded upon sound economic principles. Speculation and exploitation must play no part in reorganization of the district and the administration of the Equity Trust. New capital may be obtained by borrowing if the economic situation warrants or it may be admitted to a direct share in the Trust.

It is perhaps reasonable to point out that the marketability of these trust shares should be increased in direct proportion to the success of the management of the trust in increasing net income and in building up a working surplus. The price of the trust shares may increase and the owners of the shares may directly benefit thereby and yet the economic organization of the property will not be disturbed by a change in the price of the shares. This is to be contrasted with the situation produced when the equity representing an individual parcel of real estate is sold at a profit. Immediately the relationship between income and invested capital is altered, frequently to such an extent that property will not carry at a profit and must be re-sold or re-financed, or frequently completely rebuilt, simply to justify the price paid.

Public Improvements

The most far-reaching benefit which can be realized through the Equity Trust is the simplification of the machinery for public improvements. Prior to the pooling of equities any proposed public improvement immediately accentuated the conflicting interests of individual owners. Each owner wanted the improvement made in such a way that his own individual plot was benefited and yet he was equally eager to shift as much of the cost of the improvement as possible to other shoulders than his own. The tendency to shift the burden to the municipality has made it necessary for the municipality to consider the varying merits of the various demands made upon it and, in many cases, to limit its assistance to those projects which promised the greater political advantage. Individual owners of small plots by their failure to see a common interest and by their insistence upon their own individual desires have made public improvements difficult and unnecessarily expensive.

Under the administration of an Equity Trust a district may study its own needs and plan for its own future. Such areas as practicable may immediately be cleared for public improvements without any capital expense for land. For example, an entire block measuring 200 by 600 feet may be rebuilt in such a way that the ordinary drab 50-foot street on which it fronts may be widened to a 120-foot boulevard. The change may be made provided only that, within a reasonable time, the net earning power of the entire district is increased sufficiently to pay an adequate return on the new capital. This must allow for interest charges, taxes and reasonable depreciation. Since the benefit of all improvements will accrue to the whole district and since it will be impossible for individual owners to appropriate or exploit the benefit desired from improvements it will be possible to make these improvements without loading individual properties with burdensome charges arising from assessments either for damages or for benefits. It is obvious, of course, that improvements must be reasonable and must be in accord with a plan well thought out in advance.

It should be obvious that with reasonable forethought the Equity Trust should be able to set aside certain properties for immediate improvement without sacrificing the present income derived from them. It should be possible to offer equivalent accommodations to present tenants in other properties within the district. There should always be the proviso that desirable tenants who cooperate may be rewarded with the original choice of improved localities as soon as available.

Limitations

No comprehensive plan of the rebuilding of a blighted area can be carried out except as a matter of slow and orderly progress. It is altogether probable that it would be unwise for the Equity Trust to attempt to carry the whole burden of reconstruction. It should be pointed out that the primary purpose of the Equity Trust is to increase the net earning power of the district as a whole. The pooling of equities should be in fact the pooling of interests. Conflicting rivalries which have been producing such dangerous economic waste in the past must be eliminated. So long as the Equity Trust maintains control and secures the advantage due to administration for a common purpose it may delegate to subsidiaries the development of individual units under the supervision of the Trust. There is a great range of possibilities.

Subsidiary corporations may be formed to build and develop certain of the improvements needed. The ownership of the stock of these corporations may rest entirely with the Equity Trust or may be drawn from independent sources. The Equity Trust may lease a parcel of land for development by independent owners or by corporations and thus secure to itself the desired income from ground leases and by the contract of the lease maintain the control it desires of the development.

Economic Necessity for Pooling of Equities

Although there is no room within the scope of this paper for a broad discussion of the economic situation in real estate, it would be incomplete without reference to the economic necessity which is compelling unified action on the part of those interested in real estate located in blighted sections, whether they be owners, the holders of mortgages, or tenants. Nothing but a sudden influx of population, such as a wave of immigration comprising largely the types of families driven by economic necessity and limited in their choice of homes, offers any hope to our blighted districts of increasing their income on the basis of individual administration.

It must be recognized further that, even were a wave of sudden immigration possible, which might offer a hope of restoring the population of New York's Lower East Side with this great influx, there would be a choice of site in some of the newer communities which have recently been opened up on the outer districts of the city. These newer districts have been undertaken on the basis of sale and turn-over and they, too, are already feeling the economic pressure which will compel congestion. Many of them are already taking on the aspect of blighted districts and they will compete in the future with the older districts for population and for tenants.

The situation which confronts the blighted districts, especially those which are centrally located and on potentially valuable land, is that they cannot carry on and that they cannot continue to live upon borrowed capital unless they can restore their earning power. It remains for the owners of blighted districts to recognize their situation and to pool their interests before further economic damage is done. No amount of study should be spared which may help them to organize effectively for the restoration of their earning power.

NEW HOUSING FOR PHILADELPHIA SLUMS

EDMUND G. KRIMMEL; JOHN GRAHAM, JR.; PURVES AND DAY; TILDEN, REGISTER & PEPPER,
Architects Associated for Model Housing

A group of architects in Philadelphia has been organized to study slum clearance and better housing. This action did not result from the present depression but from long advocated needs. Many of the municipal activities have led to the erection of buildings of non-revenue producing character. The deteriorating homes are falling in value and bring small return to the city. Endless rows of monotonous houses built since the war are cheap and tawdry; many new districts of homes are nothing more than potential slum areas.

To rehabilitate the blighted areas with desirable housing accommodations for low-wage earners is the program set up by these Philadelphia architects. Their methods of procedure—the study of incomes and rentals, the survey of available properties, the planning to meet local needs, and the efforts to secure State laws enabling slum clearance—are described in this article.

Philadelphia has acres of deteriorating residential areas which are growing in size, and public improvements are unwittingly aiding them on their downward path. No effort has been made to bolster up good neighborhoods which have started to decline. High speed transportation lines—built with the taxpayers' money—aid the people to flee from the blighted areas faster than the central commercial realty can develop and absorb them for other uses. The people are in no proper way encouraged to stay within the city.

The shifting of recognized respectable residential districts has always been accompanied by less municipal interest in the old districts, less policing, less enforcement of laws. The old houses built for the comfort of one family had a garden and open spaces. When they were deserted for more fashionable quarters they were re-occupied by many families and the open spaces were built up with cheap tenements, offering even less convenience and comfort than the original houses. Each movement of the respectable residential districts has left behind a trail of slums.

Disposition of Slum Areas

The first study of the problem for correction of conditions was disheartening; the areas were large and appeared in numerous sections of the city. An advantage was seen in attacking the oldest slum areas, those nearer the municipal center. The central towering mass of the city, with its accompanying high property values, makes it prohibitive to consider corrections within the actual hub of the city. But just beyond the hub there is a band of blighted property fast receding in value, all but encircling the center city. Our first problem was to consider what was the best disposition to make of these areas, what future could be expected for them.

The many large improvements taking place in the center of the city were reviewed. The new location of the Pennsylvania Railroad Station and the placing of the new railroad tracks underground will mean the removal of that existing elevated railroad, the infamous "Chinese Wall," and will make available large parcels of undeveloped property. The vacated Baldwin Locomotive Works places eight more central city blocks on the real estate market and the location of all this property between railroad terminals and high speed transportation lines makes that area ideal for commercial development. Many blocks bordering the

PHILADELPHIA IMPROVEMENTS AND AREAS AVAILABLE FOR IMMEDIATE DEVELOPMENT

A. New Pennsylvania Railroad Station. Under construction.
B. New Post Office. Under construction.
C. Baltimore and Ohio Railroad Station. A new river drive will be extended on both sides of the river and developments along the drive will follow.
D. Parkway to Fairmount Park. Tracts of undeveloped land on both sides of drive suitable for high-rental apartments.
E. Location of abandoned Baldwin Locomotive Works. Eight city blocks extending to Broad Street ready for commercial development.
F. New Pennsylvania Railroad Suburban Station. New Pennsylvania Boulevard to connect this station with New West Philadelphia Station will call for development of obsolete property on both sides. Lower white blocks show Pennsylvania Railroad elevated tracks which are to be abandoned.

Parkway have long been awaiting development for high-grade apartments. Along the established freight lines and river front there are opportunities for splendid manufacturing belts. Our survey proved that it will take many years before the demands of the growing city will reach back into the blighted areas to absorb them for commerce, high-grade apartments or industrial needs. For this reason the property in these areas has no speculative value and its only use is housing, but better housing than exists there at the present time.

Desertion and Rehabilitation of Slum Areas

Years of service and neglect of reconditioning have turned these properties into mere shells of buildings, entirely lacking in sanitary necessities, inadequate in heat and lighting, many of them dependent upon court hydrants for their only water supply. A rent survey made in 1929, of a typical slum area, showed that 71.7 per cent of the houses lacked indoor toilets. The narrow, damp courts are filled with filth, many of the empty houses are boarded up and those that are not have had all the windows smashed and the interiors gutted, adding to the distressing appearance of the neighborhood. Only dire poverty can force respectable families to stay in such districts. The houses stand today, breeding places of disease and crime.

Whether former inhabitants of these districts could be induced to rehabilitate these districts was a problem which gave us a little concern. Agencies, still in touch with families who had moved from the slums, gave encouraging reports. Among the clerks, the watchmakers, the mechanics, the laborers, city workers who moved to outlying districts, many regret their move and would gladly return if proper quarters were available for them. They long for the nearness of city life, the chance to walk, in a short space of time, from their place of work to their homes. The long hours spent on trolleys now rob them of much leisure time. These reports agree with experiences in London, Amsterdam and other European cities, where efforts were made to induce workers to live in industrial villages outside the city. Many of the European city dwellers, who had been transferred to the villages, soon returned to less comfortable quarters in the city, so proper accommodations had to be provided for them.

Reconditioning of Old Houses Not Practical

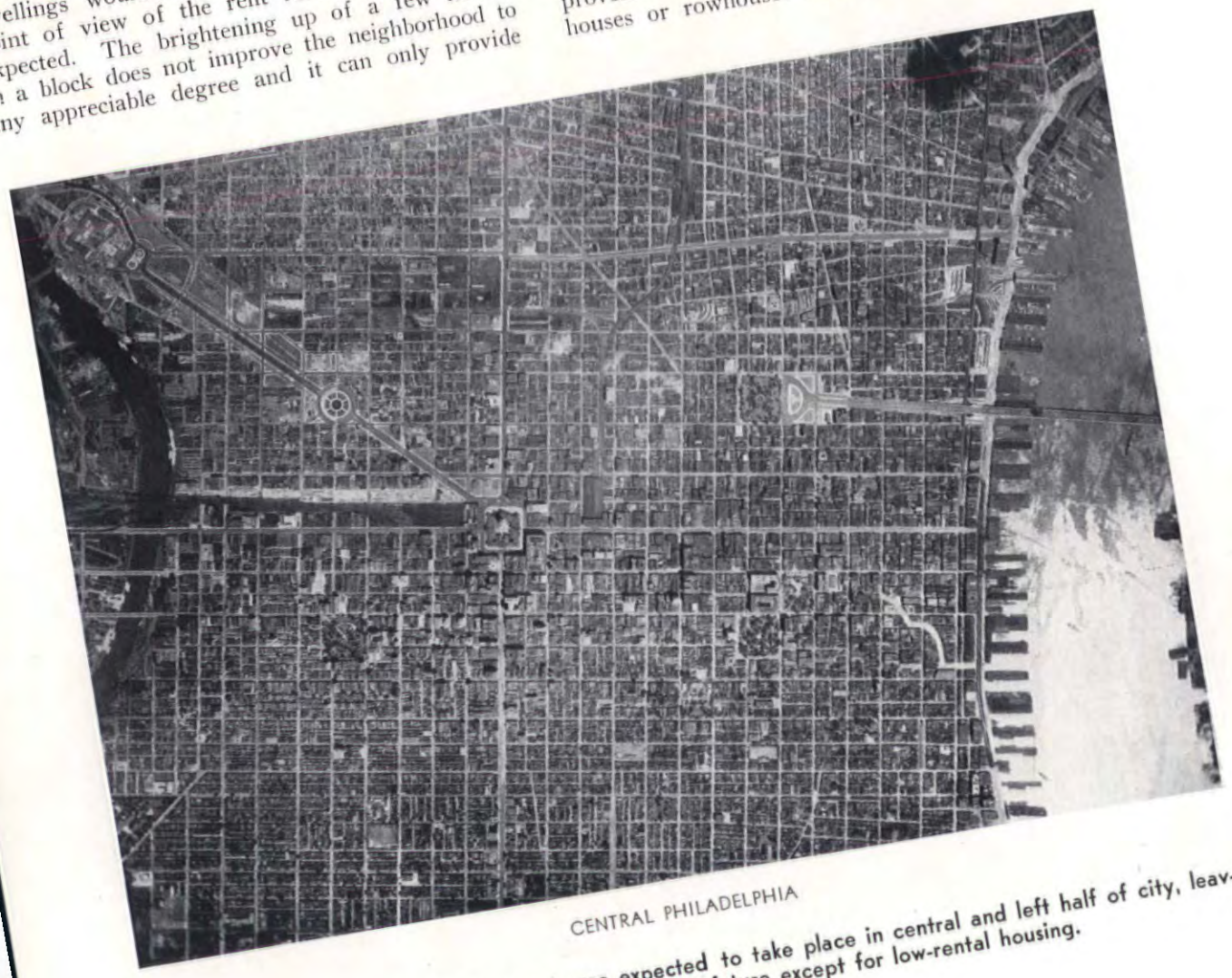
An attempt was made to plan for the reconditioning of the existing buildings, to prove that crowded, overbuilt sections of a block could be torn down and so provide the needed open spaces for the circulation of air and the admission of sunshine to the remaining buildings. This mode of attack soon proved to be of small value in obtaining adequate readjustment of housing conditions. Buildings, even after the expenditure of considerable sums of money on their "improvement", would fail to warrant financially the effort that had been made. The problem is far too great to be capable of solution by sporadic and incompleted attempts. Today property values are receding each year with no visible hope of improvement and the dilapidated condition of these old, worn-out buildings does not encourage the present landlords to repair them and none other than a philanthropic group can undertake to do it. The cost of replacing the decayed timbers and flooring, replastering, and offering the sanitation required in the city dwellings would be economic suicide from the point of view of the rent return that might be expected. The brightening up of a few houses in a block does not improve the neighborhood to any appreciable degree and it can only provide better quarters for the type of person forced or content to live in the midst of distressing conditions. Such altering of old houses is not enough of an improvement to induce the former inhabitants to return to these quarters.

Type of New Housing

Convinced by all of our investigations that the majority of the buildings in the slum areas could not be reconditioned, we sought the type of housing that would quarter people properly and, given the proper amount of open space under any sound financial plan, would offer a fair return on the capital invested in the project. The cost of buying in old properties and their demolition raises the price of the land to be built upon to between $1 and $5 a square foot, far too high a price to warrant the rebuilding of individual or row type of two- or three-story houses. The only type of housing that could be erected was the multiple dwelling type, or apartment.

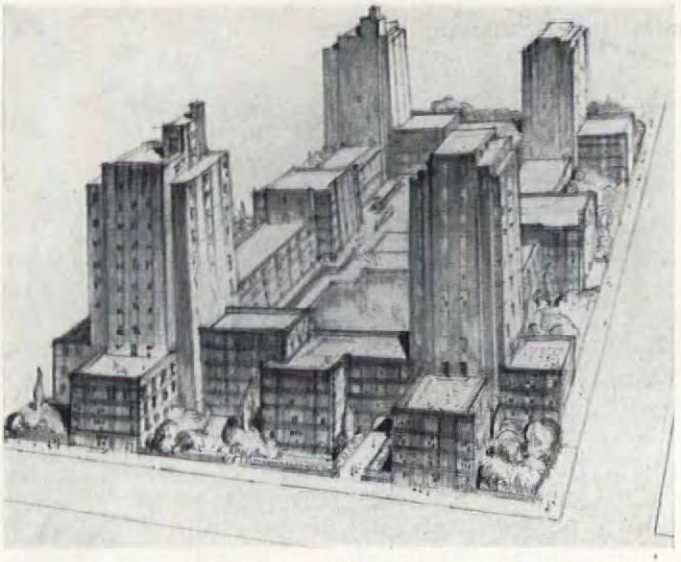
Survey of Housing Preferences

The comfort and conveniences that can be offered in the multiple type dwelling have long ago been proven. Its advantage over closely built individual houses or rowhouses is a question of individual



CENTRAL PHILADELPHIA

All important commercial developments are expected to take place in central and left half of city, leaving the old right half (to the east) no future except for low-rental housing.

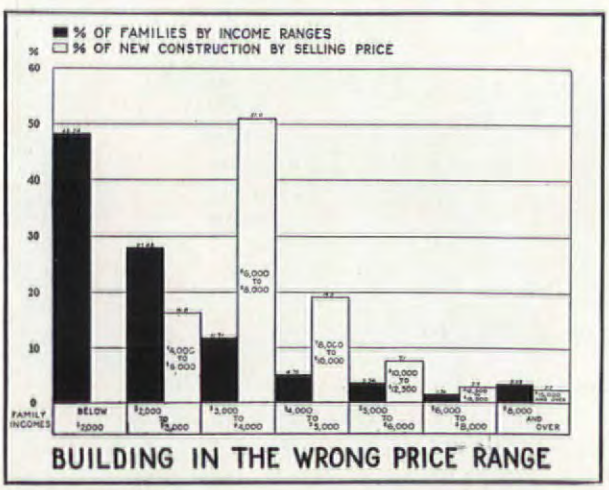


A preliminary scheme in which each city block would have four apartment towers providing high rentals to make possible low rentals in the lower structures. This combination was later discarded.

preference or prejudice. The increasing popularity and absorption of quarters in apartments built for high-salaried groups in Philadelphia proves that for those groups the advantages of multiple type dwellings must outweigh any disadvantages. The only apartment for low-wage earners ever built in Philadelphia has been a failure, but it was built many years ago; it is dingy, offering few conveniences; it is more of a tenement type and cannot be classed in the same category with modern multiple dwellings; its failure cannot be taken as a criterion. However, to make certain that low-wage earners would prefer to live in apartments where there are the conveniences we propose to offer (air, sunshine, heat, open space for gardens), a survey is being made of the class we are aiming to rehouse.

Building Has Been in Too High a Price Range

The Philadelphia Housing Association has investigated very thoroughly the housing condition in this city. It points out that during the past wave of building too much housing space was provided for the higher salaried groups and many low-wage earners were encouraged to assume the burden of carrying houses too expensive for them; with the owners unable to continue payments, the properties fell into the hands of the Sheriff. During the post-War wave of building practically no new quarters were provided for that very large class, the low-wage earners. The accompanying chart, reproduced from the Philadelphia Housing Association brochure, gives a graphic picture relation between salaries and housing accommodations provided.



BUILDING IN THE WRONG PRICE RANGE

Rental Survey

What rentals could be expected from the low-wage group? In these blighted districts it is not uncommon to see signs on houses offering furnished rooms for rent at $2 per week. Four-room to six-room houses rent from $15 to $35 a month; certainly not encouraging figures. But the experience of every one interested in housing has pointed out that new housing cannot be provided for the very poor under any system except philanthropy and subsidy. European countries have not been afraid to face the problem and every branch of government has contributed towards the support of housing for the very poor. Our study proved to us that the workers earning between $1,200 and $2,000 a year can be offered better housing on a commercial basis. By eliminating the worst buildings, and rehousing the group that can be aided, better housing will be available for the very poor.

In an effort to provide for the lowest class of wage earners a plan was devised so that every city block would have four towers of apartments, placed near the corner of the block, in which would live the higher-wage earners. The center of the block was an open area around which, connecting the four towers, would be four-story walkup apartments or individual houses for the very low-wage earners. The higher rentals in the towers would make possible lower rentals in the lower buildings. But the tenants in the towers might object should they discover that they were paying higher rentals to help support housing for the low-wage earners. The towers were oriented so that long morning and late afternoon shadows would be cast over long, low roofs; the short high noon shadow would be cast across a short, low roof and with this arrangement the minimum amount of shadow from the towers would be thrown in the open court and never on the buildings on the far side of the court. In general, however, the three- and four-story walkup and the five- and six-story elevator types of apartment building offer the needed return on the investment. Any additional height absorbs capital that should be spent on correcting neighboring blocks.

Planning To Meet Local Needs

The tastes and demands of the incumbents of various cities differ to a marked degree. Rooms serve

one purpose in one city, a different purpose in another; the social life must have expression in the arrangement of the rooms. Since most families of wage earners in Philadelphia eat in the kitchen the provision of a dining room would be wasted in plan. But the kitchen, on the other hand, must be large enough to serve as a dining room as well, and an adjoining room be available for use as a dining room should this service be needed. Philadelphia, being an old city not subjected to a great movement of its workers, finds its people with large family connections and provision must be made for the entertainment of the family visitors.

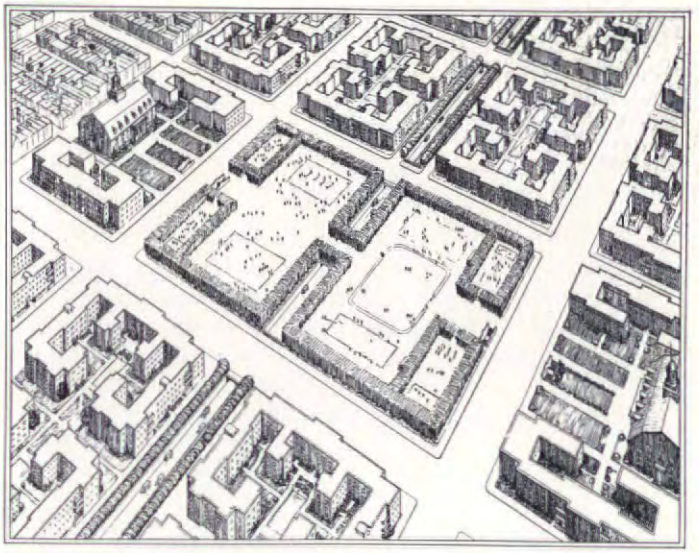
Large Schemes Necessary

Having come to a solution for the disposition of the old slum areas and the type of housing to be used in their rehabilitation, we studied the chance of success of such undertakings. New York is so formed that a single block of model housing can be developed in almost any part of the slum areas and be assured of its immediate success, but this is not true in Philadelphia, nor has it proven to be the case in Chicago, where a similar undertaking has not been very successful. A single block of model housing erected in the middle of a Philadelphia slum area, no matter how attractive or well-built, would be doomed to failure, because of the blighted sections the tenants would be obliged to walk through to reach their new quarters. Instead of working from the inside, we must start from an existing recognized respectable district or from wide thoroughfares on which people can safely travel. Only a large undertaking in a slum area could reasonably be assured of success. Entire new communities must be established to offset the blighted character of surrounding properties. In fact, tracts combining ten or twelve city blocks should be rebuilt in one operation in order to warrant the establishment of a city playground and other community features. These features must be included in order to insure the proper atmosphere for the entire group of buildings.

Enabling Laws Needed

Assembling of many small parcels of property, even in one city block, is a risky undertaking. The assembling of many city blocks would mean subjecting the buyer to robbery. No matter how much the desired property would be in need of destruction, no matter how good the purposes of offering better housing, no one could be assured that sharp speculators would not force up the value of the property needed to levels at which it would be impossible to offer new quarters to low-wage earners. We found there were no laws to aid us.

We remembered housing boards and bureaus set up in Europe, the laws given them to condemn unhealthful housing and the many plans that were adopted. In London two systems were followed. An owner holding property that was condemned as unhealthful was ordered to destroy the property at his own expense. If unhealthful property was within an area planned for model housing the property was seized and the owner reimbursed for land value only.



A four-lane high-speed road below the city street level could be built through existing slum areas. The model housing developed at the same time could be given the proper relation to parks, playgrounds, schools and social service buildings.

New York State has a housing law and during the several years of its existence it has been amended from time to time. It offers many things we needed and, believing that our legislative body would accept a bill based on an existing functioning law in another state, a State Housing Bill was drafted for the State of Pennsylvania, similar to the New York law. In our campaign for support in the legislative body we pointed out that slum clearance was the one enterprise that could be encouraged during a depression; an enterprise that would not interfere with already existing and suffering enterprises. Every other field of operation had been overbuilt: we had plenty of banks, office buildings, theaters, high-rental apartments and industrial plants. Our past building boom provided too much of everything but proper housing for the low-wage earner. The speculative builder has never been attracted to slum clearance. The movement would be the proper rehousing of the people, not the building of additional quarters. The bill became a popular one and endorsed by many groups. It passed the house with no more than fourteen votes against it and was passed in the Senate without a dissenting vote, but the Governor vetoed the bill because of a defective title and our program received a temporary check. Since then we have been consulting and meeting with many groups—Housing Associations of the State, of Philadelphia and Pittsburgh, Mr. Frederick Bigger, architect and city planner, and Mr. Charles S. Lewis, executive secretary of the Buhl Foundation of Pittsburgh—who have contributed valuable suggestions which have been incorporated in a revised bill to aid housing throughout the State. A report

has been submitted to the Governor showing the benefits that would accrue from a slum clearance program, the number of men who would be employed on the construction and in the industrial plants manufacturing building materials.

Housing In Relation To the City Plan and Budget

Since good housing is the background of every city, bringing assured tax returns for the existence of the municipality, offering respectable quarters to aid the morals and character of the inhabitants, more consideration should be given it in the city plan. It is the one class of property that should be nourished and protected with adequate district and zoning laws. Its neglect has led to the decline of many municipalities. There is little sound reasoning in assuming that a city can afford to extend new streets, sewers, water systems and offer fire protection in newly opened sections in the hope that the increase in accessible properties will warrant the cost of improvements when, at the same time, older sections have property receding in value. More returns could be gained by a municipality if it kept existing areas attractive and livable by making the necessary slight improvements to already established streets and services. The Bureau of Municipal Research has made a report on the expense and income of the city in newly developed districts. The servicing and improving of one city block containing thirty-one houses costs the city $7,600 a year and the income from taxes on the property is no more than $1,800 a year. Apartment houses in such neighborhoods immediately increase the return to the city because of their higher value per square foot of coverage.

Traffic Through Housing Belts

Of such importance is housing that it should be given its proper relation to all the elements entering into city planning, industrial and shopping districts, transportation and traffic arteries. The gridiron plan of Philadelphia was not designed for the convenience of the automobile. Any accommodation to be given this recent mode of transportation can no longer find a place within the active hub of the city, but because blighted areas lie just beyond and nearly circling the commercial area, arteries for high-speed traffic and distribution of traffic could be provided for in these areas together with the rebuilding of the slums at great saving to the municipality. High-speed streets could be lowered below grade and circle the central city as a canal, crossed only by bridges at street intersections, and allowing for the convenient entrance and exit of traffic at the principal thoroughfares. Such a suggestion has been offered to the City Planning Commission so that efforts at better housing could be linked with efforts at a better city plan, and that expenditures in one direction would be made lighter by the investment in the other and each improvement would enhance the effects of the other. The city could utilize a part of these blighted areas for the needed relieving traffic lanes, model housing could follow and the two projects executed at the same time would greatly reduce the cost that would accompany separate programs. The sinking of high speed lines along low-rental housing districts would assure the safety of the children and dwellers in the neighborhoods.

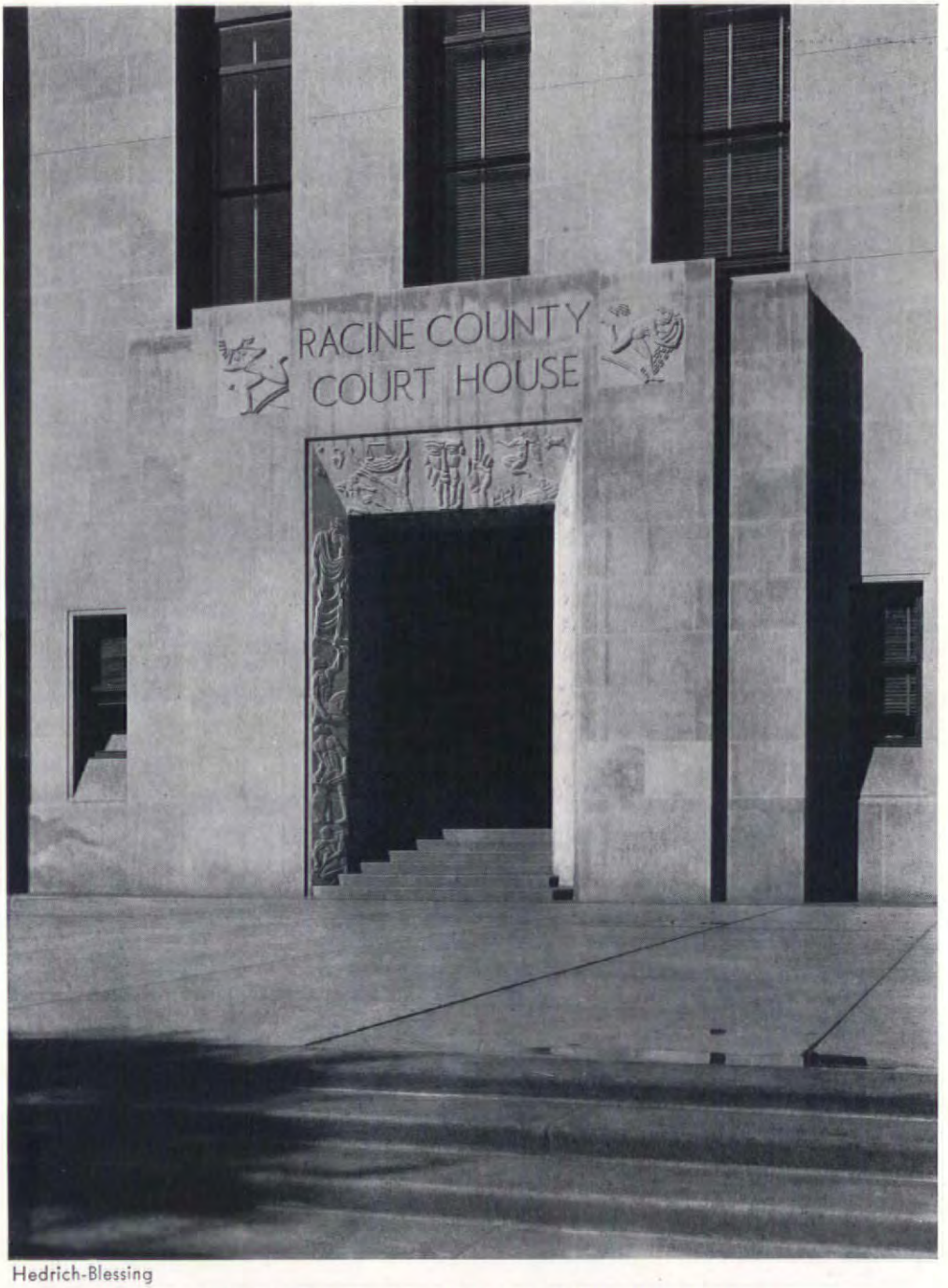
Slum Clearance and Unemployment Relief

The need for better housing is apparent. In order to carry out the object of the program—to secure good housing at low rentals—the most opportune time to enter into the work is during a period of depression, when property is low in value, when materials are low in cost and men are in need of work. To prove that a slum clearance program could be adopted as an employment relief measure we have listed the number of men who would be given employment on every city block destroyed and rebuilt, the length of time they would be employed and the amount of wages paid to them. A survey made by the Department of Labor and Industry at Washington in different parts of the country revealed that of the total cost of residential construction 48 per cent goes to pay the wages of the men employed at the place of construction. We also listed the number of men who would be given employment in the transportation and in the manufacturing of the materials used in the construction. With this information we could show that every five dollars invested to earn 6 per cent would draw ten dollars more into the project in the form of mortgage money and that nearly all of the five dollars invested as equity would go directly for the salaries of the men employed on the site.

Much criticism has been raised against the inadequacy of public works to relieve unemployment on the ground that of the large appropriations made, too small a proportion reached the laborer. We outlined a program in which all State or Federal funds appropriated would go directly for wages. It was proposed that the State or Federal Government loan to Limited Dividend Housing Companies, organized under State control, one quarter of the total cost of a housing project at the same low rate of interest available to them; the balance of the equity needed, about one twelfth of the total cost, would be raised from private capital in the communities where the slum clearance program was to be carried out. Under such a plan every million dollars loaned by the Government would enable a four million dollar project to get under way and this amount of work would employ more than three thousand men on a half-time basis over a period of nine months to a year. Every dollar of Government money loaned would be sure of going to the laborer. Leaders have been advocating similar plans and Federal or State Governments may eventually enter into them. No greater stimulus could be given the movement to rid our cities of their disgraceful areas.

PORTFOLIO OF CURRENT ARCHITECTURE

FEBRUARY 1932



Hedrich-Blessing

RACINE COUNTY COURT HOUSE, RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

OTHER BUILDINGS ILLUSTRATED IN THIS PORTFOLIO:

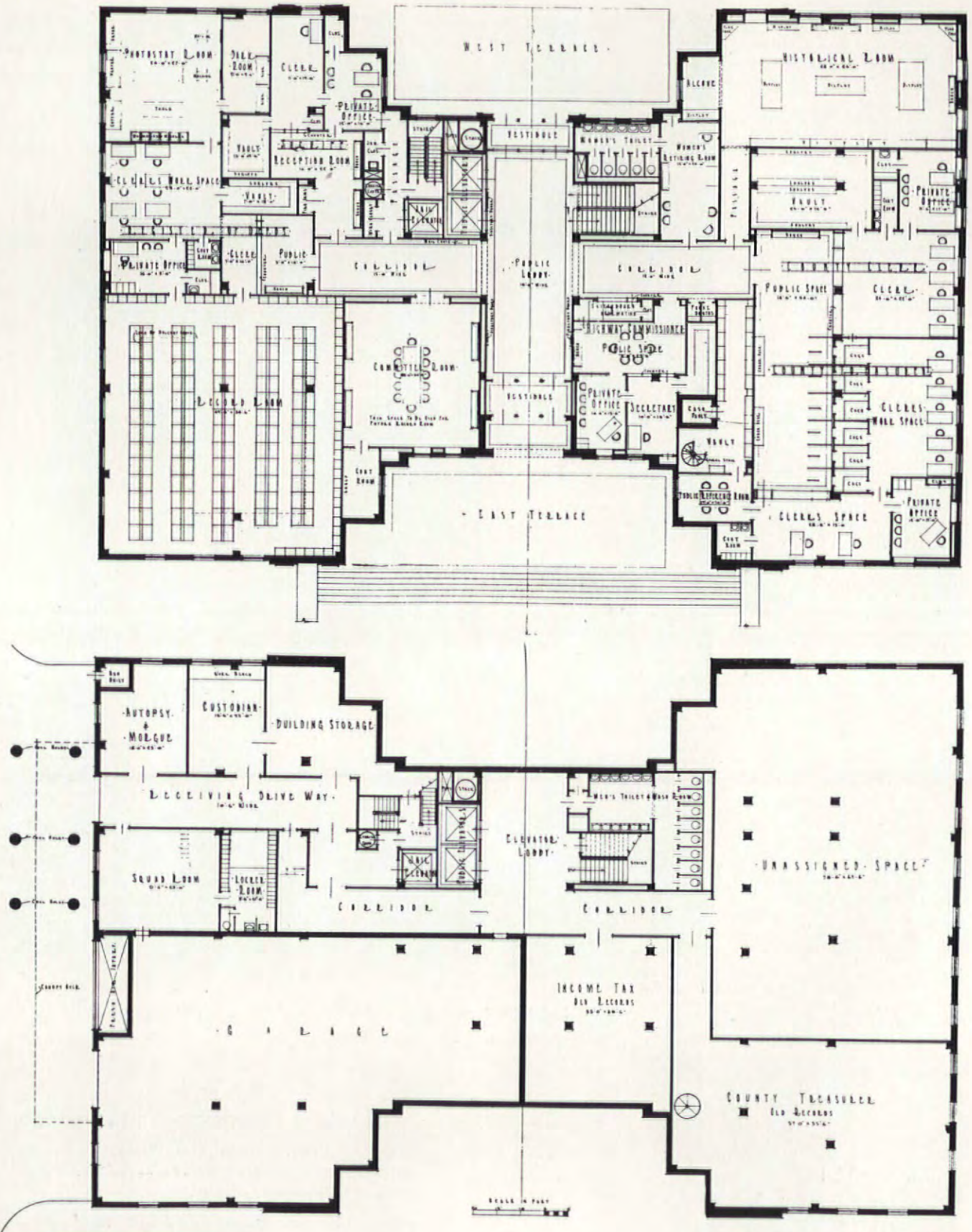
GIDEON F. EGNER MEMORIAL CHAPEL, MUHLENBERG COLLEGE, ALLENTOWN, PA. — Frank R. Watson, Edkins and Thompson, Architects.

HOUSE OF J. W. DEAN, KNOXVILLE, TENNESSEE — Barber and McMurry, Architects.

137 EAST 57TH STREET LOFT BUILDING, NEW YORK CITY — Thompson and Churchill, Architects.

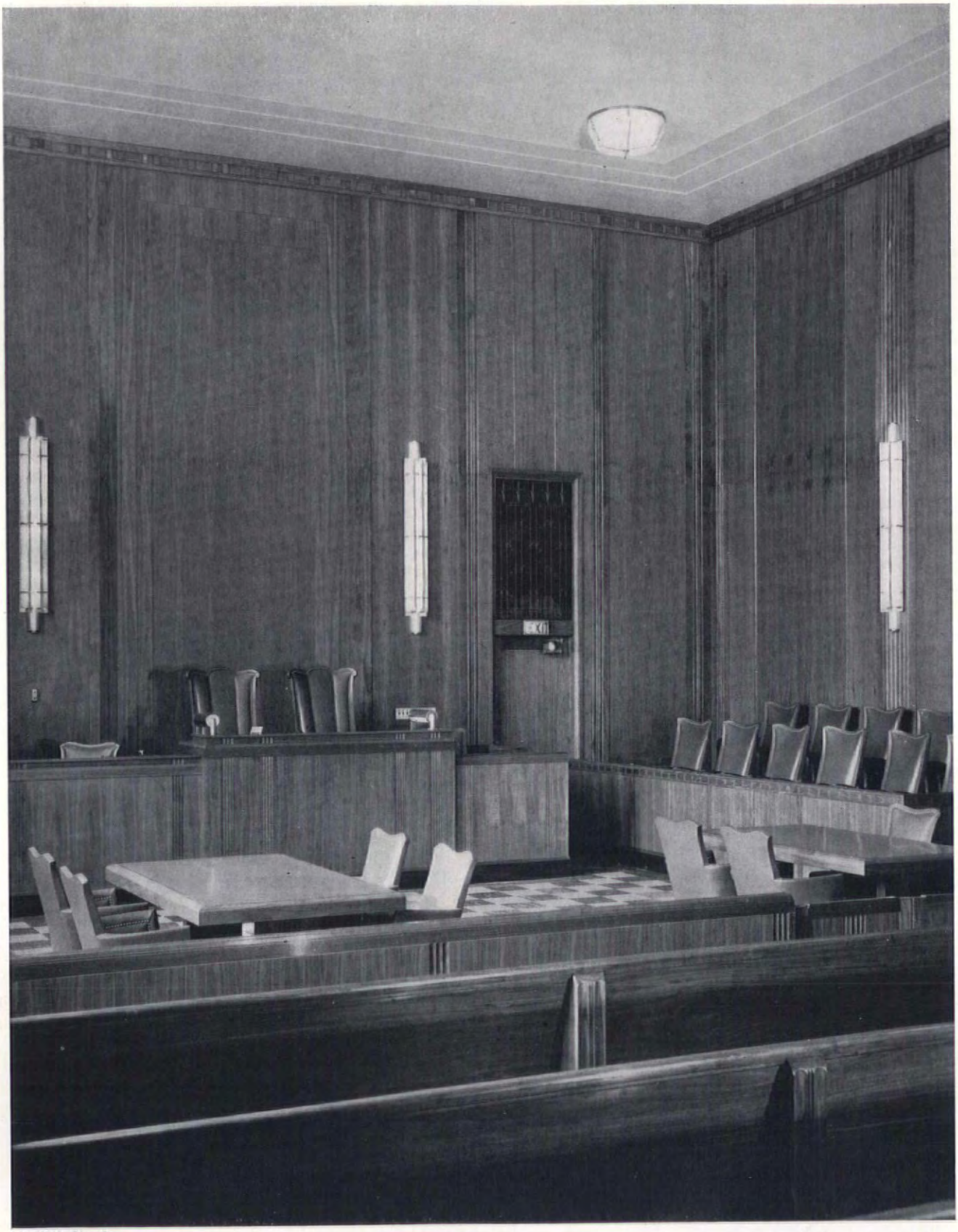
HOUSE OF W. WARREN BARBOUR, LOCUST POINT, RED BANK, NEW JERSEY — Robert M. Carrere, Architect.

BANKS-HUNTLEY OFFICE BUILDING, LOS ANGELES — John and Donald B. Parkinson, Architects.



Ground Floor and Basement Plans

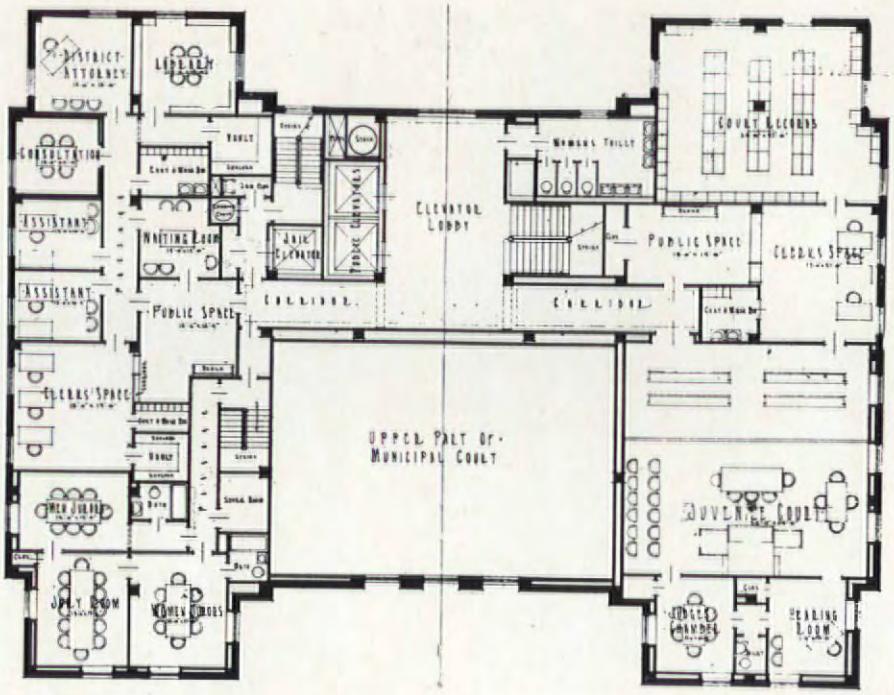
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



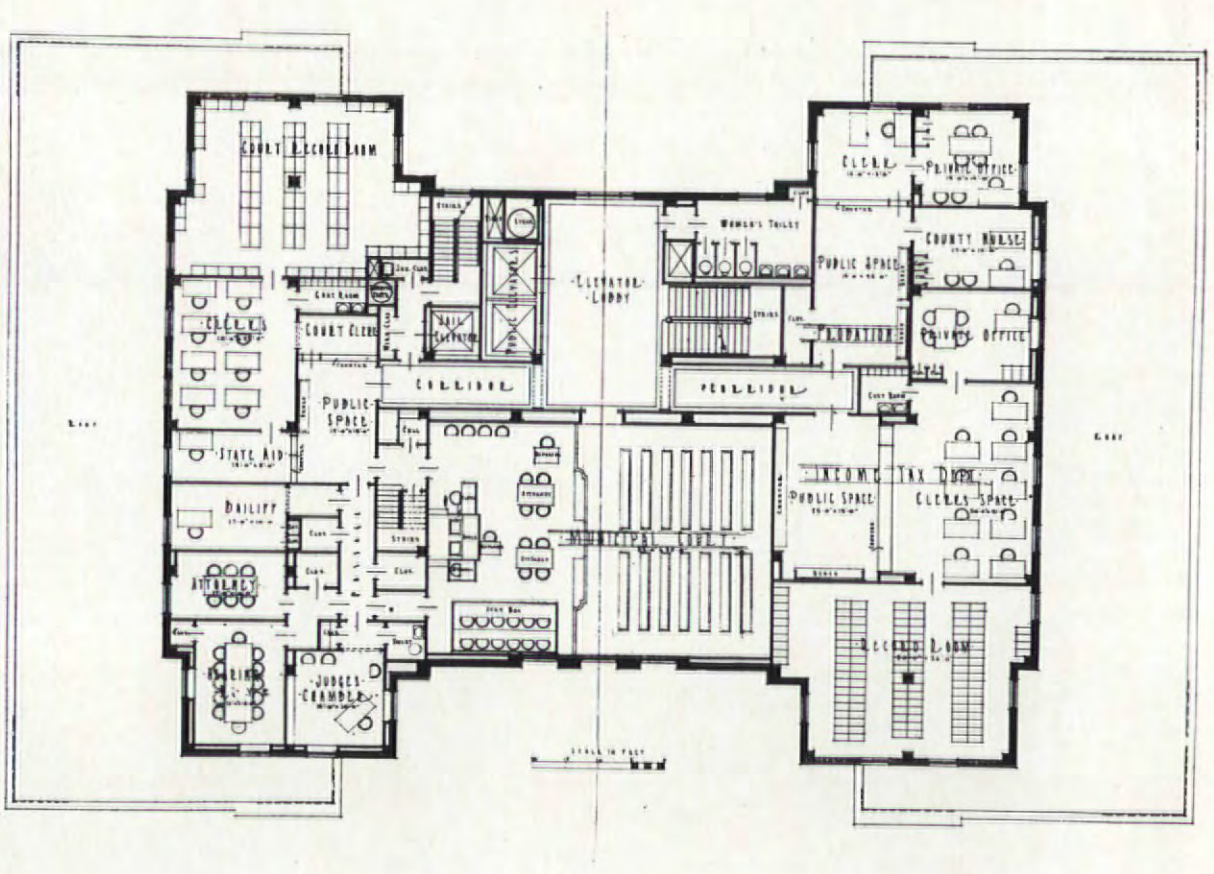
Hedrich-Blessing

Courtroom

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

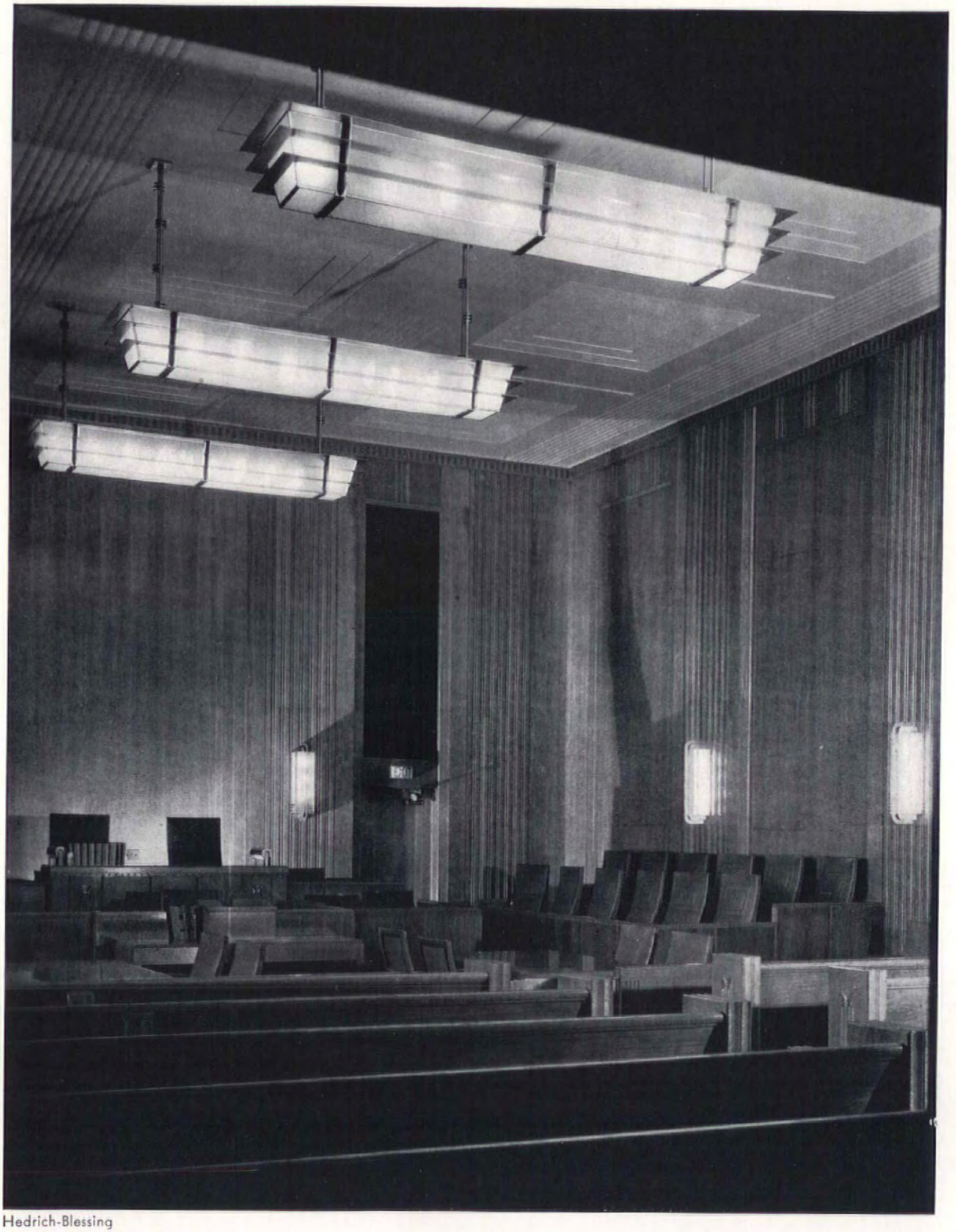


Third Floor Plan



Second Floor Plan

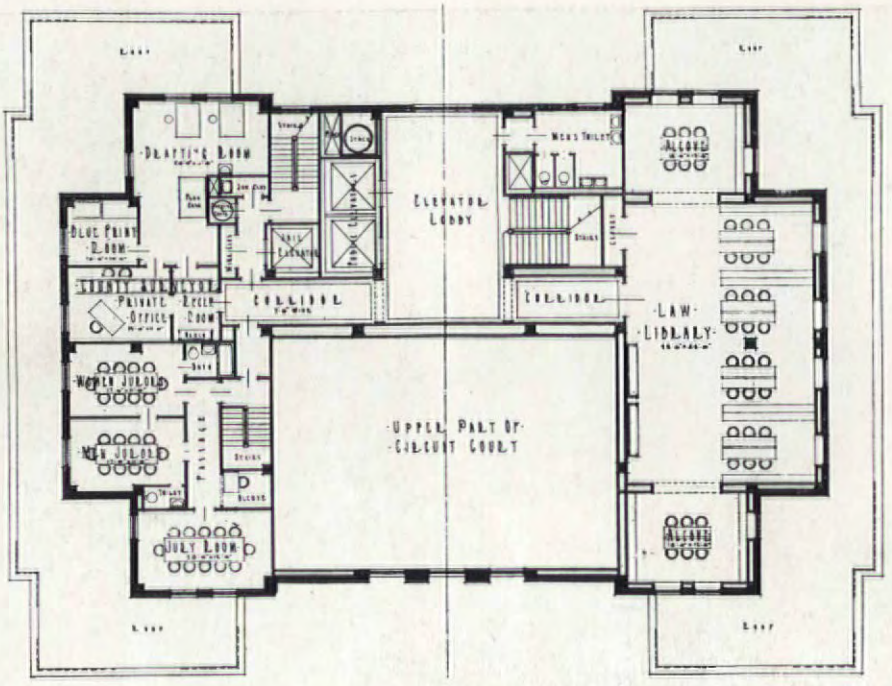
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



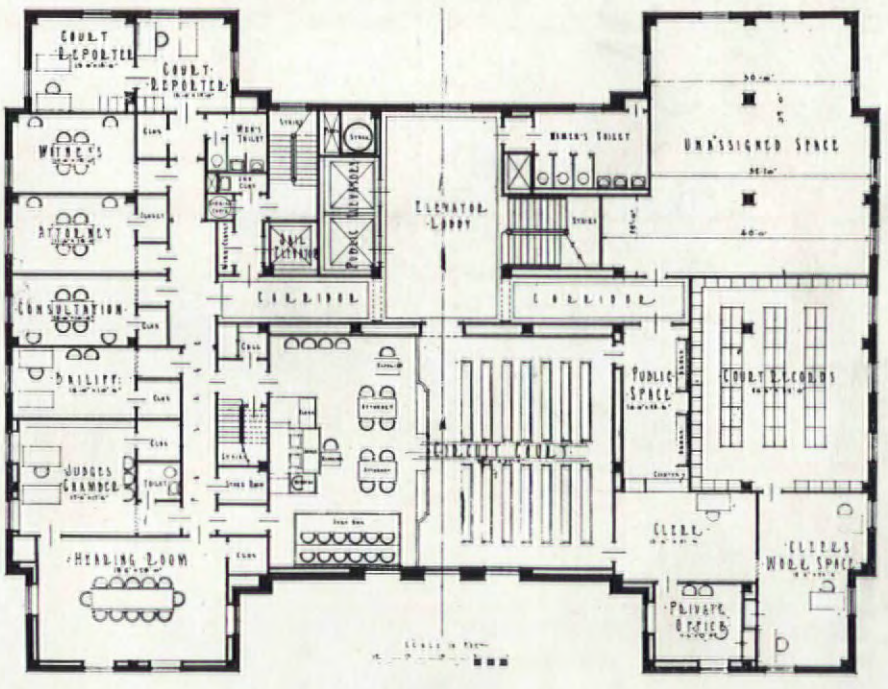
Hedrich-Blessing

Courtroom

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



Fifth Floor Plan



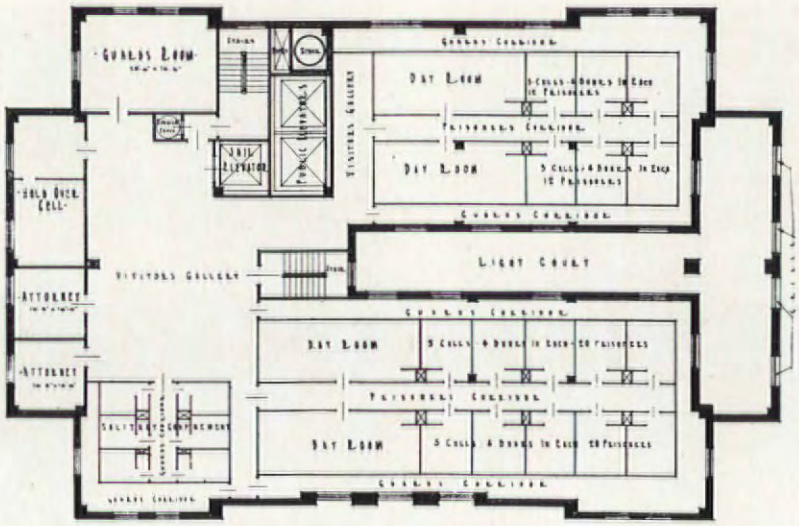
Fourth Floor Plan

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

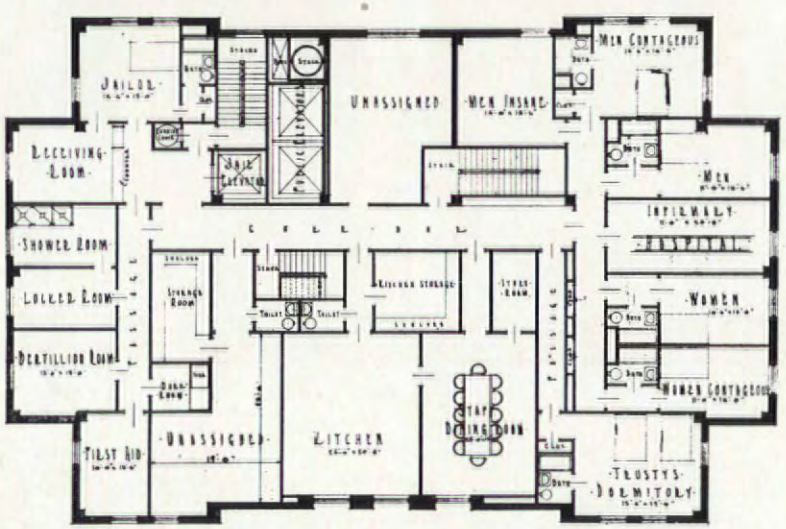
Hedrich-Blessing

Detail of Courtroom

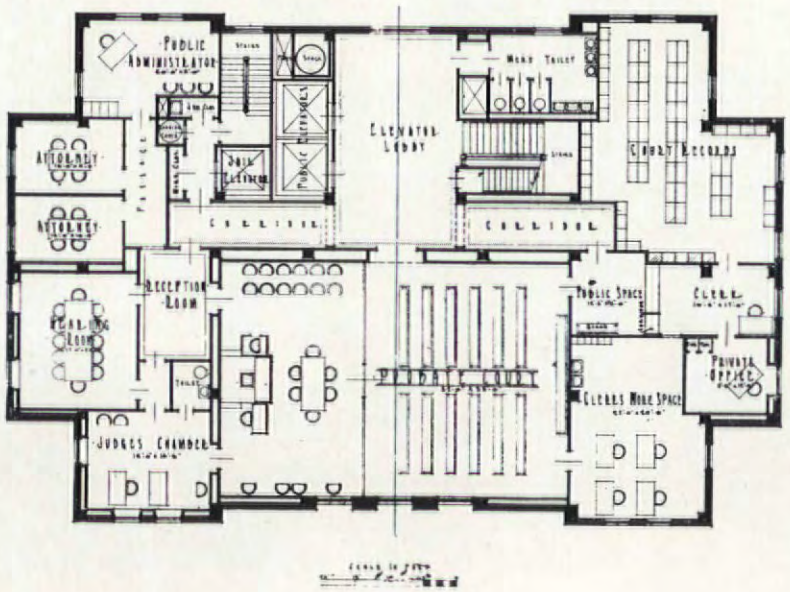
RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



Ninth Floor Plan



Eighth Floor Plan



Seventh Floor Plan

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

Hedrich-Blessing

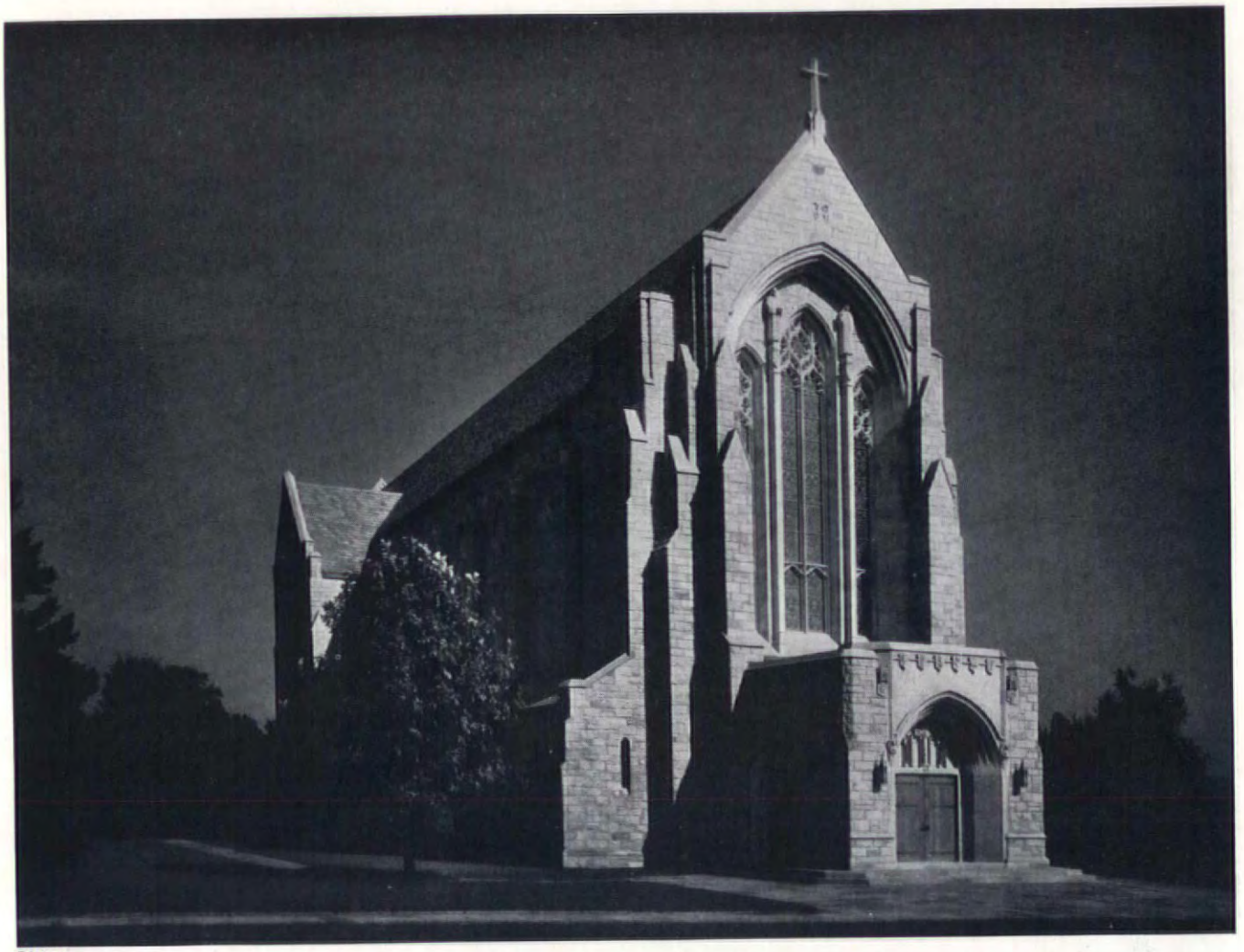
Detail of Lobby

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS

Hedrich-Blessing

Detail of Stairway

RACINE COUNTY COURT HOUSE
RACINE, WISCONSIN
HOLABIRD AND ROOT, ARCHITECTS



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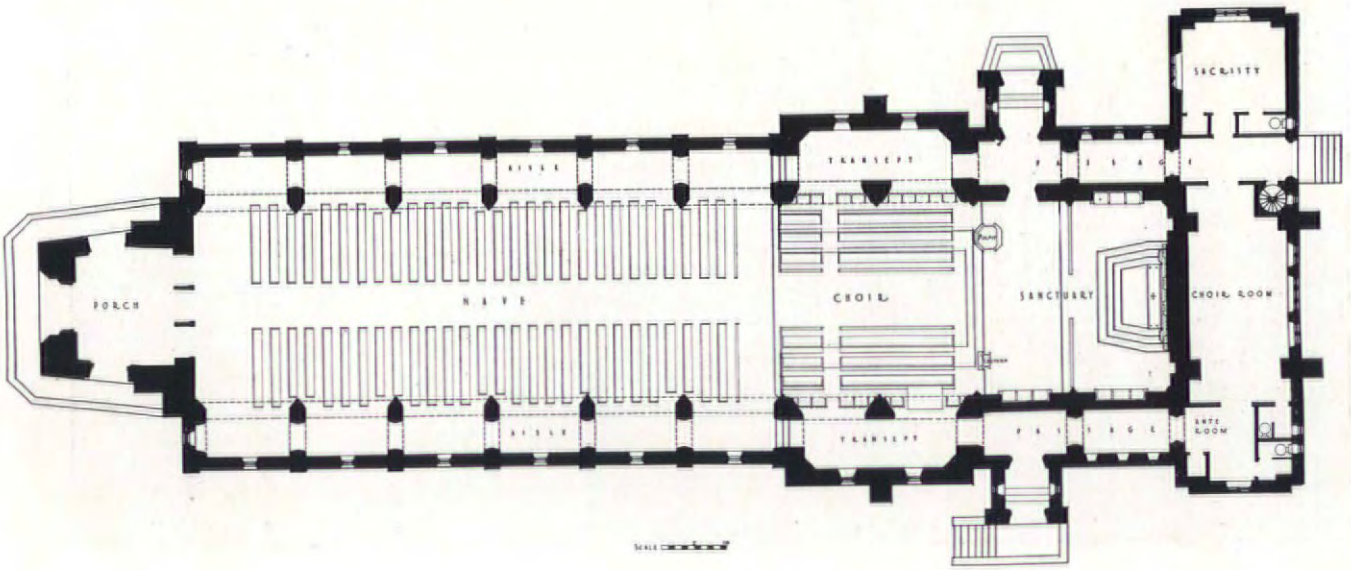
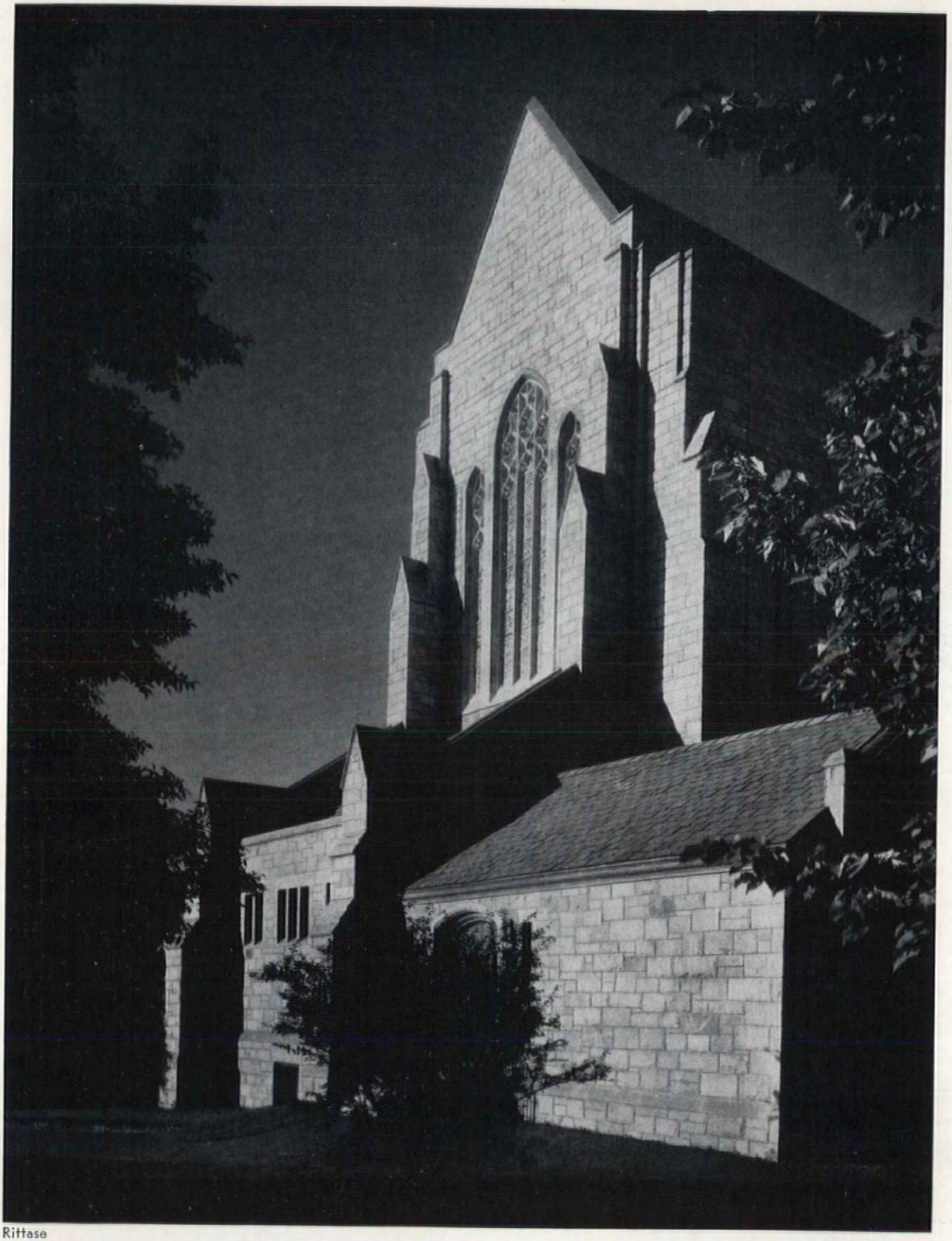


GIDEON F. EGNER MEMORIAL CHAPEL
MUHLENBERG COLLEGE, ALLENTOWN, PA.
FRANK R. WATSON, EDKINS AND THOMPSON, ARCHITECTS



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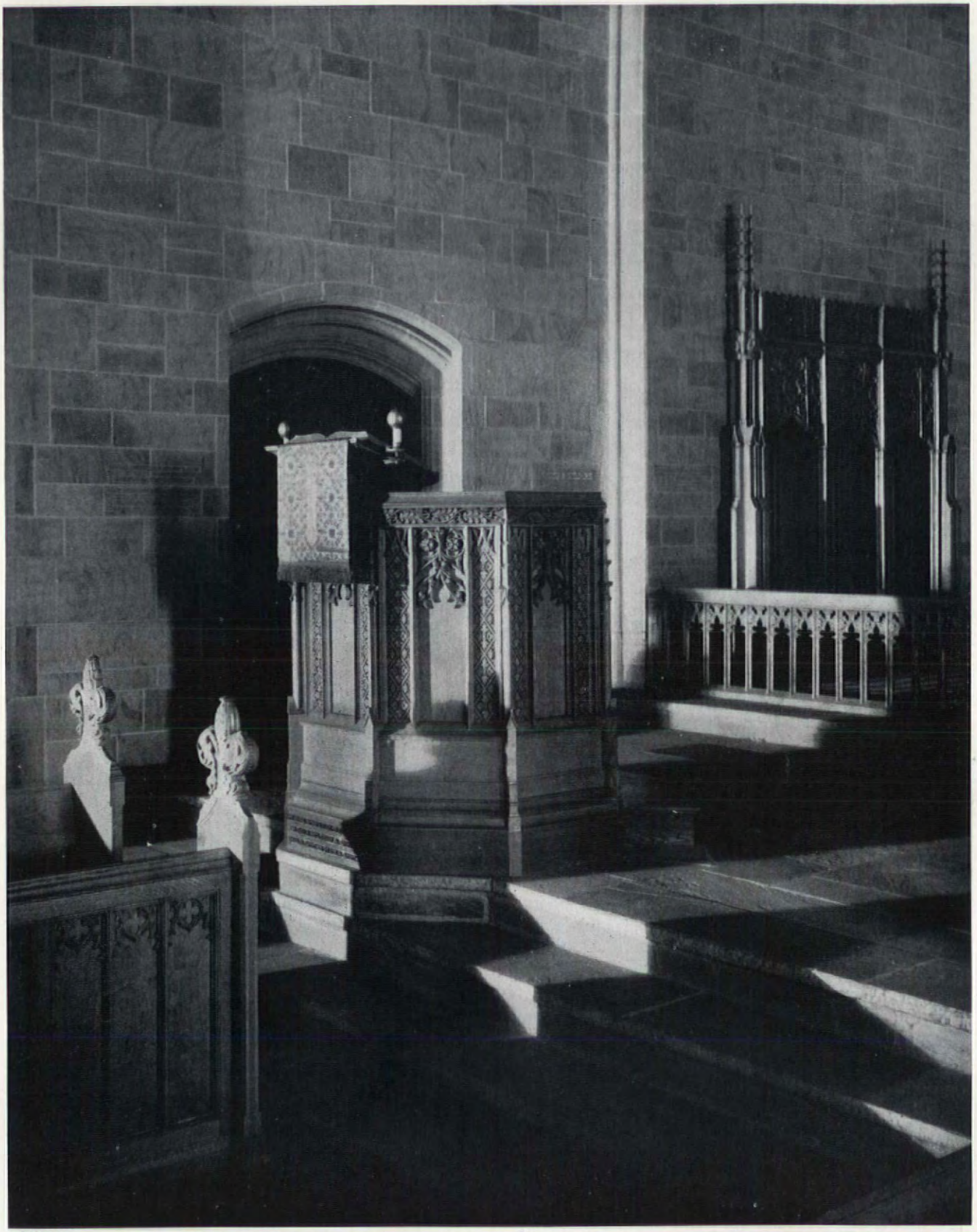

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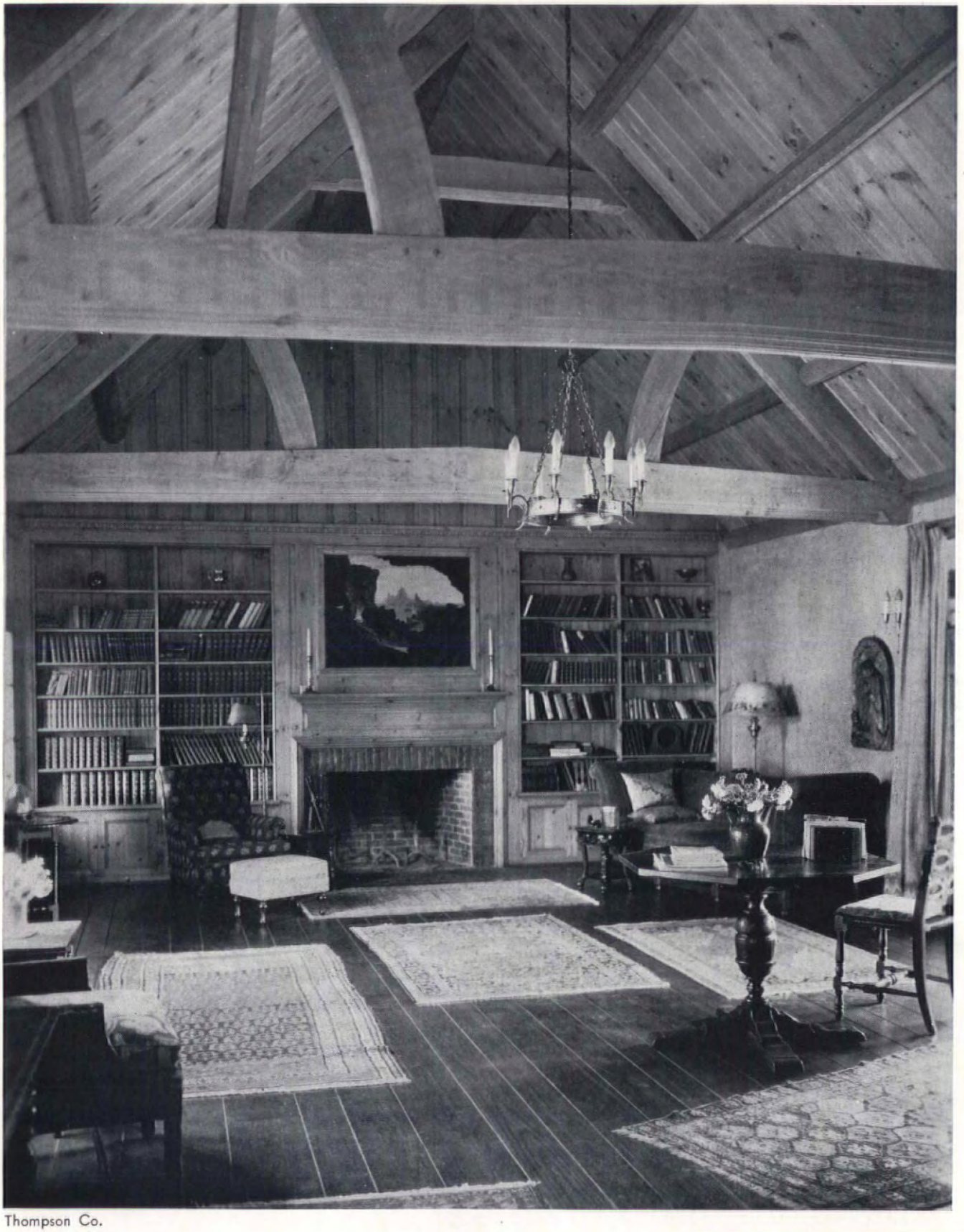
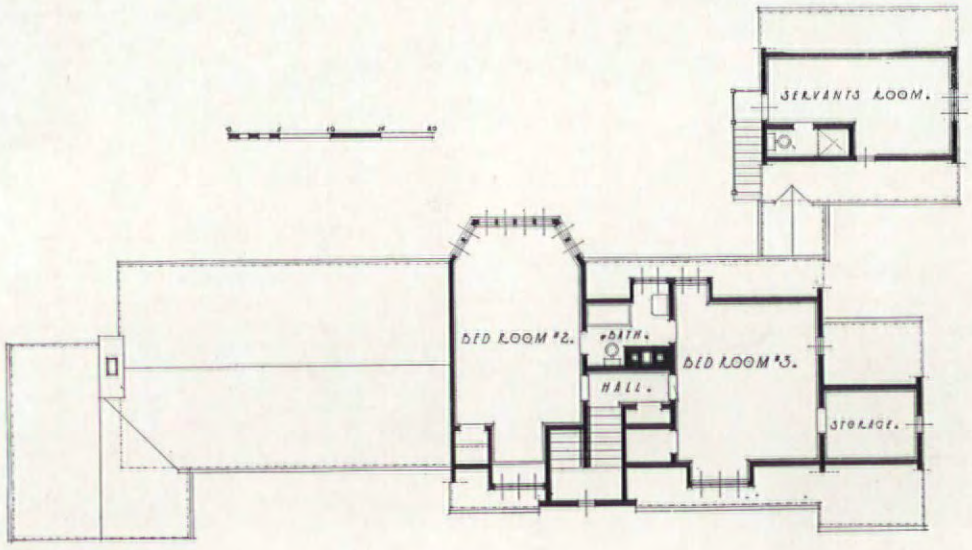


Thompson Co.

HOUSE OF J. W. DEAN
KNOXVILLE, TENN.
BARBER AND McMURRY, ARCHITECTS

Thompson Co.



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KNOXVILLE, TENN.
BARBER AND McMURRY, ARCHITECTS

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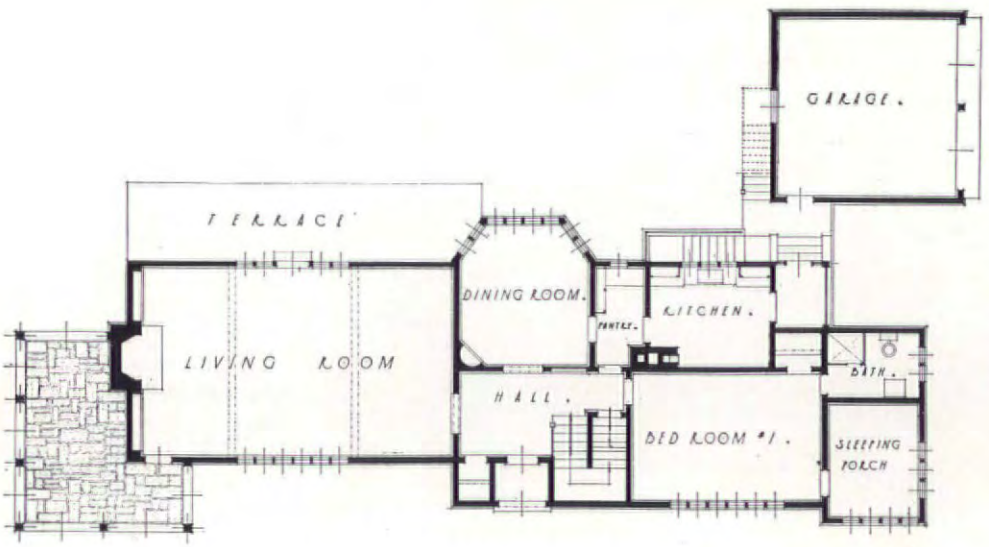
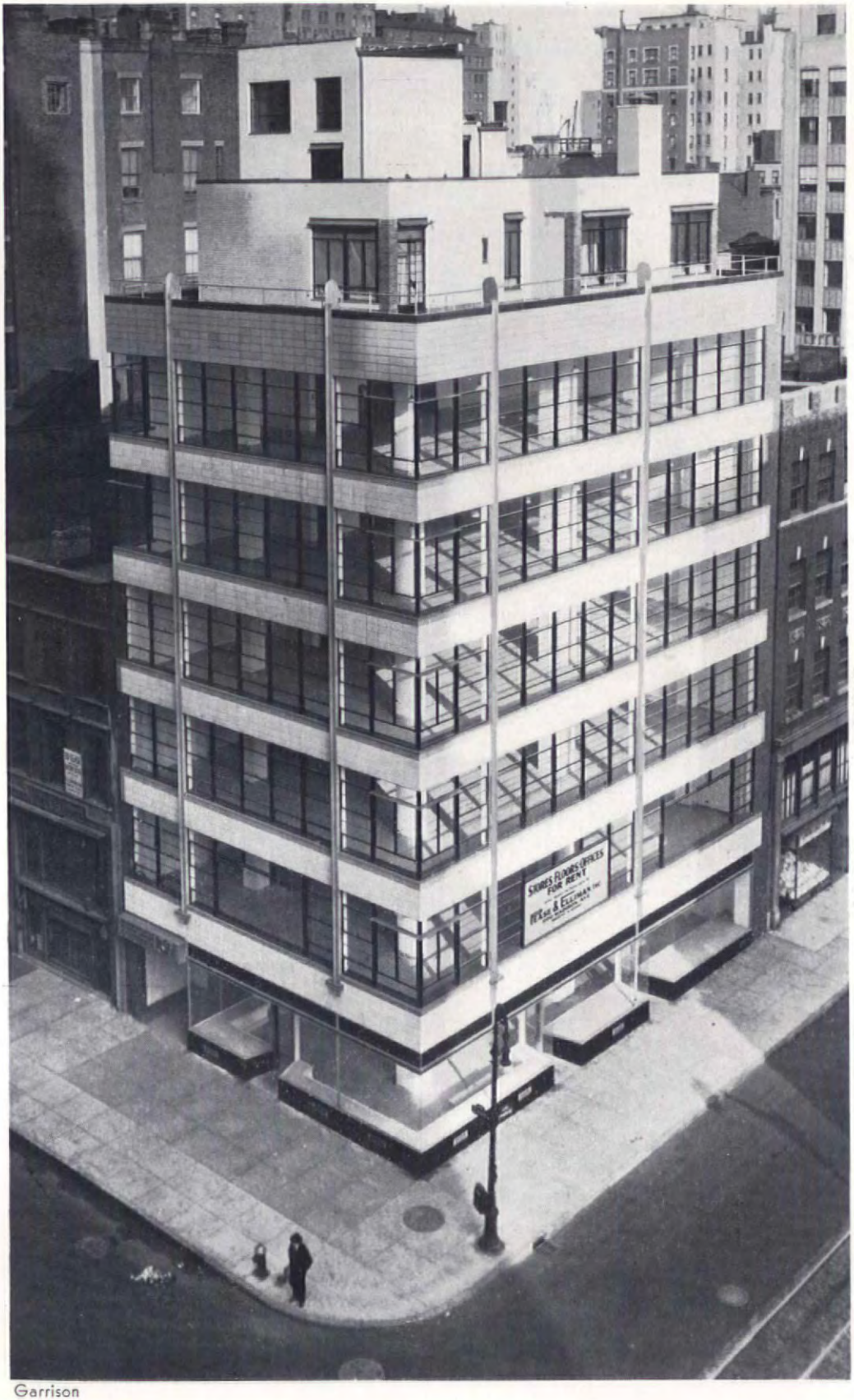


HOUSE OF J. W. DEAN
KNOXVILLE, TENN.
BARBER AND McMURRY, ARCHITECTS

Garrison

137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

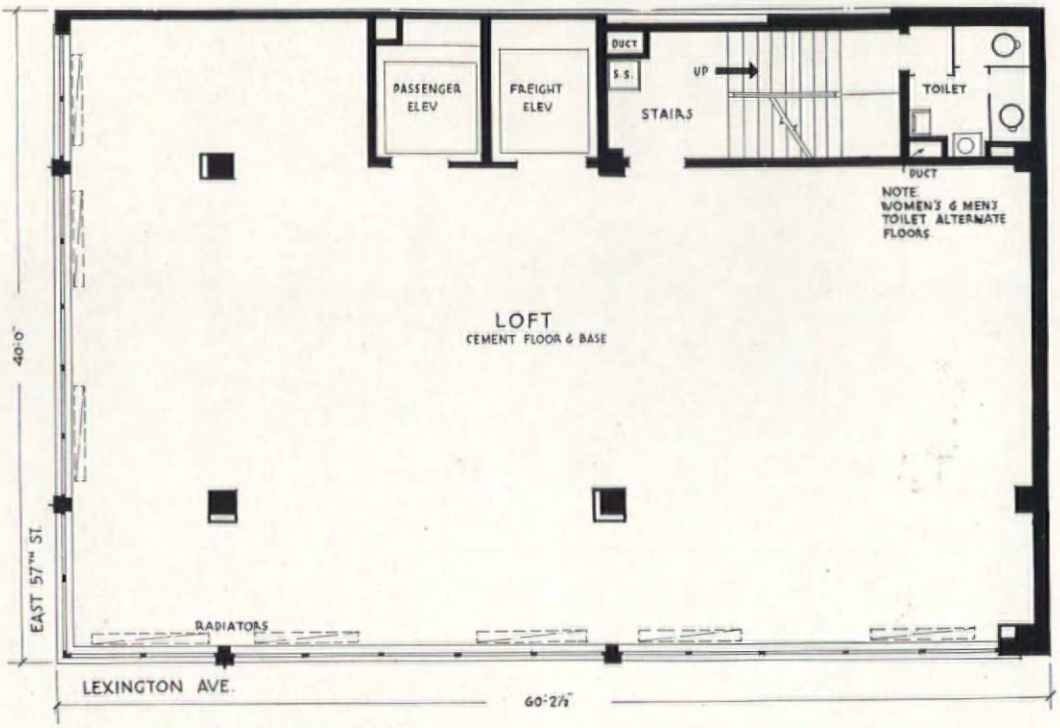
Charles Mayer, consulting engineer.



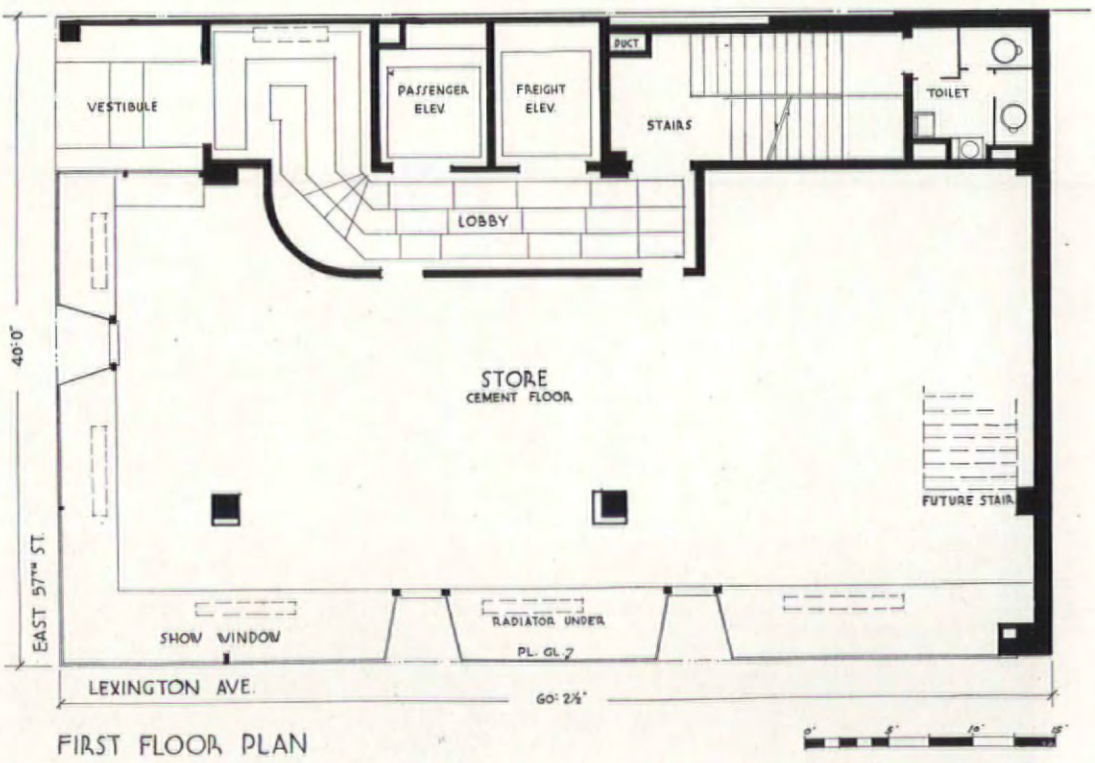
Garrison

Walls are of machine-run terra cotta. The use of 4" insulated metal walls, with a concealed light-truss construction, was desired, but not permitted by the building code.

137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS



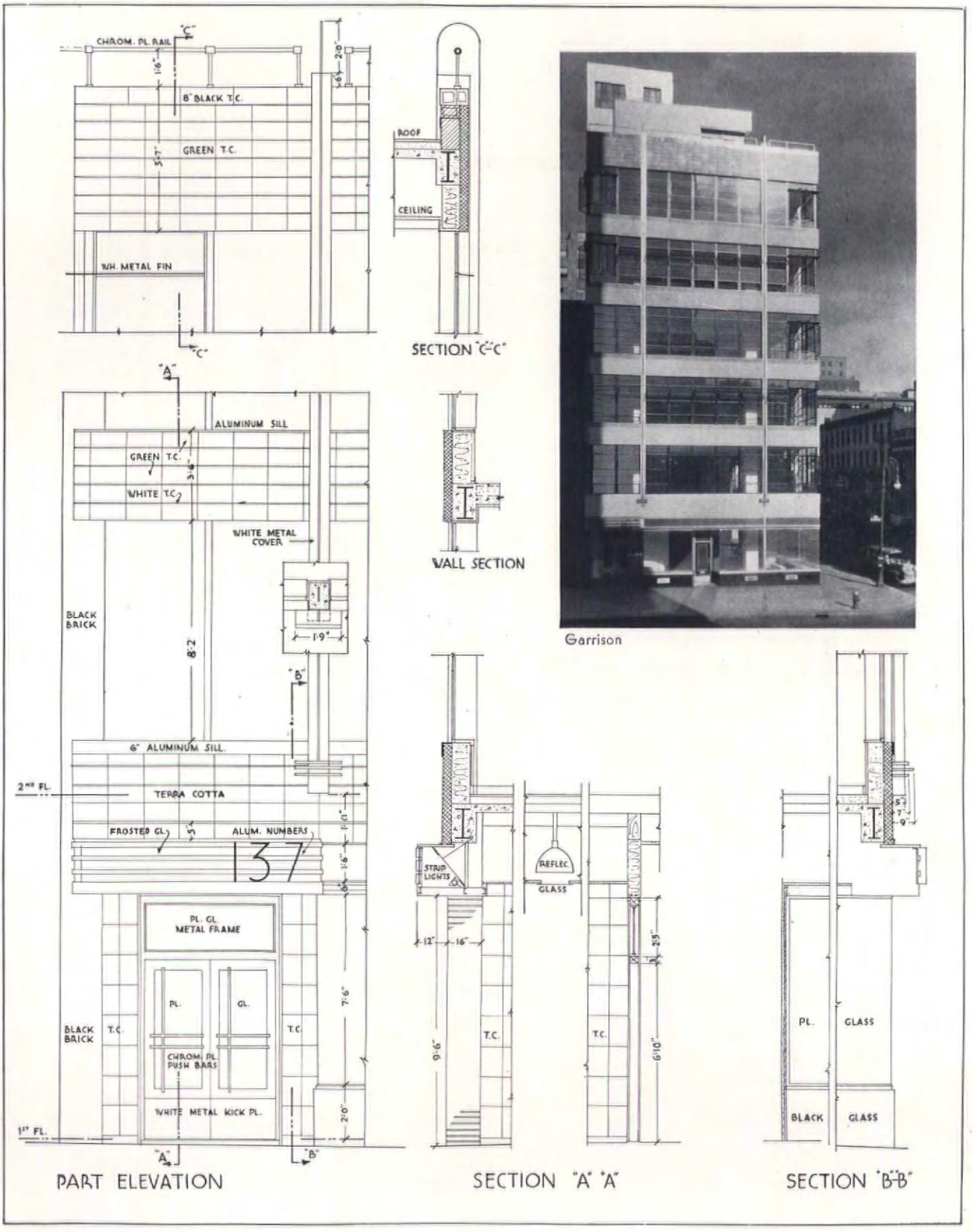
PLAN OF 2ND TO 6TH FLOORS



FIRST FLOOR PLAN

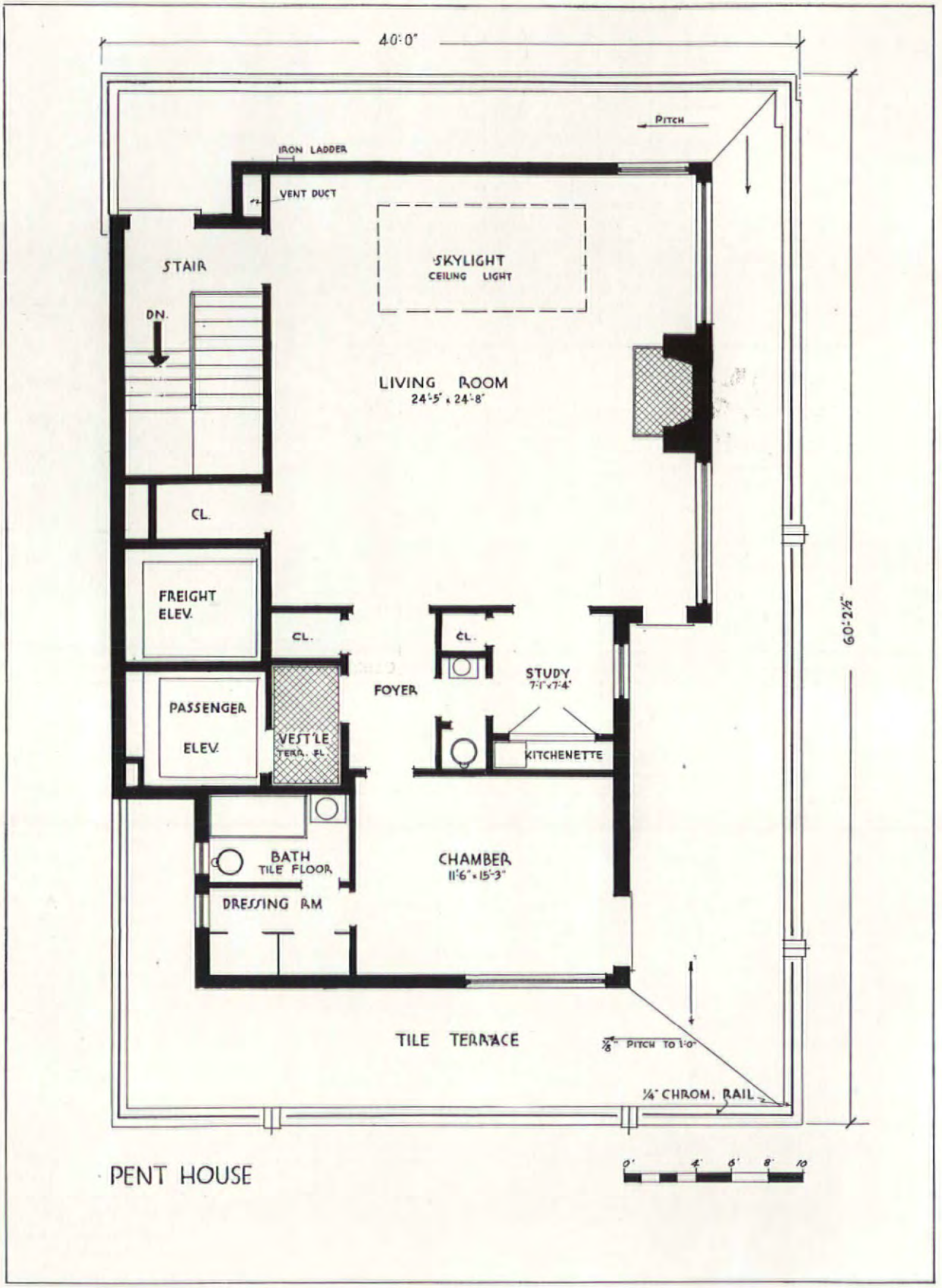
137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

Floors are arranged for use as open lofts, art galleries, studios or offices. Cost: approximately 63½¢ a cubic foot. Cubage: 231,800 cubic feet.



The 36" cantilever girders are continuous across the tops of the columns; outside panel and spandrel beams are carried by 5½" x ½" straps. Foundations: piles on swamp-brook bottom.

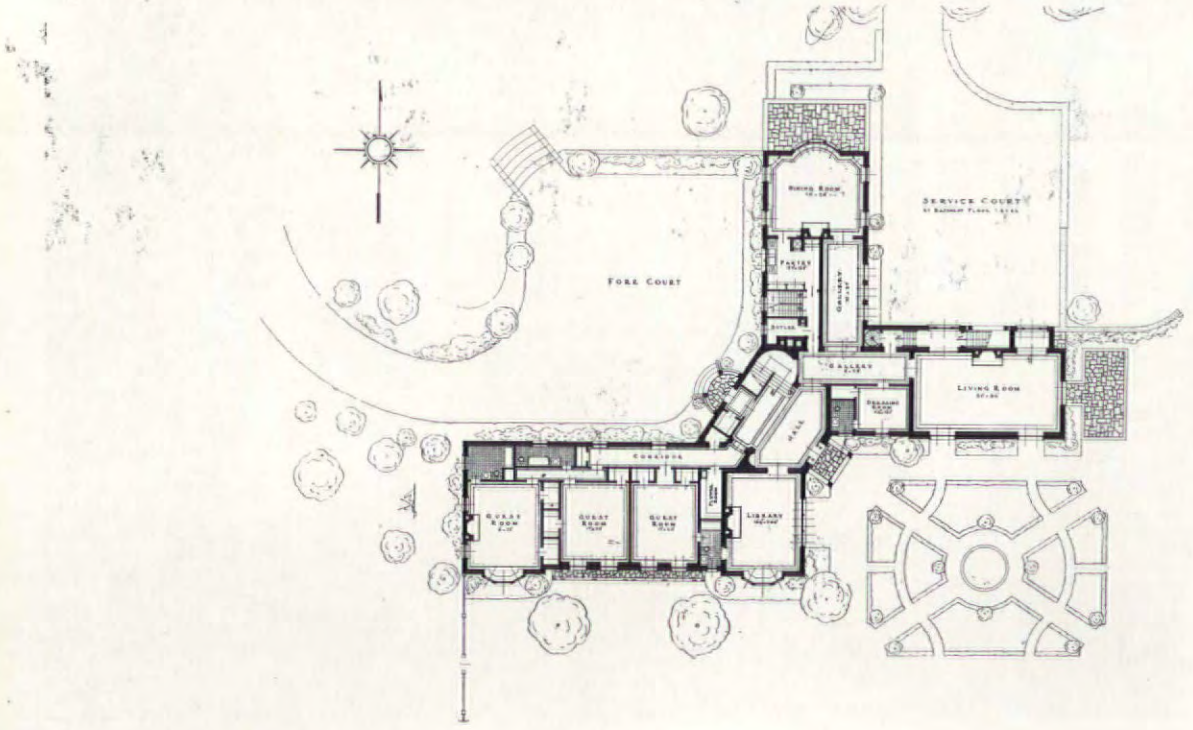
137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS



137 EAST 57TH STREET LOFT BUILDING
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

The penthouse is an apartment. The elevator car has full automatic push-button control for all-night service.

HOUSE OF W. WARREN BARBOUR
LOCUST POINT, RED BANK, NEW JERSEY
ROBERT M. CARRERE, ARCHITECT



HOUSE OF W. WARREN BARBOUR
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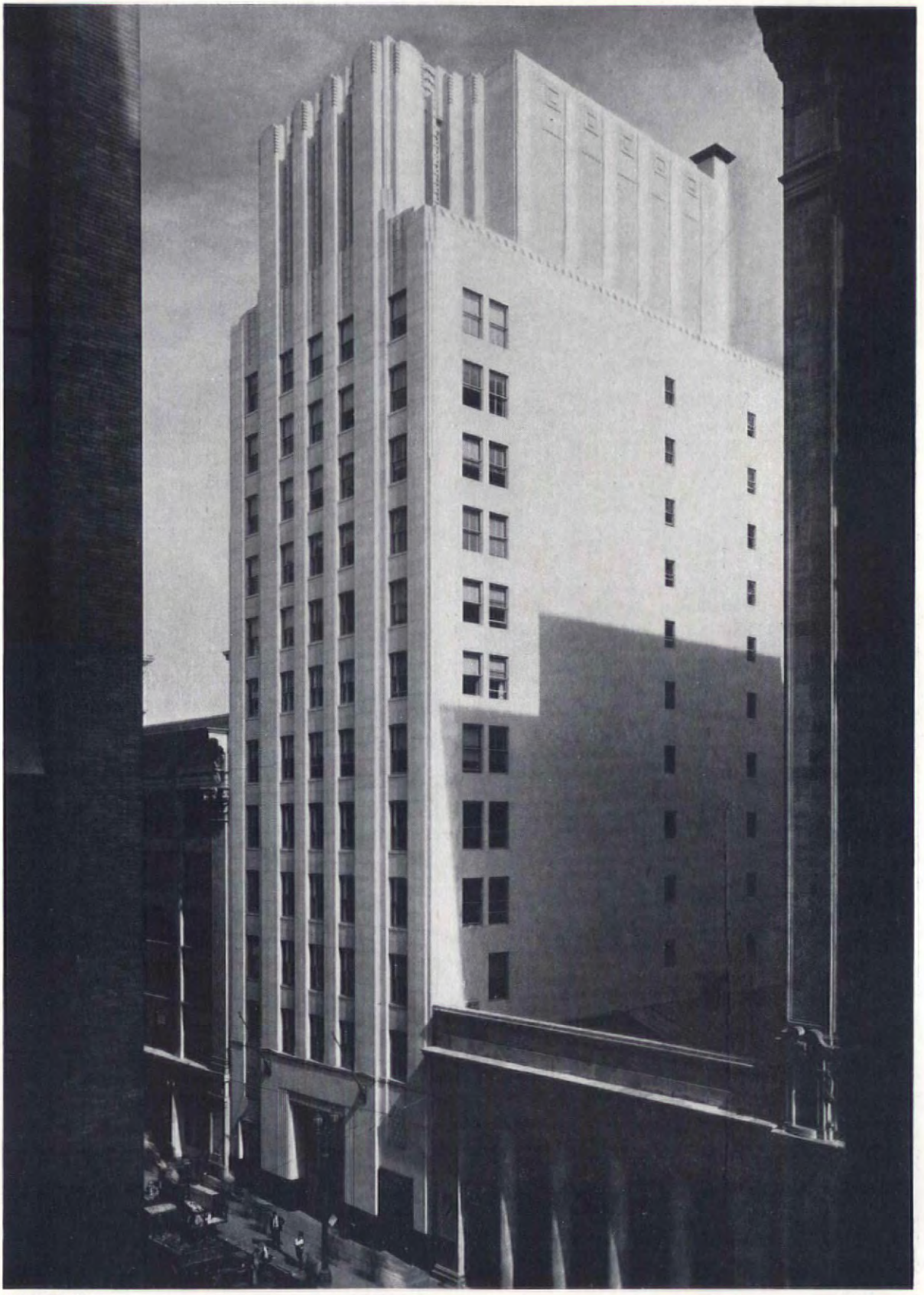
HOUSE OF W. WARREN BARBOUR
LOCUST POINT, RED BANK, NEW JERSEY
ROBERT M. CARRERE, ARCHITECT

Mott Studios

BANKS-HUNTLEY OFFICE BUILDING
LOS ANGELES
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Street frontage of 60 feet. Façade of buff Indiana limestone with a polished Black Swedish granite base. The entrance vestibule has a ceiling of decorated modeled ceramics finished in gold and colored glazes.



Mott Studios

This building is built to the full height allowed by the Los Angeles ordinance; it has two basements. Entire rentable area is air-conditioned. Cost: 76½¢ a cubic foot.

BANKS-HUNTLEY OFFICE BUILDING
LOS ANGELES
JOHN AND DONALD B. PARKINSON, ARCHITECTS

Mott Studios

BANKS-HUNTLEY OFFICE BUILDING
LOS ANGELES
JOHN AND DONALD B. PARKINSON, ARCHITECTS

The main elevator lobby is paved in marble mosaics and has a wainscot of alternating bands of Golden Sienna and St. Genevieve Rose, and a base of polished Black York Fossil. Cast bronze elevator doors are framed in Verde Antique and Alps Green marble.

CHICAGO MUNICIPAL AIRPORT

By PAUL GERHARDT, JR.
City Architect, Chicago

Kaufmann and Fabry

With the growth of air transportation has come the problem of providing adequate terminal accommodations together with necessary facilities for the traveling public. In planning the Administration Building for the Chicago Municipal Airport, a thorough study was made of existing conditions and the probable future needs for such an air center.

Visits were made to neighboring airports and conferences were held with a number of airport managers. Many valuable ideas were obtained from these sources, as well as from a study of the Lehigh Airport Competition.

The limited height of airport buildings, a governing factor in the design, suggested the use of monolithic concrete. Another consideration in favor of monolithic concrete was that greater economies could be secured than with the ordinary type of wall construction.

Both the east and west elevations of the building, which are on the street and field sides, have received exactly the same architectural treatment. The exterior walls have large unbroken glass areas; aluminum sash and mullions are used for the window trim.

The main entrance has been finished in jet black *Vitrolite* with black enamel wood doors, in contrast with the light-colored concrete walls. Attached to the *Vitrolite* above the doors is an ornament made of stainless steel. The ornament has the seal of the city of Chicago for its center, flanked on each side by the spread wings taken from the flying corps insignia. The letters above the second story windows are also of stainless steel and stand out in relief from the wall. Floodlights have been recessed in the coping on the one-story wings which illuminate the approaches to the building from the field and street sides.

The Ground Floor Plan

The waiting room is 40 by 60 feet in plan, two stories in height. The floor has been covered with Alabama marble. Walls are finished with a smooth plaster painted a pastel shade of tan. Fluted pilasters, terminating in a cornice, break the smooth wall surface at intervals. Over each pilaster is the flying corps insignia in plaster relief.

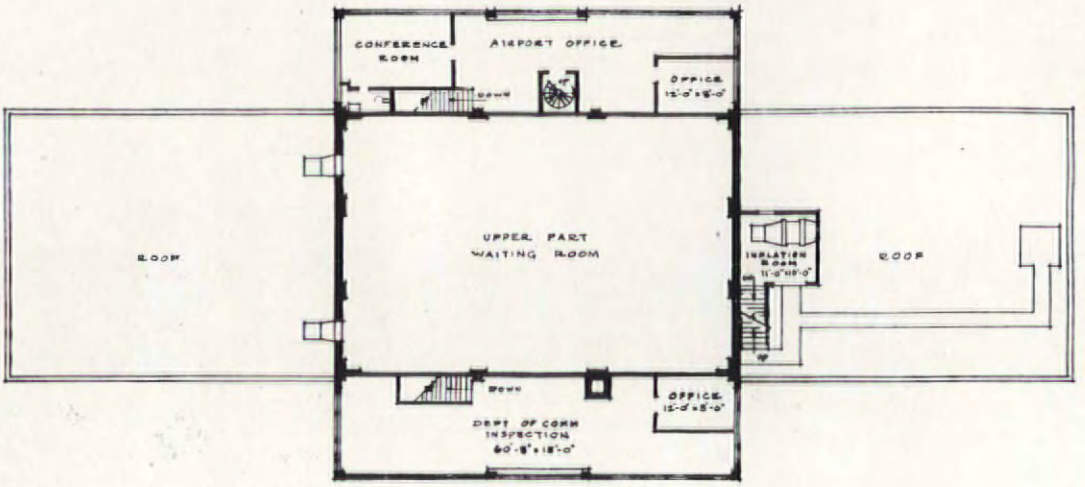
Lighting fixtures, designed to represent aerial bombs, have three fins made of polished chrome nickel attached to the sides. Bent wood furniture has been used in the waiting room in order to give more the appearance of a hotel lobby than a typical passenger station waiting room. Two large maps of the United States, set in polished chrome nickel frames with glass facings, are on one wall of the waiting room. On one map is plotted the passenger air routes. The other is a weather map showing weather conditions for all sections of the country and is maintained by the United States Weather Bureau.

In addition to the waiting room, the first floor has a restaurant, two telegraph stands, a first-aid room and a ticket and baggage office. The ticket and baggage office and the telegraph stands open directly on the waiting room and have been finished with marble counters. Space has been allotted on this floor for the accommodation of the Airways Division of the Department of Commerce and the United States Weather Bureau.

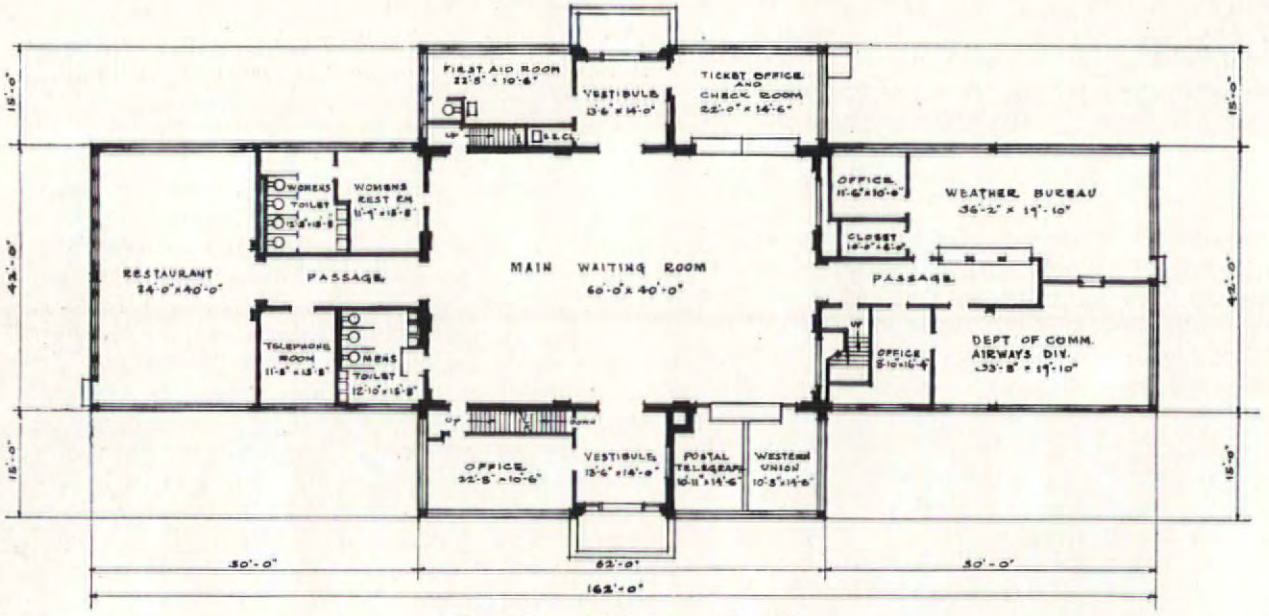
A gas heating unit, selected because it requires less chimney height than any other type, was installed in the part basement.

The Second Floor Plan

On the second floor to the east the Inspection Division of the Department of Commerce will have

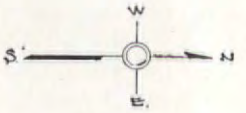


·SECOND FLOOR PLAN·



·FIRST FLOOR PLAN·

·BASEMENT PLAN·



ADMINISTRATION BUILDING OF THE CHICAGO MUNICIPAL AIRPORT
PAUL GERHARDT, JR., CITY ARCHITECT

Kaufmann and Fabry

Street Façade

Waiting Room — Field Entrance at Left, Street Entrance at Right

ADMINISTRATION BUILDING OF THE CHICAGO MUNICIPAL AIRPORT
PAUL GERHARDT, JR., CITY ARCHITECT

Detail of Entrance
ADMINISTRATION BUILDING, CHICAGO AIRPORT
PAUL GERHARDT, JR., CITY ARCHITECT

offices. On the west or field side of the building is the office of the Airport Supervisor.

The entire field is visible from this office. Directly overhead on the roof is located a control tower, constructed entirely, including the roof, of glass set in a metal frame. An attendant will be always on duty in the tower and will have full control of the field, supervising such activities as the landing of incoming planes, taking off of departing planes, and lighting the field at night. The tower is equipped for receiving and broadcasting radio messages a distance of twenty miles. Incoming planes will radio their position and expected time of arrival. The attendant will notify the pilot of landing conditions, ceiling and visibility at the airport.

The Concrete Wall Construction

The concrete walls were desired to be finished with a smooth surface free from form marks. For this purpose a ⅛" fiber-board form liner was specified. (Best results are obtainable if the forms are protected during construction from both the sun and the rain.)

A slightly over-sanded mix was used for the concrete. The proportions of materials for the mix were approximately 1 part of cement to 2½ parts of sand to 3½ parts of coarse aggregate. The water content was limited to 5½ gallons of water per sack of cement to insure the quality of concrete necessary to stand the severe climate. Six pounds of lime were added to the mix to increase its workability and to make the walls lighter in color. A six gallon water-cement ratio was specified for the structural concrete used in the balance of the structure.

Mechanical vibration of the forms was specified to insure a dense impervious concrete for the exterior walls. The mechanical vibration used by the contractor was too severe because of the thin wall section, and it was supplanted by two workmen who tapped the forms with hammers during the placing of the concrete. The results obtained from this method proved entirely satisfactory in that practically no patching was necessary when the forms were removed. The exterior walls are 12" thick below the long window sills, and 8" thick above the sash including the parapet.

Forms were left in place for a minimum of ten days, the window sills being protected during that period with damp canvas. The concrete was permitted to dry thoroughly after the forms were removed. The surface was then neutralized with a zinc sulphate solution and allowed to dry. Two coats of *Minwax* were then applied for a protective coating.

A paint mixture of one part cement gray, one part white and one part cream color, was selected. The resulting shade matched the color of the concrete in the wall and it is difficult to tell that a protective paint coat has been used.

The Flying Field Arrangements

Previous to the opening of this building passengers arrived at and departed from the hangars of the eight operating companies. This was more or less confusing to the travelers, especially when friends were meeting them. Now all passenger planes arrive at and depart from the Administration Building.

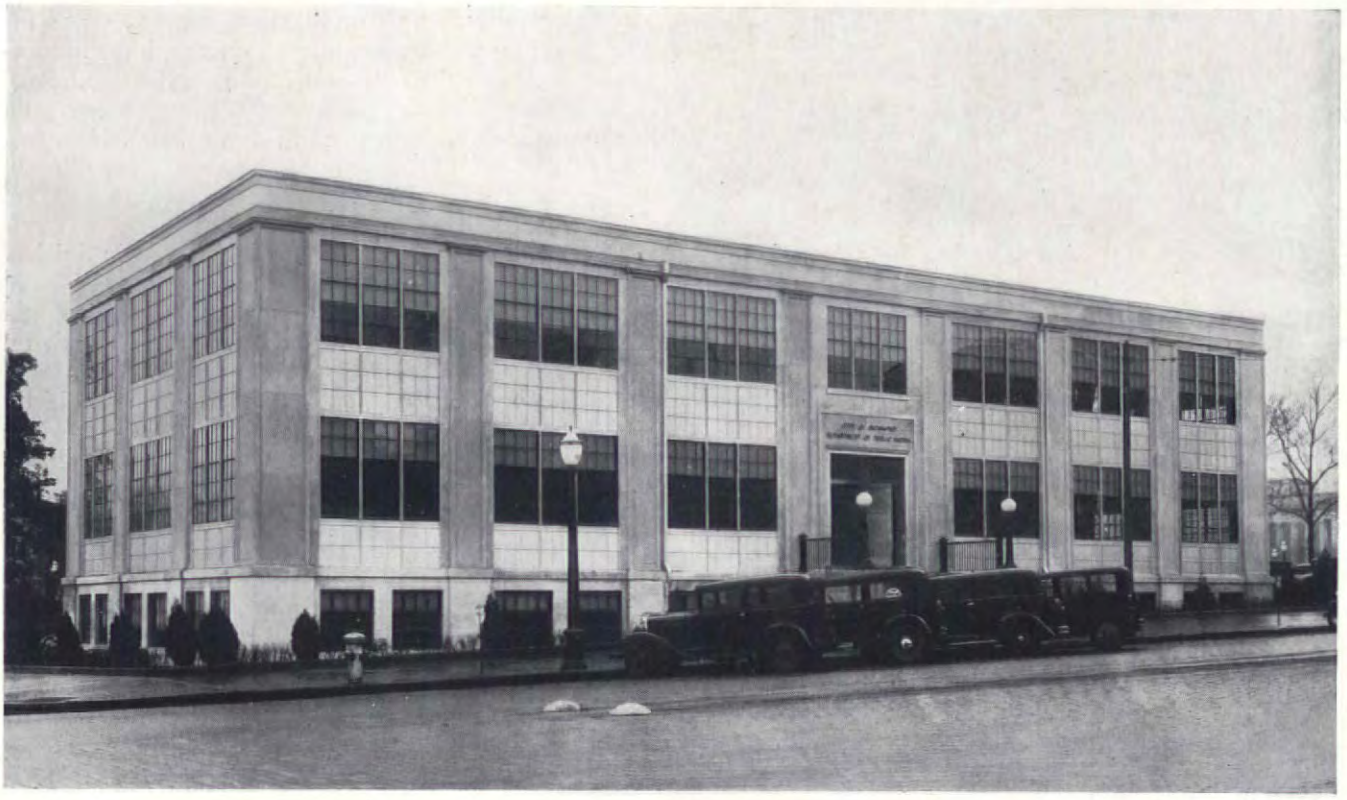
An L-shaped concrete taxi-way extends along two sides of the field and connects the hangars with the Administration Building. The taxi-way is 6,030 feet in length with 2,500 feet of it 150 feet wide and the balance 100 feet wide.

Costs

The building was designed in the office of the City Architect of Chicago. The volume is 203,000 cubic feet. The total cost of the building was $76,000.

AN ALL-METAL OFFICE BUILDING IN RICHMOND

BUILT AT A COST OF 19.1¢ A CUBIC FOOT — By JAMES BOLTON, DEPARTMENT OF PUBLIC WORKS



The recently completed office building of the Department of Public Works of Richmond, Virginia, by the use of new forms and materials, has eliminated heavy curtain walls, reduced column and girder size, speeded up erection and made possible the occupancy of the building in a relatively short time. If at some subsequent date, as seems highly possible, it will be necessary to tear down the building and re-erect it on a different site, this can be done with a minimum wastage of material. The high salvage value of the metal forms and the ease and speed with which they could be assembled and disassembled led to the adoption and construction of an all-metal building.

Late in 1930 the Department of Public Works was notified that it would have to vacate its offices in the City Hall to make room for expansion of another division. In looking elsewhere for available office and laboratory space, seventeen different projects were considered. These included renting space in nearby office buildings, buying and remodeling conveniently located buildings, rehabilitating city-owned buildings, or erecting the department's own building on a city-owned lot.

When the plans for the present all metal structure were completed and its cost compared with the cost of the sixteen other propositions, it was found to be the most desirable not only from a financial standpoint, but from the standpoint of usefulness. The annual interest and redemption on the capital outlay, based on a complete amortization in six years, were less on this building than on buildings which could be purchased; in fact, they were even lower than the cost of reconditioning city-owned buildings or the cost of renting available office and laboratory space.

This aluminum building was designed to meet the following requirements:

1. Low cost of construction.
2. Occupancy of 5 to 10 years.
3. High salvage value of materials.

Of 17 projects considered, this scheme was selected as the most economical and useful.

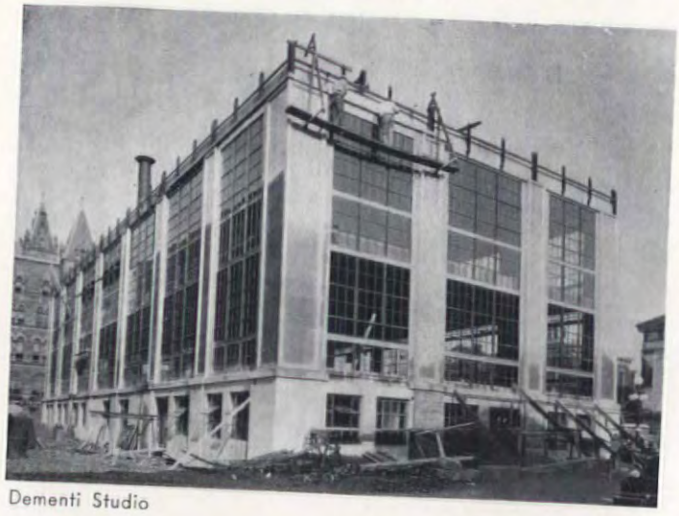
In preparing plans, it was kept in mind that it would be necessary to build a new city hall as soon as economic conditions permit. The structure, therefore, was designed to take care of the space requirements of the department for a period of between five and ten years. Since the anticipated term of occupancy is so short, it was essential to consider the salvage value of the building materials.

The Plan

The building is rectangular in shape, its frontage of 116 feet being determined by the amount of north light needed for the drafting room; it is 50

PROGRESS — SEPTEMBER 25, 1931

PROGRESS — SEPTEMBER 25, 1931



Dementi Studio

PROGRESS — OCTOBER 16, 1931

All-Metal Building Designed and Erected by Department of Public Works, Richmond, Va.

feet in depth. A two-story structure, with basement, provided the necessary floor space for the department at this time and allowed sufficient room for expansion during the anticipated five or ten years of occupancy. The physical and chemical laboratories, map reproduction quarters, space for dead files and heating plant are located in the basement, and the offices of the various bureaus, together with the necessary drafting rooms and file space, on the first and second floors.

Construction Features

The entrance to the building is satin-finished aluminum and glass. The doors are formed from rectangular aluminum tubing and have aluminum plate and glass panels; the door jamb is built up of extruded sections of the same metal.

Above the first floor level, metal is used chiefly for both the exterior and interior surfaces. The basement is of masonry construction. The pilasters and entablature are entirely of aluminum, extruded sections being used for drop-panels. The panels are of aluminum plate. The interior walls are formed from aluminum sheets, the space between the inner and outer walls being filled with insulating material after the erection of the walls.

Steel casement windows are used throughout the building. They form a continuous line between the pilaster columns from the first floor level to the base of the entablature, the spandrel sections being set off with aluminum sheet and the mullions with aluminum paint.

The aluminum pilasters and entablature have a sand-blasted finish whereas the aluminum trim on the windows and between the window frames and pilasters has a satin finish. The steel window frames and the window panes in the spandrel sections of the windows are painted with aluminum paint; elsewhere the steel window frames are painted black in contrast to the aluminum.

Partitions on the first and second floors are of satin-finished aluminum sheet over wooden frames. The permanent partitions at the entrance extend to the ceiling while those between the structural bays extend only to within 3 feet of the ceiling, thus providing better ventilation for the offices. The ceilings are of plaster applied on metal laths; the floor covering is of 1/8" asphaltic tile.

Construction Details

Columns and girders are considerably smaller in size than those used in the customary construction methods. This reduction in column and girder size as well as in the footing area is made possible through the use of the aluminum curtain walls and the steel floor and roof construction.

The base spacing of columns (6"x6", 20-pound; 8"x6½", 24-pound; and 8"x8", 31-pound H's) is 16' 6" by 16' 6". The spread concrete footings, upon which the columns rest, are 4½ feet square and extend to compacted clay gravel 18 inches

(Continued on page 48, advertising section)

DIMENSIONS

PART TWO

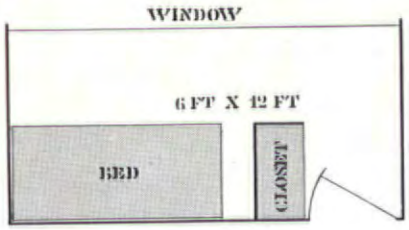
BEDROOMS • BATHROOMS

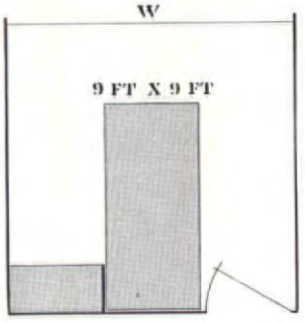
By A. LAWRENCE KOCHER
and ALBERT FREY

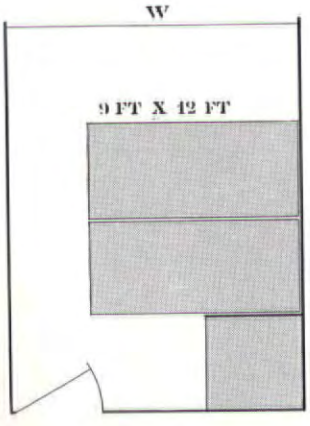
Bonney

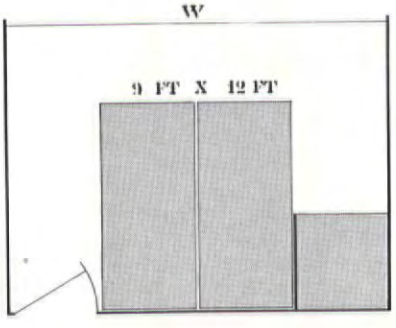
Bedroom with all furniture correct in size and in location for convenient use. The sitting-room area is made possible by the ample width of room. Cheerful lighting is obtained with windows at long side of room.

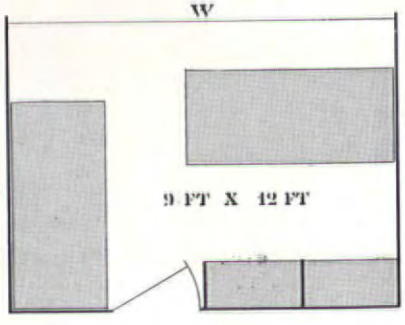
MINIMAL BEDROOMS

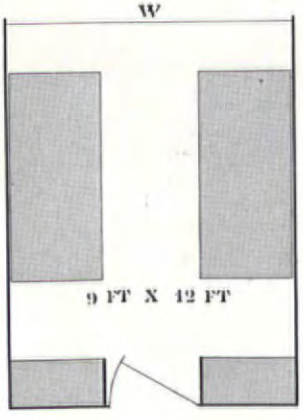










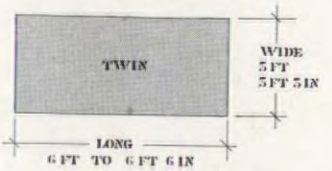


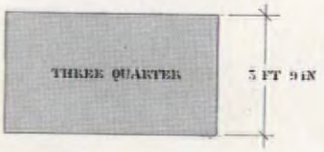
BEDROOMS OF MINIMAL SIZE are determined by the dimensions of:

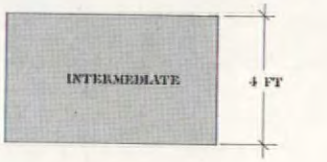
(a) One or more beds.
(b) Single or double closet.
(c) Furniture (dresser, chairs, table) and required space for walking about and dressing in a room.

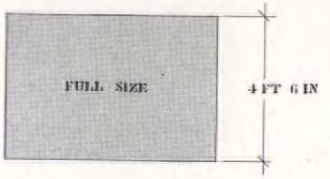
The accompanying plans indicate a variety of possible arrangements for rooms of small size with single or twin beds. The full-size bed (4'6" wide) can be substituted for the twin bed so as to obtain increased floor area. In all cases entrance doors are opposite windows because access to rooms is from hall or corridor. In the suggested rooms there are two shapes: (1) with windows at broad side; (2) with windows at narrow end of room. Closets of double size are indicated for rooms occupied by two persons.

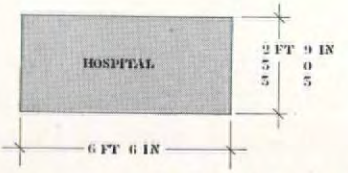
BEDS



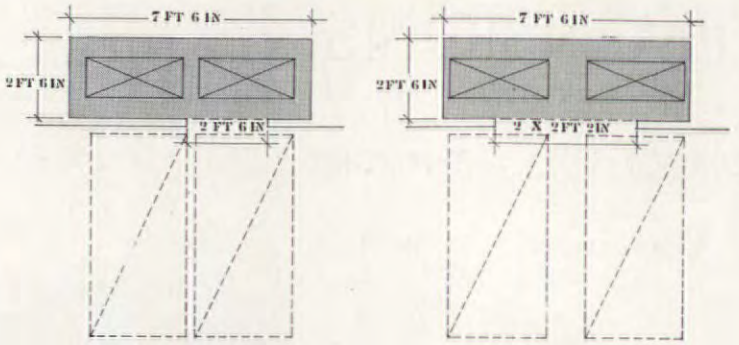


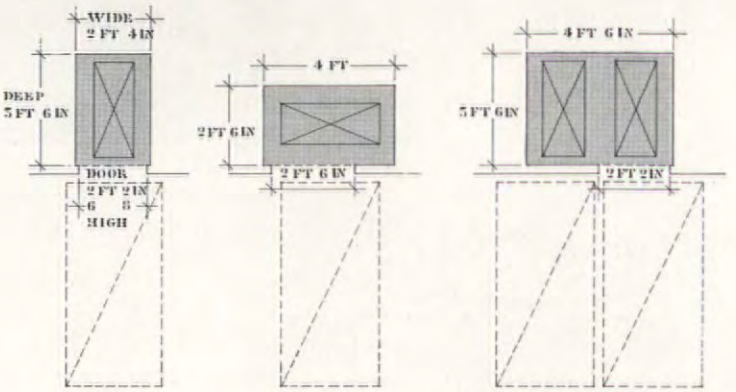




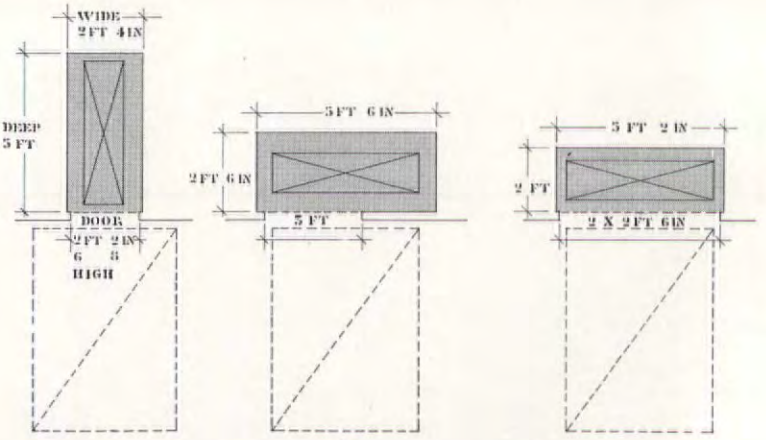


RANGE OF TYPICAL BED SIZES. There is no standard height for beds, with the exception of the hospital bed which is 27" (height from floor to top of springs, including casters, etc.). See special bed sizes recommended for hotels and hospitals at end of article.

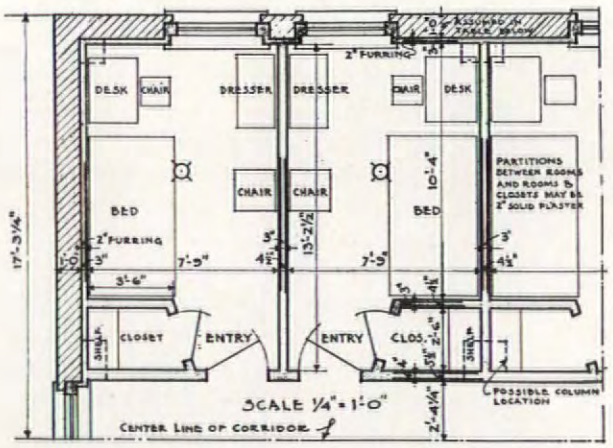




CLOSETS FOR BEDS OF 3 FT X 6 FT 4 IN

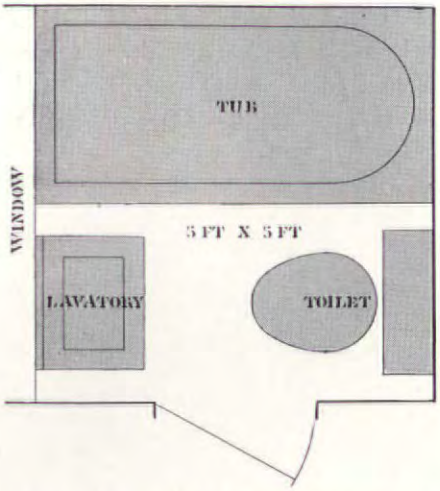


CLOSETS FOR BEDS OF 4 FT 6 IN X 6 FT 4 IN

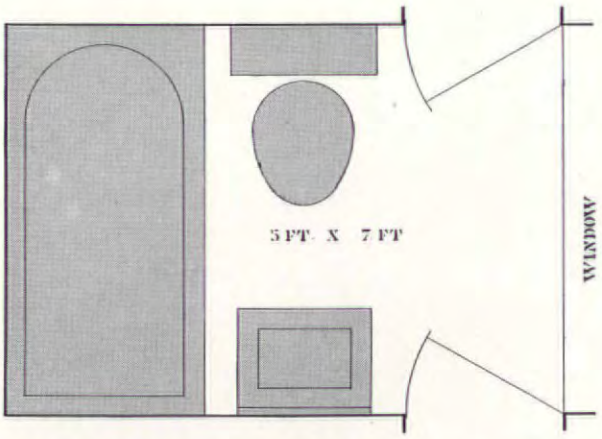


MINIMUM SPACE REQUIREMENTS for beds that either are attached to closet door and swing into closet or are detached and roll into closet. With these disappearing beds, day storage can be in either deep or shallow closets, depending upon the available space.

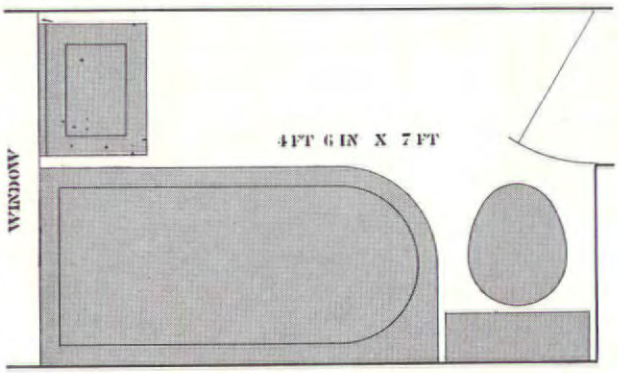
An economical room arrangement that results from the placement of essential furniture. This room scheme was developed by the architectural division of the Y. M. C. A.



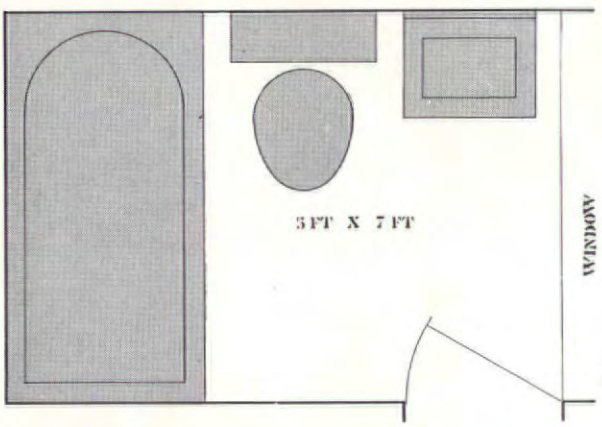
SMALLEST POSSIBLE BATHROOM. Single door entry essential (25 square feet).



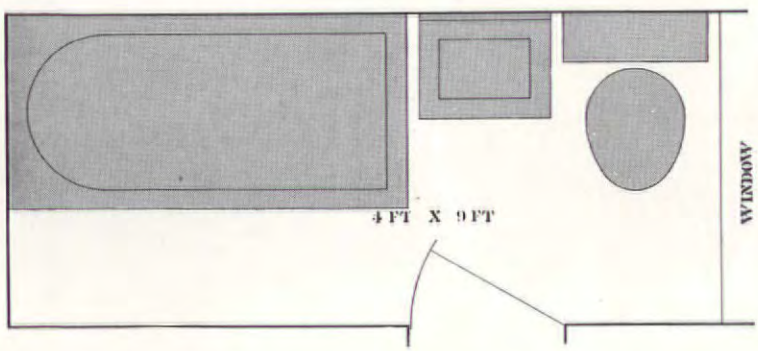
BATHROOM OF MINIMUM SIZE between two rooms (35 square feet).



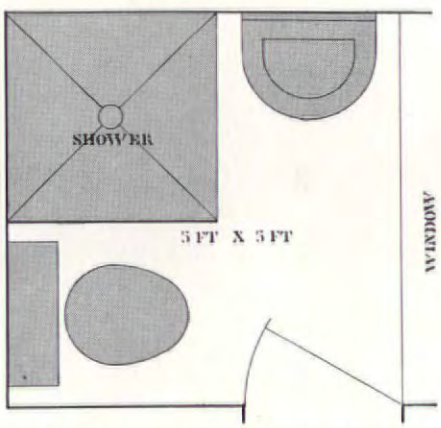
BATHROOM OF NARROW ARRANGEMENT suited to access from hall (31½ square feet).



SPACIOUS ARRANGEMENT. Single door entry (35 square feet).

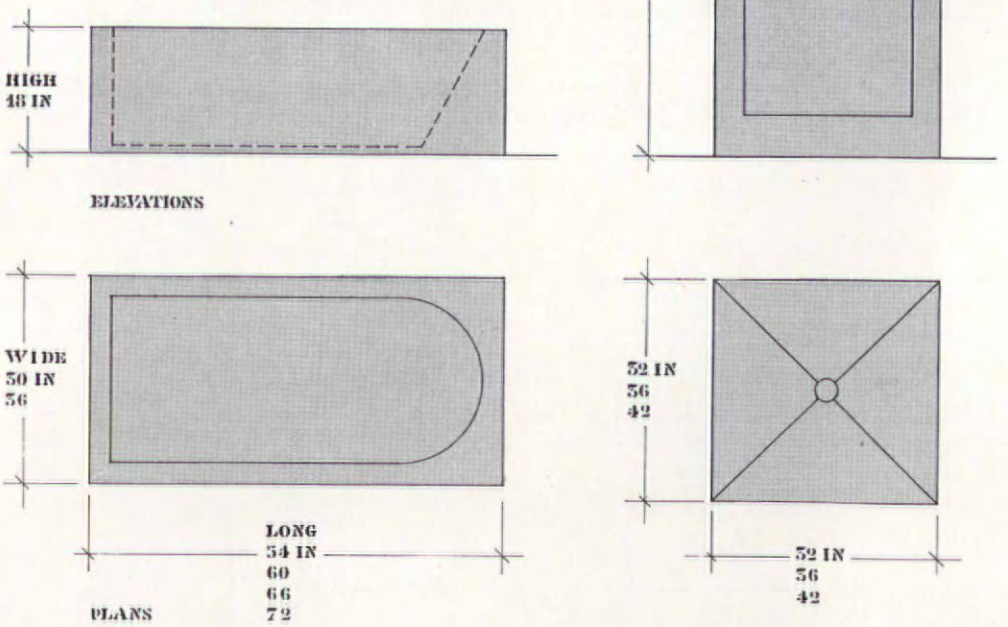


NARROWEST POSSIBLE ARRANGEMENT to parallel deep rooms. Fixtures are in row with economical plumbing (36 square feet).



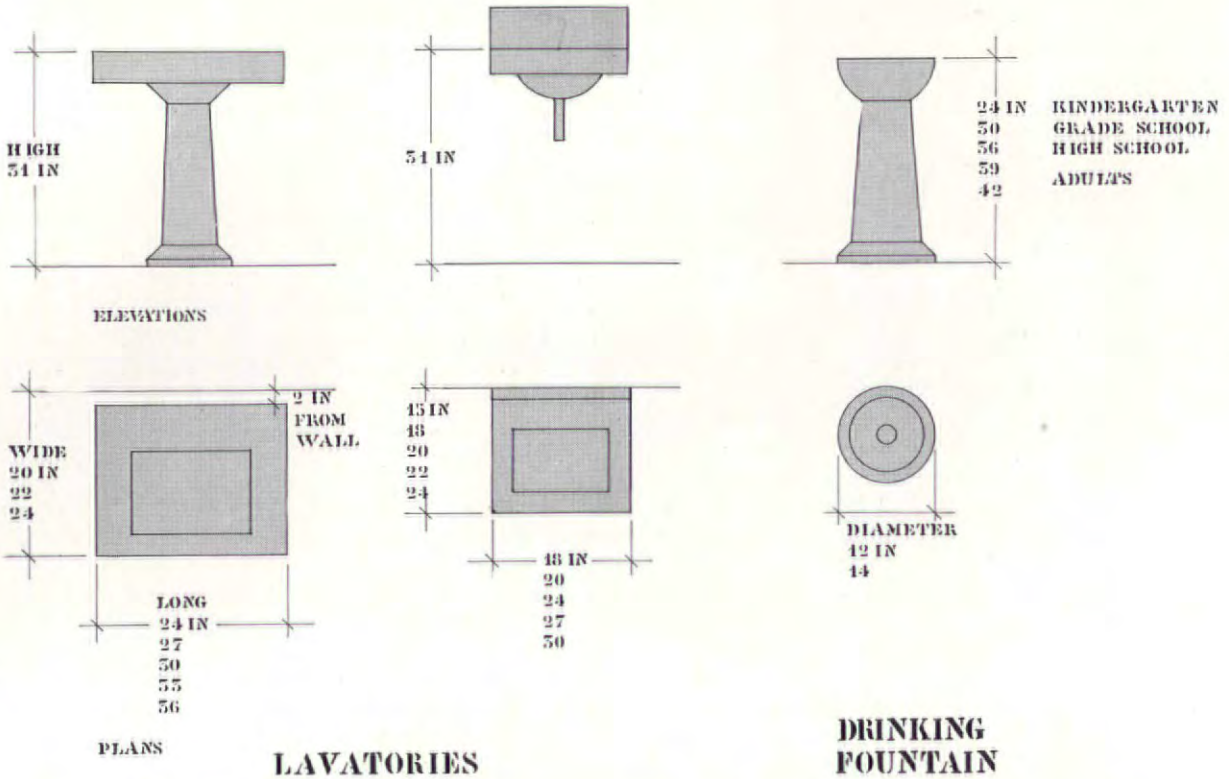
ARRANGEMENT OF MINIMUM SIZE with shower (25 square feet).

BATHROOM WHICH COMBINES SHOWER AND TUB with convenient location of fixtures. The wall and floor tiling are correct for tub and toilet seat.



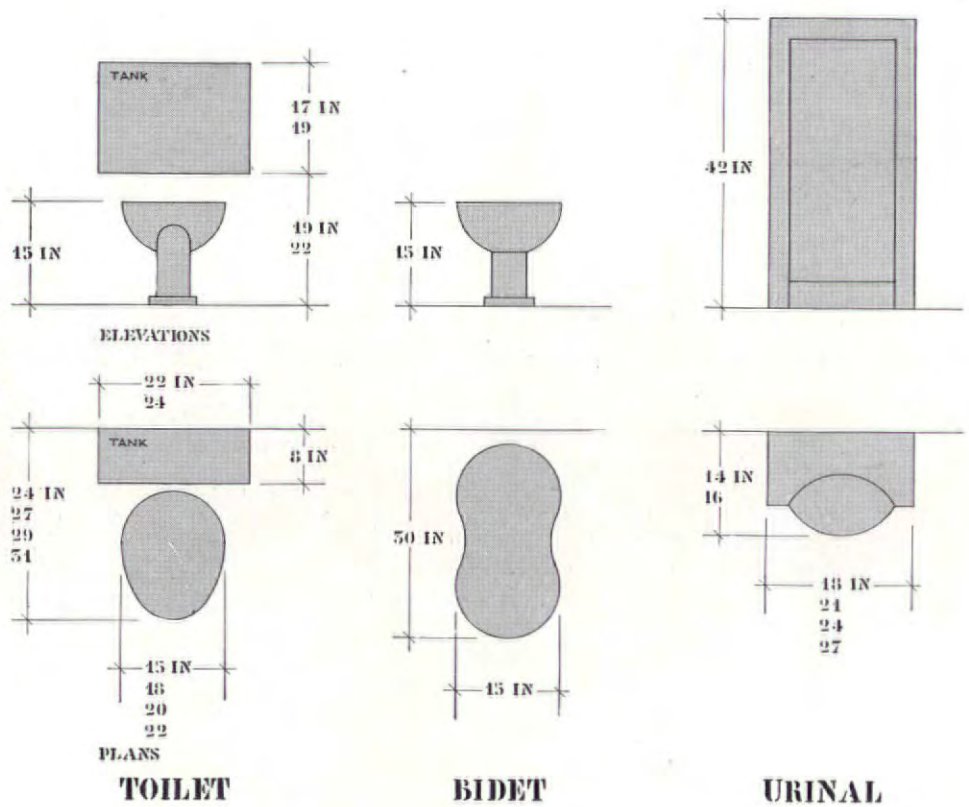
BATHTUB **SHOWER CABINET**

STANDARD TUB AND SHOWER-CABINET SIZES in prevailing use.
Exceptional and special sizes are also procurable.



LAVATORIES OF PEDESTAL AND WALL TYPE AND DRINKING-FOUNTAIN SIZES for general use. The recommended height for the lavatory is 31 inches. Drinking fountains vary in height from 24 inches to 42 inches, accommodating all school grades from kindergarten to adults. Wash basins may be obtained with oval, circular or semi-circular bowls. Corner basins are also obtainable.

THE DIMENSIONS FOR FIXTURES IN DRAWINGS are for adults. The height of the toilet seat for kindergarten and for the nursery toilet should be a maximum of 9 inches. For junior high school grades the recommended seat height is 13 inches.



Furnishings of a Typical Hospital Room:

1 bed (adjustable).
1 closet.
Bedside table.
Feeding table.
Adjustable reclining chair (patient).
Straight chair (visitors).
Dresser.
Writing desk (optional).
Couch (optional).

Recommended Bed Sizes:

1. For general hospital use:
   (a) Length (inside distance between head and foot posts) ..... 6′ 6″
   (b) Width (end angles of springs).. 3′ 0″
   (c) Height from floor to tip of springs, (inclusive of castors, etc.)..... 2′ 3″
2. For certain institutional use the need for a narrower bed is recognized. In these cases the recommended width is 33 inches, with dimensions the same as (a) and (c) in (1) above.
3. For private room use, where a wider than standard bed is desired, the recommended width is 39 inches, with dimensions the same as (a) and (c) in (1) above.

Research on Bed Sizes

"On June 27, 1923, Miss Margaret Rogers, superintendent of the Lafayette Home Hospital, Lafayette, Indiana, was appointed by the Department of Commerce to act as its representative in gathering the data on which to base recommendations for standard dimensions of hospital beds. Questionnaires were sent to many of the hospitals throughout the country. The replies were tabulated, showing the following results:

1. Total beds reported: 92,167.

2. Variations in length, 33, as follows: 60, 64, 65, 68, 70, 70¼, 70½, 71, 72, 72½, 73, 73½, 73¾, 74, 74½, 75, 75½, 76, 76½, 77, 77½, 78, 78½, 79, 79¾, 80, 81 82, 83, 84, 86, and 90 inches.

Reported lengths (in order of relative importance)

	Per Cent
72, 72½	27.5
75, 75½	16.0
74, 74½	14.5
78, 78½	12.3
76, 76½	11.3
77, 77½	11.2
73, 73½, 73¾	3.4
60, 71	1.0
80	.8
82, 90	.8
81	.6
79, 79½, 79¾	.5

"As regards width, the 36-inch bed is by far the most popular, representing considerably over 50 per cent of the beds on any basis of tabulation. For this reason it is believed that this width may be made standard, and that any other widths should be looked upon as special to meet special conditions. The 36-inch width of end angles of the spring has been adopted by the Federal Specifications Board as standard for all United States Government hospitals." *

Door width for general hospital use to permit passage of beds through doors:

Where 36″ bed is used, ... 3′ 8″
Where 39″ bed is used, ... 3′ 10″

(This allows approximately 5″ clearance with door open at right angles.)

Hospital beds should stand free from wall, crosswise in room (with side of bed, not head or foot, toward the window). Where the window draft cannot be avoided, the draft should be across the foot of the bed only. Obviously the successfully-designed hospital will lay out rooms so that all beds *can* be placed crosswise.

*Elimination of Waste: Hospital Beds. U. S. Department of Commerce. Government Printing Office,. Washington, D. C.

REFERENCES

"Hospital Beds," Division of Simplified Practice, No. 24, Department of Commerce, Washington, D. C.
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"Recommended Minimum Requirements for Plumbing," U. S. Department of Commerce, BH 13.
"Outline of the Industrial Sanitation Code," American Standards Association, 1924 draft prepared by committee Z4.
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TECHNICAL NEWS AND RESEARCH

Fischer

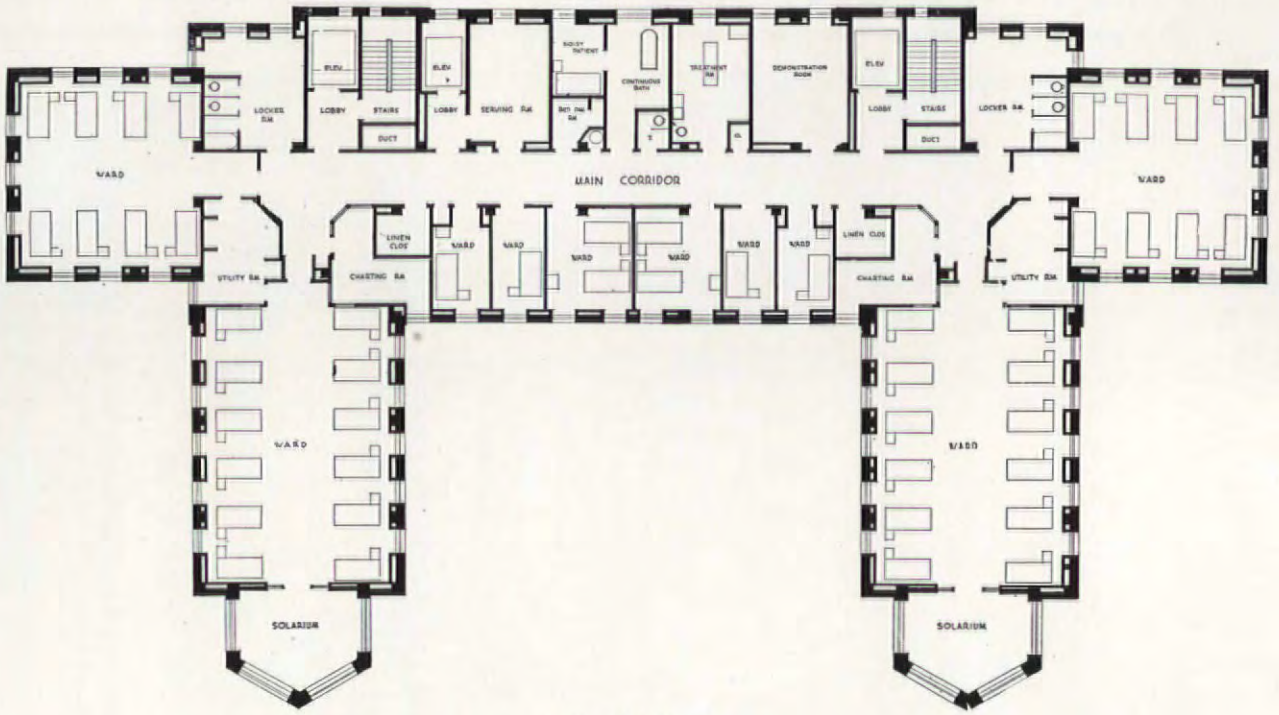
NEUROLOGICAL INSTITUTE OF NEW YORK, COLUMBIA-PRESBYTERIAN MEDICAL CENTER
JAMES GAMBLE ROGERS, ARCHITECT — C. F. NEERGAARD, CONSULTING ARCHITECT

PART ONE — INSTITUTIONS FOR THE MENTALLY AFFLICTED

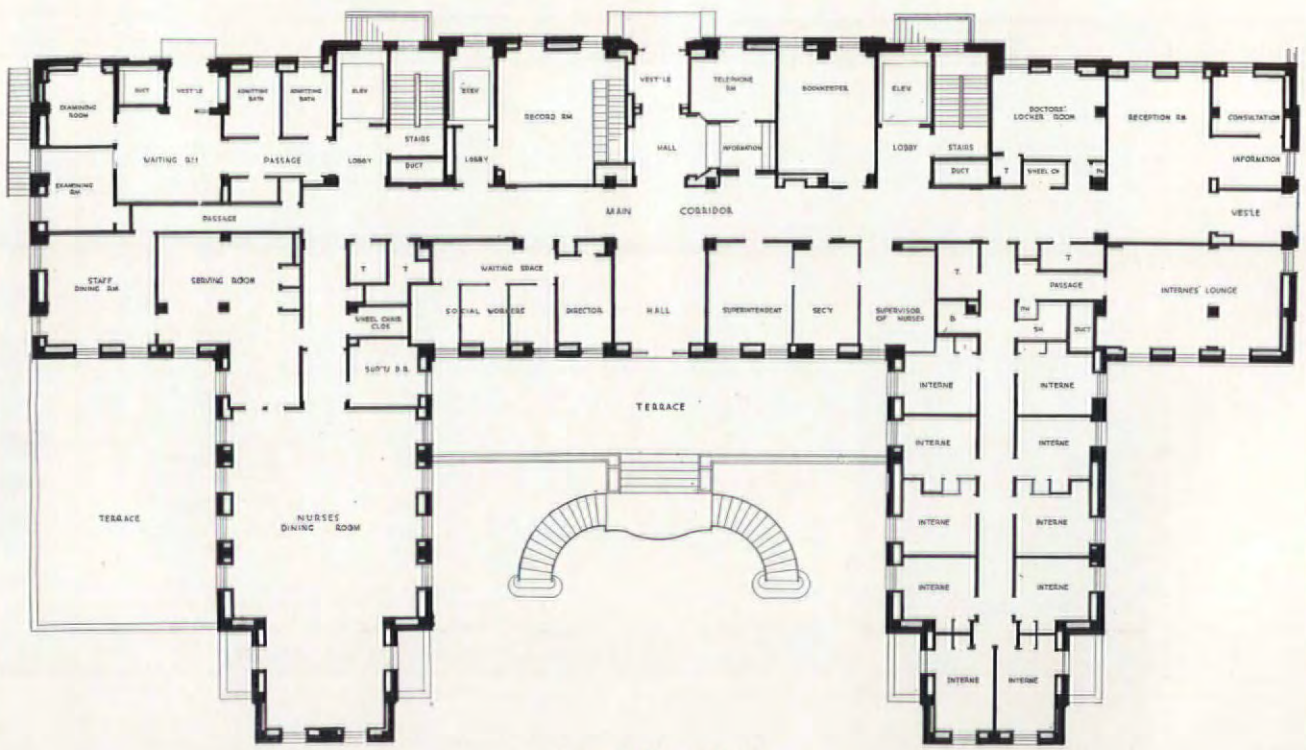
By Lewis F. Pilcher, Architect

PART TWO — PLANNING THE SURGICAL FACILITIES

By S. S. Goldwater, M.D., Hospital Consultant



Fourth Floor



Ground Floor Plan

THE NEUROLOGICAL INSTITUTE OF NEW YORK
COLUMBIA-PRESBYTERIAN MEDICAL CENTER

JAMES GAMBLE ROGERS, ARCHITECT
CHARLES F. NEERGAARD, HOSPITAL CONSULTANT

INSTITUTIONS FOR THE MENTALLY AFFLICTED

A Program of Planning Requirements

By LEWIS F. PILCHER, Architect

Data in this article were obtained by Prof. Pilcher as State Architect of New York.

To determine the requirements for a proposed State institution which would make possible the advancement of a preventive, curative and custodial policy, and provide adequate facilities for identification and treatment of all stages of mental disease, an investigation was undertaken by the office of the State Architect. This investigation was based on more than 30,000 actual case studies.

Since the condition of mental patients is not fixed and since the method of classification is that of assignment according to behavior, it was necessary to learn through the examination of actual cases the average number of patients in each class and the specific requirements of these classes.

This information, as it appears herewith, has been compiled by Prof. Pilcher in the form of a typical building program for an institution treating 3,500 patients. It is now being used by advanced architectural students at Pennsylvania State College as a thesis program.

It is assumed that a typical institution for the treatment of mental diseases will have a patient population of 3,500. The buildings, it is also assumed, will be divided into seven groups for general and medical administration, and when possible will be grouped geographically, although not necessarily in close juxtaposition:

Group 1—Reception Buildings	6%
Buildings for Convalescents	4%
Group 2—Hospital Buildings and Psychiatric Unit	2%
Building for Disturbed Patients (Reception Group)	8%
Group 3—Buildings for the Quiet and Appreciative Chronic Class	14%
Group 4—Building for Workers (Laundry, Shops, Farm, Grounds and Power House—Service Street and Farm Colony)	40%
Group 5—Buildings for Restless and Noisy Cases	20%
Group 6—Buildings for Epileptic and General Paralysis Patients	3%
Group 7—Building for Tuberculosis Cases	3%
	100%

Planning Considerations

Group 1 should have its principal outlook towards the south, free from the view of other hospital buildings. This is for the psychological reason of aiding those who come to the institution for the first time, and of shortening the period which must elapse before convalescents can return to their families. These features are much less important in other divisions of the hospital.

The superintendent's house should be fairly near Group 1, and also the administration building, in order that he may be brought as frequently and conveniently as possible in contact with this department of the hospital.

The convalescents' pavilions should be separated from the reception unit, but in close relation to it, and under the same medical management. There should be a garden outlook adjacent to the landscaped entrance plaza.

In the case of buildings for the infirm it is not necessary to separate the sexes. It is necessary, however, to do so in the case of patients in Groups 2, 4 and 7.

The mortuary should stand in fairly close relationship to the infirm group in order to avoid the necessity of transporting bodies through the entire grounds. The death rate should be figured at 6 per cent.

The buildings in Groups 3, 4, 5 and 6 may be arranged entirely with reference to convenience and economy of administration. Grouped dining halls should be provided for the different classes of patients. Men and women should be cared for in separate units. These units should have several pavilions so placed as to provide a graduation from the appreciative chronic cases to those in an advanced senile state. The day rooms should be oriented to obtain sun for the greater part of the day. No dormitory should be planned for more than 50 patients:

Dormitory space—50 square feet per patient.

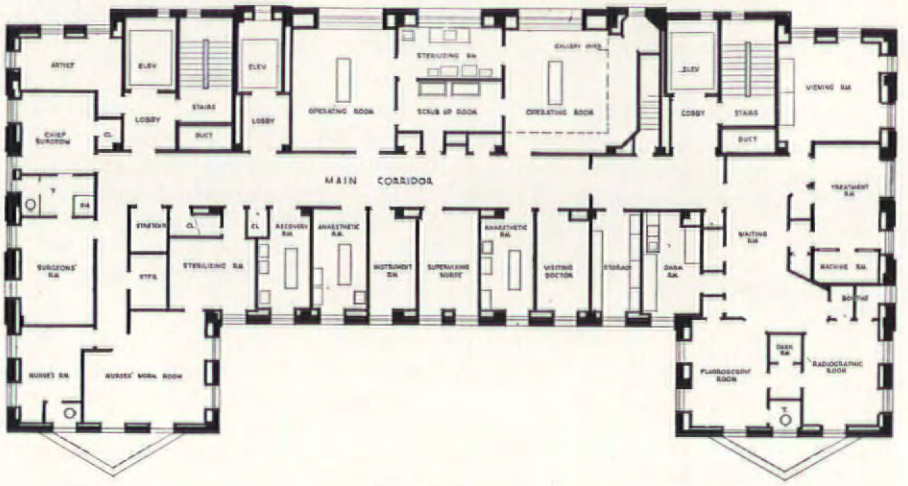
Day-room space—40 to 50 square feet per person.

One toilet and a lavatory are required for each 6 to 10 patients, according to the type of service. One spray bath is required for each 30 patients.

All wards should be provided with an adequate number of single rooms, which should not be larger than 90 square feet in order to avoid the use of two beds in one room.

No dining hall should plan for more than 50 patients. Larger areas may be used if divided by dwarf partitions into smaller sections for 50 or fewer patients. All patients occupying the same dormitory should occupy the same dining room:

Dining room space—14 to 16 square feet per patient.



Tenth Floor

Sixth Floor

THE NEUROLOGICAL INSTITUTE OF NEW YORK
COLUMBIA-PRESBYTERIAN MEDICAL CENTER

JAMES GAMBLE ROGERS, ARCHITECT
CHARLES F. NEERGAARD, HOSPITAL CONSULTANT

BUILDINGS

Administration Building

Office of superintendent.
Offices of assistant physicians.
Offices of medical staff.
Offices of steward.
Offices of clerical staff.
Offices of welfare workers.
Offices of director of welfare of hospital.
Medical records and stenographers.
Medical library.
General post office.
Telephone central.
Reception of visitors.
Issuance of passes and information.
Toilets for public.
Utility rooms.

Psychiatric Reception Hospital

First Floor:
Office of medical director.
Office of staff.
Office of nurses.
Records.
Examination room.
Waiting room.

Second and Third Floors—Psychiatric Clinic:
Office of director.
Rooms for eye, ear, nose, throat, teeth treatment.
X-Ray examination and dressing rooms.
Wasserman tests.
Endocriminology.
Laboratory for stomach, urine and excreta analysis.
Psychology (3 rooms).
General research laboratory.
Small lecture room.

Basement:
Hydrotherapy.
Rest rooms.
Pack rooms.

General data regarding psychiatric reception hospital:
This building is best arranged with the above activities in the center and with wings in which are placed dormitories, single rooms and day rooms for men and women. Direct light is required in all rooms and corridors. Not more than 6 patients should be placed in psychiatric unit dormitories, which should have bath, shower, toilet and lavatory in direct communication as dependencies.

Individual lockers should be provided. Nurses' duty rooms are to be planned for each classification; these rooms to serve for examination rooms and as wards as circumstances require.

Other provisions:
Diet kitchen on each floor in patient wings.
Small dining rooms.
One isolation room, with toilet facilities in each wing for contagious cases and suspects.
One or two utility rooms on each floor of wings.
Elevators.
Apartments for two internes.
The dormitories and day rooms for suicidal cases should be arranged so that constant supervision is possible.

General Hospital

Wards and single rooms for patients.
Wards and single rooms for sick employees (30).—Separate from patients.
Nurses' duty rooms.
Linen rooms.
Observation rooms.
Day rooms and sun rooms for each ward.
Two operating rooms (major and minor).
Diet kitchen on each floor.
Several small dining rooms for patients.
Several small dining rooms for sick employees.
Elevator.
Apartments for two internes.
Wards should be lighted from both sides with partition on long axis serving as light screen 1′ 0″ above floor.
Water sections, utility rooms and clothes rooms adjacent to wards.

Kitchen Building for Psychiatric Reception Unit and General Hospital

Kitchen, scullery, storerooms.
Refrigerating rooms, serving rooms.
Dining rooms for patients.
Dining rooms for nurses and attendants.
Dining rooms for staff of reception hospital, psychiatric clinic and general hospital (space per person: 16 square feet).

Convalescent Buildings

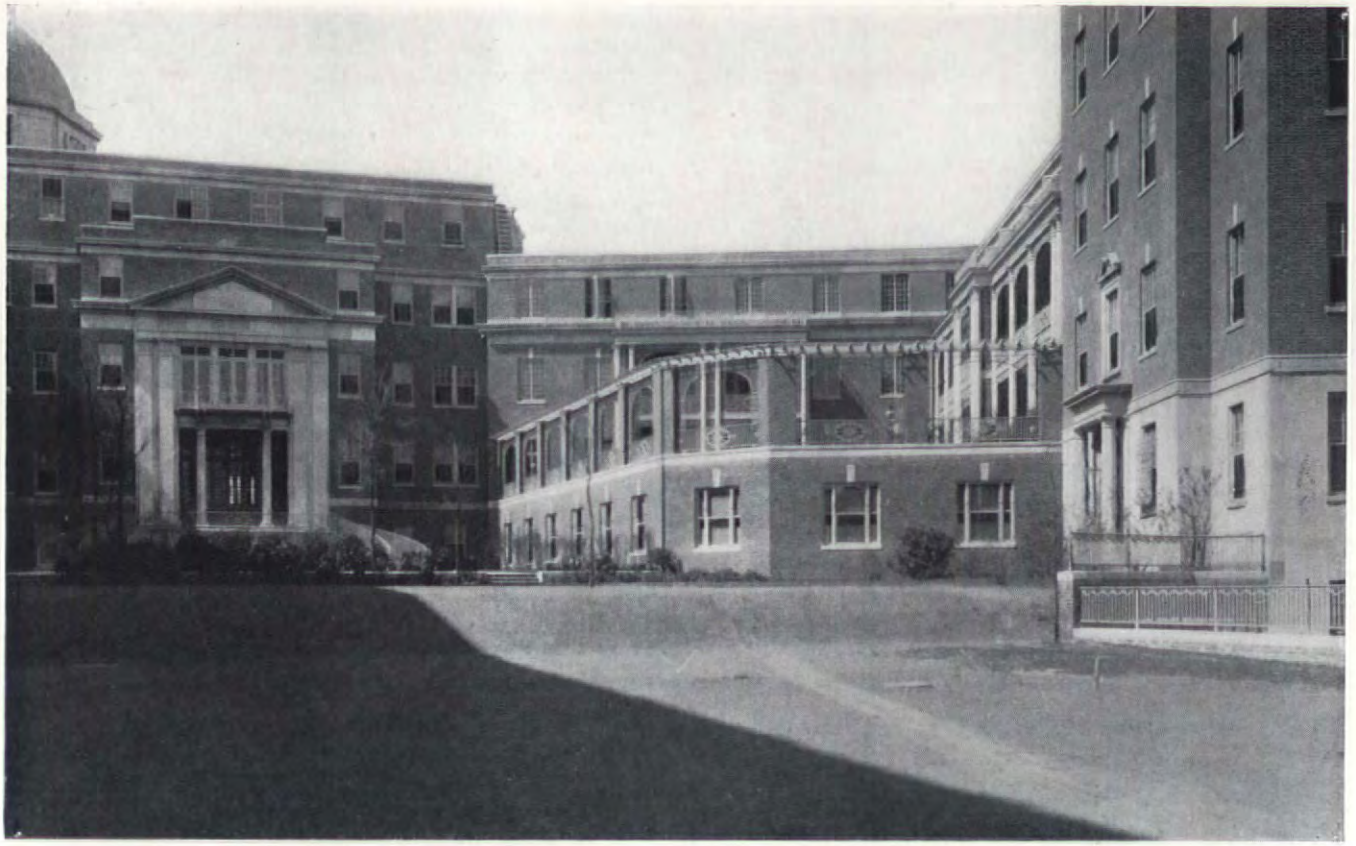
Men and women separate. It is especially important to relate this group to the outer world and the plan should suggest home or domestic ideas, with all the forms that recall the institutional life removed.

Disturbed Building (Reception Unit)

This building should be planned so that a three type classification for each sex is possible. Day rooms are to be provided, each with an occupation room in connection. In the case of two of the classifications prolonged bath equipment should be introduced. A dining room adjacent to each classification is required. Diet kitchen and serving room may be combined.

This building forms part of the reception unit or group. It should be isolated from the other buildings of the institution and those of the group of which it is an integral part. It should not be seen from the entrance, reception building, approach or from the convalescent unit.

Not more than four persons should be located in a dormitory. All doors should be flush veneered,



INSTITUTE OF HUMAN RELATIONS AND STERLING HALL OF MEDICINE AT YALE UNIVERSITY
GROSVENOR ATTERBURY, ARCHITECT

The outdoor balconies facing the elevated terrace open on individual rooms in the psychiatric ward. This ward is divided into two complete units, one on each floor, containing 25 beds each.

opening into the corridor, with hardware on the outer side. The partitions should be solid. The heating and ventilation systems must be indirect, with openings high on the walls. The window openings should be protected with a substantial steel mesh on the interior. The toilets are to be open and exposed so as to enable easy, direct supervision by attendant. For the day-room space allow 100 square feet per patient.

Chronic Building Units

In the housing of the Appreciative Chronic cases men and women patients are segregated. The grouping of several pavilion units of one or more stories about a landscaped area is advisable. When a number of units are grouped, a continuous corridor should connect the several pavilions; these should be spaced about 70 feet apart. On one side of the corridor between pavilions are to be arranged stairways (panic and service) and rest rooms (opposite). Provision may be made for single rooms, nurses' room and linen rooms.

Bathing facilities and occupational rooms may be located in the basement.

Dormitories:
For 34 patients, allowing 50 square feet per patient with master section equipped with one toilet for each 10 patients, one lavatory for each 6 patients and one emergency shower bath.

Day Room:
A south exposure is advised. Allow 40 square feet for each patient. Utility rooms and nurses' toilet and clothes room.
Charge nurses' suite in all pavilions containing more than one unit.
Nurses' duty room.
Linen room.
Several single rooms.
Clothes room—clothes chute, dumb-waiter, towel closet.

If, because of greater efficiency of service and adaption to ground requirements, the designer should advance a plan scheme for 2-story, 4-ward units, with a capacity of 275-300 patient beds in each unit and using the same area and sanitary requirements as in the case of 34-bed dormitory pavilions, the ward proportions of beds on each floor should be as 16, 16, 24; between the 16- and 24-bed dormitories there should be arranged attendant and night toilets, utility closet and clothes chute. The ward on the floor nearest the day rooms should have a capacity of 16 beds. Adjacent to this ward, and between it and the day room, should be the panic-service stairways, clothes room, charge nurse suite (bedroom, closet and bathroom), linen closet and clothes chute. The waste chute should serve the day room. The

dressing rooms adjoining the day rooms should be convenient to water sections and should provide for the care of private clothing and the issue of institutional clothing.

Dining Building for the Chronic Groups

The mess hall buildings should provide dining rooms for 50 patients in each. They may be two stories in height. Approximately 15 square feet of space should be allowed for each patient. Dining rooms for 50 nurses and attendants and adequate toilets are to be arranged. Connected with the dining building should be a fully equipped kitchen with overhead ventilation and light. Necessary scullery, store and refrigerating rooms are to be provided. If the building is to have more than one story, sufficient serving rooms with dumbwaiters, or an elevator for food cars, should be provided. Round tables seating 8 persons are to be used.

Chronic Disturbed Group

This building or group of buildings should be sufficiently distant from the others to prevent annoyance. Three classifications may be used. Dormitories should not contain more than 6 patients. Not less than 8 betterment suites of one and two rooms with connected vocational room and open toilet should be planned.

Epileptic, General Paralysis, Infirm Units

The same type of building may be used, although placed separately for the care and treatment of the epileptic, general paralysis and infirm patients. The chief requirements for this type are easy stairways, preferably ramp, and extra facilities for bed service. The day room should be planned with porches where the patients may be in the open air and sun, protected from the weather.

Low-Grade Patients

For the low grade of patients, including those with unclean habits, a unit should be planned with extra facilities in water sections and the construction should be so conceived that all portions may be freely flushed and drained.

Psycho-Neurotic Housing

It has been determined that the modern curative hospital, for the complete treatment of mental diseases, should provide special housing for the observation and betterment handling of psychoneurotics, the emotional cases being separately housed. These psycho-neurotic units are to be related to the housing group of the nurses and employees. They should be placed so that this class of patients may be kept in touch with normal everyday interests and activities.

Tuberculosis Pavilion

This building is to be isolated from the other institutional groups. It should face the southeast (the greatest exposure should be to the south). The plan should provide for an infirmary for the observation period; wards for infirm, disorderly and moribund cases. Outdoor sleeping porches, well protected from drafts, could serve all sleeping quarters.

Separate buildings should be constructed for ambulatory cases.

Assembly Building and Chapel

This building should be a structure combining the public and congregate activities of the institution. It should provide facilities for entertainment, religious service, school, library and applied social welfare. The school unit should serve 150 patients at one time. The assembly hall should seat 1,200 and have full protection against fire and panic.

Greenhouses

Separate from the propagating houses located in the farm colony. These houses could be situated in the vicinity of the reception group and approached from the appreciable chronic units.

Service Street

On the service street should be located:
Power plant (5 300-h.p. boilers) and coal supply.
Terminals of the railroad spur.
Mechanical shops.
Storehouses.
Institutional scullery.
Refrigerating plant.
Fire apparatus house.
Industrial building and vocational building.
Laundry.

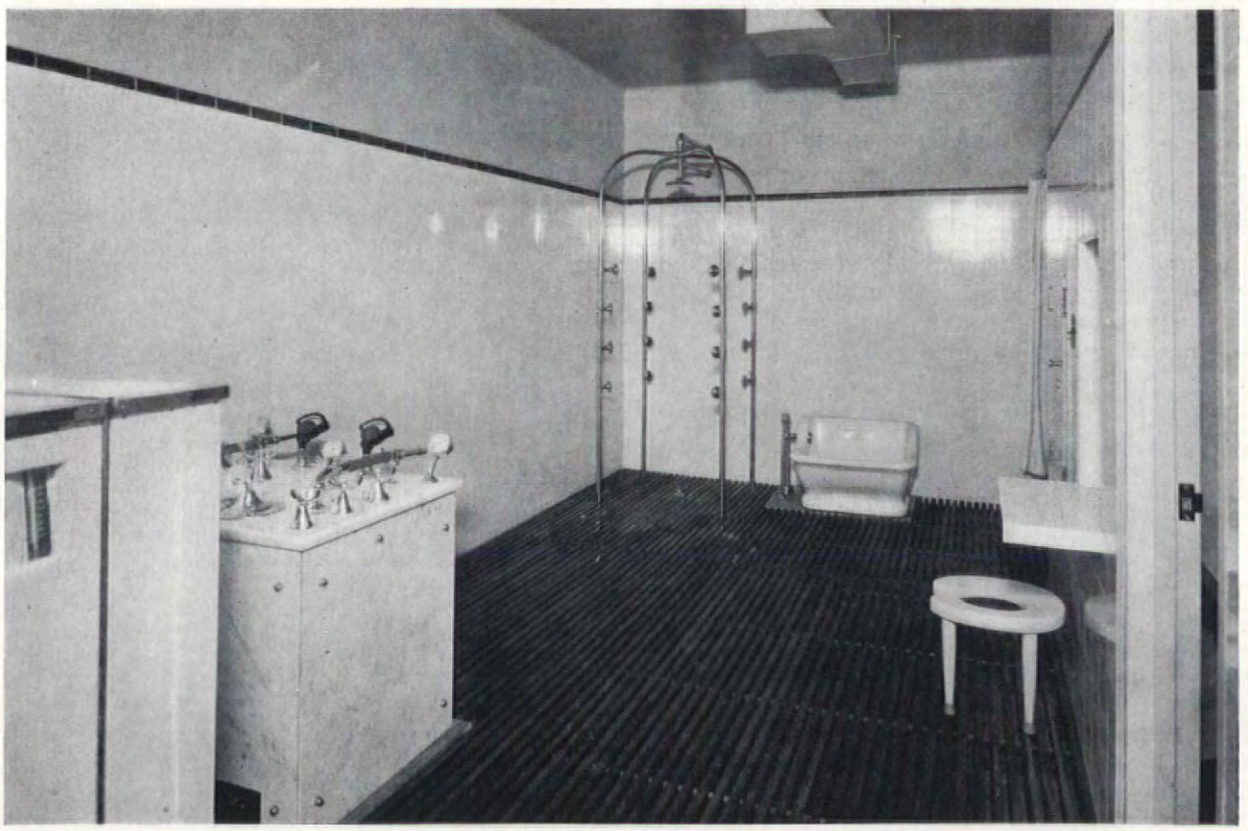
Guards

At the entrances to the reception group and the chronic groups there should be, for each, a gatehouse; at suitable locations there should be placed two shelters for ground guards.

Farm Colony

Within a rectangle of 100 acres should be arranged the following:
Residences for the chief farmer and veterinarian.
House for 25 employees.
Quarters for 100 patients.
Vegetable forcing house.
Vegetable and fruit storage, and root cellar.
Dairy barn for 200 cows.
Milk house and sterilizing plant (3000 quarts daily).
Stable and tool shed (20 horses).
Dairy and young stock barn (90 head).
Laying houses, poultry storage and brooder house.

Gymnasium in the Psychiatric Ward



Hydriatic Room in the Psychiatric Ward

INSTITUTE OF HUMAN RELATIONS BUILDING, YALE UNIVERSITY
GROSVENOR ATTERBURY, ARCHITECT

Piggery (80 brood sows).
Colony houses (15 hogs, 1 sow and brood).
Slaughter house (1200 square feet).

Within the 100-acre limit and conveniently arranged, making adequate provision for irrigation, drainage and wind protection, are to be plotted the acres for pasture and stockyard (adjacent to stable, stock and dairy barns), vineyard and fruit orchards.

Outside the 100-acre rectangle the cultivation of vegetables, silage, hay, grain, potatoes, and field crops should be provided for.

Patient Distribution

The distribution of the institution census, for an assumed population of approximately 3500, would be as follows:

Reception building	100
Reception, disturbed patients' building	60
Male convalescent pavilion	40
Female convalescent pavilion	60
Surgical—medical hospital	250
Civil cases	30
Psycho-neurotic betterment quarters	90
Male appreciative group	816
Male infirm unit	150
Male epileptic building	100
Female appreciative building	816
Female infirm unit	150
Female epileptic building	100
Low grade, filthy unit	200
Chronic disturbed group	318
Farm group	100
Tuberculosis unit	90
Total patient census	3,470

Personnel:

Residences and quarters for scientific and medical staff	20
Superintendent	
Assistant medical superintendent	
Visitors' house	
Chemical director	
Dental surgeon	
Two assistant physicians	
Two assistant physicians	
Two assistant physicians	
Senior assistant physician	
Four senior assistant physicians (bachelor)	
Officers' club (quarters for 4)	
Staff and administration employees	
Staff	12
Employees	30
Nurses' home, female group	100
Five cottages for 18 nurses—each cottage is under charge of an undergraduate nurse (total 19 each)	95
Two cottages for charge nurses and supervisors (each housing 18)	36
For male group:	
Main housing unit (nurses' home)	100
Five separate cottages each for 18 attendants. (Including home economic student nurse, total 19)	95
Two cottages for nurses' supervisors (each housing 18)	36
(In these three groups of nurses' and attendants' quarters, 90 psycho-neurotic patients are to be planned for.)	
Building for outside employees	80
Farm colony employees	25
Residences for engineer, assistant engineer, controller of grounds, chief farmer, sanitary engineer, and sergeant-at-arms	6
Internes resident in reception, medical, and convalescent units, in addition to the residences for staff resident group	6
Total personnel census	641

Water Supply and Tower

The water tower should be located where the head pressure requires. The tank should be 20 feet in diameter and with a capacity of 50,000 gallons. The water surface in the tower tanks when full, should be 160 feet above the ground level directly beneath the tank.

The origin of the water supply—its evidence of cleanliness, exposure to the sun and pure air—should be exemplary of the character of the whole institution. It should be made an object of interest to all visitors.

Sewage Disposal

The sewage disposal system will occupy an area approximately 80 by 350 feet. It should consist of:

Diverting manhole.
Screening chamber.
Preliminary settling tank and apparatus.
Sprinkling filters (80′ x 80′).
Final settling tank.
Sludge beds.
Liquid chlorinating apparatus.

The sewage production is based upon 200 gallons of water supply per day per person in the institution, approximately 85,000 gallons per day. It is essential that the plant be operated by one man.

Activated sludge operations may be considered, if economically feasible. The operation of the activated system, incorporating motors, air compressors, pumps, blowers, gas machines, etc., would require the services of four mechanical operators, and an additional area of 2000 square feet.

PLANNING THE SURGICAL FACILITIES

By S. S. GOLDWATER, M.D.
Hospital Consultant

The architect who undertakes to plan a hospital for the first time, and who turns to literature for guidance, finds at his disposal numerous descriptions of individual hospitals and a limited number of textbooks from which useful hints can be obtained. The available texts, as a rule, offer little more than an introduction, for the modern hospital is so complicated that a complete analysis of its structure and function is a task to be accomplished only by years of concentrated effort.

Several years ago Dr. Goldwater began the publication of a series of comprehensive reference lists dealing with special phases of hospital planning and construction. Three studies of this kind were in successive years presented to, and adopted as official documents by, the committee on construction of the American Hospital Association: these studies were devoted, respectively, to ward planning, to planning for private patients, and to planning of nurses' homes.

The list which is printed here relates to the operating room and its auxiliary services, and is presented as a continuation of the earlier studies, which have been issued by the American Hospital Association in pamphlet form.

Number of Operating Rooms

Based on number of operations; estimate maximum and minimum daily requirements; in this connection consider

(a) Daily surgical admissions.
(b) Volume of routine surgical work daily.
(c) Requirements for emergency cases and peak load.
(d) Staff organization and case grouping (facilities for open staff greater than for closed staff).
(e) Morning or afternoon program only, or all-day service.
(f) Separate operating rooms for courtesy staff (safeguards aseptic standards in staff service).

Location of Operating Rooms

Advantages of northerly exposure if natural lighting is to be used.

Isolated location, free from miscellaneous hospital traffic.

Stretcher route from and to wards and private rooms; avoidance of multiple elevator trips.

Physical relation to cooperating departments, including radiography, accident and emergency rooms, laboratory, resident staff quarters (also quarters of night call nurse, orderly and anesthetist, if service does not include day and night shifts or continuous duty).

Size of Operating Room

Minimum length and width of room sufficient to permit free circulation of attendants about the operating table and the surgical team (surgeon, operating assistants and anesthetist) without danger of contamination of aseptic field; 320 sq. ft. (exclusive of galleries or other space for observers) sufficient for normal working purposes; rooms containing scrub sinks, etc., must be larger than rooms from which plumbing fixtures are excluded; if large north windows are used in cold climate, consider the danger of placing the operating table too close to the window.

General Arrangement of Operating Rooms

Necessary service within the operating room by "unclean" assistants without invading aseptic working field; space on opposite sides of room for clean and "unclean" tables (see also "arrangements for observers").

Natural Illumination

North or northerly exposure.

Treatment of windows when other exposures are unavoidable.

Top light or vertical rays (value in abdominal surgery); climatic limitations to employment of overhead skylight in the summer; prevention of down drafts in winter (double glazing); radiator placement; location of warmed air outlets.

Dimensions of vertical windows and of skylights, if any; area proportionate to size of room.

Relation of top of window to ceiling.

Height of sill.

Clear or translucent glass.

Cleaning arrangements (outside balcony, leaning rail, strap hooks, supports).

Methods of controlling, regulating, or excluding light (lightproof shades of heavy, stiffened and filled fabrics, manually controlled or motor driven). Fixed or movable window sections.

Wide or narrow mullions.

Facility of operating hinged sash (type of hardware).

Material of window frames (rustless metal).

Weather stripping.

Screening of open windows in summer.

Heating (commensurate with size of window and degree of exposure).

Complete double glazing, or interior glass screen of reduced height to control down drafts; access to space between window and screen.

Artificial Illumination

Surgical illumination:
- Relation of light beams to surgical planes.
- Intensity, diffusion, control of shadows; illumination of field, reflection from field.
- Adaptability to type of surgical work.
- Obtainment of daylight values (color filtration).
- Ratio of intensity to normal daylight.
- Influence of color background on eye strain and acuity of vision.
- Value of color background as reflecting surface.
- Effect of intense, concentrated light on ocular accommodation.
- Indirect lighting.
- Semi-indirect lighting; use of mirrors.
- Single or multiple source.
- Distance from working surface.

Fixed *versus* adjustable overhead installations (advantage of flexibility *versus* danger of dust dissemination):
- Heat production and control.
- Supplementary adjustable lights supported by ceiling rods, wall extension brackets, or floor standards (universal joint).
- Special structural requirements.
- Cost of installation.
- Electric current consumption.

Utility lighting:
- Moderate intensity.
- Location.
- Sanitary features.
- Ease of replacement.

Emergency lighting system:
- Portable standard with portable battery.
- Central storage battery system.
- Automatic gas engine.
- Legal requirements.

Location of switches:
- In or out of operating room (factors of safety and convenience).

Air Supply and Air Treatment

Direct (natural) ventilation; used chiefly in small hospitals having a slight surgical service (rooms aired between operations).

Semi-indirect wall ventilators; warming and filtration of air-intake, associated with gravity exhaust flue).

Indirect:
- Mechanical exhaust only:
  - Actual sources of air supply where exhaust fan only is employed (air drawn directly from outdoors or from directly ventilated corridors preferable to air from sterilizing and workrooms).
- Gravity bypass to insure modicum of ventilation when exhaust fan is not active.

Mechanical supply:
- Rate of air change.
- Size of ducts; straight vertical ducts *versus* tortuous ducts; dry and moist air filters; cleaning of ducts and of dry filters.
- Thermostatic control.
- Arrangement for warming operating rooms in between-season periods when hospital wards are not heated.
- Humidity control: standard to be maintained (comfort, physiological need, safeguard against static).
- Seasonal variations.
- Control by operating nurses *versus* central control by house engineer.
- Signal lights if remote control is employed.

Floor Material and Treatment

Tile; terrazzo; marble; glass; rubber; composition (sanitary value, safety factors, durability, comfort, maintenance, ease of repair, relative cost).

Grounded metal floor grid as safeguard against gas explosions.

Floor slightly pitched to floor drain.

Floor drain; location of drain (under operating table or at one side); flushing valve.

Wall Material and Treatment

Tile (glazed or eggshell surface); marble; imitation marbles; terrazzo; glass; Keene's cement; plaster to ceiling or plaster above tile or other hard wainscot.

Height of wainscot: (a) utility height, (b) esthetic height.

Cap above wainscot or flush finish.
Sanitary base cove.

Angular or cove finish for vertical room corners and ceiling junction.

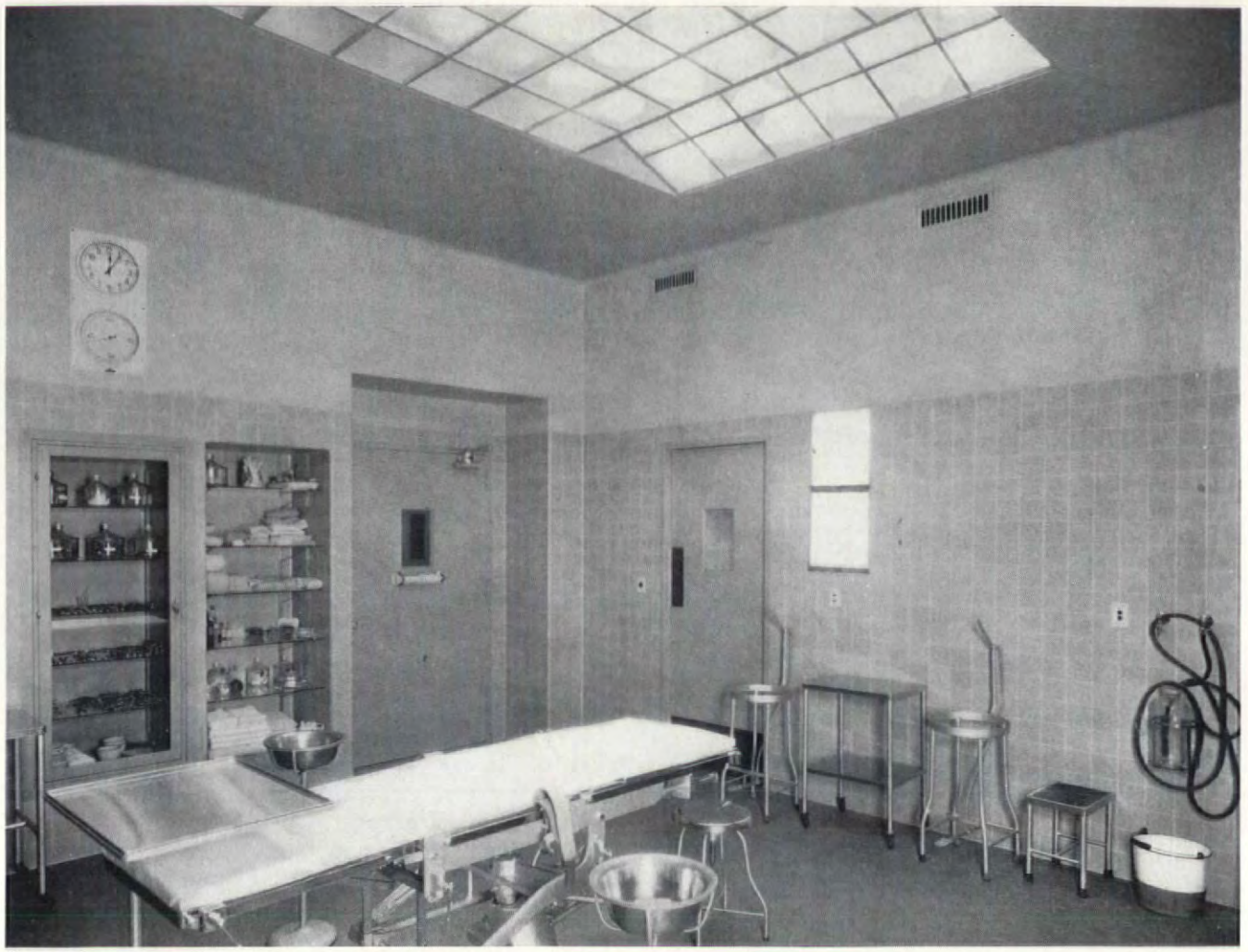
Enamel paint or dull finish of plaster surfaces.

Color Scheme

Value of floors, walls, ceiling, respectively, as reflecting surfaces.

Single color for walls and ceiling *versus* darker walls and lighter ceiling.

Relation of color to eye fatigue.



Demarest

OPERATING ROOM
MOUNT SINAI HOSPITAL, NEW YORK CITY
YORK AND SAWYER, ARCHITECTS

Doors and Doorways to Operating Rooms

Width of single doors.

Conservation of floor space through use of double or divided doors; width of such doors; extra cost.

Combination buck and jamb, flush finish.

Amputation of door stop 6 or 8 inches above floor to avoid dirt pockets.

Single acting or double acting.

Direction of swing; projection into operating room or corridor; danger of collision; utilization of space.

Sliding doors, exposed or in concealed grooves; access to grooves for cleaning.

Hand control; pedal control with pneumatic operation; 100 per cent automatic, independent of bodily contact.

Vision panel; height of center above floor; size.

Wood (flush or panel); hollow metal.

Push plates (metal, plastic material), of generous size.

Protection from stretchers (metal, rubber or plastic material).

Locks and keys.

Auxiliary dwarf doors (afford privacy and facilitate traffic and ventilation); dwarf doors inadmissible where air-conditioning system does not include corridor and other adjoining space.

Double-acting doors or framed opening between operating room and scrub-up room.

Arrangements for Observers

Portable stands (can be freely placed and removed when not wanted).

Built-in galleries (relatively commodious, higher than portable stands and therefore afford better view, but usually at greater distance from operating table).

Access to galleries or stands (noninterference with surgical procedures).

Space allowance (horizontal and vertical) for each row of seats; minimum height of first row of seats; distance from operating table; angle of vision.

Galleries parallel with or at right angle to axis of operating table.

Relation of gallery to window (obstruction of light).

Protection of aseptic field (glass shields).

Seating arrangements: economy of space in hinged seats; shape of seat to afford comfort; elbow rest.

Projection system (observers in adjoining room).

Coat space at entrance to gallery or in separate room near visitors' entrance.

Built-In Instrument and Supply Cabinets in Operating Room

Flush finish.

Locks.

Dustproof construction.

Transparent or opaque doors.

Width of (adjustable) shelves.

Free access.

Integral shelf alcoves with rounded interior angles; outer margin of shelf flush with wall.

Electric Receptacles

A. C. or D. C. (usually house current) supplemented by A. C. (supplementary public service) for special purposes.

General utility and special power plugs (portable x-ray, etc.).

Location: (a) safety factor, (b) convenient height of outlets above floor, (c) relative utility of assembled and distributed outlets.

X-Ray Display Box

Portable.

Fixed location (a) mounted on slide support in corner of room, (b) flush cabinet (2 large-sized films).

Unobstructed view from operating table and gallery.

Dark Room for Fluoroscopy (convenient location)

Compressed Air and Vacuum Supply

Portable apparatus; or stationary pump with pipe lines to all operating rooms (pressure gauges).

Special Operating Rooms

Nose and Throat:
- Special operating table or chair, or both; dental type cuspidor for minor operations.
- Waiting room for ambulant cases.
- Recovery room.

Eye:
- Lightproof shades; magnet; oil instrument sterilizer for cataract knives.

Urology:
- X-ray machine.
- Nonconducting floor covering under table.
- Formalin instrument cabinets.
- Electric cabinet (fulguration).
- Adjustable ceiling rod with electric receptacle and rheostat.
- Utility sink.
- Toilet adjoining.

Orthopedic:
- Plaster sink and drain board (marble or wood); suspension apparatus; splint closet.

Emergency (may be in accident ward).

Surgical Treatment or Dressing Rooms (distinct from operating rooms).
- Location (adjoining operating room or wards).

Surgeons' Scrub-up Sinks:
- Water supply (city water; filtered supply; sterilized supply).
- Proximity to operating room (danger of contamination increases with distance); in operating rooms, in alcove adjoining, or in separate room.
- Ratio of scrub-up sinks to operating tables.
- Single scrub-up alcove for two operating rooms (economy of double service).
- Height of rim from floor.
- Height of spout above rim (for comfort and avoidance of splashing).
- Elbow, knee or foot control.
- Material and finish of fittings (brass, nickel, chromium).
- Brackets or pedestals.
- Single or double sinks (do double sinks threaten asepsis?).
- Open spout on rose spray.
- Mixing valves (type).
- Built-in soap and brush containers.
- Liquid soap (gravity supply); control mechanism—foot or knee.
- Shelves over sink (height, width).
- Large-faced clock (effective location).
- Visual control of operating room.
- Ventilation of scrub-up room or alcove.
- Free space beside sinks sufficient for circulation without contact.
- Gown and glove containers (in operating room or scrub-up room).

Anesthesia

Relation of anesthesia rooms: (a) to elevator, (b) to operating room.

Number of rooms (use of operating rooms for anesthesia).

Width of doors.

Portable anesthesia stands *versus* central tank system with pipe supply.

Sink or lavatory.

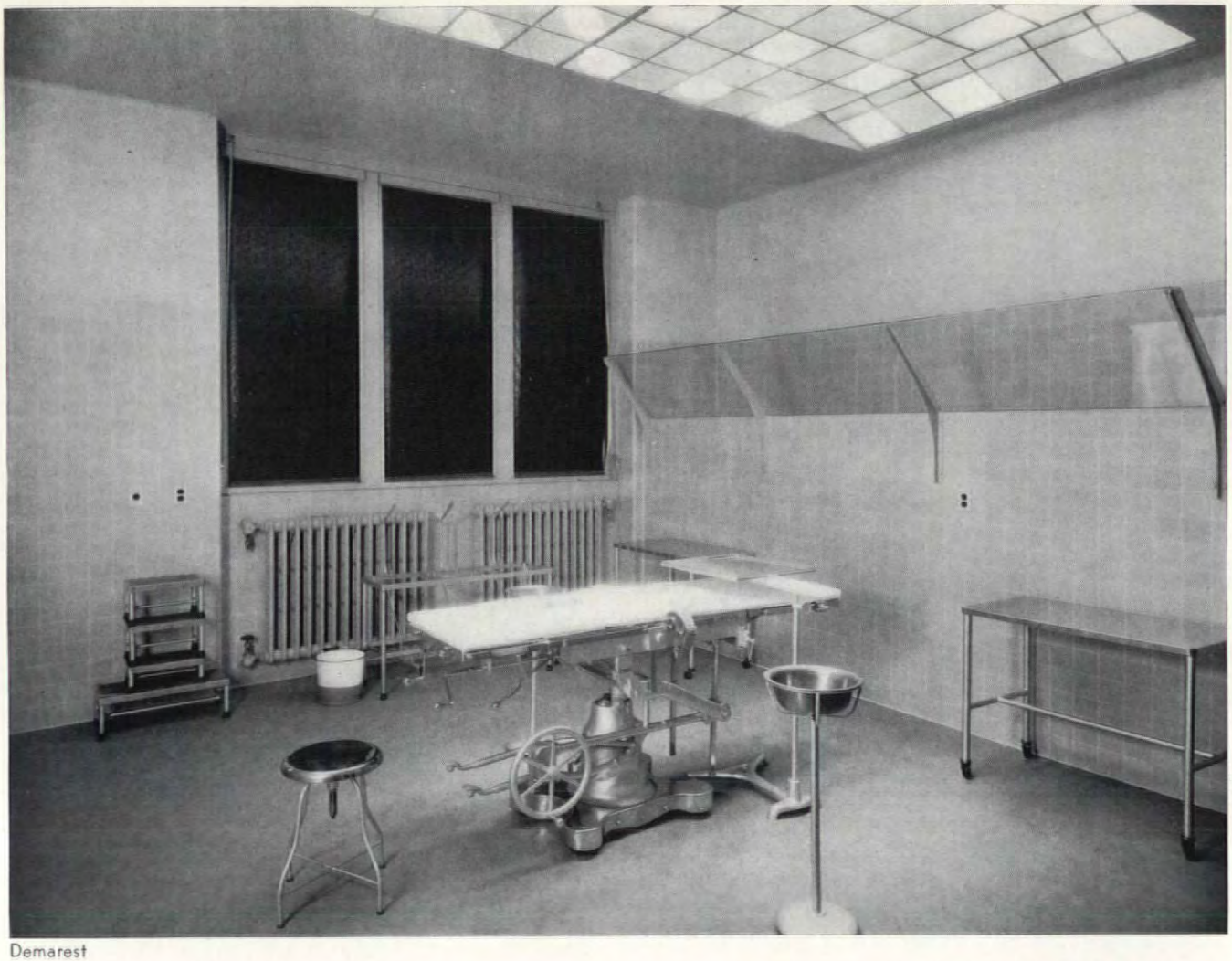
Supply cabinet.

Stretcher guards (doors and walls).

Ventilation.

Emergency push button.

Decorative scheme (psychological effect).



Demarest

OPERATING ROOM
MOUNT SINAI HOSPITAL, NEW YORK CITY
YORK AND SAWYER, ARCHITECTS

Sterilizing and Workroom

Size of workroom (number of workers, volume of work; intermittent or continuous service).

Central plant for sterilization of surgical dressings; location.

Central sterilization of (a) utensils, (b) instruments (risk of contamination in transit).

Local Instrument and utensil sterilizers; nonpressure or pressure type, adjoining operating rooms.

Single sterilizing or workroom with open sterilizers (instrument or utensils and instruments) for two operating rooms.

Access to local sterilizing and workrooms (a) from operating rooms, (b) separate access from corridor (requires additional space, but is serviceable), (c) automatic operation of door between operating room and adjoining sterilizing room ("magic" type requiring no touch).

Built-in dressing sterilizers and autoclaves.

Access to apparatus and connections.

Ventilation of built-in sterilizer compartments; floor drain.

Electric sterilizers; advantages and disadvantages.

Size and shape of drum sterilizers; economy of labor in large units; recording gauges.

Auxiliary dressing sterilizers (breakdown service).

Hood over open type instrument and utensil sterilizers.

Hydraulic or oil pump lift.

Vents for exhaust steam extended to open air.

Steam condensers ("ejectors").

Oil instrument sterilizers (electric connection).

Water sterilizers:

- Central or distributed.
- Size of units.
- Duplicate apparatus for emergencies.
- Recording gauges.
- Elevation to insure adequate flow.
- Pipe system (tin-lined) from central water sterilizers to operating rooms or adjoining workrooms (advantages and danger); reheaters at outlet (elbow control valve, receptacle beneath outlet).

Water still:
Single, double or triple distillation; capacity; location.

Cabinet for drum and supplies (separate storage for sterile and nonsterile supplies).

Metal or wood cabinets (pitched, sanitary top or built-in flush with plaster); drawers, cupboards, bins.

Counter shelves of wood, rubber, linoleum, composition or of stainless, noncorrosive metal; height above floor.

Interior adjustable shelves of sanitary construction.

Work tables.
Sink and drainboard.

Warming cabinets; separate or combined blanket and solution cabinets.
(a) Central installation.
(b) Individual warming cabinets, convenient to operating rooms.

Slop sinks:
Convenient location; flushing rim.

Special Workrooms

Glove preparation (sinks, cupboards, work tables, drying racks).

Salt solution preparation (single *versus* triple distillation).

Surgical tray preparation.

Plaster room (plaster bandage preparation).

Splint room (on operating floor, or adjoining pharmacy or central supply room).

Instrument washing room.

Instrument Storage

Central instrument room or distributed instrument cabinets.

Small individual cabinets for surgeons' private outfits or for special apparatus under strict department control.

Students' Lounge and Toilet

Teaching hospitals only.

Telephone Booth

Accessible to medical visitors.

Nurses' Dressing Room

Lockers, w. c., shower, couch.

Orderlies' Toilet and Dressing Room

Soiled Linen Closet

Ventilation.

Cleaners' Closet with Slop Sink

Ventilation; sanitary finish.

Corridor

Width; ventilation; acoustical treatment; floor finish; wall protection; privacy.

Apparatus Room

For special tables and other bulky apparatus intermittently used.

Recovery Room or Rooms for Desperate Cases

Proximity to operating suite.

Rest Room for Minor Ambulatory Cases

Private Consulting Room near Operating Room

For convenience of visiting staff.

Laboratory for Frozen Section Work

Not necessary if pathological laboratory is nearby.

Clinical Record Room

Stenographic service.

Supervising Nurse's Office

Telephone; emergency signal annunciator; clock, doctors' call system.

Local Signal System

For individual operating rooms connecting with
(a) *Supervisor's Office.*
(b) *Anesthesia Room.*
(c) *Laboratory.*
(d) *Student's Waiting Room.*

Dressing Room for Visiting Staff

Shower, toilet, telephone (exposed telephone or booth), space for desk, couch, chairs, lockers (individual lockers for active staff surgeons).

Lounge and Dressing Room for Surgical Staff

Usually combined with dressing room in smaller hospitals.

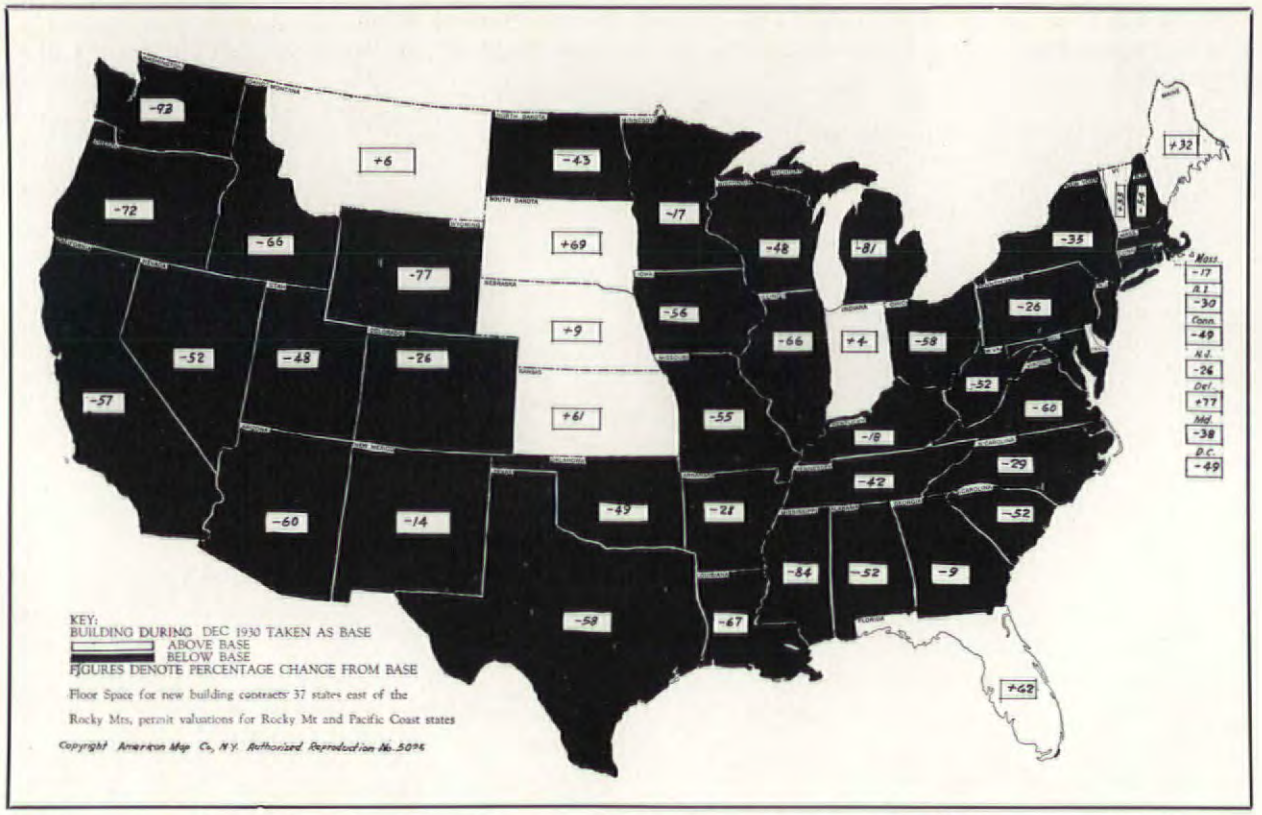
Special Dressing Room for Courtesy Staff

Registration Room and Lounge for Medical Visitors

Large clinics only; visitors' gown closet in smaller hospitals.

Dressing Room for House Staff

Alternate: use of visiting staff dressing room.



The December, 1931, building map showed eight states in the area east of the Rockies where building contracts, on a floor space basis, were higher than in December, 1930: Maine, Vermont, Delaware, Florida, Indiana, South Dakota, Nebraska and Kansas. The map for November showed nine states where the then current new building awards were larger than those of a year earlier. Of the states to show improvement in December, only Delaware, Florida and Nebraska showed gains in November. Of these states, only Florida maintained the gain scored in October; in fact, Florida has shown a consecutive gain over the corresponding month of the previous year since August, 1931. The increases here were principally due to small-house construction, although there has been a noticeable advance in commercial undertakings.

BUILDING TRENDS INDICATED BY THE CENSUS*

PART 6—INCREASING DEMAND FOR HOSPITALS AND INSTITUTIONS

By L. SETH SCHNITMAN

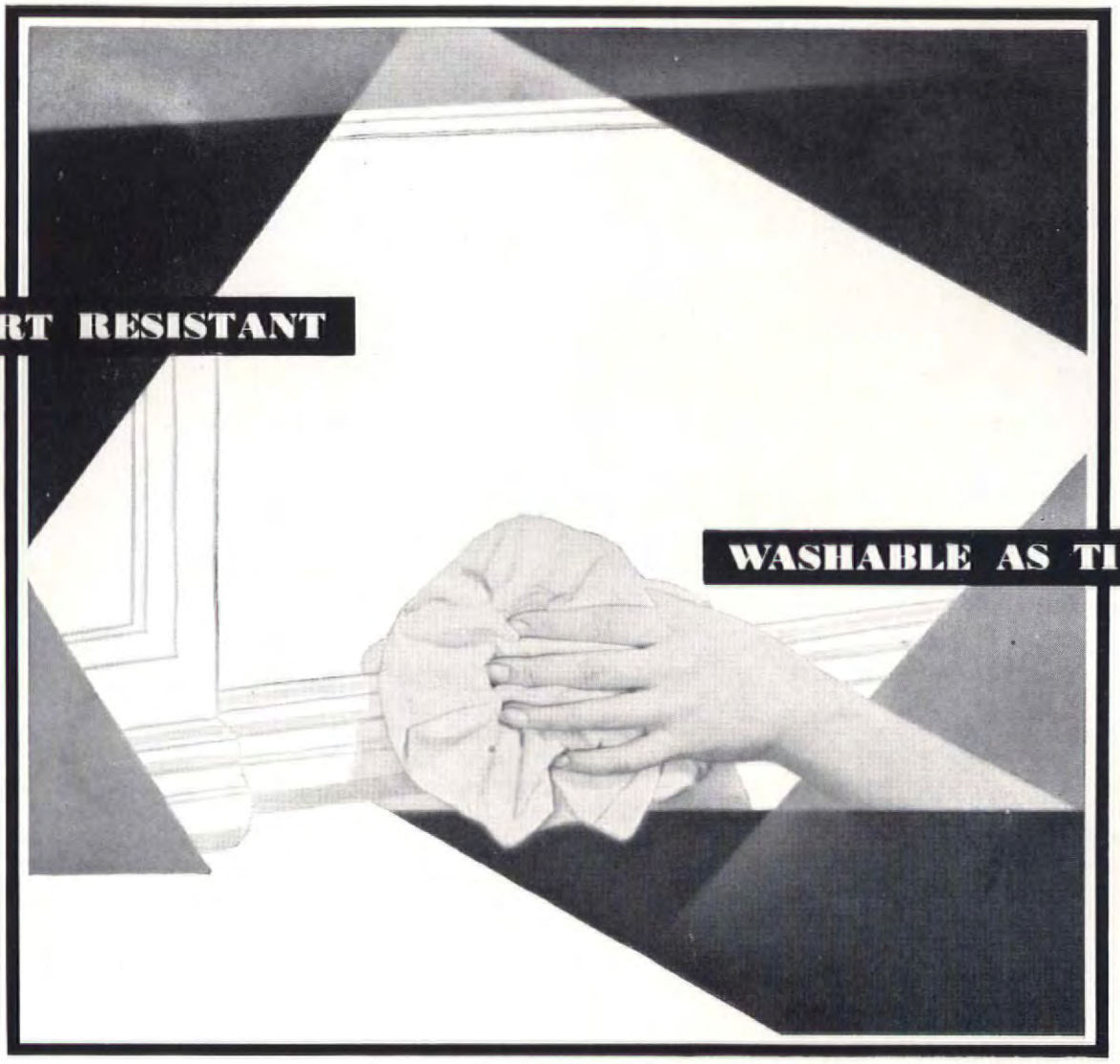
Society has made large advances in the care of its sick and infirm. Medical and sanitation science have materially enlarged the life-span expectancy of our people. At the same time the attitude of employers has shortened the work-span and is making more difficult the outlook of millions of our middle-aged wage earners. How then are these and the host of other new sociological, economic, political forces to affect the demands for new hospitals and institutions?

The composition of our population is undergoing striking changes; our middle-aged and aged are proportionately larger as a group than ever before; conversely our young are proportionately smaller as a group. In 1920, 21 per cent of our entire population was 45 years or more of age. In 1930, 23 per cent of our population was 45 years or older. In 1920, 34 per cent of our people were 35 years old or more; while in 1930, 37 per cent of the population was in that category. By 1940 it appears safe to assume that at least 25 per cent of our people will be 45 or more years of age and that at least 40 per cent will be 35 years or more.

From the population data alone it appears reasonable to presume that the demands for new hospitals and new institutions for the aged and infirm will continue to increase as long as the present population tendencies obtain. Our rising living standards will find a way to solve effectively the problem inherent in our present sociological and economic structure. Part of the solution will doubtless rest on new building—more hospitals, larger medical centers, more sanitariums, more asylums, more homes for the aged, more hospitals for the mentally deficient. This is not so much the price of progress as it is its reward, for as the

(*Continued on pages* 34 *and* 44, *advertising section*)

*Earlier articles in this series of population studies have appeared in these issues: Parts 1 and 2—August, 1931; Part 3—September, 1931; Part 4—October, 1931; Part 5—November, 1931.



YEARS of use in public buildings, offices and institutions, where good looks and practical qualities alike are essential, have proved the value of interiors painted with Barreled Sunlight.

Such interiors are lastingly bright . . . clean . . . cheerful. And they are easily . . . economically maintained.

A damp cloth quickly removes accumulated dust, smudges and finger prints from Barreled Sunlight surfaces; satin smooth, flawless, they have no minute cracks or recesses to catch and hold dirt.

Remarkably durable, Barreled Sunlight stands up under repeated washings. In addition to saving cleaning labor, it materially reduces the need of repainting.

Because it is an all-oil product, Barreled Sunlight may be tinted in a variety of pleasing colors to harmonize with interior surroundings. Tinted, it retains its washable qualities . . . rich depth.

Our catalog in Sweets will give you complete information. For your own files, let us send you our booklet, "For Interiors of Lasting Beauty and Cleanliness." Write U. S. Gutta Percha Paint Company, 22B Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Company.)

. . .

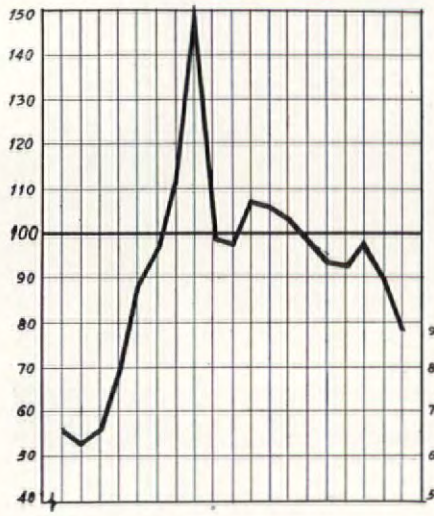
Barreled Sunlight is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight — its more pronounced whiteness, richer lustre and marked durability. (Note that both forms of Barreled Sunlight are readily tinted any desired shade.)

Barreled Sunlight

REG. U. S. PAT. OFF.

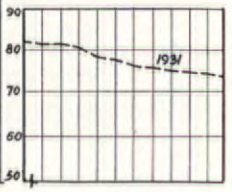
WHOLESALE PRICES FOR BUILDING MATERIALS

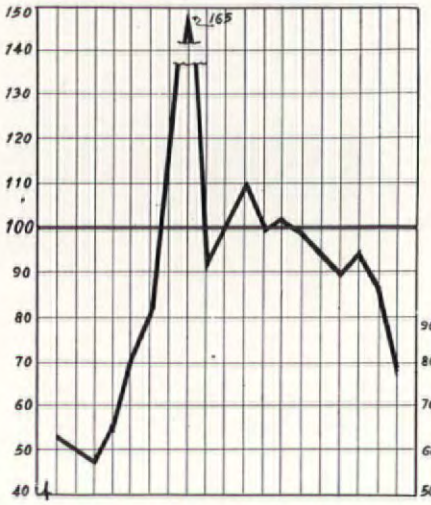
1926 Monthly Average—100



GENERAL INDEX

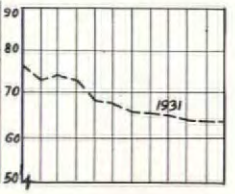
As yet there is no evidence that the long decline in material prices has been arrested.

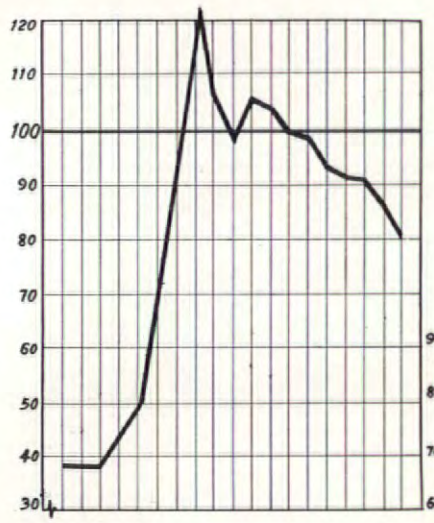




LUMBER

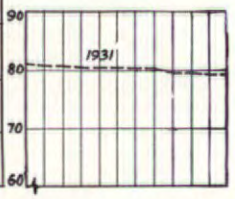
Continued weakness in lumber prices is probable over the next two or three months.

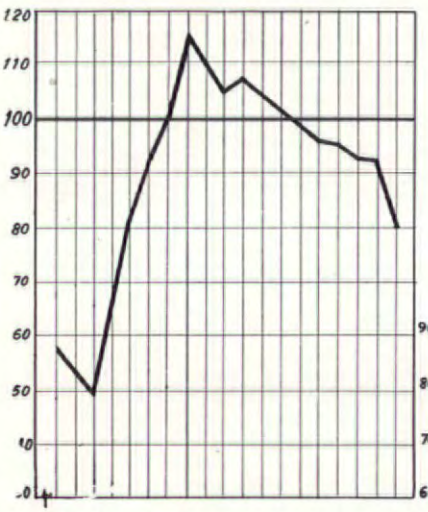




BRICK

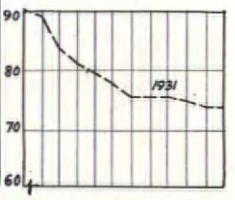
Prices will likely recede from present levels; local building conditions will determine course.

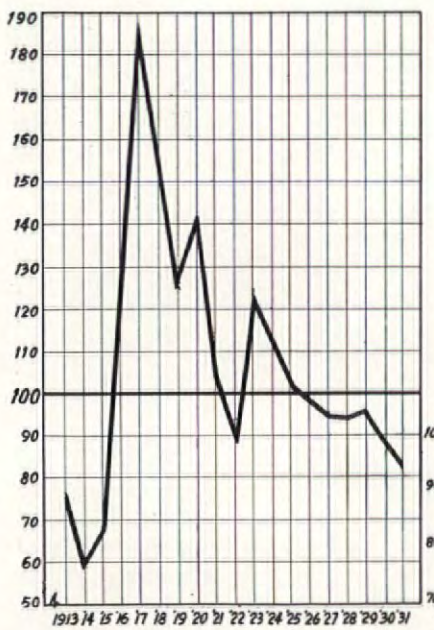




CEMENT

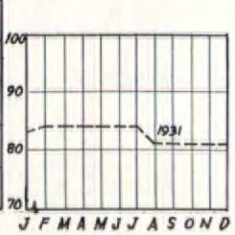
No stability for cement prices yet in sight; further weakness likely in near future.

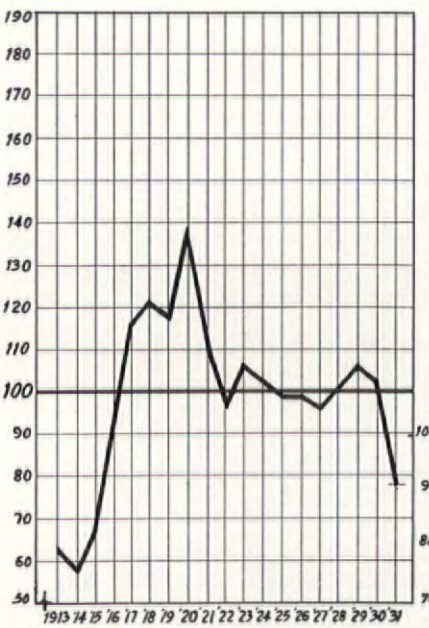




STRUCTURAL STEEL

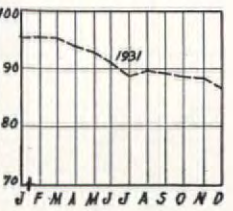
Current prices are not stabilized; recession from present levels appears imminent.





OTHER MATERIALS

Price movements of most other building materials will largely parallel building trend which is still downward.



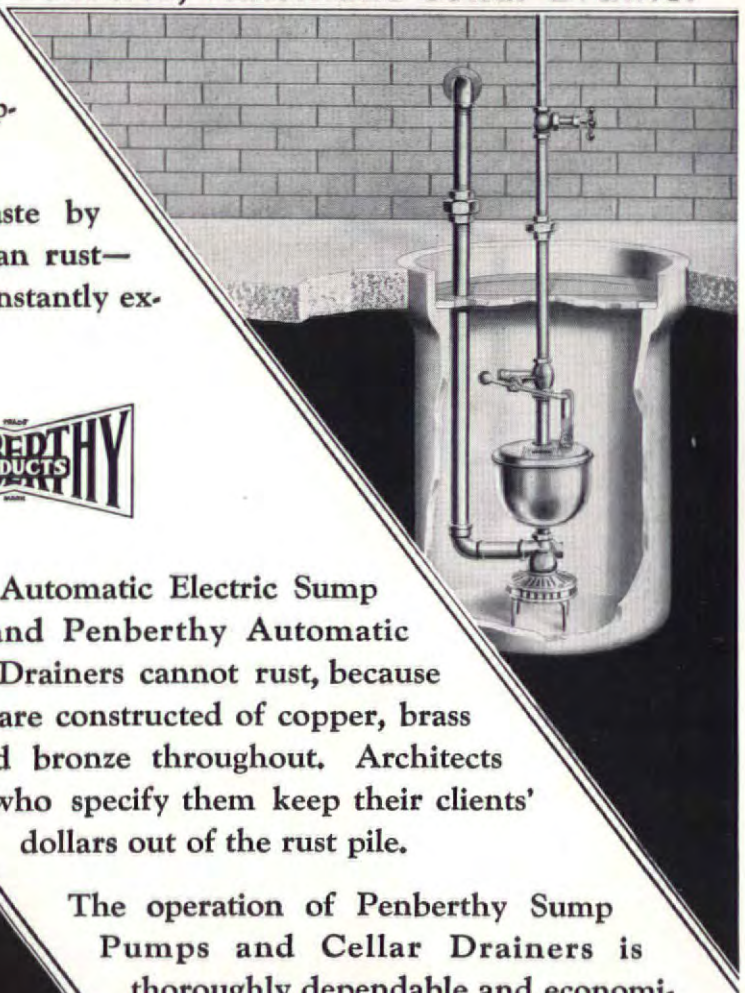
A $600,000,000 Waste!

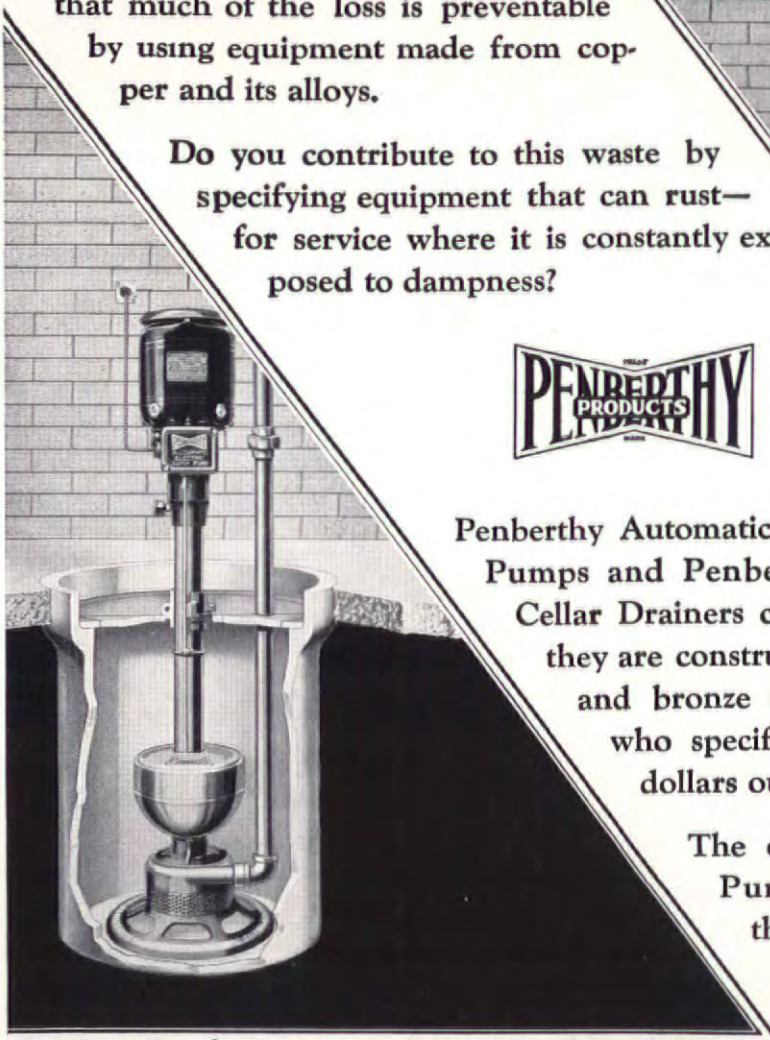
Are you responsible for a part of it?

The annual loss in the United States due to rust is estimated at $600,000,000. This figure is appalling—particularly when you realize that much of the loss is preventable by using equipment made from copper and its alloys.

Do you contribute to this waste by specifying equipment that can rust—for service where it is constantly exposed to dampness?

Penberthy Automatic Cellar Drainer





Penberthy Automatic Electric Sump Pump

PENBERTHY PRODUCTS

Penberthy Automatic Electric Sump Pumps and Penberthy Automatic Cellar Drainers cannot rust, because they are constructed of copper, brass and bronze throughout. Architects who specify them keep their clients' dollars out of the rust pile.

The operation of Penberthy Sump Pumps and Cellar Drainers is thoroughly dependable and economical. There is a size and type for every drainage requirement.

These Penberthy Pumps are quickly available—they are carried in stock by the leading jobbers throughout the country.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

NEWS IN BRIEF

FEWER WORKING HOURS TO RELIEVE UNEMPLOYMENT

To double the number of men employed, a working day of two shifts of five hours each in the construction industry is advocated by the California State Chamber of Commerce through the recently organized California Building Congress. Already inaugurated in San Francisco, the plan, its sponsors hope, will spread to other parts of the country.

The Congress has found that labor working five hours a day is actually producing more work per hour than on the eight-hour basis, according to Frederick H. Meyer of San Francisco, director of the American Institute of Architects, and chairman of the northern section of the Congress. Thus, he points out in an appeal for cooperation sent to all members of the Congress, the decreased labor cost will offset any charges resulting from the changing of shifts. The arrangement contemplates an intermission of half an hour between shifts.

STANDARD GRADING ADOPTED FOR FACE BRICK

Face brick has joined the growing list of building materials which are being sold under grading rules that protect both the buyer and the seller. At its annual meeting, the American Face Brick Association formally adopted standard grading rules that had been in process of preparation for more than a year and that will henceforth be used as the basis on which face brick are sold.

Four classifications are given in the rules: Uniform Shade, Mingled Shade, Substandard and Cull. All first quality brick are placed in the first two classifications, which have stringent requirements as to dimensional variations, chippage, color and warpage.

The rules as adopted are based upon the standardized sizes of brick which were established in 1923. At that time a size of 8″ x 3⅞″ x 2¼″ was made standard for smooth face brick, while a size of 8″ x 3¾″ x 2¼″ was made standard for rough-textured face brick. It was recognized then, as now, that it is impossible to manufacture brick conforming exactly to these sizes, but no limitations as to the variation in sizes were worked out. The new rules cover this point thoroughly.

NEW YORK STATE OFFICE BUILDING

The illustration of the State of New York Office Building, appearing on page 54 of the January issue, was credited to William E. Haugaard as architect. The credit line should have included Sullivan W. Jones as State Architect. The building was designed in the office of the State Architect while Mr. Jones held that position. Mr. Haugaard's connection with the building was that of Commissioner of Architecture.

WINNING DESIGN BY GUSTAVUS A. MANG

NEW YORK REGISTERED ARCHITECTS CERTIFICATE AWARDS

First prize of $100 for a design of a membership certificate in the Council of Registered Architects, State of New York, has been awarded to Gustavus A. Mang of Scarsdale, New York. The competition, in which architects and draftsmen of both sexes throughout the State were entered, was conducted by the Architects' Emergency Committee for the Region of New York to aid unemployed members of the profession.

Second prize went to Edmond J. Ryan of Chateaugay, New York; third prize to Weston Morley Geety, and fourth prize to Albert Kirschbaum, New York City.

The following received honorable mention:

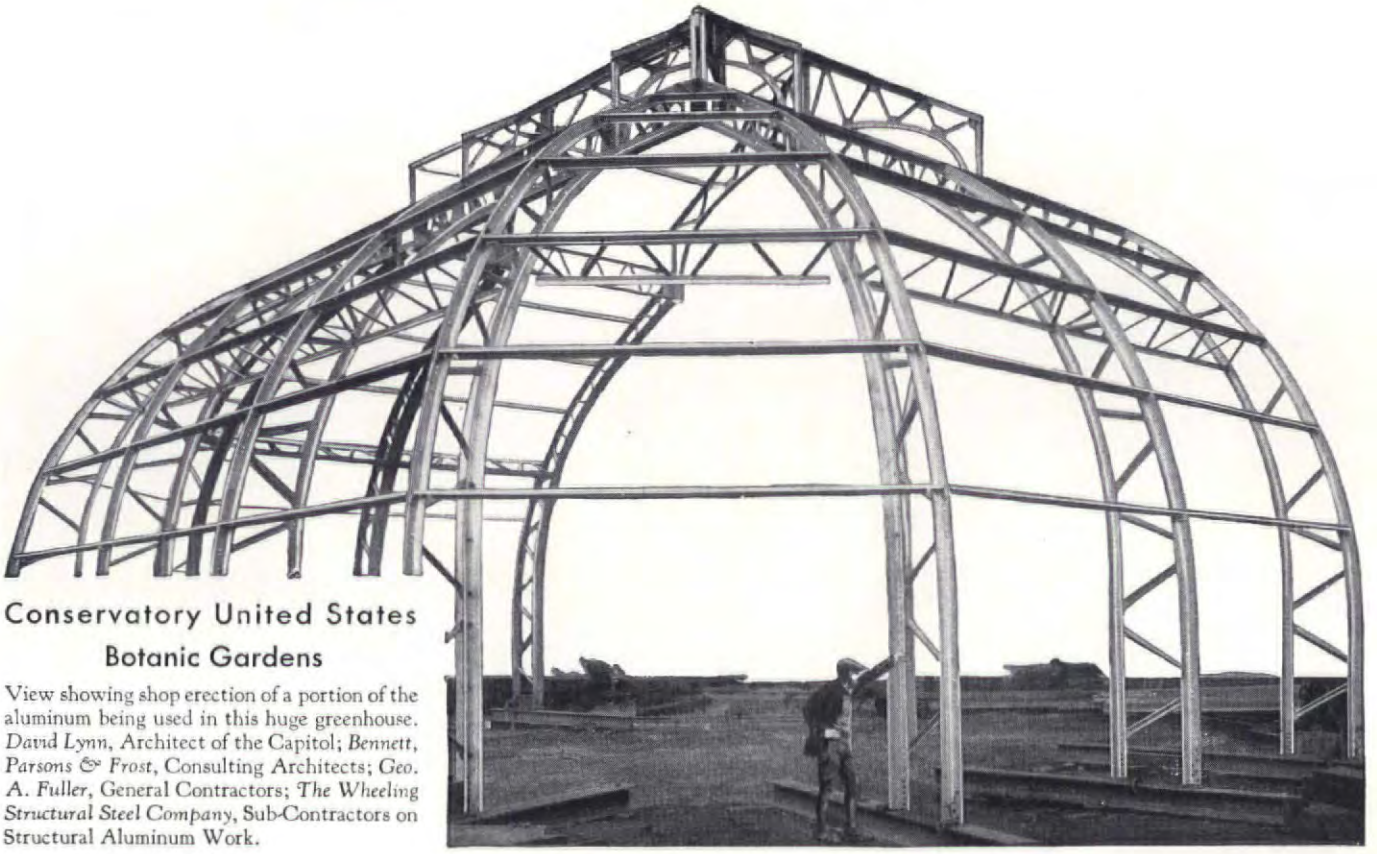
Mario Bianculli, Steven A. Bugaj, David Darrin, Frank E. Dopp, Harry B. Doppel, Peter Franceschi, George Jackson, Elving L. Johnson, Francis Kapp, Charles S. Lynch, Henry D. Menkes and Elias L. Ruiz.

The jury was composed of Julian Clarence Levi, chairman; H. VanBuren Magonigle, Frederick Mathesius, James F. Bly, William E. Haugaard, Elmer Adler, Chester Price and August Reuling.

ADVANCES IN ARCHITECTURAL PLANNING

Gains in architectural control were made by the nation in 1931, the outstanding example being that exercised in Washington, D. C., by the National Commission of Fine Arts, according to a report by Charles H. Cheney of Los Angeles, chairman of the Committee on City and Regional Planning of the American Institute of Architects.

The most notable planning advance of the year, Mr. Cheney says, is found in the regional plans adopted for the New York and Philadelphia districts after several years of study. Westchester County, New York, is said to present "the most remarkably finished and most beautiful parks and parkways developed during the year." Cincinnati is singled out for praise in city planning.



Conservatory United States Botanic Gardens

View showing shop erection of a portion of the aluminum being used in this huge greenhouse. *David Lynn*, Architect of the Capitol; *Bennett, Parsons & Frost*, Consulting Architects; *Geo. A. Fuller*, General Contractors; *The Wheeling Structural Steel Company*, Sub-Contractors on Structural Aluminum Work.

It costs a little more to use Alcoa Aluminum

. . . . but it saves a lot in upkeep

The Botanic Gardens Conservatory is built to endure. Its large expanse of glass is supported by aluminum structural shapes—trusses, purlins and glazing bars. The specifications also include doors, grilles, flagpole bases and many other items of cast and extruded aluminum.

Alcoa Aluminum cannot rust. It will resist corrosion. It is light, weighing only 1/3 as much as other common metals. It cannot warp, crack or split open.

Architects find that the numerous advantages of Alcoa Aluminum recommend it for a multitude of uses. To obtain absolutely satisfactory architectural aluminum, specify Alcoa Aluminum and its alloys, made by Aluminum Company of America.

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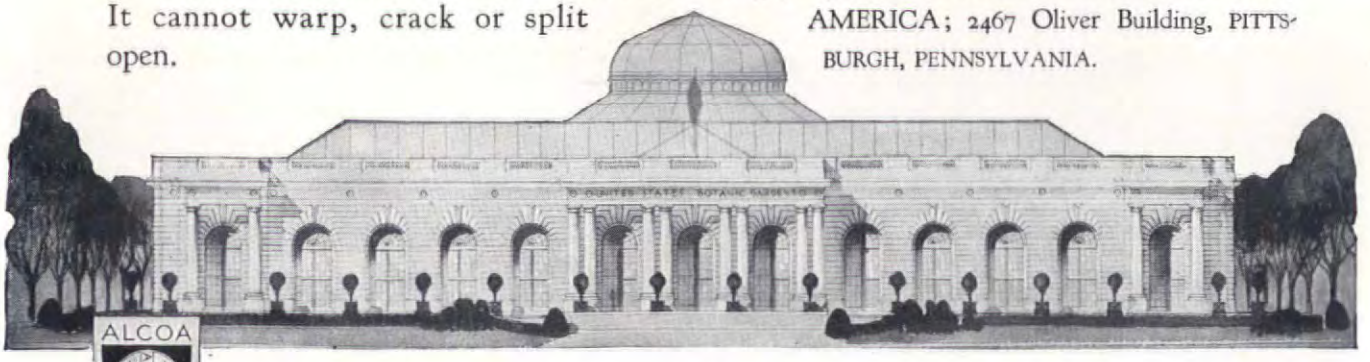

ALCOA

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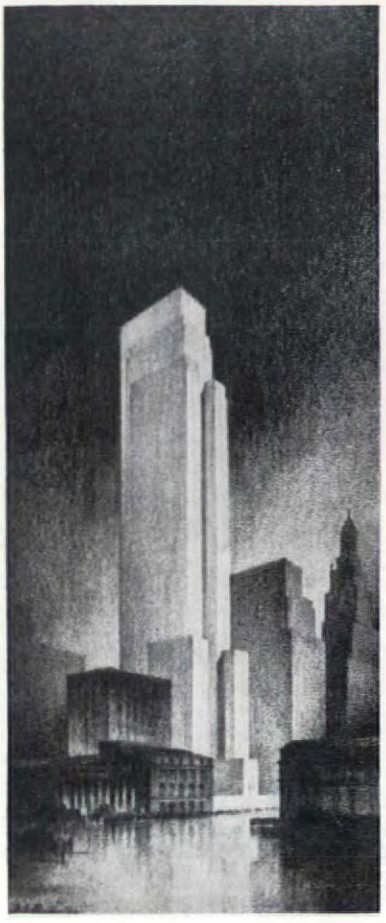


Drawing by A. J. Frappier

H. Craig Severance, Inc., Architect
Rendering by Hugh L. Ferriss

Drawing by A. J. Frappier

PROPOSED NEW YORK REGIONAL PLAN LIMITATIONS ON BUILDING BULK

In the center is shown an example of present-day skyscraper architecture—the Bank of Manhattan Building on Wall Street. The part of the building below the tower is built up to the maximum bulk permitted by the present zoning ordinances. The Regional Plan proposals would permit buildings of this size or even a little larger, in central areas, but they would require a much greater area of plot. At left is a drawing of a building having the greatest bulk which would be permitted on a plot the same size as that of the Bank of Manhattan, and on the right is a drawing of a building of the same height and approximately the same bulk as the Bank of Manhattan, but on a plot nearly twice as large, which would be required for this bulk under the proposals of the Regional Plan.

LOCAL NEEDS BEST MET BY LOCAL ARCHITECTS, SAYS ACKERMAN

The standardized procedure of the Federal Government threatens to destroy regional traditions in American architecture, which should endure as a living record, Frederick L. Ackerman, New York architect, declares in an announcement issued by the American Institute of Architects. Mr. Ackerman urges the enactment by Congress of the bill introduced in the House by Representative Green of Florida to enlist private architects in the design of Federal buildings, and to confine the Office of the Supervising Architect of the Treasury Department to supervision (see pages 57-58, January issue of THE RECORD).

Greater competence and lower costs would result, according to Mr. Ackerman. A centralized bureau in Washington, he asserts, is hopelessly handicapped in its attempts to economize and to meet local needs.

MEDAL TO EMPIRE STATE BUILDING ARCHITECTS

The Medal of Honor for 1931 of the New York Chapter of the American Institute of Architects has been awarded to R. H. Shreve, William F. Lamb and Arthur Loomis Harmon, designers of the Empire State Building. The Medal, conferred since 1904, is given for "distinguished work and high professional standing."

"In the monumental design of a great office building they have made a genuine contribution to architecture," the citation reads. "The noble simplicity of this outstanding structure makes it an inspiring landmark in our city."

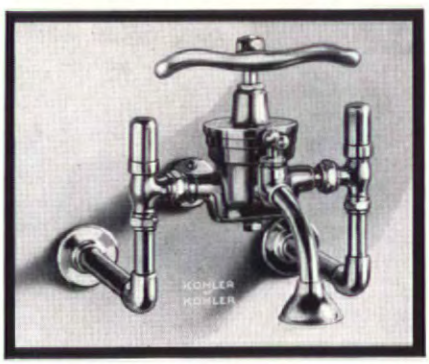
Stephen F. Voorhees, president of the Chapter, and chairman of the Jury for Medal of Honor, explained that, while the award is not based on work performed on any particular building, in the case of the winners the jury recognized their accomplishment in the Empire State Building.

KOHLER OF KOHLER ANNOUNCES A COMPLETE LINE OF HOSPITAL FIXTURES

ARCHITECTS will be glad to hear that from now on, Kohler will provide a *complete* line of hospital plumbing fixtures and fittings!

Continuous flow baths, surgeons' wash-up sinks, hydrotherapeutic showers, service sinks — every unit demanded in the modern hospital is included. All are designed to meet the requirements of leading physicians and surgeons. Each fixture and fitting is true to its purpose and scientifically correct.

This is another good instance of the way that Kohler works together with architects. With the Kohler line, you can now specify almost any plumbing equipment needed anywhere.



H-13634—*Kohler Elbow Control Supply Fitting with Mixer*

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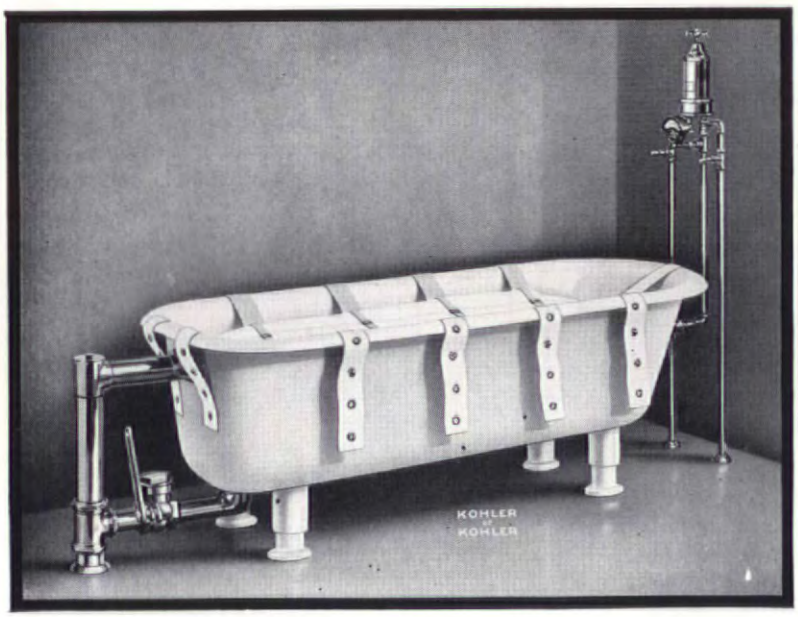
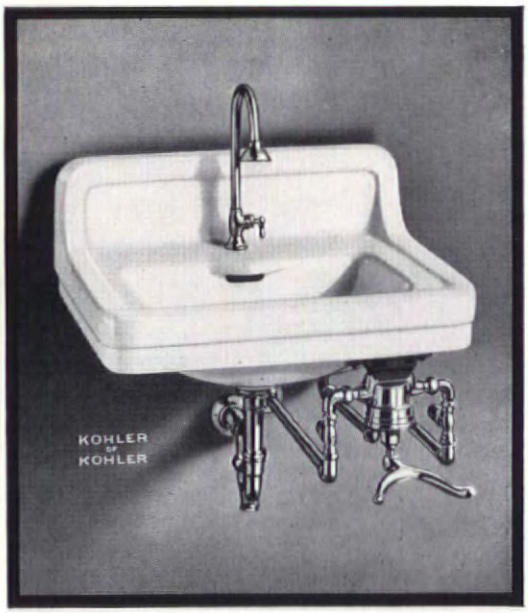
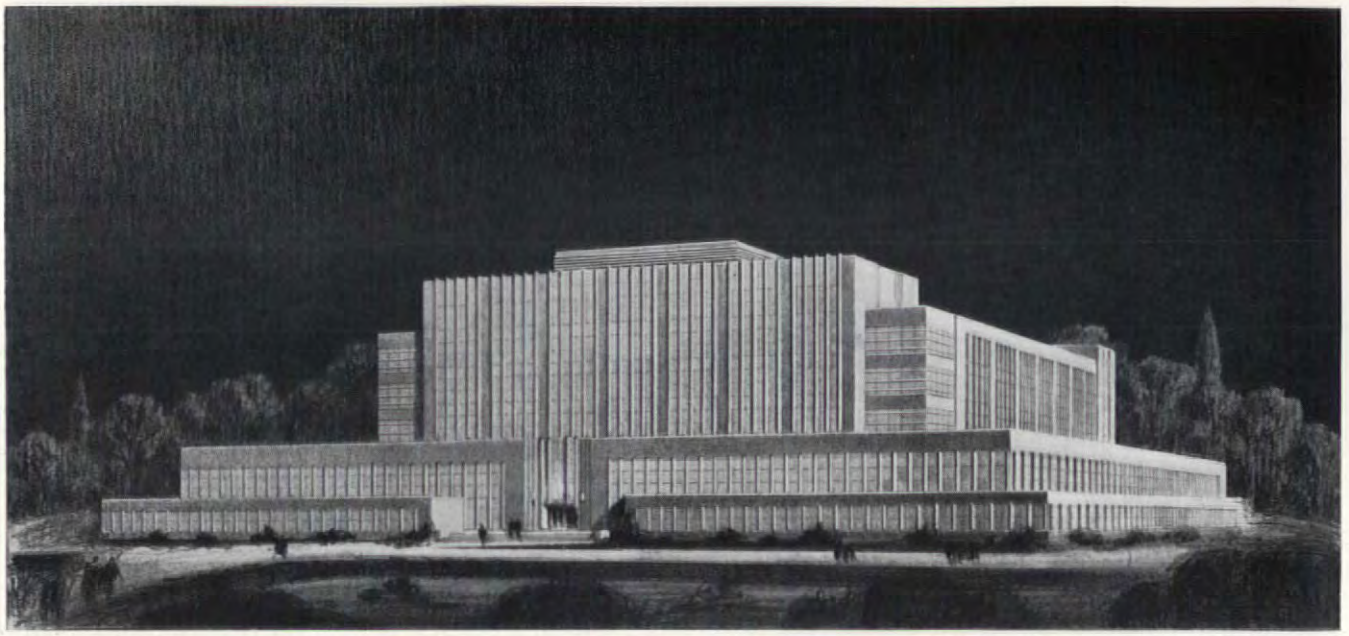


H-12500—*Kohler Enameled Continuous Flow Bath*



H-12818—*Kohler "Calvert" Vitreous China Lavatory with Knee Control Mixing Valve*



FOREST PRODUCTS LABORATORY AT MADISON, WISCONSIN—HOLABIRD AND ROOT, ARCHITECTS

This research laboratory building, U-shaped in plan, measures approximately 275 feet in length and over-all breadth. The ground floor and five stories contain a total area of approximately 175 square feet. Exterior walls are faced with Bedford limestone. Interior trim, including doors and window frames, is chiefly of wood. As a future development, it is planned to install wall panels and finish flooring in diffefent woods in the various rooms at a practical display of the many American forest species.

R. I. B. A. MEDAL AWARD

Dr. H. B. Berlage of Amsterdam has been awarded the 1932 Gold Medal for Architecture by the Royal Institute of British Architects. Dr. Berlage, who is now 75 years old, is a pioneer of the present-day architectural movement in Europe. His chief work is the Bourse in Amsterdam, a building which he designed in 1898 and which was the beginning of an architectural renaissance in Holland. He is still one of the most vigorous architects in Holland.

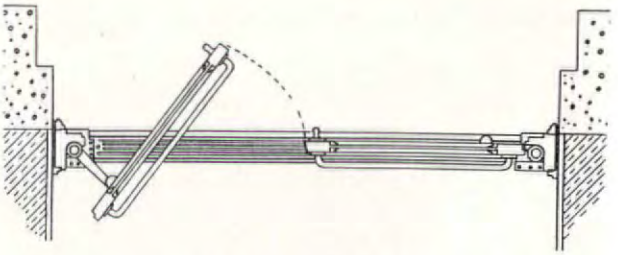
CONCEALED DOOR CLOSER

An invisible closer has been developed by the Yale & Towne Manufacturing Company. The new door closer is mortised like a lock into the top rail of the door. Although particularly adapted to metal doors which would be prepared at the factory to receive the closer, it can be applied with the use of side plates to wood doors 1¾ inches thick. If the wood doors are 2 inches or more in thickness, side plates are not necessary.

The closer is constructed of two compression springs applying their power to a spindle by means of two racks, one at each end of the closer; these racks are arranged so that the turning force is balanced, thus reducing the side thrust on the shaft bearings, with a high rate of efficiency. The closer uses a hydraulic checking cylinder. Two regulating screws located on top of the closer control the door through the main closing swing and at the latch. An outstanding feature of this construction is that the door can be opened a full swing of 180 degrees, flat back against the wall.

BALANCED DOOR CONSTRUCTION

This construction has been developed by the Ellison Bronze Company, Inc., of Jamestown, N. Y., for use at entrances and vestibules where there is a need for a door that can be easily opened against high pressure. In opening, one half of this door swings outward against the wind and the other half inward with the wind, so that the wind pressure is automatically counterbalanced at all angles from the closed to the wide-open position.



The door is similarly balanced against wind pressure from the inside of the building. A light spring conversion in the closer automatically closes the door tightly against wind action from both outside and inside.

WOODWORK EXHIBITION

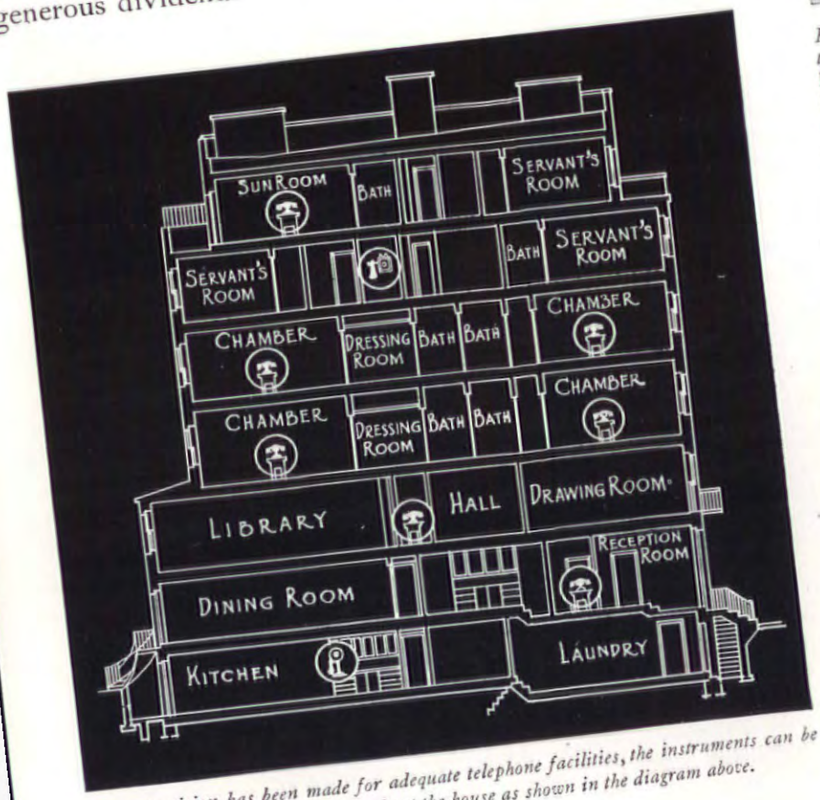
An exhibition of woodwork has recently been opened in Baltimore by the Morgan Millwork Company. The exhibits, which illustrate several architectural styles, are part of a program fostered by this company to emphasize to the public the importance of consulting architects in home planning and building.

TELEPHONE COMFORT AND CONVENIENCE FOR YOUR CLIENT

EFFICIENT management of home or business today demands that ample provision be made for complete telephone communication. All built-in conduits and outlets should be included in the original specifications for a structure of any size or character, whether the recommendation is for a single extension telephone or for a private branch exchange.

Pre-planned arrangements of this kind will assure full convenience, allow for future expansion, conceal all wiring and protect against most types of service interruptions. This thoughtful planning on your part returns generous dividends in client satisfaction.

Provision for telephone convenience was built into this well-planned New York residence. EDWARD S. HEWITT, *Architect;* ROBERT JOHNSON, JR., *Builder. The diagram shows the arrangement of the telephones connected to a dial intercommunicating system, with 2 trunk lines and 9 stations, each one equipped to pick up or initiate central office or interior calls.*



When provision has been made for adequate telephone facilities, the instruments can be conveniently located throughout the house as shown in the diagram above.

A representative of your local telephone company will be glad to consult with you in regard to the telephone arrangements suited to the particular needs of any type of building. The service of these trained telephone engineers is offered you free of charge. Call the Business Office of your local telephone company.

Broadway Building, New York
Ely Jacques Kahn, Architect

Federal Building, Boston
Ralph Adams Cram, Architect

McGraw-Hill Building, New York
Raymond Hood, Architect

ARCHITECTS' LIBRARY

KIDDER-PARKER ARCHITECT'S AND BUILDER'S HANDBOOK. Harry Parker, editor-in-chief. Eighteenth edition. John Wiley & Sons. $8.

A new edition of that manual well-known in the building field as "Kidder's Handbook." It is the first complete revision since 1916 and consequently includes information on all the newest materials; in addition, it retains all those tables of information so necessary to the designer and builder. Although primarily designed as a reference book, the method of presentation is such that it can be used as a text book; however, unless the reader has some knowledge of engineering a good deal of the information would be meaningless. Taken as a whole, the architect and contractor are bound to find something in its 2247 pages that will help them solve almost any problem of design or construction. The fact that the associate editors include such authorities as George W. Baumeister, Herman Claude Berry, J. J. Cosgrove, Theodore Crane, Hardy Cross, R. P. Davis, Robins Fleming and seventeen others ranked as experts in their particular fields is sufficient evidence of its authenticity and accuracy. The book contains a good index.

APPLIED ARCHITECTURAL DRAWING. By Towne R. Abercrombie. The Bruce Publishing Company, Milwaukee, Wis. 156 pages, illustrated with photographs and drawings. $2.

A new textbook intended primarily for those pursuing architectural courses, this book is also a guide to all who are interested in house designing and planning or constructing their own homes.

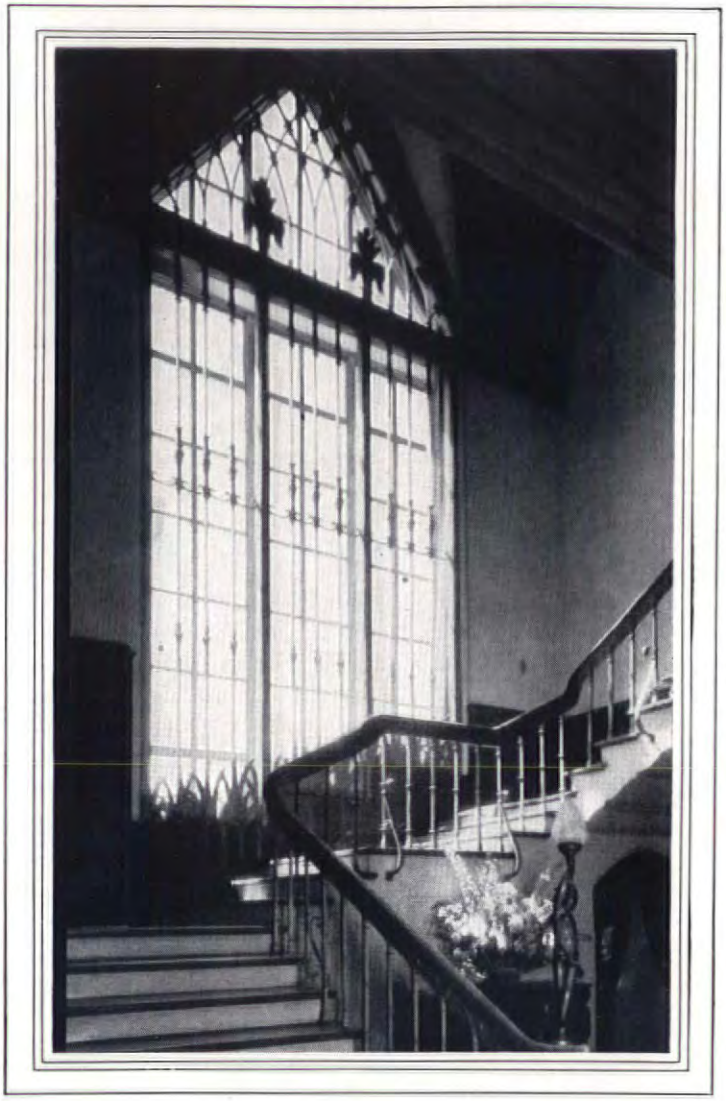
CONTEMPORARY AMERICAN ARCHITECTS. Compiled by Arthur Tappan North. Published by Whittlesey House, a division of the McGraw-Hill Book Company, Inc., New York. Photographic plates, drawings and charts. Price $3 each, or $8 for the set of three volumes. (1) Raymond M. Hood. 120 pages, 95 pages illustrations. (2) Ralph Adams Cram. 120 pages, nearly 100 pages illustrations. (3) Ely Jacques Kahn. 122 pages, 90 pages illustrations.

This new series reviews the work performed by contemporary architects of such widely divergent tastes and talents as Raymond M. Hood, Ralph Adams Cram and Ely Jacques Kahn. Each volume contains a foreword by Arthur Tappan North. A brief biography outlines each architect's education, training, achievements, interests and personality. This is followed by a more detailed description of his art, the principles which govern it, his outstanding achievements, and particularly those buildings showing the salient characteristics of his style. The balance of each volume consists of full-page photographic plates, of drawings and plans, arranged chronologically or according to type of structure, in one case grouped to show collaboration with other architects. The illustrations have been carefully selected to cover a wide field of endeavor, and the accompanying text is informative.

AIRPORT RATING REGULATIONS. Aeronautics Bulletin No. 16, U. S. Dept. of Commerce. Pamphlet obtainable at the U. S. Government Printing Office, Washington, D. C. 29 pages. 10 cents.

This pamphlet contains essential information for airports. A listing of basic requirements which airports shall meet in order to receive a rating from the Secretary of Commerce is given in full, covering these points: (1) suitable landing area, (2)

JOHNSON Heat and Humidity Control



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Canada Permanent Building, Toronto, Canada. 101 room type Johnson Thermostats control 208 Sylphon radiator valves on direct radiators. Johnson 2-point multiple thermostat controls valves on tempering coils on ventilating system. Johnson 3-point multiple thermostat controls valves and bypass damper on reheater coils. Johnson pneumatic switches control fresh air and return air dampers and foul air dampers; Johnson insertion type humidostat for control of humidity.

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freedom from obstructions, (3) accessibility, (4) wind direction indicator, (5) markings, (6) runways, (7) drainage, (8) fuel, communication, transportation and personnel.

The paragraph on runways is selected as a typical illustration of the text:

"Runways shall be constructed of crushed stone, crushed slag, or other wear-resisting material, used in conjunction with a suitable binder, in such a manner as to give a smooth, firm, uniform surface. . . . Runways shall be so designed and constructed as to withstand safely the loads to which they will ordinarily be subjected. They shall permit safe landing and taking off of airplanes under all weather conditions and shall be not less than 100 feet in width. The distance from the center line of any runway to the nearest paralleling edge of the landing area shall be at least 200 feet. The runways may be given a slight crown, either positive or negative as may be desired to facilitate surface drainage. (It is recommended that crown should not exceed 6 inches per 100 feet of width. Generally 3 or 4 inches per 100 feet of width will suffice.) The edges of the runways shall be flush with the adjacent surfaces of the field and either transition strips of some granular material, such as crushed stone or crushed slag, used in conjunction with a proper binder, or other suitable means shall be provided to insure the safe landing and taxiing of planes across the runways in any direction."

BUILDING TRENDS INDICATED BY THE FEDERAL CENSUS

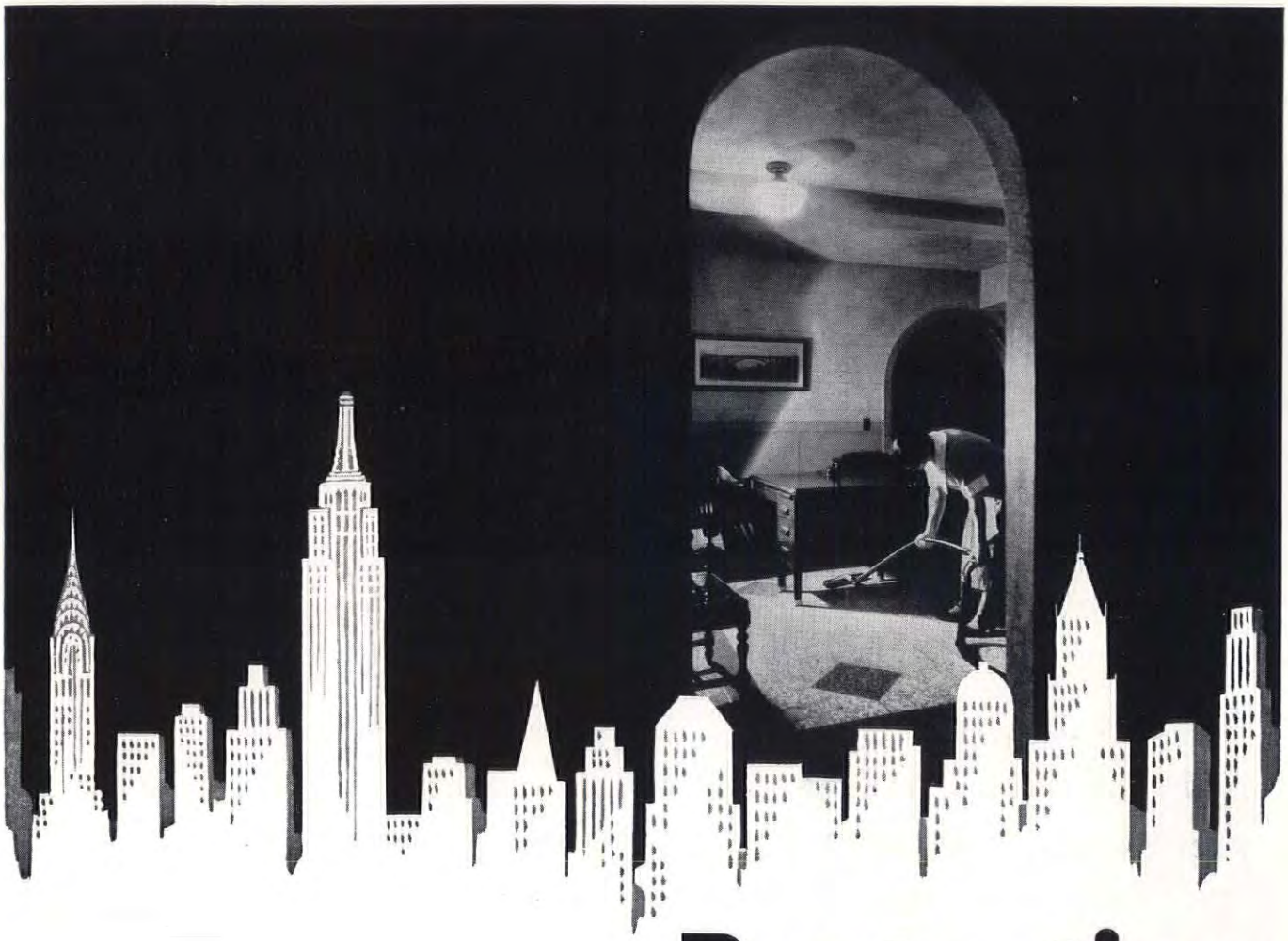
By L. Seth Schnitman

(Continued from page 144, editorial section)

future unfolds, society's debt to itself will be liquidated more fully than ever before.

It is here that the architect can make lasting contribution to the cause of social advancement. So long as the hospital, the asylum, or the home for the aged is designed and planned on the basis of so many beds, just so long will these institutions continue to fall short of their functional purposes. In essence the hospital, the asylum and the home for the aged are residential projects to meet a particularized demand for shelter, comfort, surroundings and environment. As the social changes become more pressing, as the economic developments which lie ahead come to light, as government more completely recognizes its paternal responsibility, then may we expect to see new ideas of hospitalization translate themselves into suitable projects to meet the needs for particularized shelter —not so many beds, but rather so many housing units to meet a specific condition.

Essentially, therefore, this is the era in architecture that demands liberalization—in truth it is the time for liberalized specialization. It no longer suffices to be an architect, a specialist on the design of this or that structural type. The time has arrived when the architect must know something of the science of society, something of psychology,



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something of psychiatry, something of all the sciences which bear upon the broader aspects of design and the requirements of a people accustomed to an ever-rising living standard.

During the 10-year period from 1921 to 1930, inclusive, expenditures for new hospital buildings and institutions throughout the United States aggregated approximately $1,400,000,000, based upon data from F. W. Dodge Corporation. Of this amount about $425,000,000 was expended in the 13 cities in the United States which in 1930 had 500,000 or more inhabitants. Thus it will be seen that approximately 30 per cent of total expenditures for new hospitals and institutions were centered in our 13 largest cities; these are the cities which in 1930 accounted for only 17 per cent of our entire population.

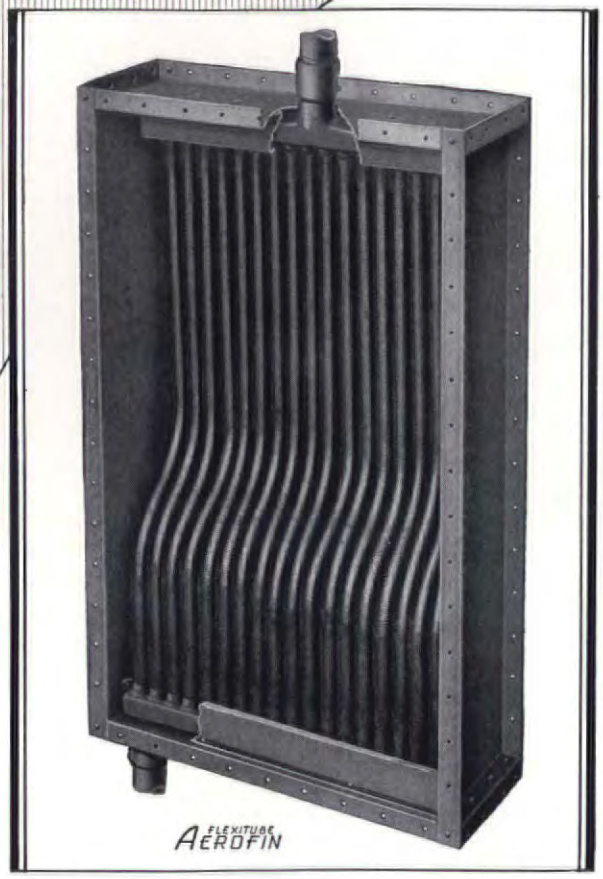
To put it still another way, 70 per cent of our expenditures for new hospitals and institutions were made in the cities and towns where 83 per cent of the entire population made their homes. Inferentially, therefore, it may be said that in our smaller cities and towns a large need exists for better hospital facilities and better institutions to cope with their growing problems.

For each new housing unit constructed throughout the country during the decade that ended in 1930 ($5,000 of residential building was used as a housing unit on the assumption that this approximates the value of each new housing unit constructed during the period), $285 was spent on new hospitals and institutions. It now appears that for the current decade which will end with 1940, approximately the same relationship to residential building will hold; in fact it is likely that upwards of $300 may be expended for hospitals and institutions for each new housing unit, if we may look for larger activity in our smaller cities occasioned by pressing demands for hospitalization and for homes to take care of our aged and infirm.

Society will one day find an even better way than now to care for its sick and infirm; it will find a way of providing shelter and comfort to our aged along the lines that perhaps at this moment might appear Utopian. But we must now methodically plan our communities with proper regard not only for economic but indeed for social considerations.

The slowing-up of building from the hectic days of 1928 has at least given more time to appraise soberly some of the causes which brought about the cycle of feast and famine. If we have gained nothing more than a catholic understanding of society's growing problems, then indeed we will at least have learned some of its newer needs. Out of this should come an advanced conception of the purposes and functions of the hospital, the home for the aged, the institution.

All in all, the transition from the "perambulator stage to the wheel-chair era" in our society will, in all probability, produce a new demand for particularized shelter that should to some degree offset the decline which appears presaged for residential building because of the striking changes that are taking place in our population growth rate and in the age composition of our people.



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Complete descriptive and technical Data are presented in our new Bulletin No. 32 which Newark will be glad to mail, gratis, upon request.

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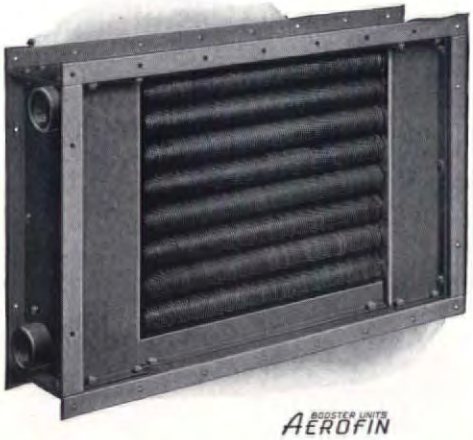

Complete information covering BOOSTER UNITS AEROFIN also in Bulletin No. 32, which every Architect, Engineer or Contractor should request from Newark at once.

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AN ALL-METAL OFFICE BUILDING IN RICHMOND

By James Bolton, Department of Public Works, Richmond, Va.

(Continued from page 122, editorial section)

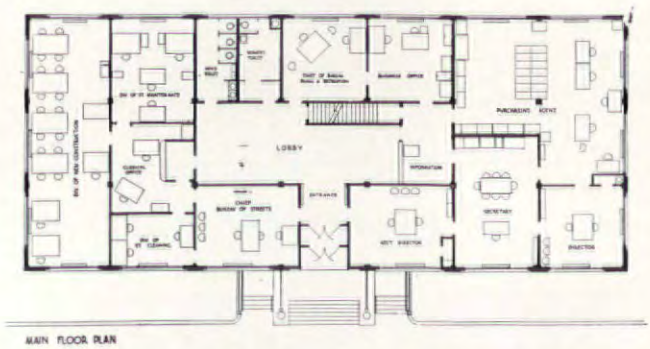
below the basement floor level. The girders for the first and second floors run crosswise; those for the roof run lengthwise. The exterior columns are also connected by girts of 5″ x 5″, 18.9-pound H's immediately above and below the window levels, except on the front and rear elevations of the second floor. Here, the top girt has been omitted and the roof girder serves in a dual capacity.

The floors are designed for a live load of 80 pounds per square foot, and the roof for a live load of 30 pounds per square foot. Lattice-type joists, bolted at the top and bottom to the structural girders, are used for both the floor and roof beams; while formed steel plate, attached to joists by means of bolts, serve as the floor and roof decking.

The roof is covered with 5-ply slag roofing on insulated boards cemented to the steel decking; the floors with 3 inches of gypsum poured in place and unreinforced, the system of underfloor ducts determining the depth of gypsum. As constructed, the floors have a dead load of 20 pounds per square foot, and the roof, a dead load of 15 pounds per square foot.

The wind bracing consists of two 2½″x2½″ x 5/16″ angles crossed and bolted to the corner columns and horizontal girts on all four elevations at both floor levels. A kneebrace of angle iron, 18 inches in length, ties the first row of interior columns from each end to the structural girders on the first floor; a channel iron serves as a bracing between the bottom chord of the roof joists and the columns on the second floor.

The use of metal in the façades of the building combines sound engineering judgment with the definite economic trend taking place in contemporary architecture. In this new building the façades, composed of an inner and outer wall of aluminum, are from 3½ to 7 inches thick; together with the



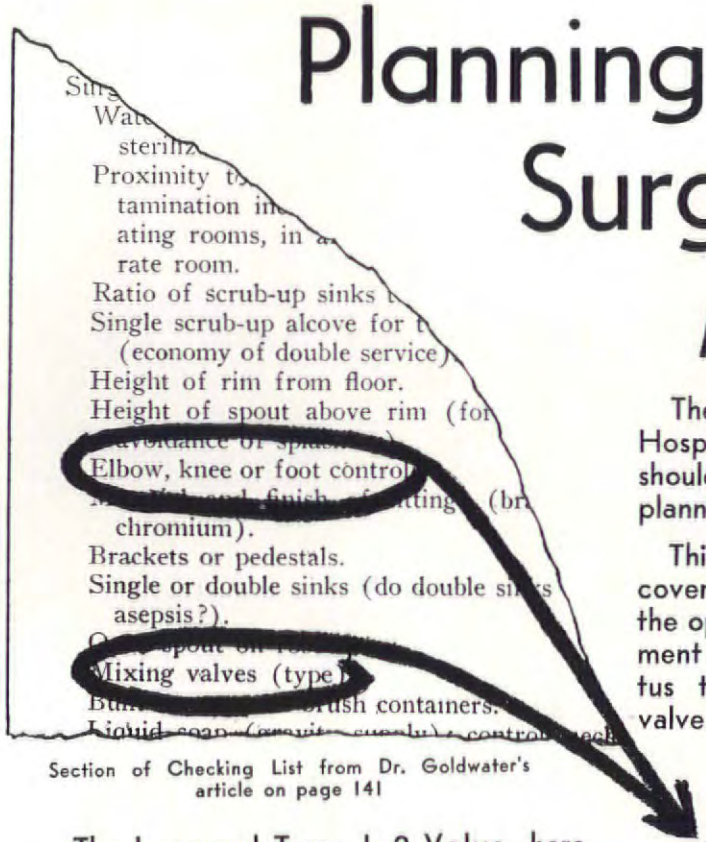
MAIN FLOOR PLAN

All-Metal Building Designed and Erected by Department of Public Works, Richmond, Va.

Planning the Surgical Facilities in the MODERN HOSPITAL

The article by Dr. S. S. Goldwater, the noted Hospital Consultant, on page 138 of this magazine should prove of great interest and help to Architects planning hospitals.

This article provides a comprehensive checking list covering, not only the number, size and location of the operating rooms, but all of the permanent equipment required, from heating and ventilating apparatus to floor and wall materials, toilets, mixing valves, etc.


Proximity t
tamination in
ating rooms, in
rate room.
Ratio of scrub-up sinks
Single scrub-up alcove for
(economy of double service)
Height of rim from floor.
Height of spout above rim (fo
Elbow, knee or foot control
chromium).
Brackets or pedestals.
Single or double sinks (do double s
asepsis?).
Mixing valves (type
sh containers.

Section of Checking List from Dr. Goldwater's article on page 141

The Leonard Type L-9 Valve, here illustrated, fills the requirement listed in Dr. Goldwater's article. This valve is especially designed for use with Surgeon's scrub sinks and can be specified for either elbow, knee or foot control.

In addition to the above, every need of the modern hospital can be met by Leonard Thermostatic Water Mixing Valves. Hundreds of satisfactory installations in hospitals throughout the country attest their mechanical excellence, superior quality and dependability.

L-9 Valve with Elbow Control

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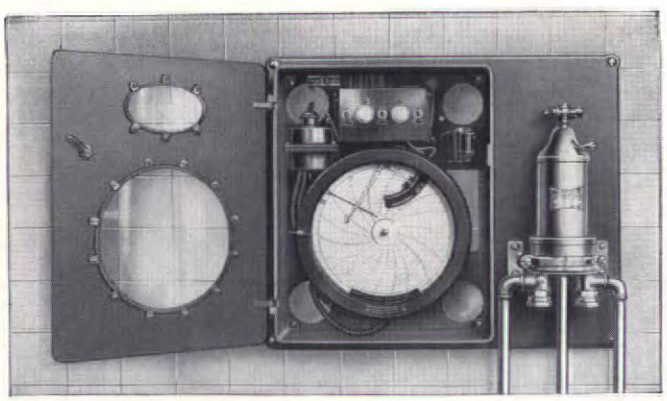
Levers are adjustable for any position and operate by slight pressure. For knee control, valve is set horizontal under sink and furnished with scale which is visible when valve is in position—adaptable to any stock fixture. For foot control, valve is furnished complete with floor bracket and foot levers.



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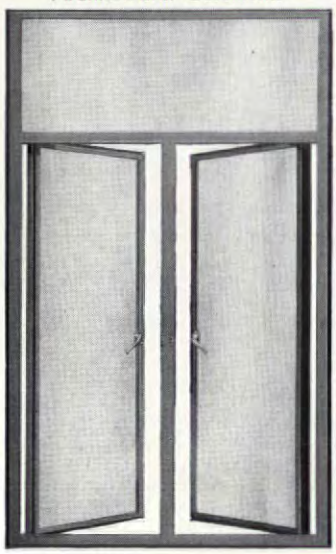

Residence Casements

Monumental Casements

insulating material, they average less than 10 pounds to the square foot. The basement walls of concrete offer a good comparison; these are 10 inches thick and average 120 pounds per square foot.

The aluminum pilaster columns, which were shop assembled, consist of a frame of extruded sections and panels of ⅛″ plate. They are 25 feet high, 3 feet wide and weigh approximately 250 pounds. The vertical members of the frame are one piece, thus simplifying the fabrication of the column as a whole. The joints between the horizontal and vertical members are welded. The panel sections, 6 feet in length, fit into grooves in the molding. The four sections are tied together by means of countersunk aluminum bolts through a 1″ offset at the top of each of the three lower sections. A piece of aluminum sheet, welded on the back of each of the upper plates, fits over the offset joints and completes the water seal.

The drop-panel columns rest on a precast masonry base and are locked to the structural girts with steel retainer clips. These clips, bowed in shape, fit into the recess sections of the extruded members of the pilaster and provide for expansion in the columns as a whole without permitting undue lateral motion. A sheet aluminum capital is fastened to the lower member of the entablature and fits over the top of the pilaster column in such a way that it conceals it and permits expansion and contraction in the column.

The steel sash are anchored at the jambs to structural steel angles which form a supporting frame for the attachment of the sheet aluminum interior columns and exterior trim as well as the steel sash. The exterior trim between the window columns and pilasters consists of satin-finished aluminum sheet. This is held in place by an extruded section bolted to the supporting frame of the window sash and an aluminum angle fastened to the extruded member of the pilaster column.

The window sills are formed by filling the lower girt on each floor with gypsum; sheet aluminum, fastened to the girt and to a wooden member at the edge of the gypsum underflooring, forms the wall beneath. The wall above the windows consists merely of a piece of aluminum sheet fastened to the expanded metal lath of the ceiling, bent around the upper girt, and connected to the lintel member of the windows.

The building is capped with a 3′ 10½″ paneled aluminum entablature, using the same extruded sections that were used in forming the pilasters. These are erected in 10-foot lengths and attached by steel clips to the structural columns and to two 5″, 6.5-pound channels, spaced equally between the bays. At the junction of two pieces a wooden block, covered with sheet aluminum and of the same contour as the inside of the extruded member, fits into them and holds them in rigid alignment. The panels, which fit into the grooves in the extruded members, are of 13-gauge (B&S) aluminum

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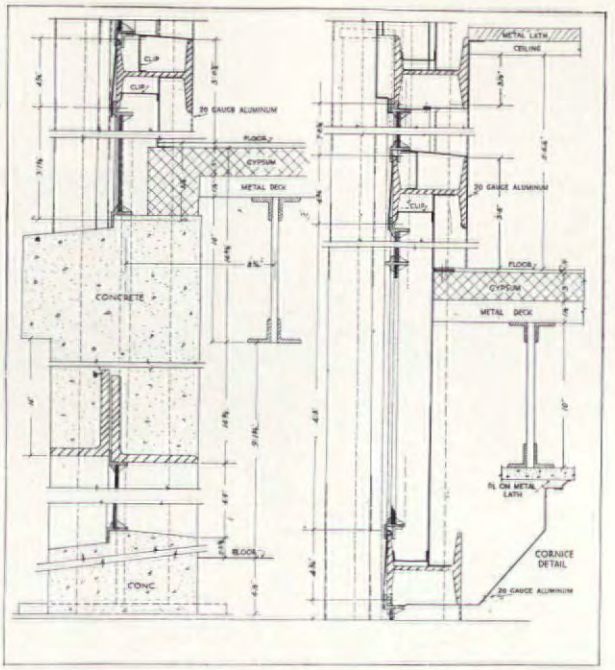

WALL CONSTRUCTION DETAILS

All-Metal Building Designed and Erected by Department of Public Works, Richmond, Va.

sheet. They are erected in 8′ 3″ lengths fastened together by means of double lock joints. Expansion in the entablature as a whole is taken care of by enlarging the bolt holes in the steel clips which hold the extruded sections in place.

The satin-finished aluminum trim between the base of the entablature and the top of the windows is applied in an identical manner to that on the sides of the windows. A sheet aluminum coping, bolted to the upper section of the entablature, extends over it and forms a water seal for the 20-gauge steel counter flashing.

The insulating material was blown into the space between the outer and inner walls prior to the completion of the entablature. It extends from the first floor line to a point approximately 1 foot above the roof girders. Tests have shown that a 3½″ double metal wall, insulated in this manner, has a heat loss of approximately 0.075 B.t.u. which is the equivalent of the heat loss in a 48″ brick wall.

The heating system for the building is a single-pipe steam system using, for fuel, gas manufactured by the city. The steam pipes, as well as the hot and cold water pipes and the conduit for telephone and electric wires, run along the exterior columns between the outer and inner walls. At the first and second floor levels, the steam, hot and cold water pipes and telephone conduit are embedded in the gypsum underfloor covering; the electrical conduit runs through the lattice-type floor and roof joists.

The building was completed 4½ months after excavation was begun. The plans for the building were prepared in the Department of Public Works (Col. R. Keith Compton, Director) by W. A. Childrey of the Bureau of Surveys and Design.

(CONTINUED ON PAGE 56)

fine Glass . .

Libbey·Owens·Ford Polished Plate Glass used throughout Camden City Hall and Court House. Architects: Edwards & Green, Camden, N. J. Glazing Contractor: F. W. Mark Construction Co., Philadelphia.

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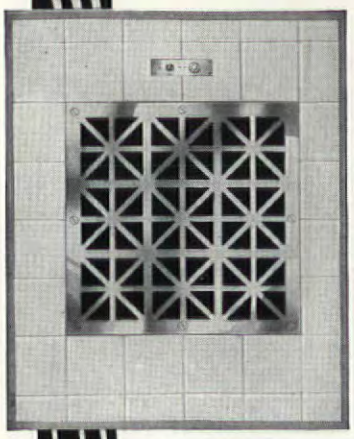
Are *New* Buildings Obsolete?



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In the erection of the building, the department served as its own general contractor, executing several units of construction with its own forces and dealing directly with the various subcontractors.

COST

The distribution of the construction cost of the completed building is given in the accompanying table. The annual interest and redemption on the capital outlay, including all accessories, based on an amortization in six years, will amount to $9,358.50; the estimated maintenance and operating costs on the building will bring the total yearly expenditure during the period to $13,458.50.

CAPITAL EXPENDITURE

Preliminary and general expense	$ 671.80
Clearing site	*125.01
Excavation	960.00
Concrete footings	465.00
Concrete walls and partitions in basement	1,818.00
Reinforced concrete floors, first floor	310.00
Concrete floors in basement and gutter around building	1,224.00
Concrete entrance	398.00
Structural steel	5,237.50
Plumbing	1,780.31
Heating	3,019.40
Stack	396.00
Joists, floor and roof	1,726.67
Deck, floor and roof	2,687.38
Gypsum floors	1,275.02
Roof covering	900.00
Aluminum, outside	6,320.63
Aluminum, inside	3,125.00
Aluminum doors	870.75
Kalamein doors	99.70
Glazing doors	28.00
Steel window frames	1,429.30
Glazing windows	570.00
Insulation	1,063.75
Painting	237.00
Water, gas, sewer and electric connections	282.25
Electric conduit material	2,775.56
Electric wiring	450.54
Electric fixtures	598.58
Plastering	1,094.63
Sand blasting	275.00
Window washing	60.00
Fire escape	375.00
TOTAL	$42,399.76

*Credit.

Cost of accessories not included in capital expenditure: gypsum partitions, including doors, 16¢ per square foot each surface; floor covering, 14.8¢ per square foot; aluminum partitions—(1) full-height, 32.5¢ per square foot each surface, and (2) 7-foot movable, $6.53 per lineal foot or 41.5¢ per square foot each surface; window shades on first and second floors and one side of basement, $180.00.

The building cubes 222,244 cubic feet. Cost per cubic foot, without accessories, 19.1¢; cost per cubic foot, including all accessories, 22¢.

THE ARCHITECTURAL RECORD

F.W. DODGE CORPORATION

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VOL. 71 NO. 3 MARCH, 1932

Cover:	1301 ASTOR STREET APARTMENTS, CHICAGO, ILLINOIS Philip B. Maher, Architect Photograph by Hedrich-Blessing
Frontispiece:	VAN TASSEL APARTMENTS AT NORTH TARRYTOWN, NEW YORK Andrew J. Thomas, Architect
147-150 . . .	HOW CAN APARTMENT FACILITIES BE PROVIDED FOR THE LOWER-INCOME GROUPS? By Henry Wright, Architect and Town Planner
151-156 . . .	LOW RENTAL DWELLINGS—How Can Construction and Service Costs of Apartment Buildings Be Reduced?
157-163 . . .	REDUCING APARTMENT COSTS BY ECONOMY OF (1) PLANNING, (2) CONSTRUCTION, (3) OPERATION By Eugene H. Klaber, Architect
164, 165 . . .	CHRONOLOGY OF DEVELOPMENT OF GARDEN APARTMENTS AND GROUP ROW HOUSES
166	HOW LARGE-SCALE HOUSING PROJECTS ARE DEVELOPED
167-198 . . .	PORTFOLIO OF APARTMENT HOUSES Apartments by Ernest Flagg; Springsteen and Goldhammer; Andrew J. Thomas; Bley and Lyman; Houlihan, Hauser and Marks; Sukert and Cordner; R. C. Reamer; Philip B. Maher; Holabird and Root; Garber and Woodward; George Fred Keck; Thielbar and Fugard; Edward B. Green and Son; Albert Hart Hopkins; Irwin S. Chanin; Boris W. Dorfman; Howe and Lescaze; Clauss and Daub; Architects.
199-208 . . .	PRIZE-WINNING APARTMENTS IN NEW YORK—PLATES Apartments by Charles A. Platt; Clarence S. Stein; Andrew J. Thomas; Roger H. Bullard; Philip L. Goodwin; Kenneth Franzheim; Bottomley, Wagner and White; Th. Engelhardt; Architects.
209-211 . . .	COLORS TO RELIEVE EYE STRAIN IN THE SURGICAL OPERATING THEATER By J. Eastman Sheehan, M.D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University
211, 212 . . . 46 (adv.)	THE NEED FOR A NEW HOUSING ECONOMY By L. Seth Schnitman
213-216 . . . 44 (adv.)	TECHNICAL NEWS AND RESEARCH: COMPARATIVE COST STUDIES OF NEW GROUP DWELLINGS—Addenda of Cost Data Used in Determining New Housing for the Reconstruction of Slums By Henry Wright
37, 38 (adv.)	ARCHITECTS' ANNOUNCEMENTS AND CALENDAR—THE APRIL ISSUE
48 (adv.)	QUESTIONS AND ANSWERS
50, 52, 55, 56, 58 (adv.)	NEWS IN BRIEF
60, 62 (adv.)	THE ARCHITECT'S LIBRARY
62, 64 (adv.)	CORRESPONDENCE

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Plate 11
of a series
showing
how marble
is being
applied in
the field of
modern design

Modernistic is a word of many meanings. The range in interpretation runs from the grotesque to the severe. At its best it stands for a new kind of beauty.

This view of the Standard Building, Albany, N. Y., was taken from the inside looking out toward the street. In this case as in many others the designers have worked out a thoroughly good idea in the modern marble way.

Black and white marbles were combined with other foreign varieties on this interior. Shreve & Lamb were the architects.

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ANNOUNCEMENTS

Frederick W. Whittlesey, architect, has opened an office for the practice of architecture at 721 Professional Building, Phoenix, Arizona.

Robert S. Hale, architect, announces the removal of his office to 1660 Old Colony Building, 407 South Dearborn Street, Chicago.

Henry J. Nurick, architect, announces that his new office is located at 830 Putnam Avenue, Brooklyn, New York.

Ball and Snyder, consulting engineers, announce the removal of their offices to 110 West 40th Street, New York City.

The firm of Denison B. Hull and Stanley W. Hahn, associated architects, 77 West Washington Street, Chicago, is dissolving on April 1. Mr. Hahn's address after this date will be 6 North Michigan Avenue, Chicago. Mr. Hull will continue at the present address.

The National Airport Engineering Company, 775 East Washington Street, Los Angeles, has opened an office on the second floor of 606 Common Street, New Orleans, with William E. Arthur, engineer, in charge. Mr. Arthur is a registered engineer in the state of Louisiana.

James R. Tyler, architect, announces the removal of his offices from 34 State Street, to 147 Parkdale Terrace, Rochester, New York.

ARCHITECTS CLUB OF BROOKLYN

The fourth annual dinner was held on January 11 at the Elks Club. Officers for the coming year were installed: Maxwell A. Cantor, president; Samuel L. Malind, first vice-president; William T. McCarthy, second vice-president; Alfred A. Lama, secretary; Samuel Gardstein, treasurer and Dominick Salvatti, James F. Bly, Boris W. Dorfman and Michael Margolin, directors.

EXHIBITION OF BATHROOMS

The American Radiator and Standard Sanitary Corporation has established a design bureau for the development of heating and plumbing equipment in relation to architecture and decoration. The current project is the study of the bathroom as an architectural and decorative unit of the house and as a "machine for cleanliness." Five rooms of different types and prices have been erected in the studio-laboratory of the bureau. These rooms (numbers 503-4-5 of the American Radiator Building at 40 West 40th Street, New York City) are open to architects between the hours of ten to four.

PRINCETON PRIZES IN ARCHITECTURE

Two competitive prizes of $800 each, in the School of Architecture, Princeton University, are announced for the year 1932-33. The competition in design is to be held from May 20 to May 30. Applications must be filed on or before April 20. Address The Director, School of Architecture, Princeton University, Princeton, N. J.

ROTCH TRAVELLING SCHOLARSHIP

Preliminary examinations for the Rotch Travelling Scholarship will be held on April 4 and 5. There will be sketches "en loge" April 11 and 13, open to all who are eligible. The amount of the prize is $3,000. The Boston Society of Architecture has offered a second prize of $100 to be awarded to candidate placed second. For further information apply to C. H. Blackall, Secretary, 31 West Street.

EXHIBITIONS AND EVENTS

March	Annual exhibit of the Cleveland Society of Artists in the Builders' Exchange Building, Cleveland. House Beautiful competition designs on display March 1-12. Exhibit of Swedish architecture, March 17-29.
March	Exhibition of modern architecture at the Museum of Modern Art, New York City.
March 9	Regional meeting, in Cleveland, of the American Society for Testing Materials.
March 10	Meeting of New York Section, Illuminating Engineering Society, at Electrical Institute, Grand Central Palace Building, Lexington Avenue at 46th Street, New York City.
Until March 10	Exhibition of industrial art—"Design for the Machine"—at the Pennsylvania Museum of Art.
Until March 12	Exhibition of the Architectural League of New York at 215 West 57th Street, New York City.
March 28-April 11	Exhibition of work by members of the American Union for New Architecture at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City. For information, address Richard C. Wood, Room 1405, 120 West 42nd Street.
April 17-May 1	Annual exhibition of the Richmond Academy of Arts, Richmond, Va. Open to all artists native of or residing in Virginia. Closing date, March 31. Address Secretary, 1110 Capitol Street, Richmond.
April 25-May 5	Exhibition of the Westchester County Society of Architects in connection with the second annual Westchester Home Show, county center, White Plains, New York.
June 20-24	Annual meeting, in Atlantic City, of the American Society for Testing Materials.
June 25-Aug. 19	Modern architecture tour of Europe, conducted by Prof. Talbot F. Hamlin of Columbia University. Address The American Institute of Educational Travel, 587 Fifth Avenue, New York City.
July 30-August 14	Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City.
October	International Congress for Modern Architecture at Moscow, U.S.S.R. Program: "The Functional City."

COMPETITIONS

March 7	Mailing date of programs to approved candidates for the fifth annual competition for the A. W. Brown Travelling Scholarship. Address William Dewey Foster, 25 West 45th Street, New York City.
March 15	Closing date of drawings for Le Brun Travelling Scholarship Competition. Chester H. Aldrich, 126 East 38th Street, New York City, chairman of committtee.
April 4-5	Preliminary examinations for Rotch Travelling Scholarship. Apply to C. H. Blackall, 31 West Street, Boston.
April 20	Closing date for applications for Princeton prizes in architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
June 15	Closing date for entries for Douglas Fir Plywood Manufacturers design competition. Address C. H. Alden, professional advisor, Skinner Building, Seattle.

FIR PLYWOOD DESIGN COMPETITION

Prizes totaling $1500 are offered for rough "idea-sketches," in plan and elevation, showing practical and attractive uses of Douglas Fir Plywood for any of the following interiors: (1) attic bedroom; (2) basement recreation room; (3) kitchen and breakfast nook; (4) camp cottage including sleeping, cooking and living facilities for four people. Copies of the contest rules may be obtained from Mr. C. H. Alden, Professional Adviser, Douglas Fir Plywood Manufacturers, Skinner Building, Seattle, Washington.

HENRY WRIGHT, architect of housing developments at Sunnyside, Radburn and Pittsburgh in association with C. S. Stein.

EUGENE H. KLABER, Chicago architect associated with E. A. Grunsfeld, Jr., in the design of Mich. Blvd. Garden Apartments.

IN THIS ISSUE . . . Mr. Wright and Mr. Klaber have collaborated on a study of low-cost dwellings which is a significant development in present-day efforts to find a technical solution to the housing problem. . . . In addition to the annual Portfolio of Apartment Houses, there is a showing of apartment designs recently awarded prizes by the New York Chapter of the American Institute of Architects.

NEXT MONTH

The feature of the April issue is a presentation of prize-winning designs in the annual BETTER HOMES IN AMERICA competition.

Other articles include:

SEATING—A study of standard sizes and spacing of seating facilities for schools, theatres, churches and amphitheatres.

EMPLOYMENT OF DRAFTSMEN—The relief program outlined for Boston and New York City.

NEW MATERIALS—A summary of products used in the buildings now being constructed for the Chicago World's Fair.

PORTFOLIO OF SMALL COMMERCIAL BUILDINGS—The Goodall Shop in New York City by Eleanor LeMaire; the "Bachelors' Shop" in Los Angeles by J. R. Davidson; a shopping center in New Canaan, Connecticut, by Alfred Mausolff.

A CHURCH—The Healy Chapel in Aurora, Illinois, by George Elmslie, architect.

A PUBLIC BUILDING—The State Education Building in Harrisburg, Pennsylvania, by Gehron and Ross, architects.

Gottscho

GOLD MEDAL AWARD — BETTER HOMES IN AMERICA ARCHITECTURAL COMPETITION FOR 1931
HOUSE OF FRANCIS COLLINS, FIELDSTON, N. Y.
DWIGHT JAMES BAUM, ARCHITECT

. . . that an

OTIS ELEVATOR

may more exactly fill the needs of the architect

The following comes from a letter by A. Moorman & Company, of Minneapolis, bank builders, in commenting on a car installed by Otis in Spokane, Washington: "This is the most beautiful elevator car that we have seen. The workmanship is excellent and the finish, castings, and all the equipment are as nearly perfect as any one could hope to obtain."

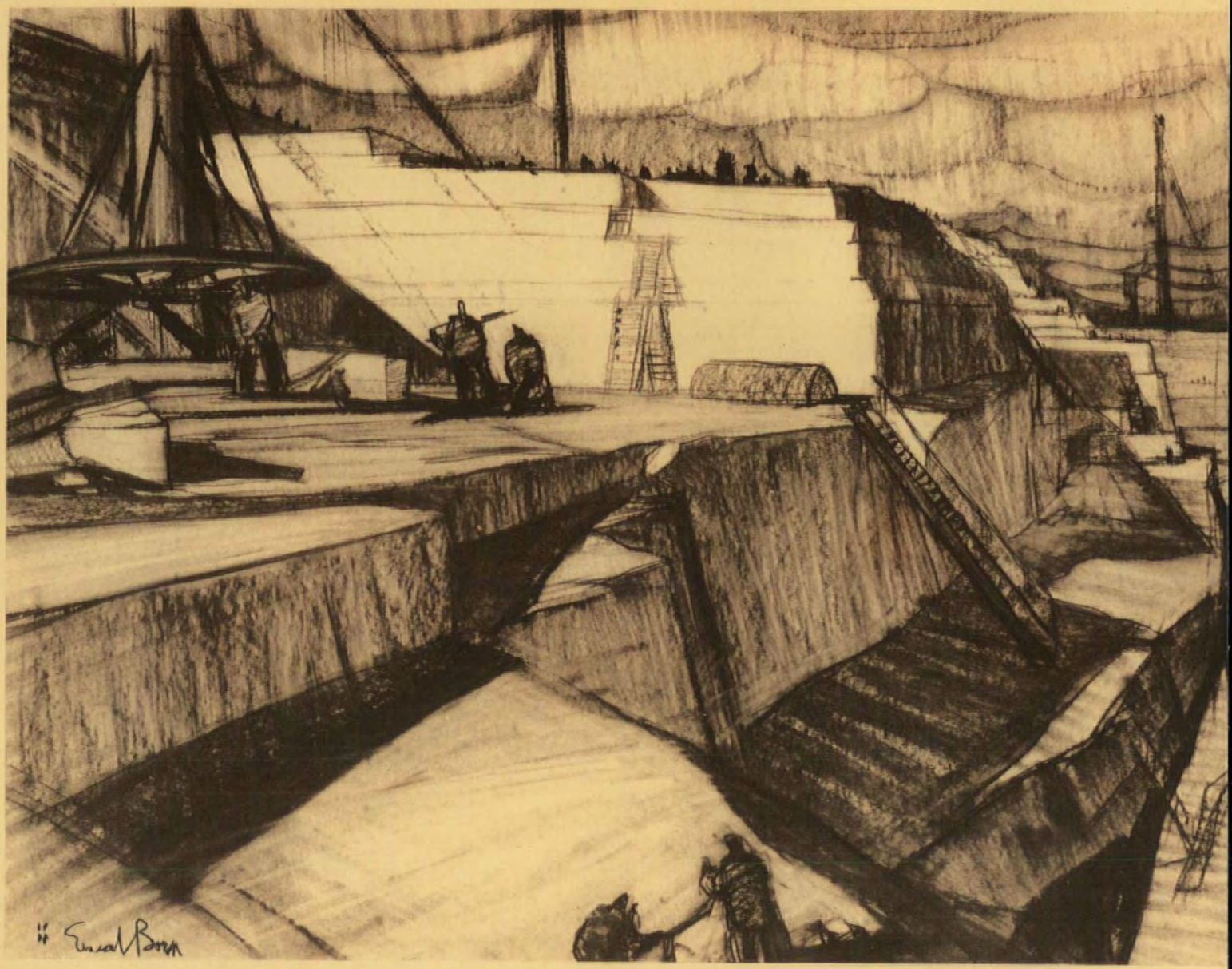
• • •

It is the unanimous belief of every one within the organization of Otis Elevator Company that highest quality of materials and workmanship give, in the long run, greatest value. This applies not only to such elevator mechanism as motors and controllers and brakes, but to such things as elevator entrances, fixtures, and cars —visible portions of the elevator which can either add to or detract from the appearance of the building. Thus it is that Otis has a special department of architectural designers, artists, and craftsmen for the purpose of adapting modern architectural practice and the ideas of the building architect to the visible details of an elevator. Within this department many interesting elevator cars and accessories of excellent modern design have been created. Here also craftsmen faithfully produce any special design conceived by the architect.

OTIS

ELEVATOR COMPANY

339 OFFICES THROUGHOUT THE WORLD



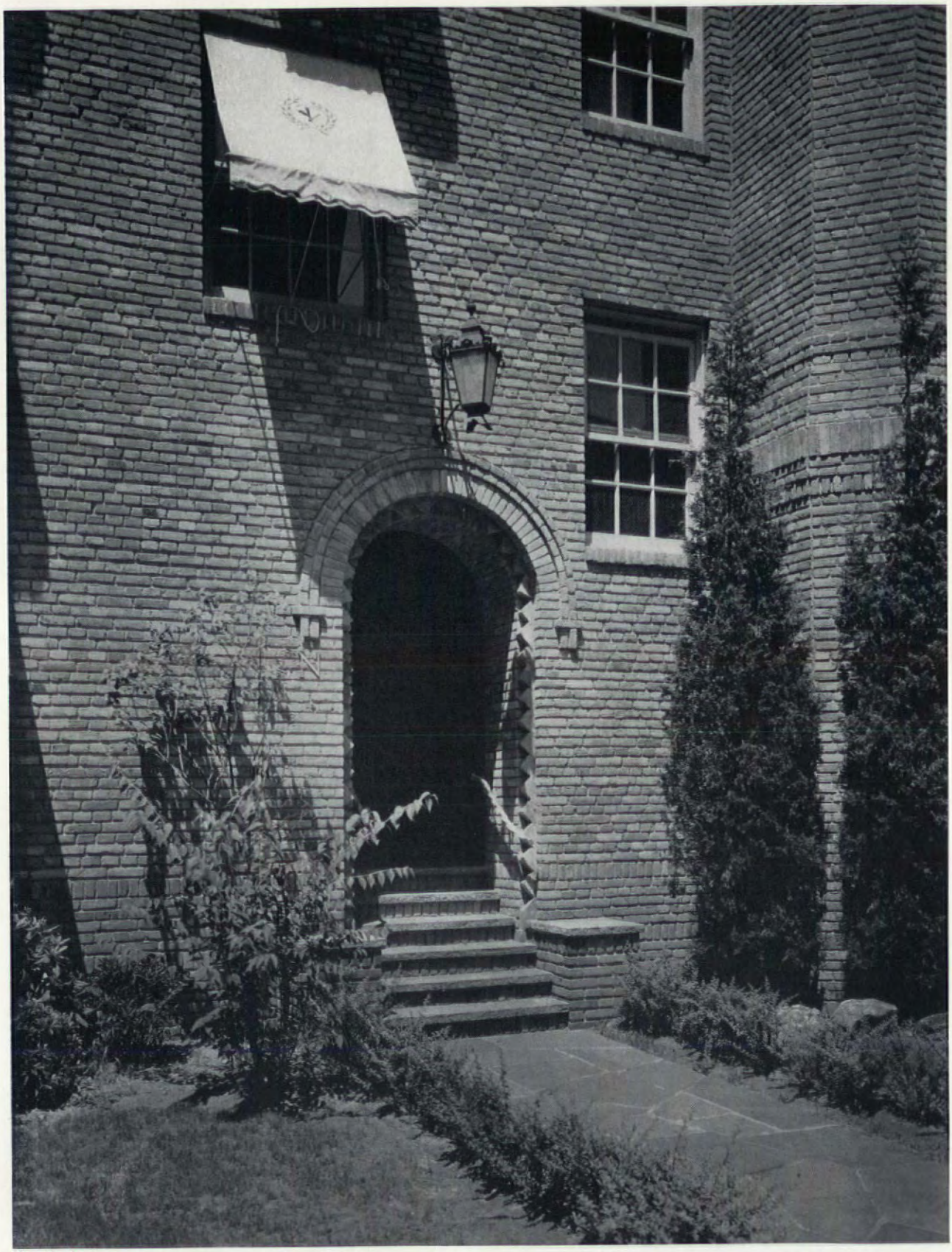
NEW NORTH TERRACES

Number Twelve of a series of twelve drawings made at the Fletcher Quarries by Ernest Born.

GRANITE

H · E · FLETCHER CO.

WEST CHELMSFORD MASS.



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VAN TASSEL APARTMENTS AT NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

THE ARCHITECTURAL RECORD MARCH, 1932 VOL. 71—NO. 3

This article opens a series of related studies by Henry Wright and Eugene H. Klaber in this annual Apartment House number. Taken as a whole, they present an entirely new approach to the problem of producing low-cost dwellings in the reconstruction of blighted areas in our large cities.

The first study presents an economic analysis which leads to the conclusion that a new dwelling type, which will provide for a fairly intensive use of land without entailing apartment-house service costs, may be a possible solution. The design of this new dwelling type, Mr. Wright points out, is dependent on the technical inventiveness of the architect.

Following articles by Mr. Wright and Mr. Klaber present solutions which meet the requirements established by an investigation of housing costs. The Technical News and Research article of this issue gives a complete survey of building costs and rent charges which demonstrate the feasibility of these new schemes.

HOW CAN APARTMENT FACILITIES BE PROVIDED FOR THE LOWER-INCOME GROUPS?

By HENRY WRIGHT
Architect and Town Planner

The failure to realize new business activity forecast by statisticians may be related to our consciousness that the causes of the depression are more fundamental, and probably more simple, than facts which are to be revealed through statistical research. We find ourselves in the position of the unmechanically-minded automobile owner who finds his car stalled five miles from the nearest garage and who, after he has, in turn, investigated the carburetor, the timer and the tail-light, becomes suspicious of further suggestions from well-meaning bystanders and longs for the appearance of a man in overalls.

In this article it is proposed to trace some of the causes of our present economic plight. These, it appears, correspond with the troubles of the stranded autoist who has merely run out of gas.

The latter years of the past decade were a period of riotous living, nowhere more marked than in the construction industry. The crest of the super-induced building prosperity carried far inland. The studies of various Committees of the recent Washington Housing Conference show convincingly that the production cost of dwellings, some 45 per cent of the whole industry, had become entirely out of line with our needs in terms of economic reality. Although statistics have been foresworn in this article, it may be in order to repeat the fact that, while the cost of new dwellings has centered at the equivalent of $60 to $65 in monthly charges without heat, rentals have centered at from $35 to $40.

Another phase of our activity during this period is worthy of consideration. Things had been coming so easily that we were quite content to know (if we cared to know at all) that a great section of our construction, that of small houses and cheap multifamily dwellings, remained in the hands of poorly trained and often unscrupulous builders, who understood or thought little of either good quality or good taste, but who covered in a vast wholesale manner great areas of our new suburbs, representing expenditures of hundreds of millions of dollars. Into all this activity was going a minimum of either well-considered ideas or real construction value. We were too easily convinced of an enduring prosperity to realize that these competitors were wasting our potential business chances, just as surely as if we ourselves had been turning clients away and suggesting that they proceed to build without technical advice. It is this mass of unassimilated and disreputable construction, which not only clutters the city borders, but stands in the way of new construction.

Old type two-family flats common in New York City and now technologically outmoded. The second-floor apartments have heat supplied; deliveries come through the front stairway.

There is, however, one barely possible (and if possible, fortunate) rift in this clouded picture. The processes of this drab, unimaginative and flimsy mushroom growth have been wasteful in the extreme. The products have been cast largely in antiquated forms, ill-suited to modern life, and not providing for the real needs of the individual family or prepared to assume responsibilities for civic and social equipment. Even in cheapness they have represented more than the owner could afford in monthly payments, if he could and would have those other necessary accompaniments which make the desirable community. Nor can such districts ever require complete civic and social furnishings because, in addition to their outmoded individual fashions, these houses are set in an extravagant and costly pattern of streets and other civic equipment; they cannot take advantage of economies being made possible by new self-contained household services, such as heat, refrigeration and waste disposal, which no longer require costly direct street access to individual dwellings.

It is suggested (and described more particularly later) that technical competence can be applied to the production of new forms of modern dwellings, superior to recent products of the jerry builder and yet at a lower cost level which will not only compete with these existing dwellings but reach new economic groups not previously served in any manner. The report of the Committee on Large-Scale Operations (President's Housing Conference) is referred to for detailed suggestions as well as for an explanation of the two leading types of existing low-cost housing known as the Garden Apartment and the Group Row House.

However, before entering the subject of what may be set up in actual and successful competition to our existing oversupply of cheap and incomplete facilities, it may be well to examine further the accomplishments of the past decade, in terms not altogether revealed by statistical charts.

The quantitatively large building program of this period becomes less impressive when we realize that, while some of our dwellings were highly spectacular in effect and did, in fact, employ a larger proportion of technical services than in preceding periods, the net result in the extension of substantial new residential communities was rather negligible. Our finer communities were unquestionably finer than before, but our poorer communities were also relatively poorer and less substantial than those of the decade of rapid building from 1905 to 1915. The quantitative effect of the new trend to serviced apartments may be easily overestimated. While it bulked large in the current statistics of the peak years of 1925-28, the effect on our sum of housing accommodations was small.

In 1930, it has been found by an extended research, not more than 6 per cent of our dwellings in a large number of representative cities of the central and eastern states had heat supplied from a central source common to more than one or perhaps two families. This figure includes a large number of three-story apartment flats of archaic design, which cannot really be classed as serviced apartments; hence, only somewhere between 3 and 4 per cent of housing in the larger cities is as yet represented by modern apartment dwellings. About 47 per cent of the population still live in single houses, and nearly 50 per cent in some form of flats, chiefly of the two-family variety.

ALDEN PARK MANOR, PHILADELPHIA
EDWYN RORKE, ARCHITECT

New serviced apartment type too expensive for 80 per cent of incomes because of the many services involved in the rental.

THE CAUSE AND SPREAD OF BLIGHTED AREAS

A very large proportion of housing production, representing the statistically quantitative elements of the recent past, has been in cheaply constructed single and small multifamily dwellings, in scattered or incompletely serviced areas at the borders of our cities. It has been found easier from a business standpoint to abandon or neglect the older sections of our cities and to found new housing colonies on "unspoiled" suburban land. This would, perhaps, be an estimable procedure, if our new communities were definitely better, more modern, or more desirable than the old; assuming, of course, that cities were financially able to provide the new services without withdrawing those in older districts. But most of our new communities partake of all the defects which have caused the older to deteriorate, and by postponing most of their public service costs have not revealed until recently the incapability of the city to continue expansion without the risk of bankruptcy. In the meantime, great areas of the city have remained stagnant and have become increasingly drab and undesirable.

Blighted areas have continued to increase in our cities because:

1. No public or business interest has been devoted to these older areas, which represent fully exploited opportunities in terms of new building or investment.

2. No new technical development has arisen to provide new forms of dwellings economically suited to filling the vacancies or rebuilding the better located portions of those areas in terms of moderate income needs.

3. Many of these areas were built in wholesale fashion which rendered them inherently blighted at the outset.

Therefore, we find that our blighted districts are now spreading, not because new competing communities are really better or more attractive, but rather because no attention is being paid to the older areas and no one has been concerned with the problems of evolving new methods for completing or rebuilding them in terms of current technology. Unlike the recent products, many of these areas of small multifamily or row dwellings constituted in their time an effective, if not altogether desirable, form of new substantial construction which could be rented or sold within the means of a large proportion of the clerically and industrially employed. Their construction was fairly sound and their municipal equipment often complete, although in terms of present technological changes their wastefulness in both building plan and land use has rendered them no longer available for the purpose which they once served.

Does our present method of city building offer any such hope of substantial city expansion? It has been fully demonstrated through fact and experience that for the average income groups the single-family dwelling cannot be built either within income requirements or capable of really absorbing the actual service costs of city improvements and conveniences.

On the other hand, the apartment offers no better or more promising means of meeting the needs of these large groups within our cities. The apartment is a solution of higher-cost dwelling space based on the problem of higher land cost, which is an inevitable attribute of wholesale city building. So few are the really livable parts of our cities that all who can afford the luxury of space and comfort crowd into a few small districts representing only a small per cent of the total area of the city. However, even aside from excessive land costs, the service costs of the apartment place it beyond the reach of the average family income. But let us suppose that the apartment can be brought economically within range of the average family—would even this measurably retard the spread of blighted districts, the miles of worn out or obsolescent dwelling areas of our large cities?

It is estimated that in Chicago, to take one example, there are 40 square miles occupied by two-family and three-family flats alone. To rebuild these areas with 8-story apartments on the basis of the present street and lot pattern would require a 300 per cent increase in the present total population of the city.* Technically speaking, it might, of course, be a very fine thing to replace these districts with a series of isolated apartment dwellings surrounded by vast open spaces, as outlined by M. Le Corbusier, but this is economically so far removed from our methods of land holding or our income capacities as to be wholly idealistic at this time.

TECHNICAL SOLUTIONS CAN PROVIDE MODERATE-PRICED HOUSING

The problem of providing new dwellings for average incomes has remained unsolved primarily because the technician has been concentrating his attention on the luxury house.

The business man and the more intelligent mass builder of our new dwelling areas deserve a measure of credit in that they have carried on, within their ability and the accepted perquisites of the trade, widespread building activity during the period when others were concentrating their attention elsewhere. This trend has finally run its course because of inherent wastes and the lack of imagination of its adherents, both factors having contributed to the growing discrepancy between

*Many authorities disagree with this assumption that *entire* ground area would necessarily be occupied by tall apartment buildings.

cost of product and absorptiveness of the market. The end would have come sooner except for gallant efforts at super-salesmanship and superficial prosperity. Much of this super-salesmanship business has already paid toll in wrecked banks, mortgage foreclosures and repudiated bonds. The course has been run, but building will begin again only if and when business is ready to attack the nonluxury market in terms of business efficiency which will make products more obtainable.

We have had less building because more and more capital has been taken by the business (or unbusinesslike) processes of:

(a) conversion of land into use for dwelling purposes;
(b) highly stimulated marketing of the final product.

In fact, the costs of (b) mounted as the effects of (a) and the wastefulness of the building process placed the product further beyond the purchasing power of those for whom it was intended.

But even if business should take its full cut in the general deflation, we would yet find ourselves at a standstill, since all the present forms known to the building trade and available in the past to the moderate-income group have been outmoded by current technological processes and modern service standards.

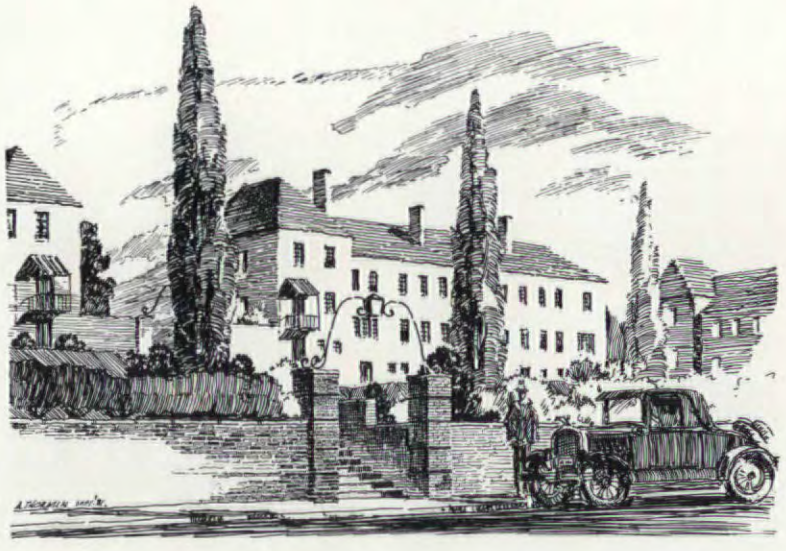
The job at this point has become one for the technician rather than the business man, and there is no reason why the former should not make the first move toward the eventual solution of the problem, even though business may have yet to add to its losses before it is ready to supply its services within the needs of the new reconstruction period economy.

The problem must be isolated in terms of economic necessity before it can be solved in terms of planning technique. The need, however, is well revealed when we consider that our upper incomes have been generally well supplied with the two luxury dwelling extremes: on the one hand the complete well-built single-family dwelling, on the other the modern serviced apartment. The need lies between these two. We should not be confused by the fact that under certain conditions, usually of a temporary nature, the obligations of the single-family house may be either avoided or postponed, while the quality may be reduced to a minimum with which no form of dwelling in well-furnished communities can possibly compete.

The problem is not to see how cheaply we can provide a temporary substitute for the old-time single-family dwelling—in the opinion of thoughtful persons the recent housing conference which hoped to prove that we could again start up the old discarded machine only emphasized the deficiencies of its past—but to devise a moderate-cost urban dwelling with which we can rebuild or extend city areas and which will carry a legitimate part of the complete community obligations. We have seen that the two- and three-family flat did this in the past on land at costs equivalent to the present costs in large, reasonably well-equipped and well-located city areas. We may forecast that something somewhat similar to the flat but adjusted to present technological requirements and family needs might again provide the same function in terms of incomes and city rehabilitation.

This is the problem that we must face in the light of present conditions.

One general observation may be in order before we go into the intricacies of technical study in outlining the possible evolution of new dwelling forms adjusted to the new age. The greatest fault of our much vaunted prosperity was that it permitted us to form a habit of regarding only the exceptional in building as of interest or worthy of our technical care. What we must carry forward is the thought that the least and meanest element in our city building is worthy of the same care that we would bestow on the greatest buildings. If future blight is to be avoided, the original conception of the community must be one of intimate and permanent interest. Only so will the reconstructed city be worth reconstructing.



South entrance to the Buhl Foundation Housing Project (Ingham and Boyd, architects) now being completed in Pittsburgh. Rentals are available to clerical workers. This development is a contrast to the usual process of building up residential areas by continual spreading out of one general and unimaginative pattern, a trend which this article interprets as a cause of blighted districts.

LOW-RENTAL DWELLINGS

—How Can Construction and Service Costs of Apartment Buildings Be Reduced?

The very real and definite need for new dwelling and construction can be supplied only if the inventiveness of the technician can be centered successfully on the discovery of new forms of dwellings.

The successful solution must incorporate an efficient use of land; it will supply those services, such as street access, water, gas and sewage, and probably heat, which are technologically supplied most efficiently in common, but it will avoid the costly additional construction and service features of the apartment. These features include fireproof stairs, roof equipment for drying laundry, dumb-waiters and fire escapes, together with their maintenance and service. To the first list of requirements should be added, if possible, the redistribution of open spaces to provide individually-maintained gardens in place of community-maintained lawns and planting.

An important factor in solving the problem will be the potentially more efficient use of typical city blocks, 250 to 300 feet deep in many large cities, for low-type buildings in court groups without street frontage. This more intensive land use, however, would provide these lower buildings with sunlight standards superior to most apartments, even the garden type, and also should make possible a small and convenient individual garden plot for nearly every family. The basis for assuming that direct street frontage is no longer necessary for such dwellings is that all modern housing will be supplied with:

(1) heat from a common source or from individual heaters to which gas or oil fuel is piped;
(2) refrigeration of mechanical origin;
(3) waste incineration of some appropriate form.

The block studies appearing in this article are all based on these assumptions. In most cases they provide separate entrances from individual door yard gardens, but many dwellings are removed from direct street access and from garage accommodations.

The problem has now been defined in terms of requirements. Its solution must be based on a continuous and related adjustment of all factors which enter into the final product in terms of ownership or rent. Rent is the simpler form to consider for comparative purposes, although in nearly every case the plans suggested are suitable for some form of ownership.

The remaining factors in the problem require the technician to be aware of varying costs under different building forms and land coverage. The architect must, as we have shown previously, become an analyst if he is to apply intelligently the principles of design; we are now asking him to think economically, not that he can do the job as thoroughly as the economist but because the problem must be solved with the fundamentals of design and economy continuously in mind. *It is easier for the architect to acquire the fundamentals of rental economy than for the economist to acquire the fundamentals of technical design.*

Brown Brothers

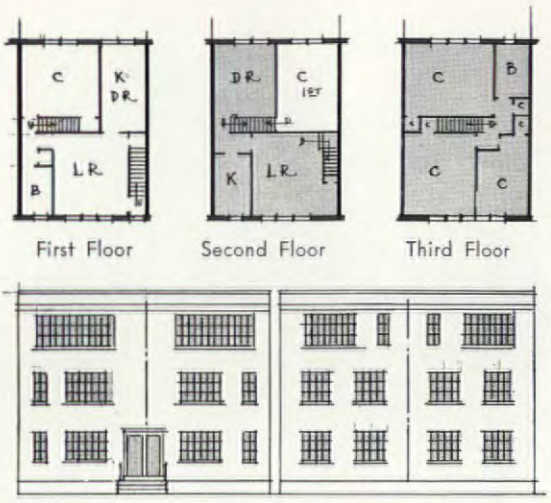
A TWO-STORY FLAT AT SUNNYSIDE, LONG ISLAND
FREDERICK L. ACKERMAN, ARCHITECT

This building, a unit in a row group, offers efficient accommodations for four families. The inside four-room plan, which is characteristic of the interior row suites, has been taken as the "yardstick" measure in this study of costs to determine a new low-rental dwelling type.

Solutions Based on Known Building Costs

In order to prove, logically and soundly, the suggestions which are presented in this article as a basis for new types of group dwellings fulfilling the problem requirements, it has been necessary to analyze carefully the itemized costs of known types of efficient flats and three- and four-story garden apartments, and to convert these costs into the capital charges for building and land which enter into the annual interest, taxes and depreciation costs of rented dwellings. It has been necessary to investigate carefully all other service and management charges in such rents and to determine equitable charges for the new forms which are suggested. To do this, facts were secured as to the cost of fuel and the wages of engineers and janitors in two-family dwellings and in apartments of similar size, design and construction; the costs of cleaning as well as lighting common stairs; repairs and similar factors broken into detailed items not usually considered important in determining rentals in dwellings of known experience.

The technical studies which parallel these suggestions and support the conclusions will be found



First Floor Second Floor Third Floor

A NEW TYPE OF THREE-STORY TWO-FAMILY FLAT

Each unit, 20' by 28'4", has ten rooms. The first floor suite has a bedroom on the second floor. This building requires 2,147 cubic feet and 2 lineal feet of frontage per room as compared with the two-story "yardstick" flat (25' by 28'4") which requires 2,510 cubic feet and 3 1/8 feet of frontage per room. Rooms average the same size in both flats.

on pages 213-216 of this issue. They provide a fairly accurate method of procedure for a combined technical and economic study of problems of this nature. Not every factor is absolute, but efforts have been made to preserve at every point the integrity of the process and the uniformity of application of all factors as accurately as possible.

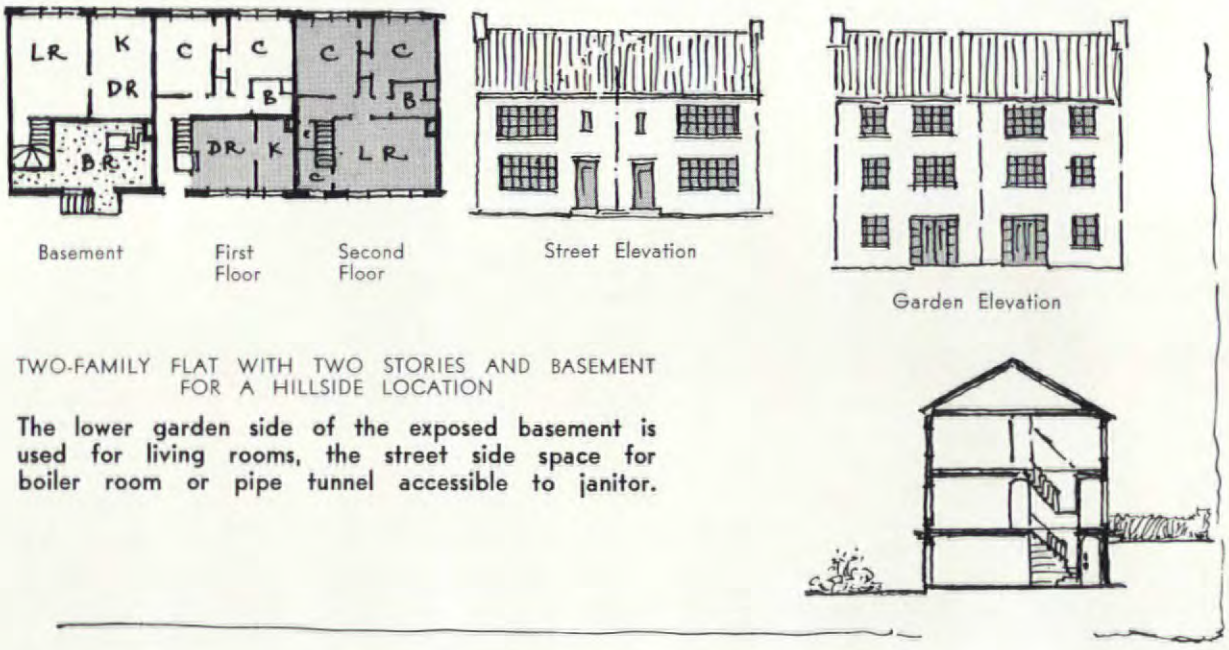
In describing the suggested solutions, the danger of setting up actual architectural forms is recognized as diverting attention from the more important *principles* involved. The suggestions form only a few of many possible interpretations. The task of evolving the underlying principles has prevented more than a crude application for the purpose of elucidation rather than emulation. Since the analytical factors have been based upon the 1926-27 technique of brick and joist construction, the present interpretation has been expressed in corresponding architectural forms. It remains for others to extend the application into more modern construction.

The first step in the analytical process was to make a careful and equitable comparison of costs of known two-story two-family dwellings, and three- and four-story apartments of practically identical plan and construction, except as required in change of type and story height.

This comparison revealed the fact that the savings in building cost due to superimposing more stories were more than offset by the added costs of safety and service equipment without even taking into account the additional costs of maintenance service for the apartment dwellings. These differences were represented by building cost figures of $805, $903 and $910 a room for the two-, three- and four-story buildings, respectively. When these building costs were combined with land costs in the proposed block arrangements, rather than with individual street frontage (as actually built), it was found that even two-story two-family dwellings could compete in capital costs with three- and four-story apartments of identical plan on land up to $1.50 a square foot. With the difference in service costs the two-story flat could compete with the three-story apartment on land at $2 a square foot.

Conclusions Reached by Comparison of Costs

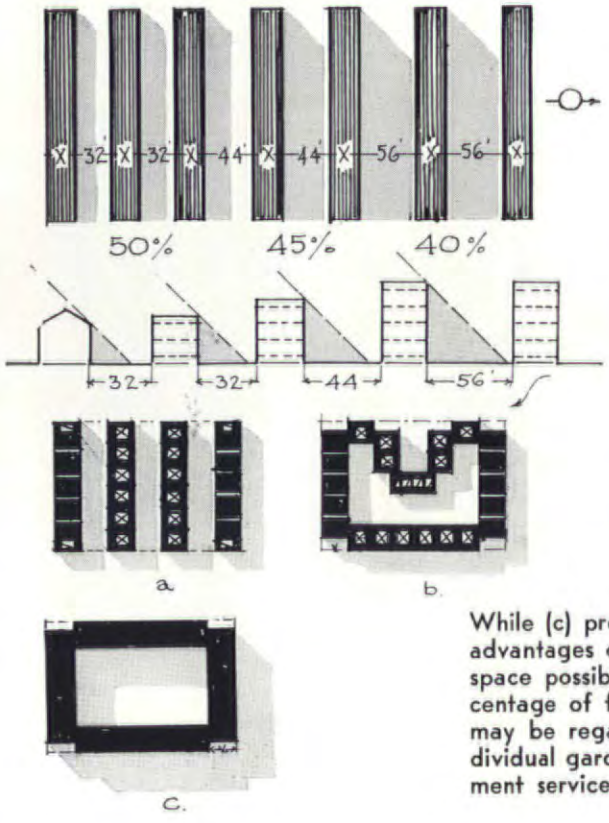
Upon this showing is based the first important conclusion. In cities where large blighted areas are now occupied with the usual wasteful two-story flats on individual narrow lots, it will be frequently found possible to purchase these old properties at



Basement First Floor Second Floor Street Elevation Garden Elevation

TWO-FAMILY FLAT WITH TWO STORIES AND BASEMENT FOR A HILLSIDE LOCATION

The lower garden side of the exposed basement is used for living rooms, the street side space for boiler room or pipe tunnel accessible to janitor.



STUDY OF RELATIVE COVERAGES AND SUNLIGHT EXPOSURE FOR TWO-, THREE- AND FOUR-STORY DWELLINGS

Spacing required for dwellings facing south in order to provide full sunlight at 45 degrees. All buildings are 28'4" deep; all coverages are based upon net area in full block 450 feet long.

EFFECT OF OTHER GROUP ARRANGEMENTS:

(a) 50 per cent coverage, two-story, all facing south as above.
(b) 50 per cent coverage, three-story, perimeter grouping.
(c) 50 per cent coverage, four-story, full perimeter plan.

While (c) provides a superior open space, it sacrifices the advantages of full sunlight and access to individual garden space possible only in (a). In the case of (b) a large percentage of families can have individual gardens. Plan (c) may be regarded as superior for families not desiring individual gardens, and able to pay the added cost of apartment services.

$2 a square foot or $300 a front foot 150 feet deep (which is a not uncommon block depth in many cities). This price will include the current value of the old buildings, which can then be razed and replaced with modern, efficient two-story flat dwellings in block organizations similar to the proposed block plans.

In these areas would be housed about twice the existing population at rentals, including heat, less than those in present forms of cheaper and undesirable apartments.

Doubtless much of our city land of this character will have been covered previously by equally antiquated and inefficient three-story flat apartments. The salvage site values of these districts may be too great to replace them with two-story flats even under improved building and block plans. The second necessary development in city rehabilitation seems then to be to set up an efficient three-story structure which will not entail the additional construction and service costs necessary to all known apartment dwellings.

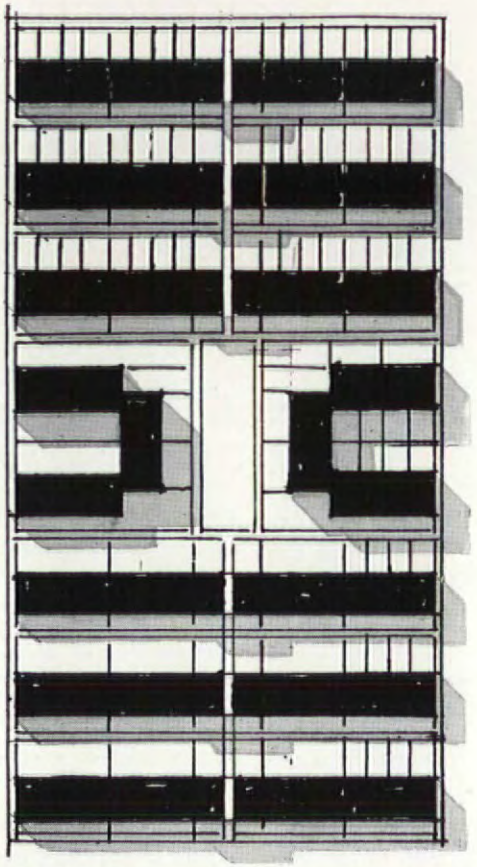
Here then is a problem for pure technical inventiveness. If it can be solved, the results are almost limitless. It is definitely known, for instance, that the old wastefully arranged three-story double apartment flat requires 60 per cent more heat per room per season than an efficient five-story apartment on the adjoining plot heated by separately metered steam from the same boiler plant. Notwithstanding the saving in fuel made possible by substituting the efficient apartment plan for the inefficient plan, there are still some expensive safety and service features which even the three-story apartment flat requires, although in less measure. If we can in one operation produce three-story dwelling space which is efficient but which obviates the additional safety and service features of either the three-story apartment flat or the taller apartment house, we shall then make real headway in providing housing for the lower-income groups. At the same time we shall have evolved a new type capable of replacing present widespread three-story dwelling districts at salvage land values sufficient to pay for wrecking these present outmoded dwellings.

The solution proposed here is simple. It is accompanied by cost studies which provide a large factor of safety for possible errors in the less absolute factors of initial and maintenance costs.

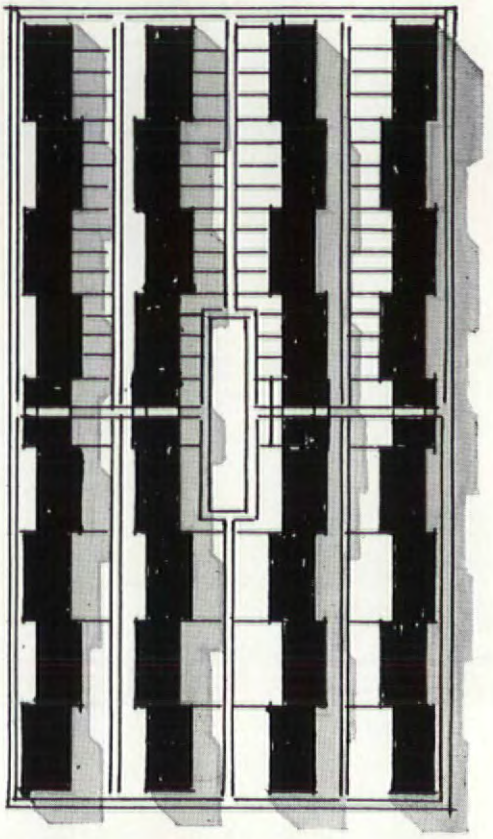
A New Dwelling Form

It would be too much to say that a new dwelling has been invented. Its prototype may be found in certain recent examples of apartment-house design in England and Germany, where flat and two-story house units are combined in buildings sometimes five stories high, to which public access to the individual dwellings is had by means of a central stair leading to external "balcony" passageways.

BLOCK ARRANGEMENTS FOR TWO- AND THREE-STORY GROUP DWELLINGS for blocks 440' by 240' to building line on street side. Additional width of 20' required for street front yards in schemes (B) and (C). All shadows cast at 45 degrees.

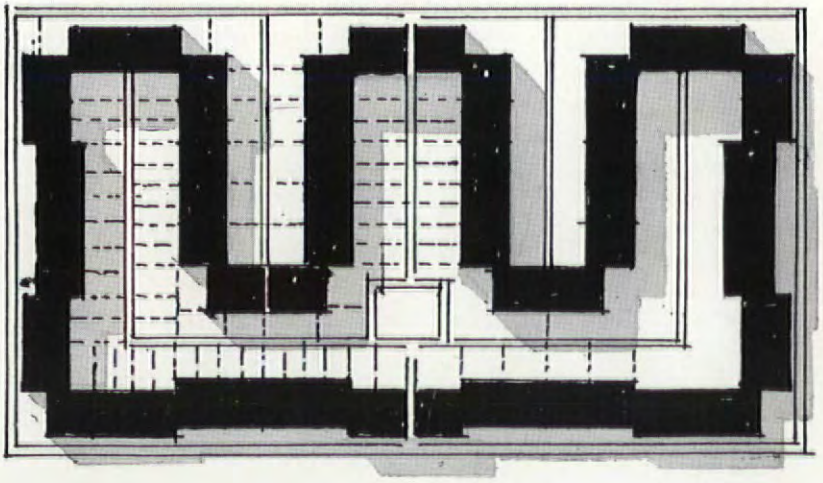


NORTH



SCHEME A:
Block running north and south. Practically all dwellings face south on individual garden spaces. All suites run through building. 49 per cent coverage; 48 two-story, 18 three-story buildings; 624 rooms.

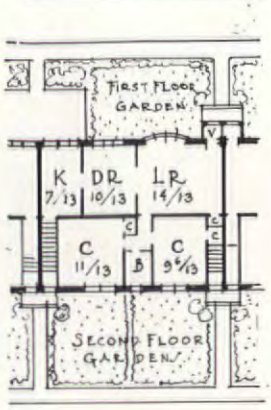
SCHEME B:
Block with dwellings running north and south. All room exposures and gardens have sunlight either morning or afternoon. 47 per cent coverage; 64 two-story, 4 three-story buildings; 572 rooms.



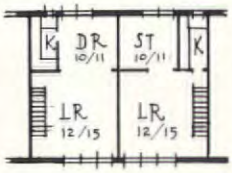
SCHEME C:
Block running east and west. Large percentage of units have east and west exposures. Long north front dwelling group has principal rooms on south garden side. 44½ per cent coverage; 22 three-story, 38 two-story buildings; 612 rooms.

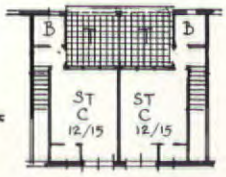
A NEW TYPE OF LOW-COST NON-SERVICED APARTMENT

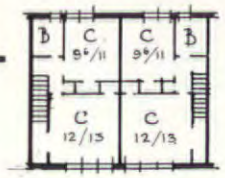
Final Three-Story Dwelling Designed To Rent Measurably Below Present Levels



Left: First Floor
Below: Second floor



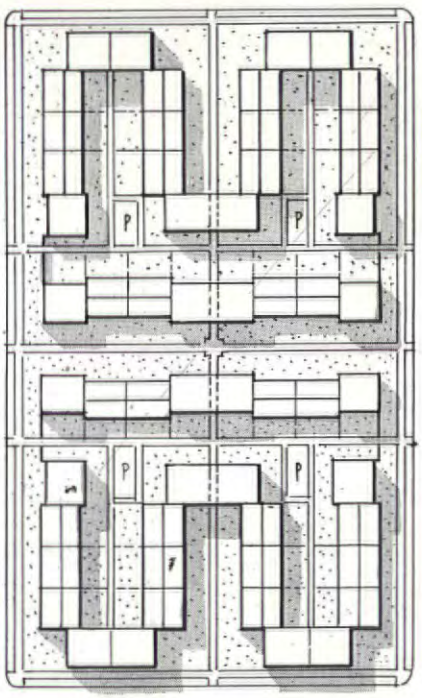




Right: Alternate
Third Floor Plans

Second Floor Entrance Elevation

First Floor Entrance Elevation

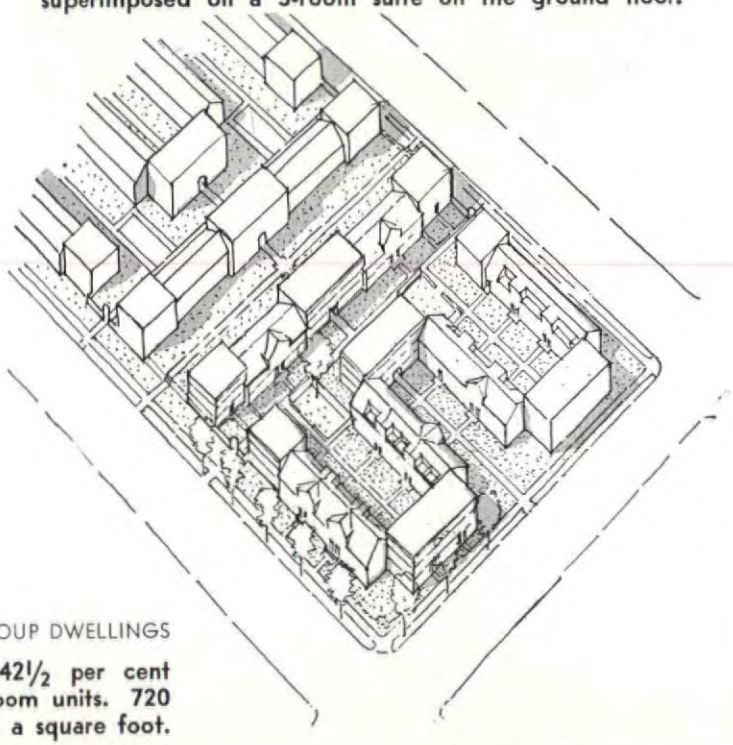


BLOCK PLAN OF 2½- AND 3-STORY GROUP DWELLINGS

Plot 260′ by 460′ to street line; 42½ per cent coverage; 24 14-room and 32 12-room units. 720 rooms at $166 a room on land at $1 a square foot.

PLANS AND ELEVATIONS OF GROUP DWELLINGS

Each building has two 2-story suites, each with 4 rooms, superimposed on a 5-room suite on the ground floor.



This new dwelling stays within the three-story limit by the simple expedient of superimposing two 16-foot four-room-and-kitchenette two-story dwellings over one five-room unit 32 feet wide on the ground floor. The entrances to the upper dwellings are at the ground level and do not differ from entrances to a second-story suite in flat buildings without interior common halls. The house occupant proceeds to his own third-floor sleeping rooms in a manner no different than that of the second-story flat dweller who happens to have rooms in his attic. Although these proposed buildings might not be constructed within the requirements of present building codes in many cities, there is no reason why they should not be readily accepted with the necessary adjustment.

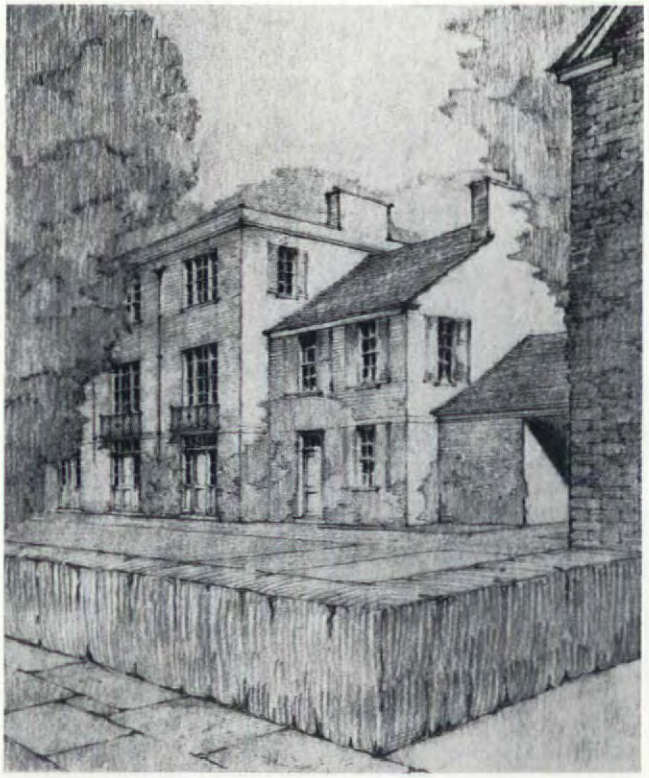
Each family has its own outside entrance door and its own individual garden. There is no longer any need for distinguishing the front or rear of any dwelling since there are no delivery services such as ice, the removal of refuse or the supply of coal, all of which have been taken care of by internal devices, power wires or piped fuel. Thus the garden space may be completely allocated, on opposite sides of each building, for the ground floor and upper floor occupants. The garden on

the first floor side is amply large to provide latticed laundry yards if desired. To maintain the simplicity of plan in regard to stairs, it would be essential for the second-floor families to have an outside area entrance to the common basement laundry. Since either gas or oil heat would be used if heat were generated in each building the space occupied would be small and the operation relatively clean, so the remaining large basement space could be used for laundry and play space.

The economies of this plan are based on: (a) the sharing of costs of basement and roof space by three occupied floors without entailing the extra costs for safety and services which would be required in an apartment building where the third floor suites have no rooms on the second floor; (b) the reduction in land cost by placing efficient flat and row-house dwellings throughout the area of the block without providing street frontage for many of the individual units; and (c) the reduction in costs of operating services by eliminating external as well as internal service requirements of the apartment. In the cost studies (see pages 213-216) it will be seen that the relative production costs per room of various types of dwellings of similar plan and construction are: two-family, $805; three-story apartments, $903; four-story apartments, $910; and for the above group dwelling, $793. The cost per room for land (at $1 per square foot with approximately 40 per cent coverage for four-story, 45 per cent for three-story, and 50 per cent for two-story buildings) is $193, $141, $119 and $154, respectively, for the four types. The total capital costs per room with carrying charges is $1,022.08, $1,071.57, $1,056.64 and $970.68. The reduced service costs add to the advantage of the new type of group dwelling, so its monthly rental per room on $1 land is $10.88 as compared with $12.15 and $11.74 for three- and four-story apartments. The group dwelling remains cheaper than four-story apartments until land reaches nearly $5 per square foot.

It is anticipated that in all forms of multifamily dwellings noise insulation will be successfully accomplished in some form commensurate with low-cost construction. There are many ways in which the roof can be made accessible to upper floor occupants. If laundry is done within the individual apartment or sent out and heat is supplied from a central source, basements could easily be omitted. In mild climates it would be possible to provide access to the upper-story suites by means of outside stairways.

In the following article Mr. Klaber approaches the same problem somewhat differently. He retains the apartment stair but reduces the size of the bath and kitchen equipment in the individual dwellings, providing also an individual heating unit. The first costs will show a saving over usual apartment building types.



Group dwellings in two- and three-story units built at Mariemont, Ohio. They demonstrate the community interest possible through the application of the economic principles developed in this article. Original sketch by Edmund B. Gilchrist, architect.

REDUCING APARTMENT COSTS BY ECONOMY OF (1) PLANNING, (2) CONSTRUCTION, (3) OPERATION

By EUGENE H. KLABER, Architect

The problem of housing is to furnish dwellings for that large proportion of the population who can afford to pay $35 or less per month for a home. If we can attain that price level, we shall have accomplished a step toward our goal, although it must be borne in mind that of this 62½ per cent of the population more than half are now paying $25 or less.

To come to grips with this problem, it is necessary to examine critically, not only the financial and physical features of the dwelling, but also the social concepts which have guided our approach to the problem in the past. This approach has always been based on an idea of well-being, accepted *a priori* and forming what we have been wont to call "The American Standard of Living." The attempt has always been to attain as high a degree of amenity as possible at rentals somewhat below the current price levels for speculative ventures, but profiting in some instances by the advantages to be obtained through large-scale operation and tax exemption. In almost every case it has been accepted without question that the highest degree of amenity and luxury attainable should be aimed at.

This point of view has led to the production of housing which is in competition with commercial ventures, and such competition has made it all the more imperative that conveniences be furnished in excess of what commercial builders were currently giving in order that a large percentage of occupancy might be reasonably assured. Even though the original intention of a housing project may have been to meet the needs of the lower-wage groups, it has only too frequently occurred, as a result of this point of view, that the very people for whom the projects were intended were financially unable to occupy them, or, if they did, they found themselves obliged to double up with other families in order to meet the rent. Needless to say, this sort of thing leads to overcrowding.

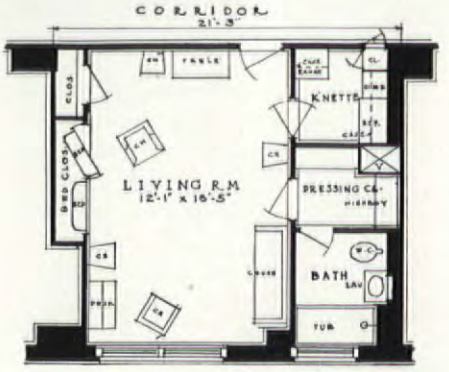
It is generally recognized today that private initiative, working along customary commercial lines, cannot furnish housing for the lower-wage groups, and we accept the fact that, in order to reach these, subvention in some form is a necessity, whether it be by foregoing the customary interest rate on money, by tax exemption, by government loans or by direct government subsidy. Wherever subvention enters into the picture, the effort should be to provide rentals that private iniative cannot hope to produce under any circumstances. The poorer the man who is to be benefited, the more necessary that benefit becomes, and we can justify special assistance only by reaching people much lower in the wage scale than we have been able to reach in any housing project which has been constructed in this country. This means that not only must cost of land and interest on money be reduced to a minimum, and construction costs kept low by large-scale operation, but equipment and service of the building must be reduced to conform to a minimum standard of necessity and not be keyed up to a maximum of luxury.

Not only is this program advisable, but it is the only equitable basis on which we can ask for government aid. A majority in this country believe that private initiative should be encouraged and allowed to be operative as far as possible. Under these circumstances, it is inequitable to produce housing similar to that produced privately which, by virtue of a subvention, can undersell it. Our plea for special aid for housing is that all should enjoy a minimum of necessary decencies, not that people should be given luxuries at the expense of the community.

We must therefore ask ourselves what is the minimum standard of American living, and in arriving at any conclusion we must eliminate everything except the absolutely essential. This does not mean that houses are to become mere packing cases, but it does imply the omission of some things which unquestionably are minor conveniences of living. It means the foregoing of things done for the average apartment-house dweller that he could quite well do himself. Ideals of service must no longer look upward to the extravagances of the fashionable apartment hotel and the gilded glory of the motion picture theatre. In planning for persons of small means, we must compromise with desires.

As a matter of fact, the comparatively wealthy have already accepted many compromises. What is the modern apartment hotel but just such a compromise, brought about by the increasing cost of domestic service, the high cost of land in desirable sections of our cities, and the desire on the part of many to make living as simple as possible with a minimum of exertion on their part. This has led them to accept apartment-hotel life with its folding beds, kitchenette and restricted quarters. These wealthy people want maid service, linen service, running ice water, ice cubes for cocktails, brass-buttoned elevator boys and a major general at the front door. For these they give up much that many of us consider essential in life. Poorer persons will also be willing to make their compromises; but what they will sacrifice will be the less

(1) APARTMENT HOTEL AT $100 PER ROOM PER MONTH
A large staff of attendants representing twelve types of services is included in the monthly rental of this apartment. Kitchen utensils, table linen, silver, soap, gas, refrigeration, shower curtains, face and bath towels, bed linen, table runners, furnishings, carpets and stationery are supplied by the hotel management. The construction and maintenance costs of this type of dwelling are extravagant, and the rental necessarily high. The manifold services are far out of reach of low incomes.



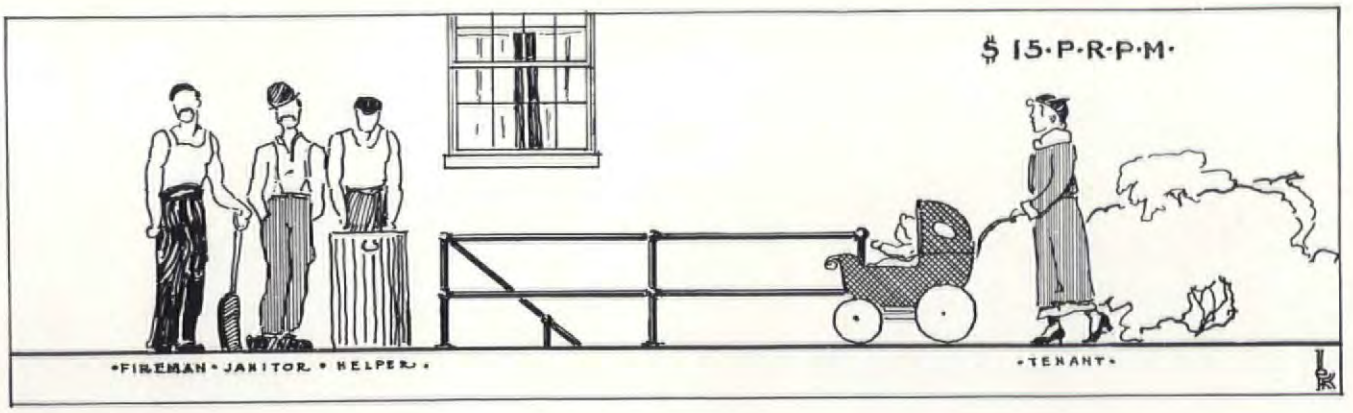
essential service elements and their compensation will be a greatly reduced rental for the essentials of decency.

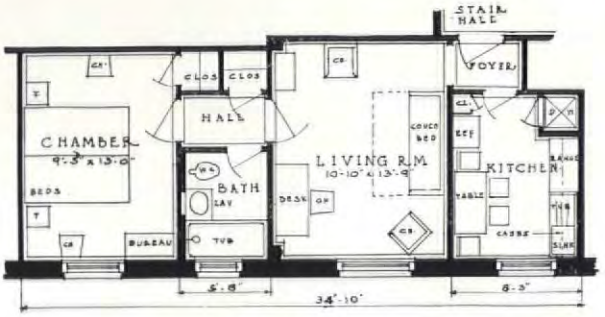
Our critical study of the minimum standard of American living must therefore be based on the way of life of people who are obliged, whether they like it or not, to deny themselves much as a result of inadequate wages. Such a study must scrutinize all phases of the make-up of the individual apartment and the operation of the building as a whole, with the service involved. To illustrate this point of approach, we present three pictures of life, entitled respectively, "$100 per room per month," "$15 per room per month," and "$7 per room per month."

The first is a single room in an apartment hotel. Everything is compactly arranged for housekeeping on a very small scale. The beds are mounted on revolving doors and disappear into the wall so that during the daytime the apartment has the aspect of a living room. For dining purposes a folding table is used. The kitchenette contains a gas range, sink with running ice water, a refrigerator attached to a central cooling system, broom closet and cupboard space. In addition, the hotel furnishes a complete equipment of kitchen utensils, table linen, silver and soap. The bathroom is wainscoted in tile and has a shower over the tub with double curtains, a medicine cabinet and a towel rack. Shower curtains are furnished and laundered by the hotel, and all face towels, bath towels, bath mats, soap and toilet paper are included in the rental. All bed linen, table runners, furnishings, carpets and stationery are supplied. Servicing this apartment is a large staff representing twelve types of service. In fact, all that the tenant need bring with him on moving into the premises is a suitcase and a bag of golf sticks. The construction cost of a unit of this type is necessarily high and the maintenance very extravagant, and it is not surprising that a big rental is charged. This type of dwelling has nothing to do with the solution of the housing problem. It is presented because it approaches an ultimate ideal of life in which the tenant does nothing for himself, and has his entire time free for the pursuit of objects other than housekeeping. Although this picture is never consciously in the minds of those who are undertaking housing projects, it probably has a subconscious influence against which we must be on our guard, inasmuch as the manifold service it affords represents the ideal of life of so many people, both rich and poor.

The second apartment shown is in a walk-up building. It is rented unfurnished, but nevertheless receives a variety of service. Heat and hot water are furnished, as well as garbage removal by way of the dumb-waiters. Refrigeration from a central system is also furnished at a small additional cost.

Although there is no dining room, the kitchen is sufficiently large, so that a small dining table and chairs can be used. In the kitchen cabinets there is ample room for the storage of grocery, supplies and a measurable amount of china and glassware. The walls of the apartment are painted and the





$15·P·R·P·M·

(2) WALK-UP APARTMENT AT $15 PER ROOM PER MONTH. This type of apartment is rented unfurnished. It receives, however, a variety of services—heat and hot water, garbage removal, central refrigeration, basement storage and laundry facilities. The construction includes items such as kitchen cabinets, painted walls, varnished wood flooring and terrazzo bath flooring, shower fixture, medicine cabinet and utility closets, all of which must be included in the rental. This layout represents living on a modest scale, but incomes below $50 a week cannot be reached.

flooring throughout is varnished wood, except in the bathroom where terrazzo is used. Bathroom fixtures include a shower over the tub and a medicine cabinet. There is a closet in the bedroom as well as one for hats, coats and general storage purposes. In addition to the apartment itself, the tenant has the use of storerooms in the basement, the laundry and rooms for perambulators. There are also certain general rooms for social purposes in connection with the project. If the tenant of this apartment pays $15 per room per month, his salary should be at least $50 a week. The entire picture of the equipment and service afforded in this case is commensurate with the means and demands of those who earn between $50 and $75 a week. There is no marked extravagance in this layout; it represents living on a modest scale.

In our attempts to eliminate all except the absolutely essential in living, we find that even in the comparatively modest mode of life for which this apartment affords opportunity, there is much that can be eliminated. The third apartment is an attempt to picture a set-up under which we may hope to achieve as low a rental as $7 per room per month

On examining the plans of the second and third example, the question arises at once: how can we hope to rent No. 3 at $7 per room per month when No. 2 requires a $15 rental? The answer does not lie entirely with the construction of the building; a lower land value has been presumed for No. 3. In general, however, No. 3 lends itself to an extremely simple form of plan, whereas No. 2 is somewhat complicated. It will also be noted that in No. 2 the apartment has a girder length of 34′ 10″ whereas in No. 3 it is 30′ 6″. This is due to a narrower bathroom and kitchen, the dining space of No. 2 being eliminated in No. 3. The girder length of the kitchen and bathroom in No. 2 is 13′ 11″ whereas in No. 3 it is reduced to 9′ 2″. No. 3 eliminates one plumbing stack.

The economies possible in No. 3 are of two kinds: (a) those relating to the make-up of the apartment itself, and (b) those pertaining to service and general equipment of the building.

Let us examine somewhat more in detail what has been done in No. 3 as compared with No. 2.

ELEMENTS OF INDIVIDUAL APARTMENTS

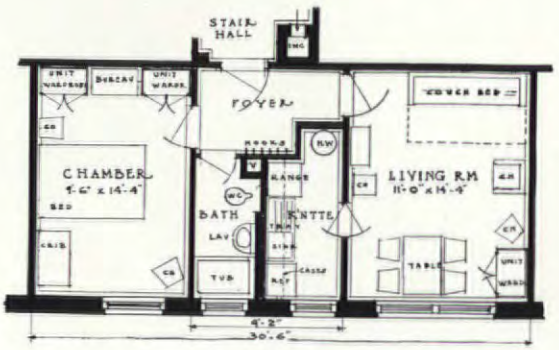
Bedrooms

The bedroom in No. 3 is 9′ 6″ by 14′ 4″ instead of 9′ 5½″ by 13′ 0″. Although it is larger, space must be taken out of it for the unit wardrobes which replace closets.

Living Room

Again the room in No. 3 is somewhat larger, being 1″ wider and 7″ longer. This room has three purposes: it serves as a living room and dining room, and in most instances will be used as a bedroom as well. The first consideration for a family of small means is furnishing the members of the family with sleeping accommodations of proper privacy and in a minimum number of rooms. It

(3) DE-SERVICED APARTMENT AT $7 PER ROOM PER MONTH. In this type of apartment all except the absolutely essential in living standards has been eliminated, and a lower land cost has been assumed. The living room serves also as dining space. The kitchen is condensed, but adequate. Cold air is utilized for refrigeration of foods during the winter months. A small tub is used in the bathroom and the medicine cabinet is omitted. All closets are eliminated. Hot water is supplied by individual heaters at the expense of the tenant. Vented gas steam radiators, also paid for by the tenant, supply heat. Economical beam and girder spans and concrete floors are used in the construction. Large pipes and dumb-waiters are eliminated. Storage and laundry facilities are provided on the roof.



is all very well to say that a living room should not be used as a sleeping room, but we know perfectly well that it will be so used; even the kitchen is likely to be used for sleeping purposes if that is possible, as it is in No. 2. If we do not wish a room used for sleeping purposes it must be planned so that it cannot be so used. This is one of the considerations which have led to the reduction of the kitchen. All other rooms must be planned definitely with sleeping accommodations in view. Hence the couch bed and the portable wardrobe shown on the plan.

In apartment No. 3 the use of concrete floors is contemplated instead of wood floors. Of course this is not so agreeable, and if the rental is in the competitive range many people will not accept this compromise. It means considerable saving, however, in first cost and some saving in maintenance. Concrete floors in apartments are by no means a new feature; at least thirty years ago Mr. Ernest Flagg used them in apartments in New York.

It will be noted that the dining table is of small dimensions. It can nevertheless accommodate five or six people if necessary, and when not in use for dining purposes it will afford a place for reading, study or games.

Bathroom

In the bathroom concrete is used again instead of an applied floor of terrazzo or tile. This room is narrow; a 44″ tub is used instead of a 60″ tub, and no shower or shower curtains are provided. The medicine cabinet is also omitted. It may be said that the small tub is somewhat uncomfortable. This is quite true, but it must be remembered that our object is to establish a minimum of decency rather than a maximum of comfort. Sixteen inches added to the girder length of the building for every bathroom would be expensive. It will be noted that in the arrangement of the kitchen and bathroom all fixtures are closely grouped, so that supply lines and branch waste and soil pipes will be simple and short. An entire plumbing stack is saved.

Kitchen

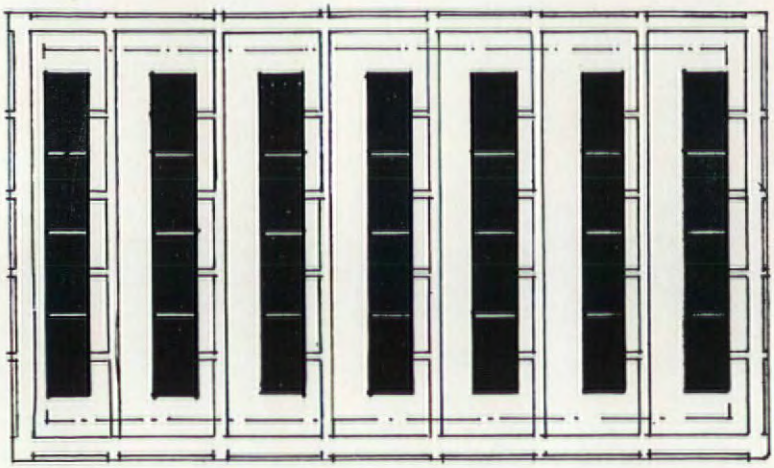
The kitchen in No. 3 is very condensed. The dining space is omitted. Cabinet space is more restricted than in No. 2. Instead of a cabinet gas range, a small range with ovens below the gas burners is used for the sake of space saving. Some will make the objection that this is an inadequate kitchen arrangement and a hardship on the housekeeper. If so, look at the kitchen in the hundred-dollar apartment, in which, as we know from experience, excellent meals can be prepared, and then compare either of these with the so-called service pantries prevalent in New York City. It is maintained that this kitchen is entirely adequate, especially for the use of people of small means. The range is less convenient than the cabinet range used in No. 2, but it is less expensive and occupies less room. No extended cabinet space is required because poor people have few dishes. The refrigerator is small, inasmuch as the buying of food is

from day to day. In this instance it is placed next to the outside wall with the idea of using air circulation ducts, which during seven months of the year will permit the cooling of foods with the external air without the use of any ice. This obliges the tenant to take ice only during the summer months when the danger of spoiling perishable foods is great. A combination sink and tub is provided, so that laundry work can be done in the apartment. Hot water is produced by an individual heater at the expense of the tenant. Not only does this mean the elimination of the enormous waste that occurs when the landlord furnishes the hot water, a waste for which the tenant must eventually pay, but it also involves an extremely simple system of small dimension supply pipes. In this combination of kitchen and bathroom the only necessary supply risers are the gas riser and the cold water line. One of the objections that is raised to this type of kitchen is that it would be undesirable for certain racial groups who lay great stress on their cooking, and would not be content with so restricted a layout. Here arises the question, to what extent are the habits of racial groups altered by circumstances? Certainly no nation has a stronger tradition of cooking than the Germans. Nevertheless, in one of the most recent housing developments at Spandau, Berlin, they have in many instances adopted not only the American kitchenette but also the so-called "strip kitchenette," in which the cooking appliances are inclosed behind closet doors which are opened when cooking is being done.

In the third apartment heating is also paid for by the tenant, who uses vented gas steam radiators. In a large-scale operation, this installation of heating and plumbing is far less expensive than a centralized system, and the cost of operation to the tenant, with reasonable economy on his part, can be reduced to the point, where he pays less to the gas company than he would be obliged to pay his landlord for furnishing him with heat and hot water. With such an installation no costly boiler room, stacks, pipe tunnels, circulating pumps, heat controls and pipe covering are needed. Consider further that a main use of the basements of most apartment houses is to permit the passage of steam pipes and water lines with proper pitch. A system such as the one indicated here would permit the elimination of a large portion of the basement.

This group arrangement embodies the plan unit developed as Apartment No. 3 (page 160)

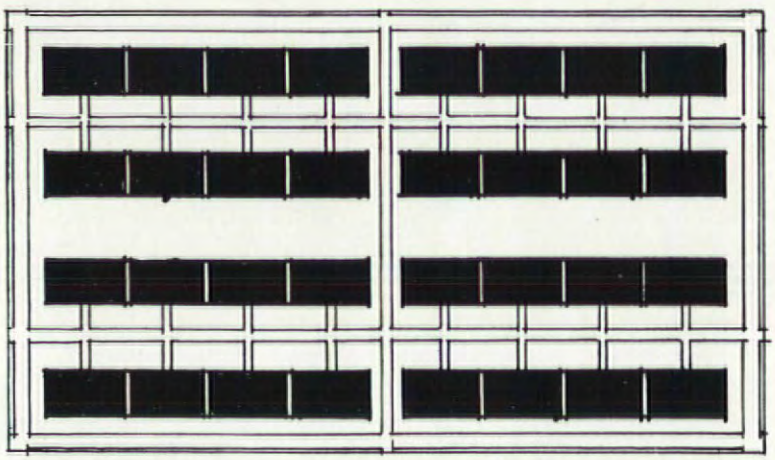
PROPOSED LOW-RENTAL APARTMENT GROUP IN CHICAGO
EUGENE H. KLABER, ARCHITECT



A.

252 Apartments
756 Rooms
40.3% Coverage

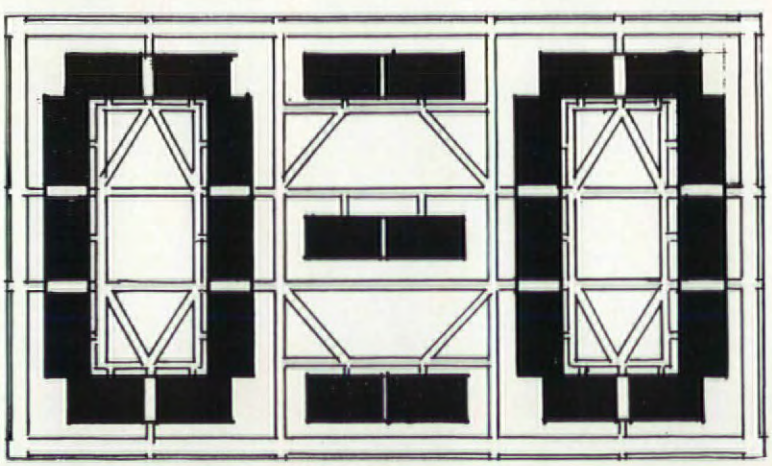
@ $1.50	@ $ .75	
630	315	Cost per apartment
210	105	Cost per room



B.

288 Apartments
864 Rooms
49% Coverage

@ $1.50	@ $ .75	
552	276	Cost per apartment
184	92	Cost per room



C.

234 Apartments
750 Rooms
40.3% Coverage

@ $1.50	@ $ .75	
680	340	Cost per apartment
210	105	Cost per room

BLOCK STUDIES BY EUGENE H. KLABER, ARCHITECT

These block studies are based on the same size block (240 feet by 460 feet to building line) as used in preceding article by Henry Wright.

Closets

All closets have been eliminated in No. 3. A rack with hooks is attached to the wall in the hall and in the sleeping rooms portable wardrobes are used. Closets are an expensive element to install. They involve partition work, plastering, many corners, trim, door, casing, hardware and finish. Unit wardrobes can unquestionably be produced in large quantities and furnished the tenant for a smaller cost. They have the advantage of being movable and placed in relation to the furniture. In planning, it is frequently found that where closets are provided for every room it is necessary to increase the area of the plan, and have a complicated layout.

ELEMENTS OF COMMON SERVICE

Heating and Plumbing

We have discussed the simplification possible by eliminating large dimension pipes, pipe covering, pumps, etc. If the basement is omitted there is a further saving in floor drains. In flat country, where the sewer mains in the streets are likely to be near the surface, any need for sewage ejectors is eliminated. In addition to the initial cost of the heating and hot-water systems, there is the cost of fuel and of engineers and firemen to be considered. Heating of stair halls has also been omitted. It is not essential that in cold weather people leave their apartment prepared for the outdoor temperature; witness the open-stair tenements.

Delivery; Dumb-waiters

The cost of delivery assumes added complications as we go upward in the financial scale. In apartment No. 2 dumb-waiters are provided for delivery of goods and the removal of waste. The latter involves janitor service. The tenant in No. 2 will frequently send home purchases from downtown stores. In addition to the cost of the dumb-waiters there is the problem of access at the bottom. This means tortuous corridors in the basement, partition work and toilet rooms for delivery men. The tenant of apartment No. 3 is strictly a cash-and-carry buyer. Her funds are limited, she must get the maximum for every cent that she spends, and above all, she wants to see what she is buying and to be assured of its quality. She knows that ordering groceries over the 'phone is expensive, and she knows that delivery of goods costs money which she must pay.

In apartment No. 2 the dumb-waiters have a special rack for garbage pails and collections are made two or three times a day. This is costly service. In No. 3 the tenant carries waste matter to the hopper of the incinerator stack in the stair hall. This system is not free from possible objections: carelessness can create a messy condition and failure to close the hopper door will admit odors into the hall. With care it can be quite satisfactory, as in the Amalgamated Clothing Workers' groups in New York.

Laundry and Storage Facilities

Although the tenants are not largely endowed with goods, some storage space must be provided. They must also be afforded an opportunity for doing more laundry work than is possible within the restricted kitchens. How are we to provide for these if the basement is eliminated? Roof or penthouse space meets this problem. Its cost is far less than cellar space. It is true that for storage, it means some additional inconvenience. For laundries, however, it is almost ideal inasmuch as an open portion of the roof adjacent to a laundry affords excellent means of open-air drying. How cumbersome is the arrangement so frequently seen in New York apartments, where the laundry must be hauled down three or four flights for washing, and then lifted up six flights to the roof for drying.

The considerations presented in this article indicate the direction that our study of the detailed planning of housing must now take. We must go into a much more careful analysis of the actual life of those who will occupy the building in order that on the physical side of the problem we can hope to obtain the utmost simplification and the smallest cost.

PROPOSED APARTMENTS IN CHICAGO
EUGENE H. KLABER, ARCHITECT

Garden apartments for City and Suburban Homes Co., Brooklyn, N. Y. Andrew J. Thomas, architect.

Garden apartments of low cost, Bridgeport, Conn. R. Clipston Sturgis, architect.

Faculty apartments, Ithaca, N. Y. Frederick Ackerman, architect.

Garden apartments, East 158th St., New York City. Andrew J. Thomas, architect.

GARDEN APARTMENTS

Pre-War Model Tenements and Community Planning: Cottage Flats by Toronto Housing Company.

1918-1919

War Housing Projects: Bridgeport, Newport News, Chester, Newburgh (2- and 3-story twin apartments and 4-story apartments with two suites per stair).

1920-1923

Application of smaller types at Ithaca, N. Y., and St. Louis; Development of Garden Apartment at Jackson Heights, Long Island and South Brooklyn.

1923-1931

Metropolitan Insurance Company Apartments, Long Island; J. D. Rockefeller, Jr., Apartments at Bayonne, Bronx, Harlem; City and Suburban Homes, Brooklyn project; Sunnyside Apartments, Long Island; New York Housing Board apartments in the Bronx, Brooklyn and East Side of New York; Radburn and Phipps Apartments; Marshall Field and Julius Rosenwald apartments in Chicago.

CHRONOLOGY OF

GROUP ROW HOUSES

Pre-War (especially 1915-17) Industrial Housing Schemes: Middle West, Boston, Philadelphia, Forest Hills, L. I.

Row Housing, Forest Hills, L. I. Wilson Eyre, architect.

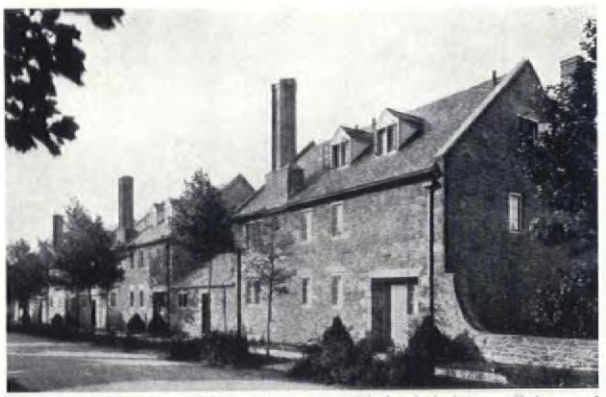
1918-1919

War Housing Projects: Yorkship, Bridgeport, Chester. Development of group rowhouses separately and combined with flats.

Bridgeport, Connecticut, rowhouses. R. Clipston Sturgis, architect.

1920-1923

Various proposed schemes for industrial housing: Standard Oil; American Car and Foundry; Shelton, Conn.



Group Housing, St. Martins, Philadelphia. Edmund B. Gilchrist, architect.

1923-1931

Community schemes employing group row dwellings: Mariemont, Ohio: Sunnyside Gardens, Long Island; Arbor Close at Forest Hills; Harvard Graduate Students' Houses in Cambridge; Radburn, New Jersey; Buhl Foundation Housing Project, Pittsburgh.

Buhl Foundation Project. Ingham and Boyd, architects. Stein and Wright, consultants.

HOUSING PROJECTS

HOW LARGE SCALE HOUSING PROJECTS ARE DEVELOPED

It is desirable that all investigations and decisions in regard to the general need, character, form and size of a housing project should be developed *before* rather than *after* a site has been selected. When steps are taken in advance, technical advice should be secured and property, wherever possible, should be optioned rather than purchased.

General Study

Surveys and brief technical studies should be made to determine the desirable character, kind and probable cost of development on either a sales or rental basis. Analysis should establish probable cost or rentals in relation to income of expected tenancy.

Suitability for intended purpose, adaptability of shape, size, topography and orientation of site or sites, either as optioned or to be selected, should be studied.

Preliminary Planning

A series of rough test plans should be made in order to avoid the early adoption of either fixed assumptions or definite plan forms. These may or may not be checked by actual estimates, but should be tabulated or in some cases shown graphically to bring out relative importance of variable factors.

Preliminary study should also develop an approximate program of sequence of construction and completion, in relation to seasonal working conditions, preferable time of sale or rental, and relative carrying charges accruing from completion of work before time necessary to accomplish these objectives. If both site and building work are required, the sequence and relationship between site and building contracts are particularly important.

Finished Plans

Actual working plans may be required during the period of study, particularly for site development, to meet the schedule outlined. A judicious balance should always be maintained between too rigid a development of original outline sketches and too great a departure to disturb economic factors either in building cost or operation.

Bids are to be taken and checked against all assumptions; any required changes should then be made, or if advisable, the project completely changed or abandoned.

Construction Program

Land option should be taken up unless previously done.

Records of assumed cost factors, as well as complete itemized subcontracts and other costs, should be set up in relation to accounting of actual costs as work proceeds: (a) to build up a reliable source of future information for architects and others concerned; (b) to check against assumed costs and prevent unfortunate surprises at the time of final accounting which so frequently not only cause embarrassment to owners but reflection on the "practicability" of the architect and other technicians.

Preparing for Operation

Whether project is to be sold or rented, preparation must be made during the period of construction for publicity, operation, organization, sale or rental schedules, etc. Here the architect can be useful outside of his usually recognized field if with proper preparation he is able to assist in what is often an intricate and difficult problem: that of allocating the total anticipated charges or receipts so as to assure an orderly and complete disposal of the project conforming to the sequence of its advantageous completion. Even a plan composed of a few typical repetitive units presents a wide variation in desirability of various locations within the project.

Uniform Cost Accounting

There is no field in which it is more important to build up complete and, so far as possible, uniform cost information. Even in most large cities the problem of large-scale building on a basis of real technical efficiency is relatively new and untried. To develop a technique in any manner comparable to that which has been evolved in England and on the continent under government large-scale housing requires the utmost cooperation on the part of the independent agencies, whether private or public, which are likely to undertake development in this field. A scientific and accurate basis of accounting and comparative costs must be developed in all fields of construction and operation. The architect is probably the one most fitted to lead in the former, and he cannot intelligently conduct his services of design without an intelligent understanding and continual comprehension of the latter. In other words, the architect must act as a combined analyst and designer at every stage of his direct participation, taking advantage of every other possible contact to check his own work against the multifarious and complicated factors which enter into the successful design and operation of large-scale housing developments.

PORTFOLIO OF APARTMENT HOUSES

MARCH
1932

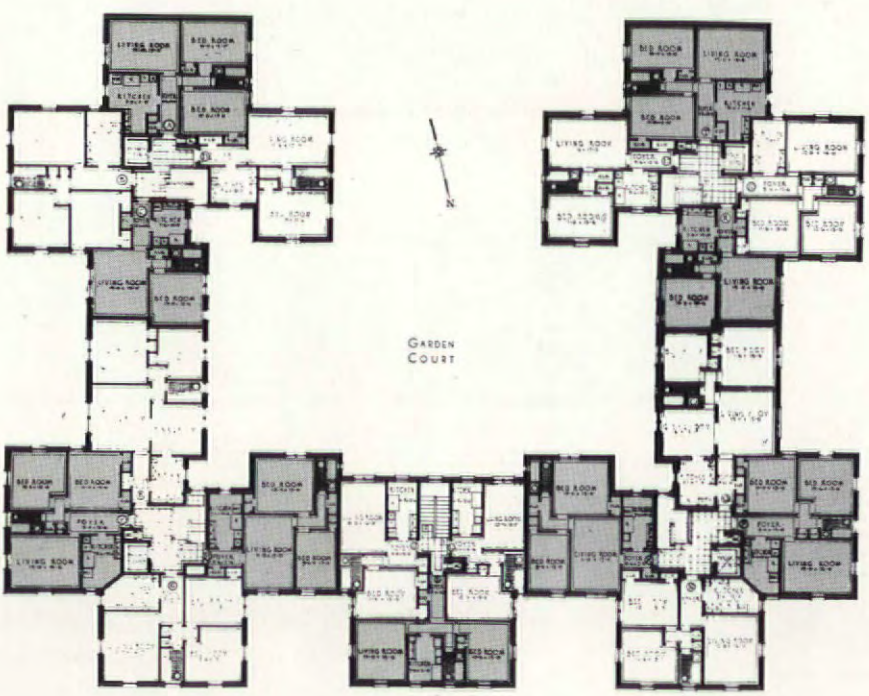
Gottscho

INTERIOR COURT OF CELTIC PARK APARTMENTS
CITY AND SUBURBAN HOMES COMPANY, LONG ISLAND CITY
ERNEST FLAGG, ARCHITECT

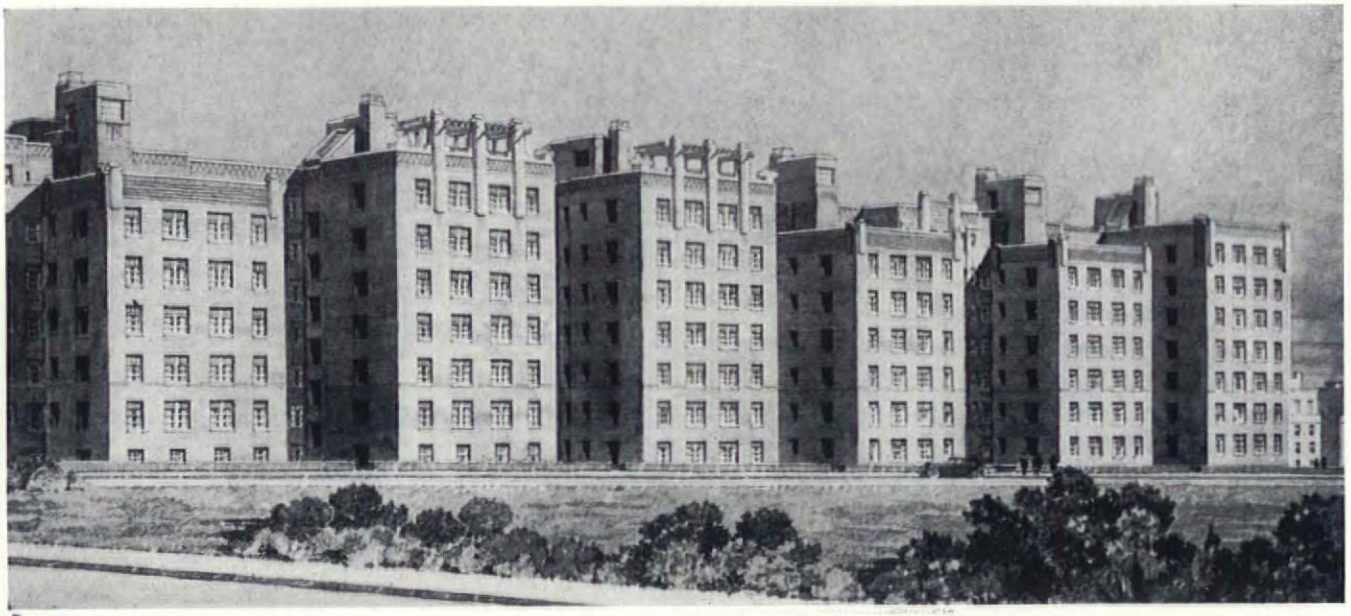
ARCHITECTS WHOSE WORK IS ILLUSTRATED IN THIS ANNUAL PORTFOLIO OF APARTMENTS INCLUDE:

ERNEST FLAGG; SPRINGSTEEN AND GOLDHAMMER; ANDREW J. THOMAS; BLEY AND LYMAN; HOULIHAN, HAUSER AND MARKS; SUKERT AND CORDNER; R. C. REAMER; PHILIP B. MAHER; HOLABIRD AND ROOT; GARBER AND WOODWARD; GEORGE FRED KECK; THIELBAR AND FUGARD; EDWARD B. GREEN AND SON; ALBERT HART HOPKINS; IRWIN S. CHANIN; BORIS W. DORFMAN; HOWE AND LESCAZE, AND CLAUSS AND DAUB.

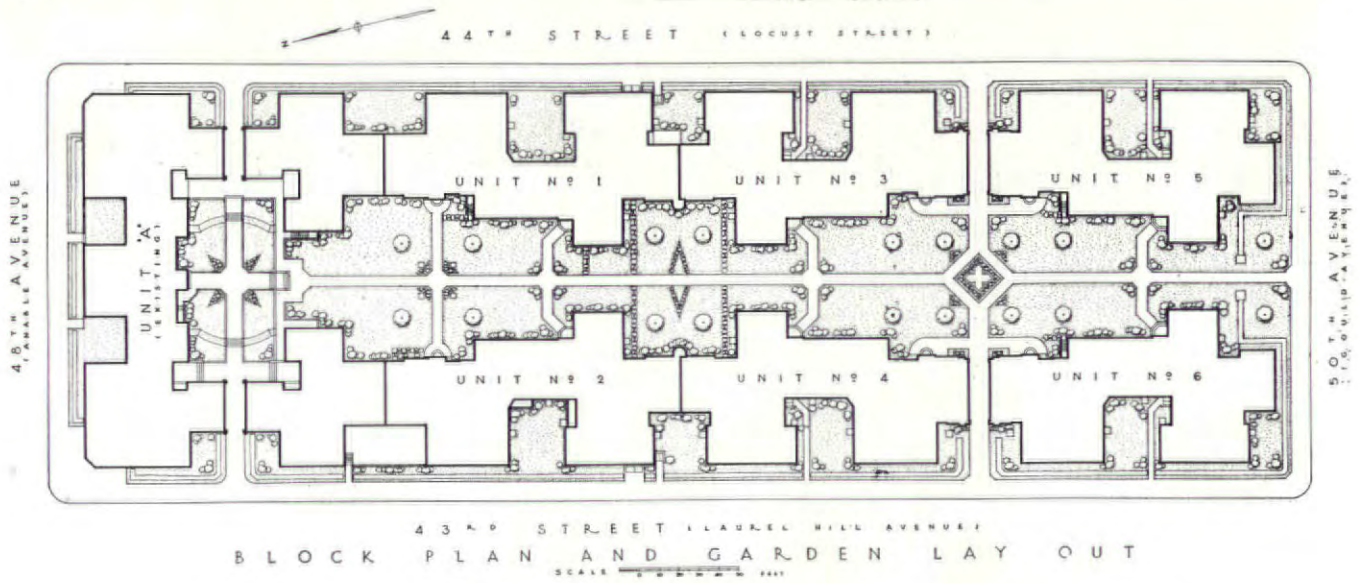
Gottscho



CELTIC PARK APARTMENTS, LONG ISLAND CITY
CITY AND SUBURBAN HOMES COMPANY
ERNEST FLAGG, ARCHITECT OF UNIT "A"



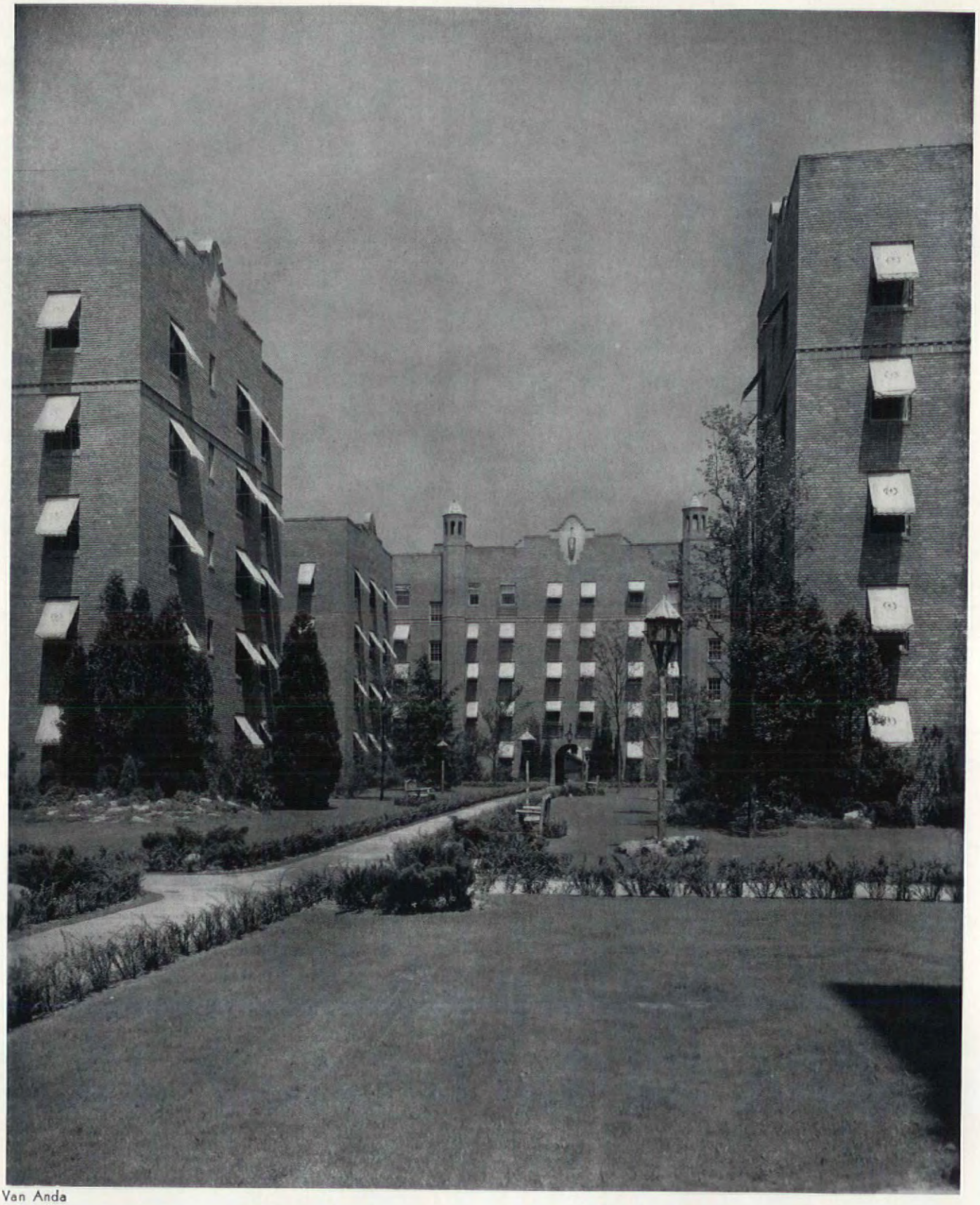
Dreyer



BLOCK PLAN AND GARDEN LAY OUT

Typical floor plan of Units 1–6. The floor plan of Unit "A", already built, is illustrated on opposite page.

CELTIC PARK APARTMENTS, LONG ISLAND CITY
CITY AND SUBURBAN HOMES COMPANY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS

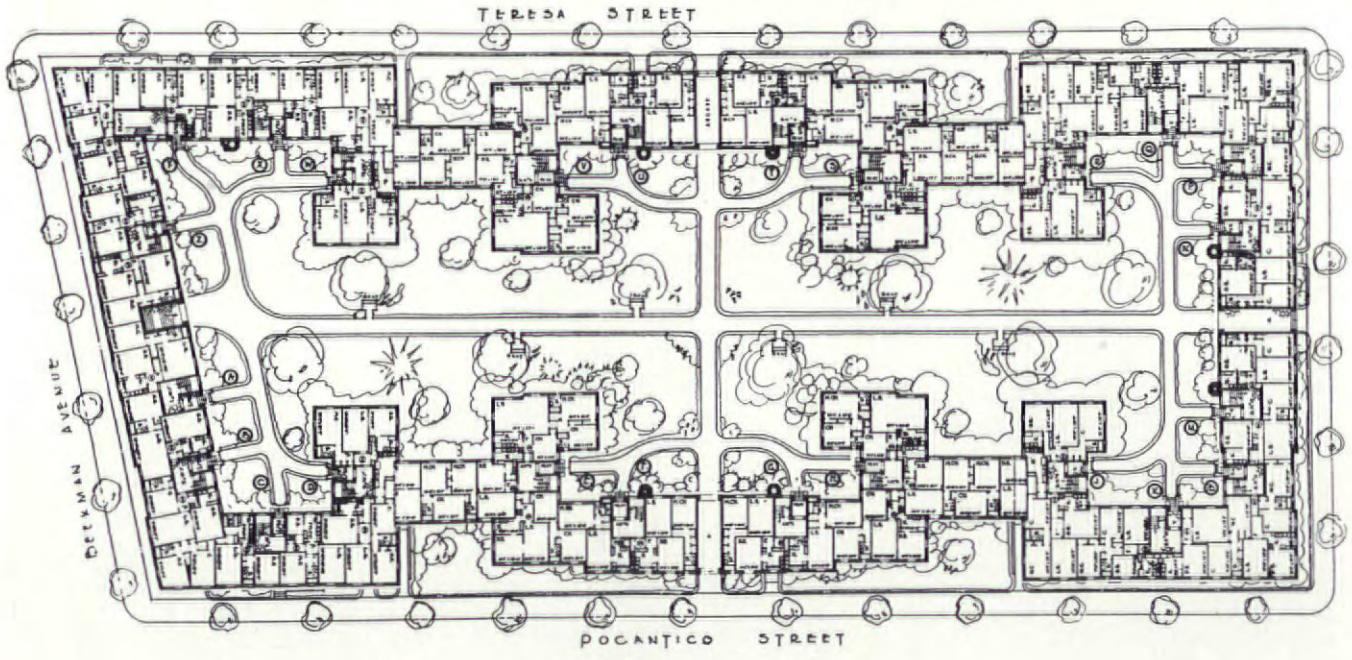


Van Anda

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

This building comprises 241 apartments. There are entrances from all four streets into the garden court. The construction is fireproof, with steel beams and concrete arches.

Van Anda



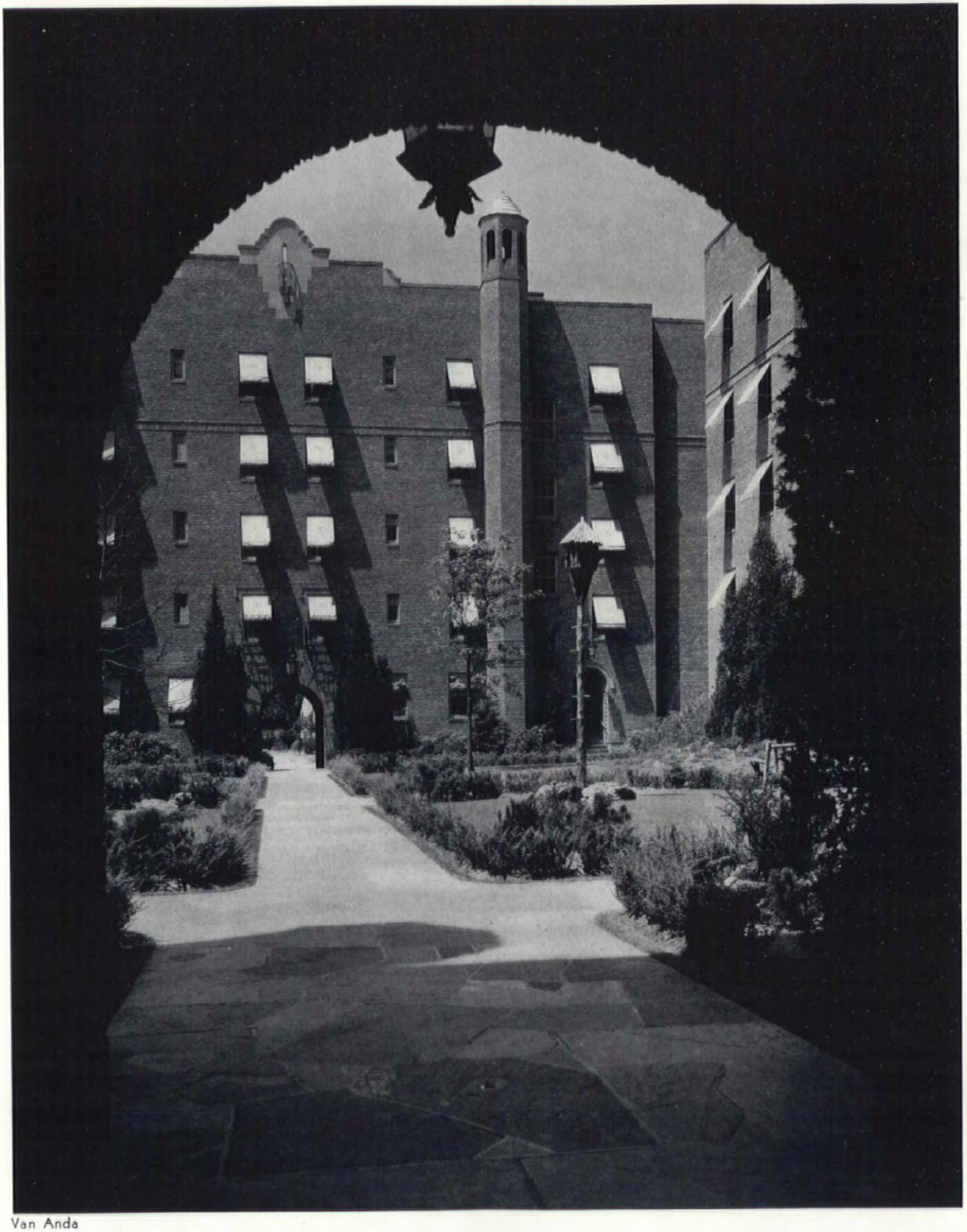
The site measures 520 by 226 feet. In the center is a private park, 400 by 150 feet, which assures an abundance of light and air for the apartments.

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

Van Anda

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

All apartments are arranged to obtain cross-ventilation. In the basement is an auditorium, with kitchen and service available to tenants for meetings, receptions, dances and other entertainments.



Van Anda

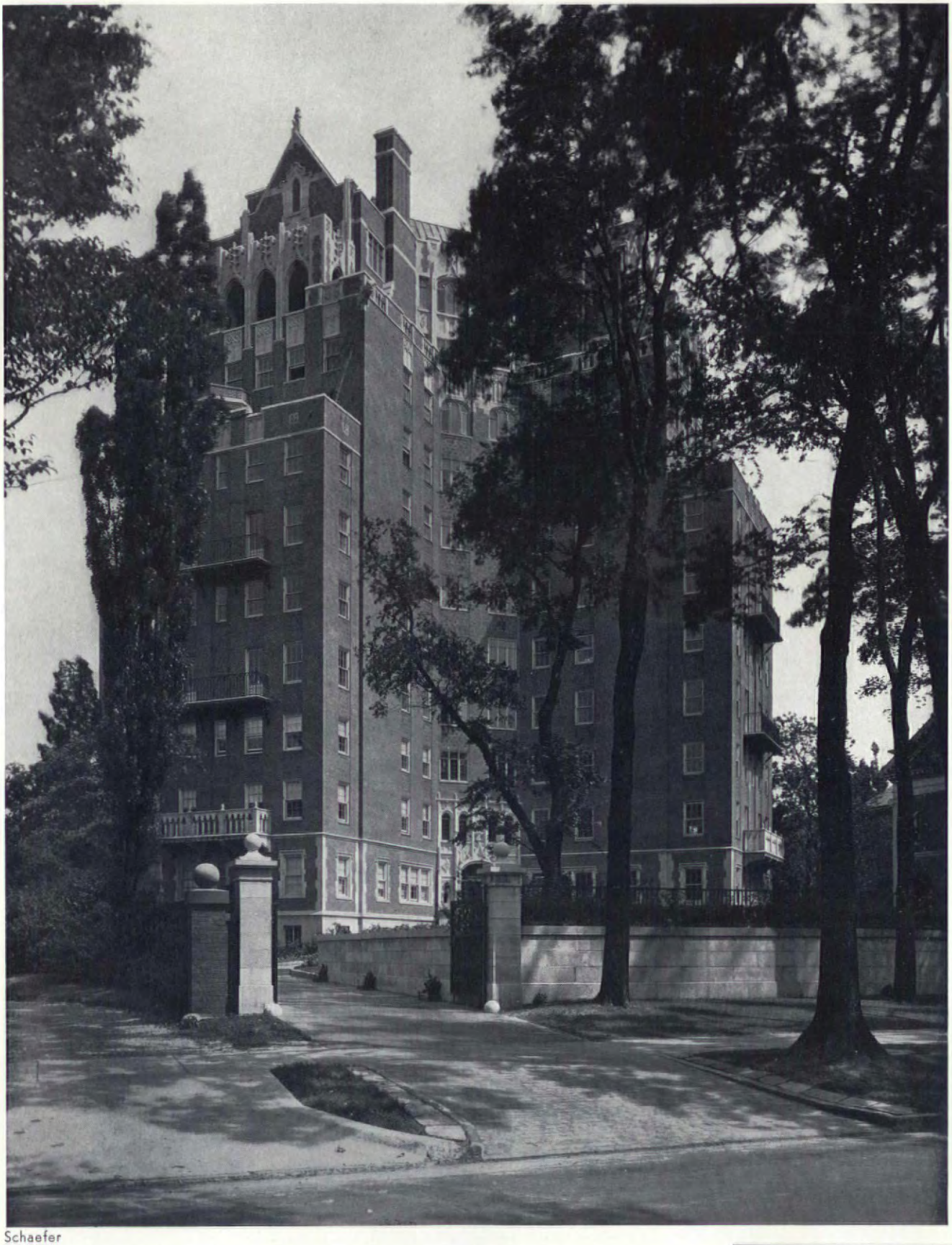
Special rooms are provided for the storage of baby carriages, sleds and velocipedes. A large garage and a fully equipped children's playground are on the opposite side of an adjoining street.

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

Van Anda

VAN TASSEL APARTMENTS
NORTH TARRYTOWN, NEW YORK
ANDREW J. THOMAS, ARCHITECT

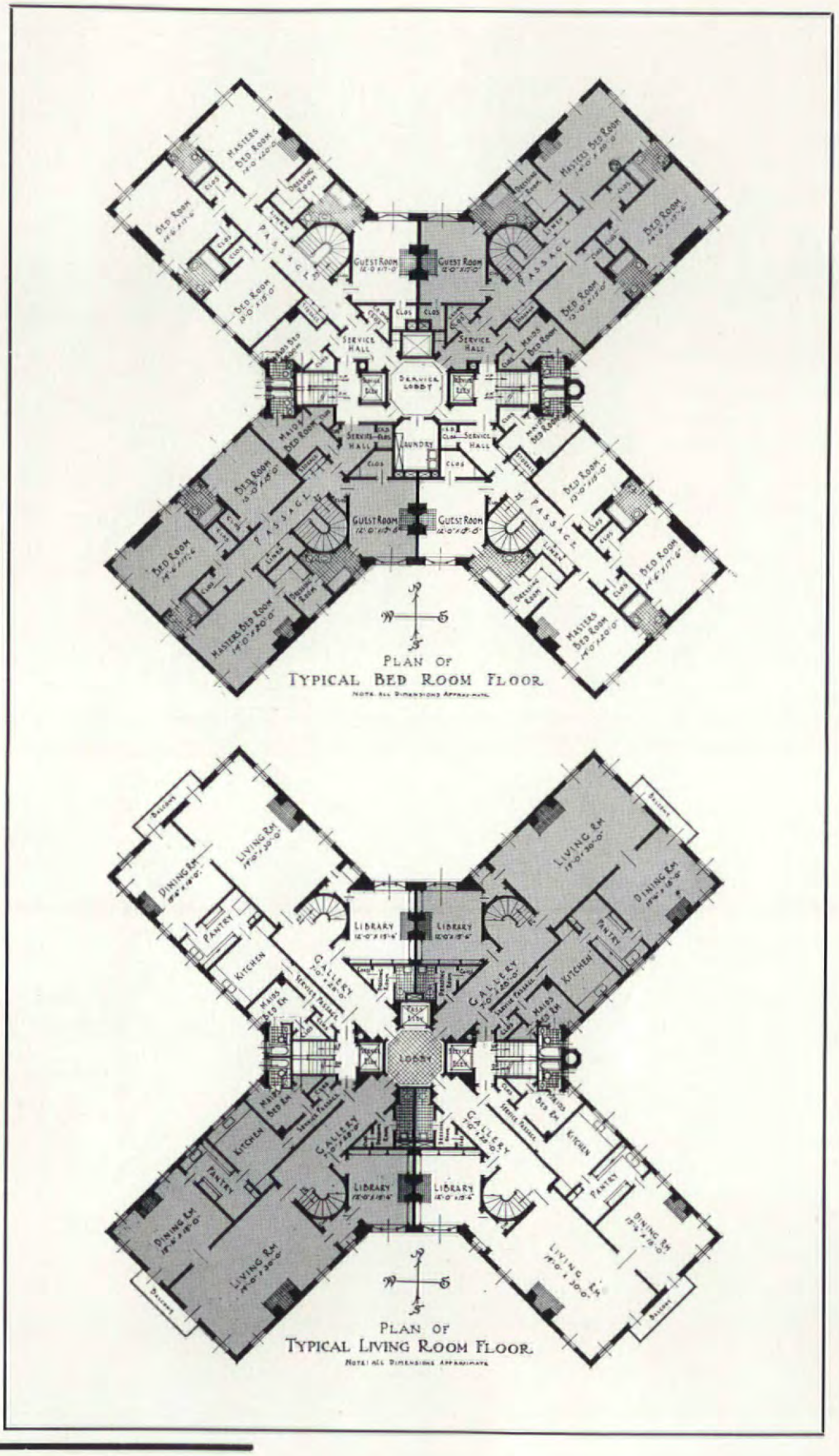
The building is on a cooperative basis. Each tenant subscribes for a certain minimum amount of stock according to the size of his apartment.



Schaefer

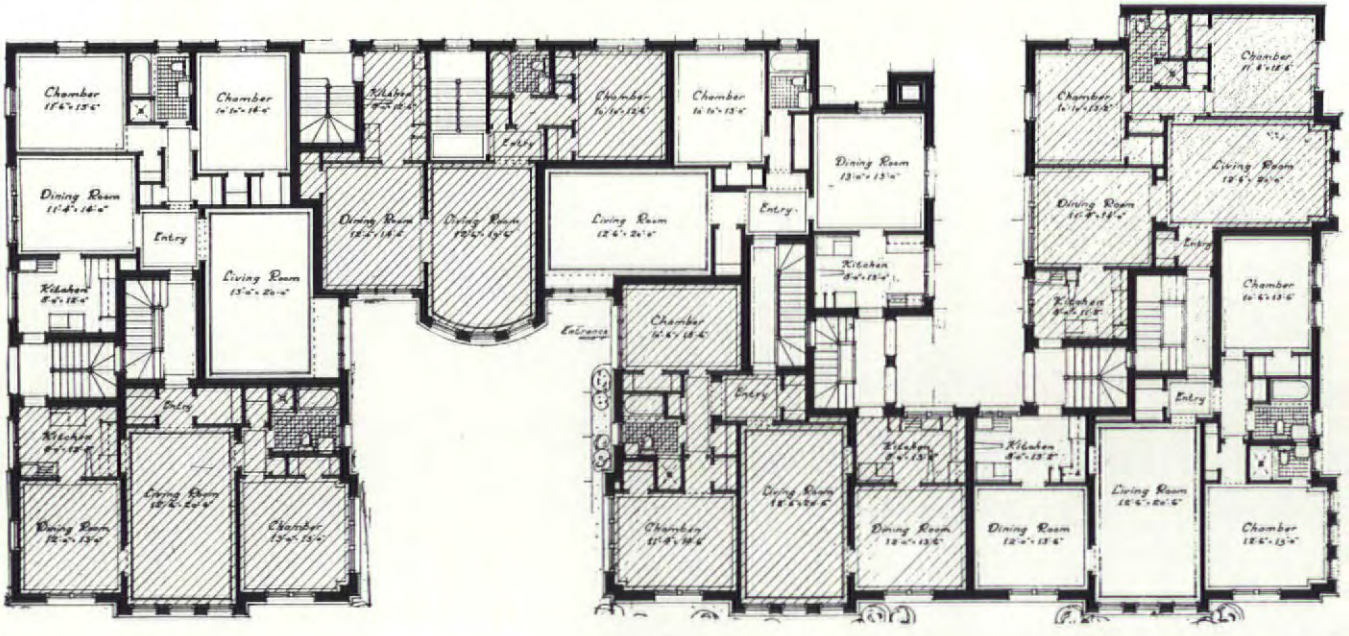
Duplex apartments, each occupying two floors of an entire wing, comprise the greater part of this building.

800 WEST FERRY STREET
BUFFALO, NEW YORK
BLEY AND LYMAN, ARCHITECTS



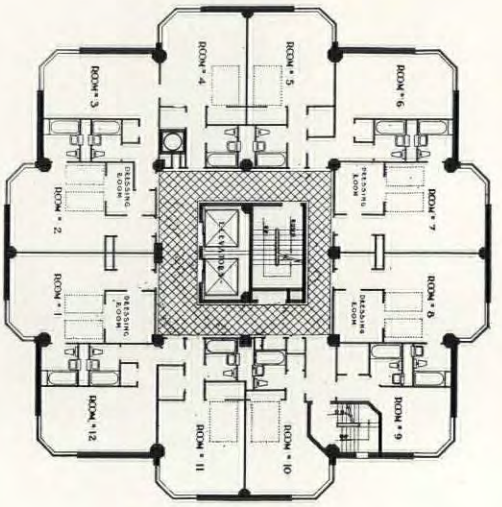
800 WEST FERRY STREET
BUFFALO, NEW YORK
BLEY AND LYMAN, ARCHITECTS

Hornby and Freiberg



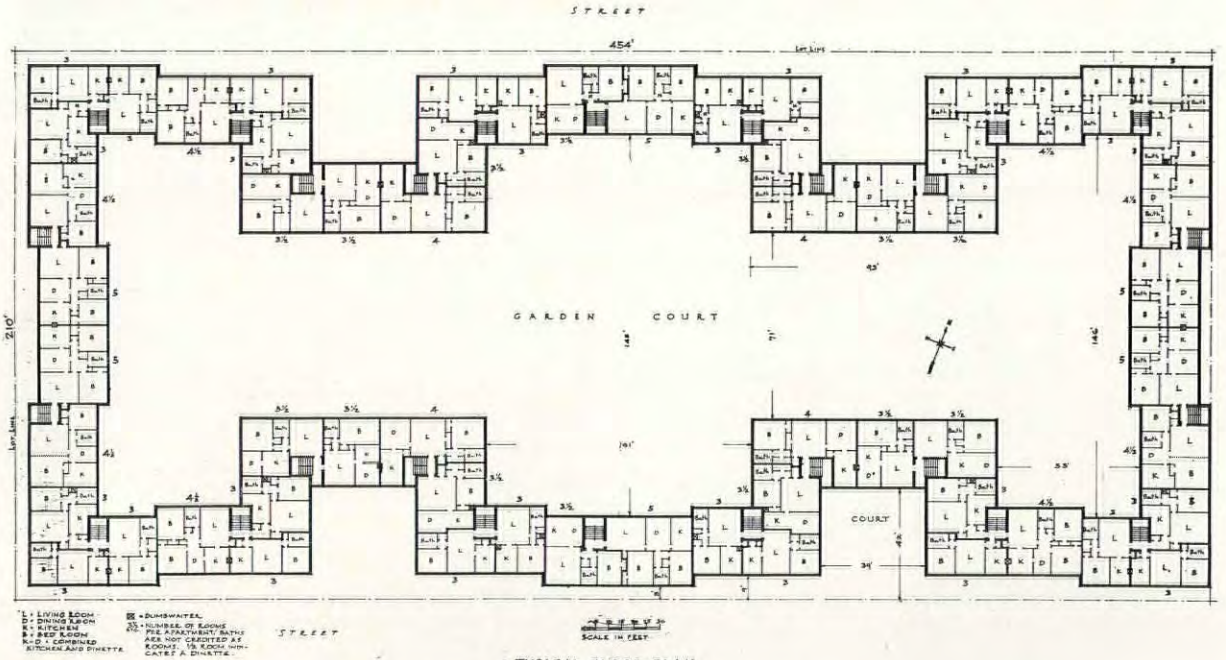
APARTMENT BUILDING AT OAK PARK, ILLINOIS
HOULIHAN, HAUSER AND MARKS, ARCHITECTS

PROPOSED GARDEN APARTMENT IN DETROIT
MICHIGAN HOUSING ASSOCIATION
SUKERT AND CORDNER, ARCHITECTS



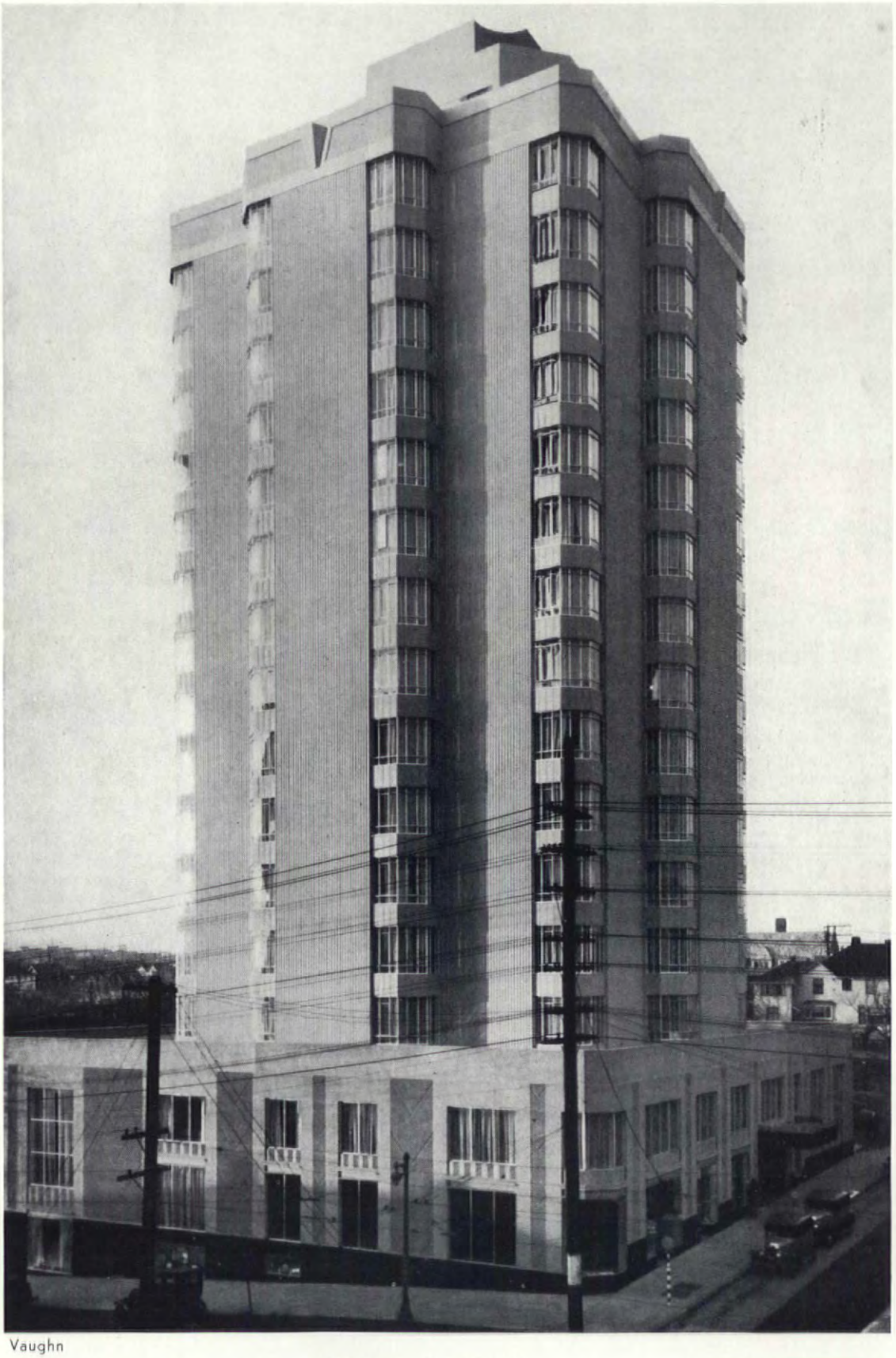
TYPICAL FLOOR PLAN
(Elevation on opposite page)

HOTEL EDMOND MEANY
SEATTLE, WASHINGTON
R. C. REAMER, ARCHITECT



• TYPICAL FLOOR PLAN
PROPOSED GARDEN APARTMENT FOR WORKERS

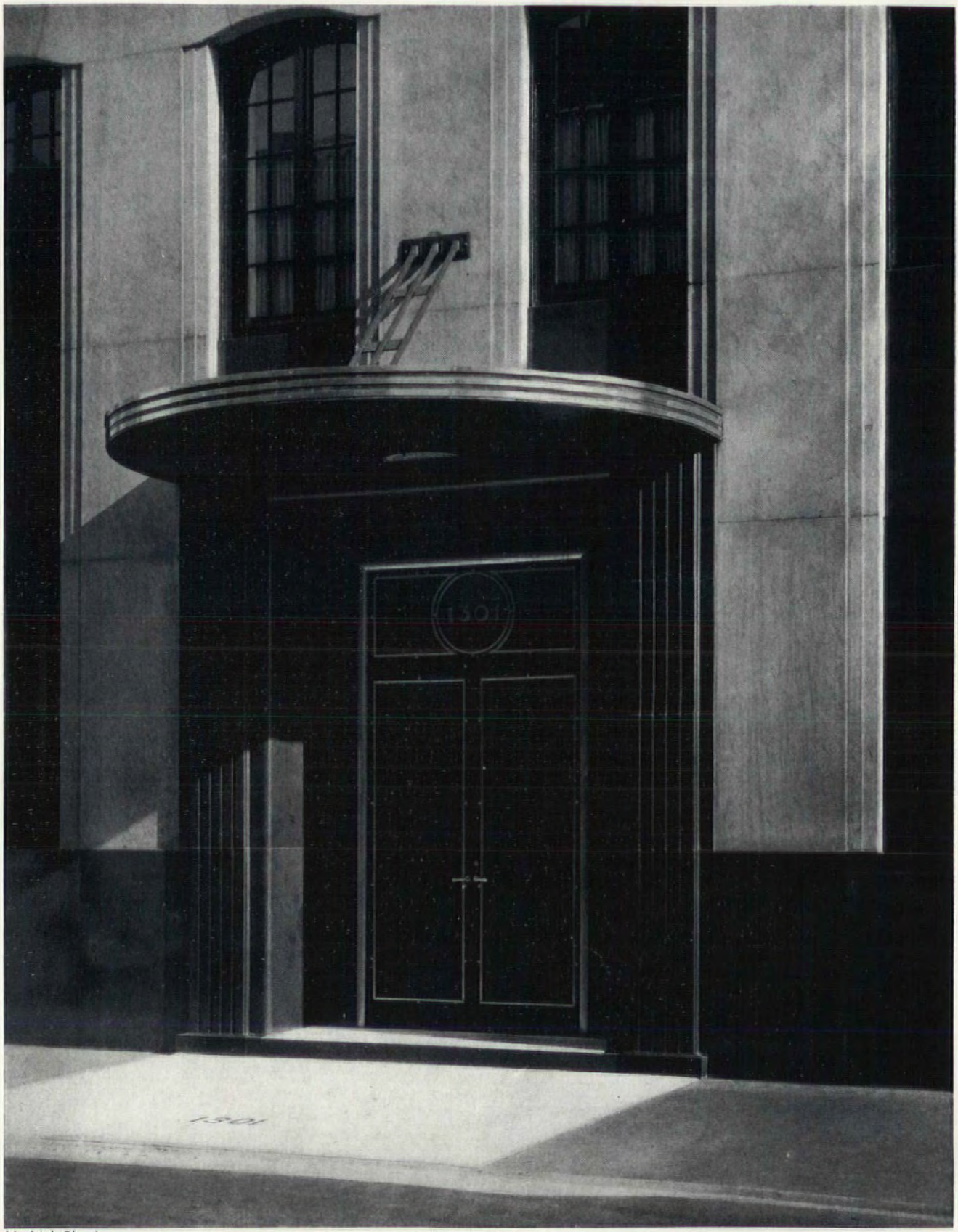
This apartment project is intended for cooperative ownership rather than rental occupancy. Children's playgrounds will be provided in the garden court.



Vaughn

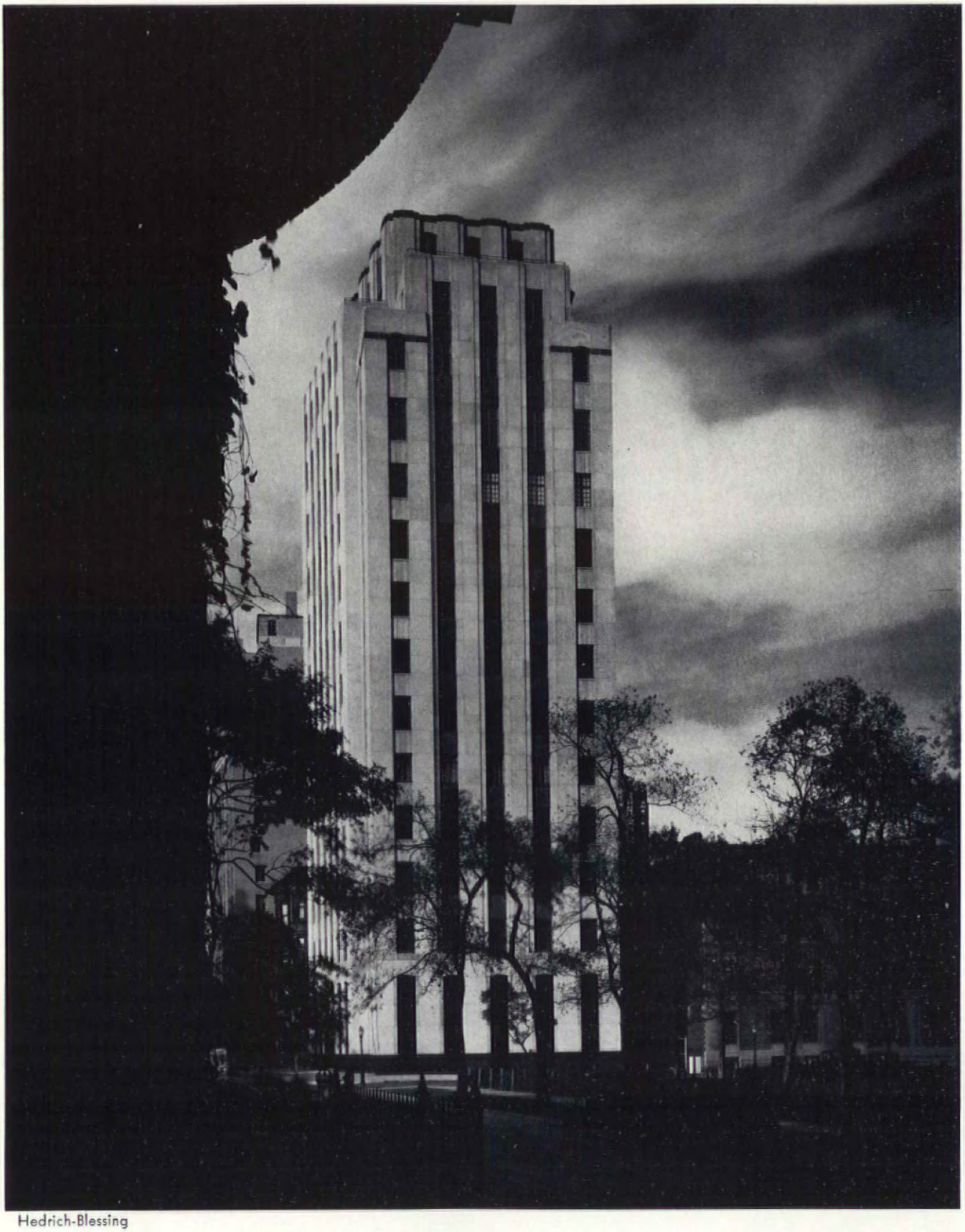
Corrugated concrete walls. Base of black granite. In addition to hotel services there are 156 guest rooms and a 6-room penthouse suite.

HOTEL EDMOND MEANY
SEATTLE, WASHINGTON
R. C. REAMER, ARCHITECT



Hedrich-Blessing

1301 ASTOR STREET APARTMENTS
CHICAGO, ILLINOIS
PHILIP B. MAHER, ARCHITECT



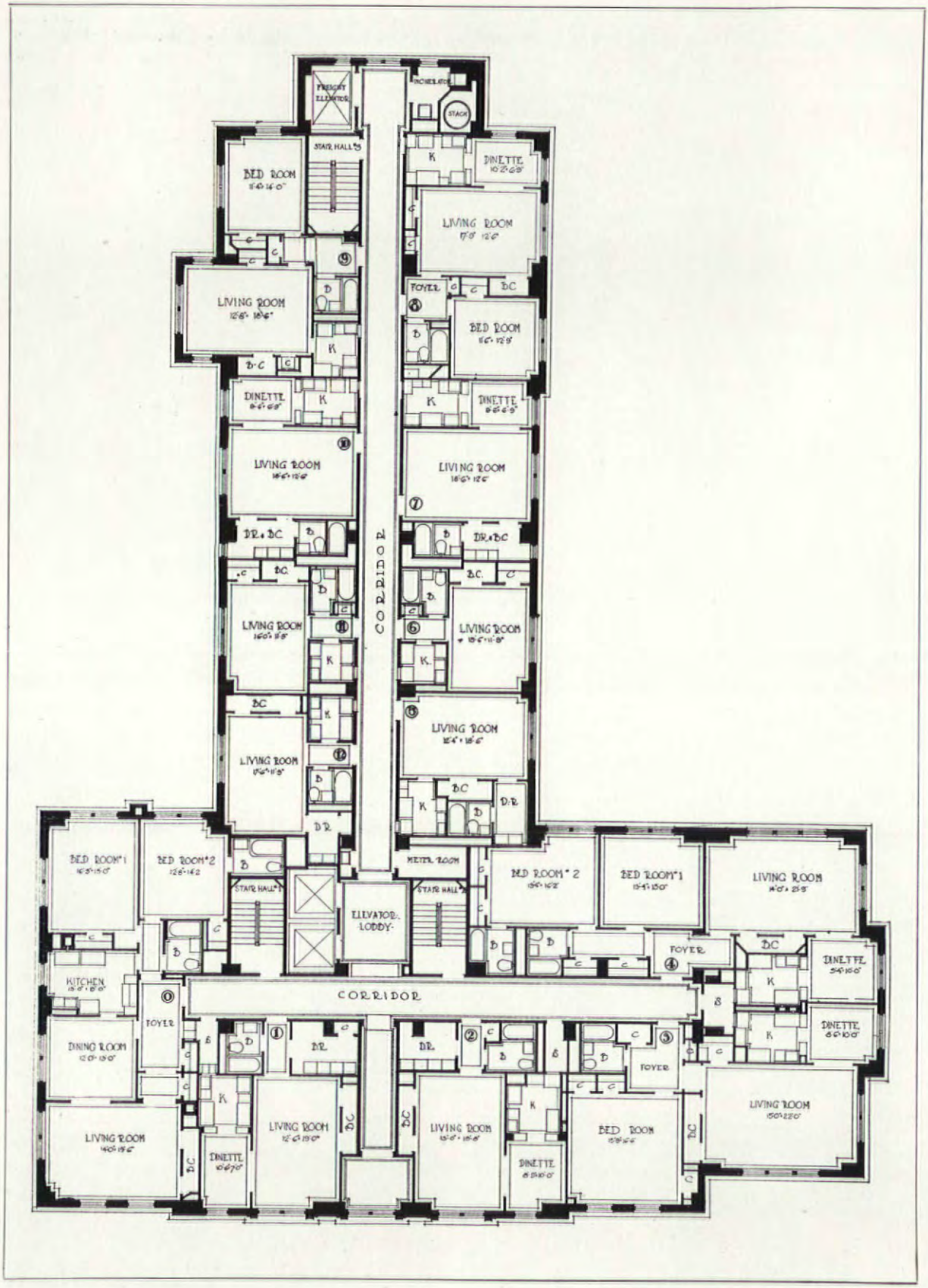
Hedrich-Blessing

1301 ASTOR STREET APARTMENTS
CHICAGO, ILLINOIS
PHILIP B. MAHER, ARCHITECT

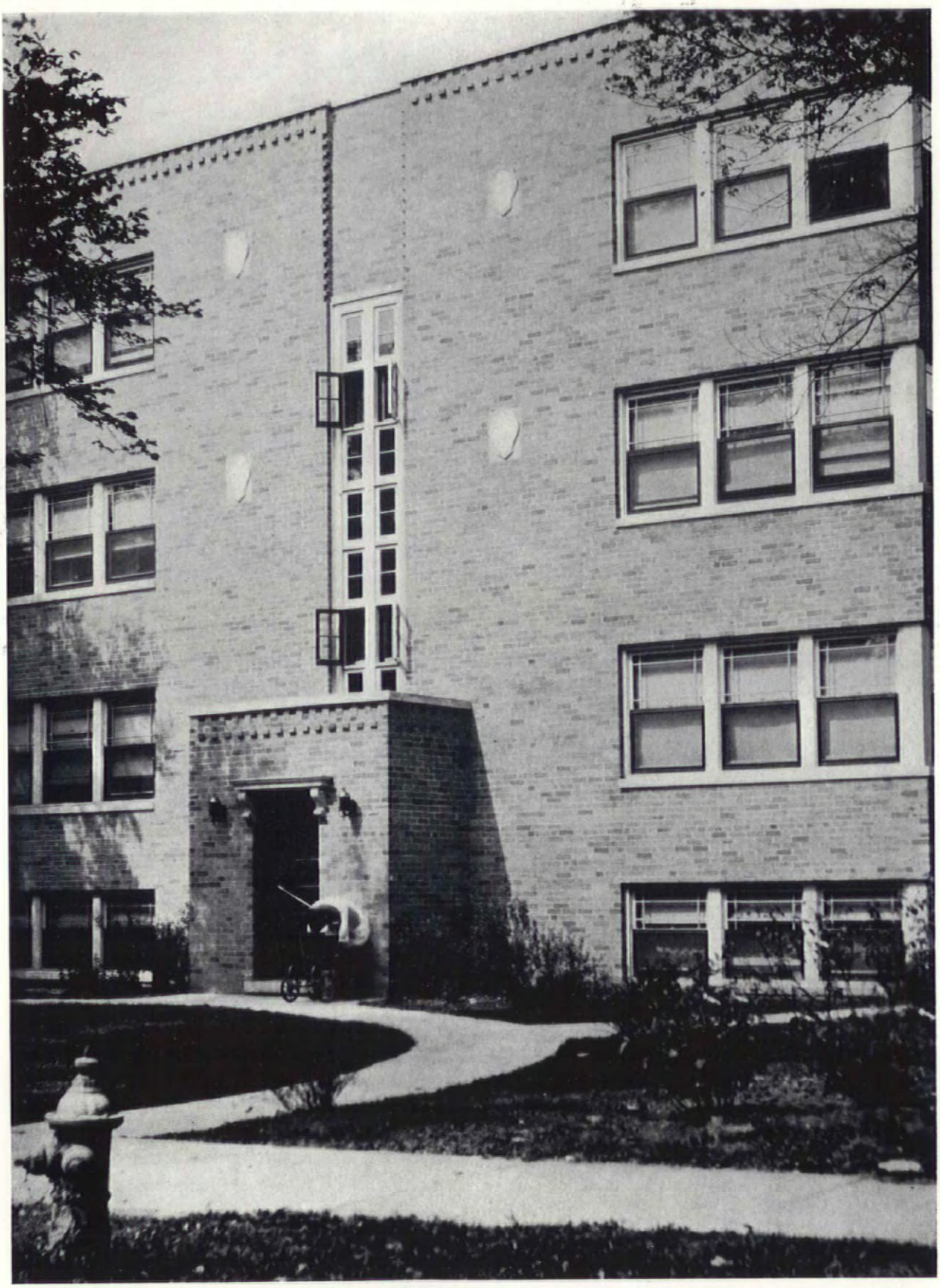
Hedrich-Blessing

APARTMENT OF MR. JOHN ROOT
CHICAGO, ILLINOIS
HOLABIRD AND ROOT, ARCHITECTS

PHELPS APARTMENTS
CINCINNATI, OHIO
GARBER AND WOODWARD, ARCHITECTS

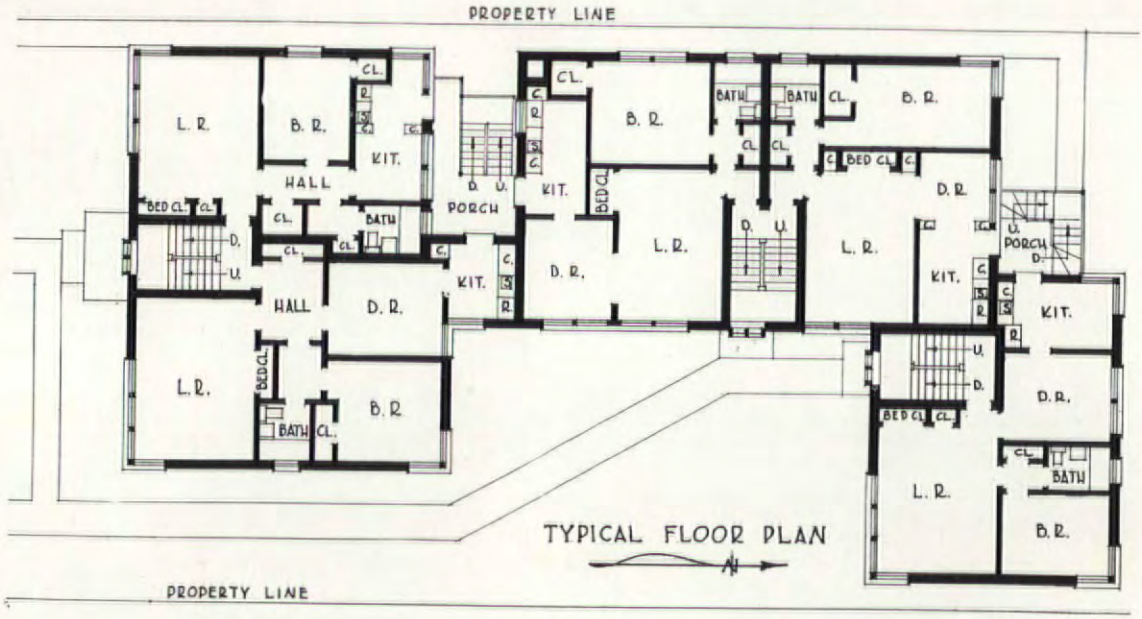


PHELPS APARTMENTS
CINCINNATI, OHIO
GARBER AND WOODWARD, ARCHITECTS



This building has 17 apartments of 3 and 4 rooms. Cost: 40 cents a cubic foot.

APARTMENT BUILDING
ELMHURST, ILLINOIS
GEORGE FRED KECK, ARCHITECT



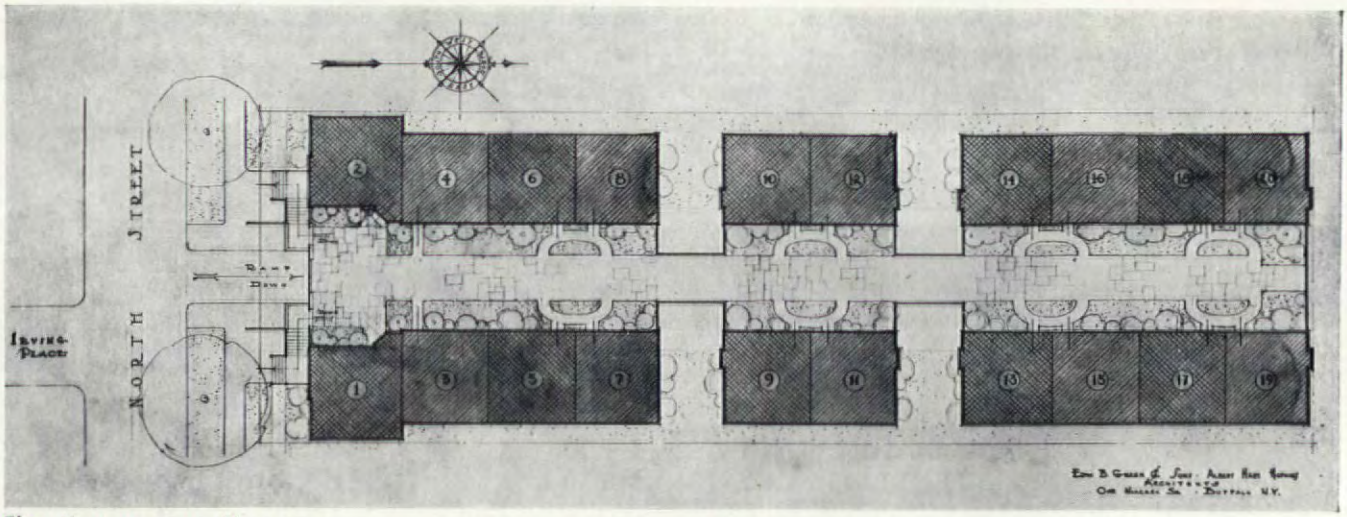
APARTMENT BUILDING
ELMHURST, ILLINOIS
GEORGE FRED KECK, ARCHITECT

Kaufman and Fabry

Chicago Architectural Photographing Co.

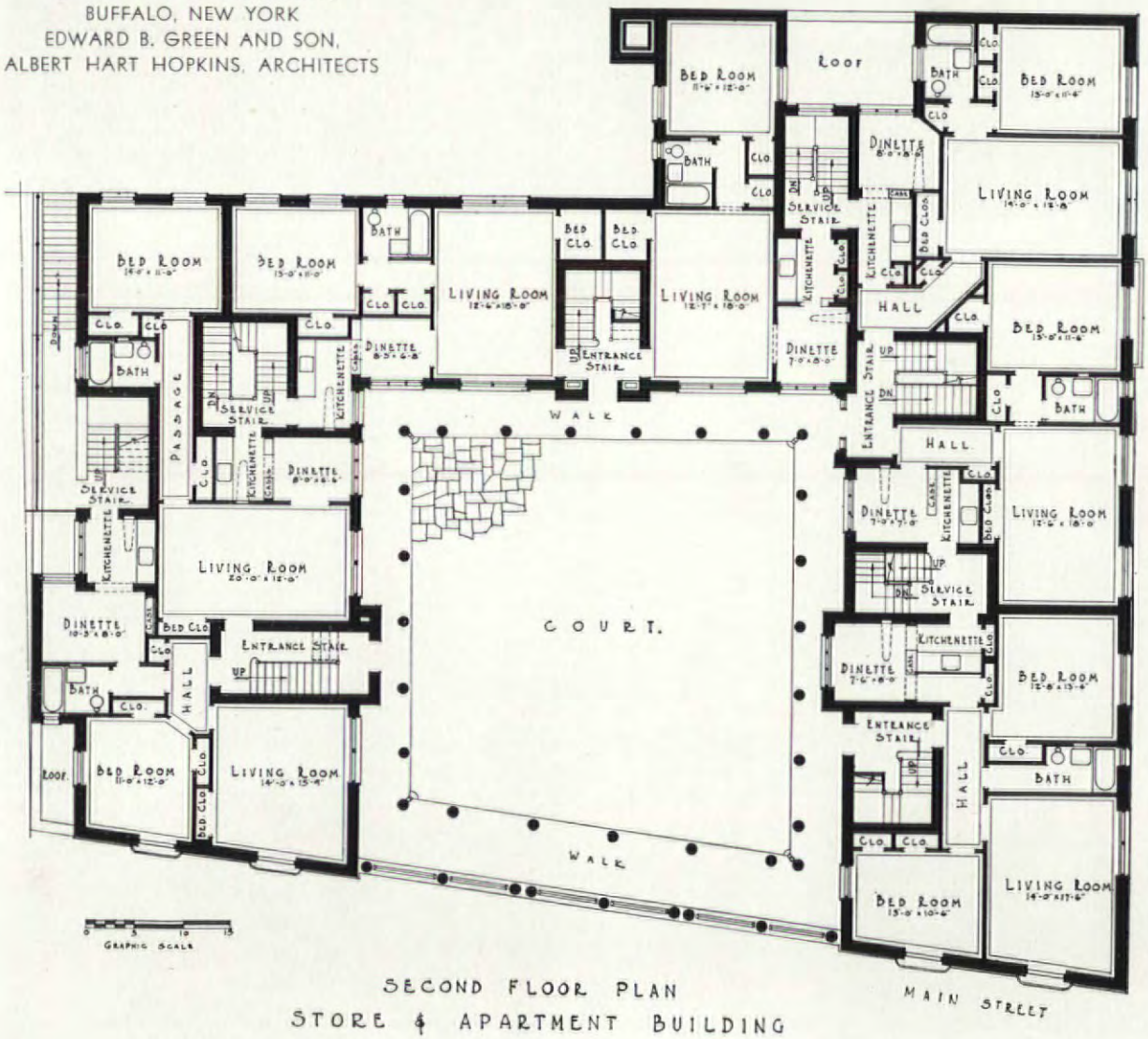
This building combines both stores and apartments.

COLONNADE APARTMENTS
EVANSTON, ILLINOIS
THIELBAR AND FUGARD, ARCHITECTS



Elevations on opposite page.

MAYFAIR LANE APARTMENTS
BUFFALO, NEW YORK
EDWARD B. GREEN AND SON,
ALBERT HART HOPKINS, ARCHITECTS



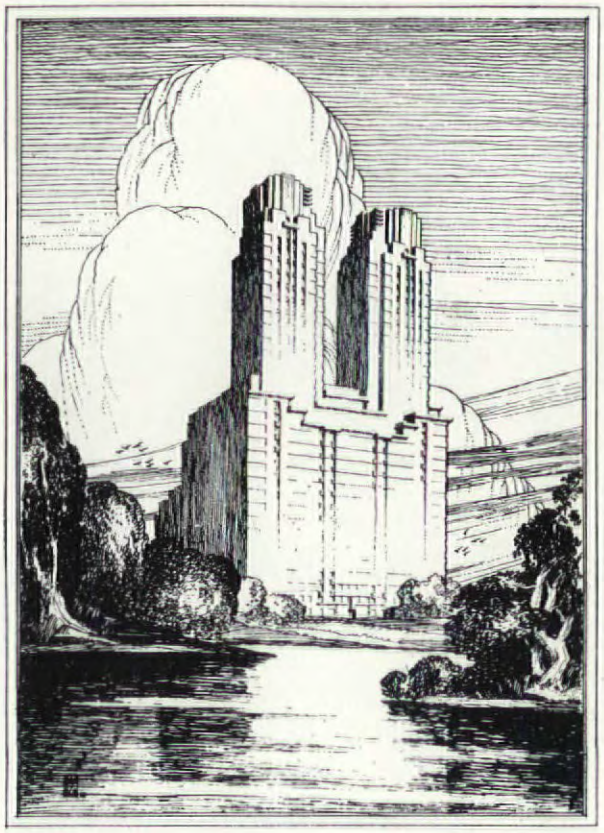
SECOND FLOOR PLAN
STORE & APARTMENT BUILDING

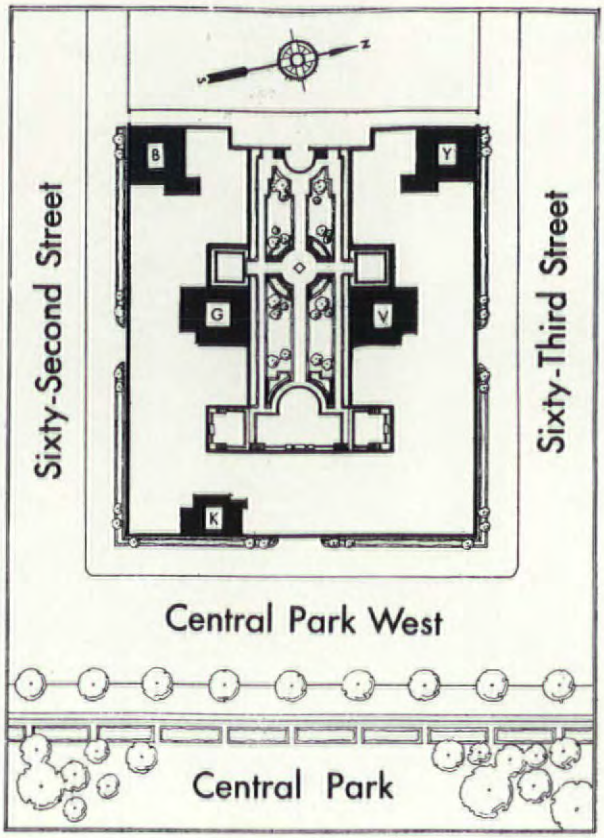
COLONNADE APARTMENTS
EVANSTON, ILLINOIS
THIELBAR AND FUGARD, ARCHITECTS

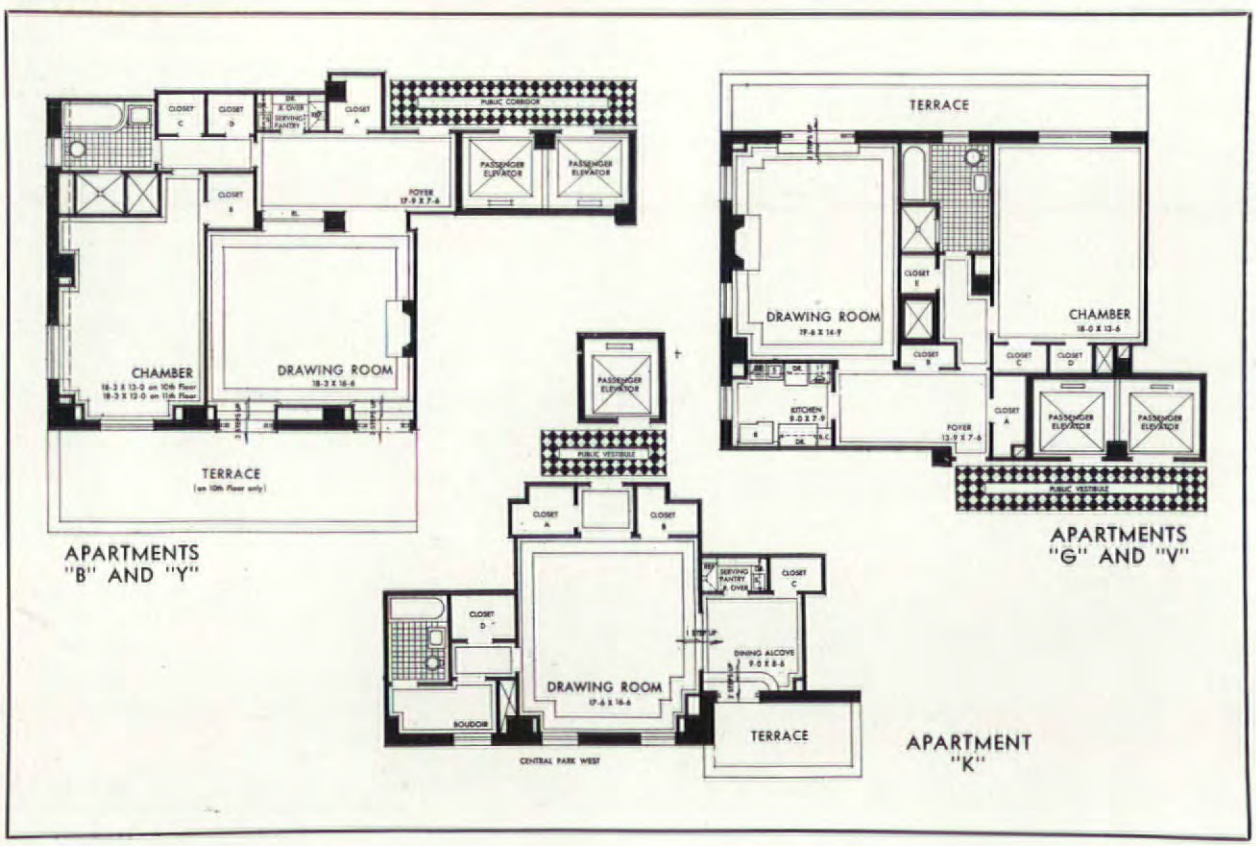
Gillies

Plan on opposite page.

MAYFAIR LANE, BUFFALO, NEW YORK
EDWARD B. GREEN AND SON,
ALBERT HART HOPKINS, ARCHITECTS



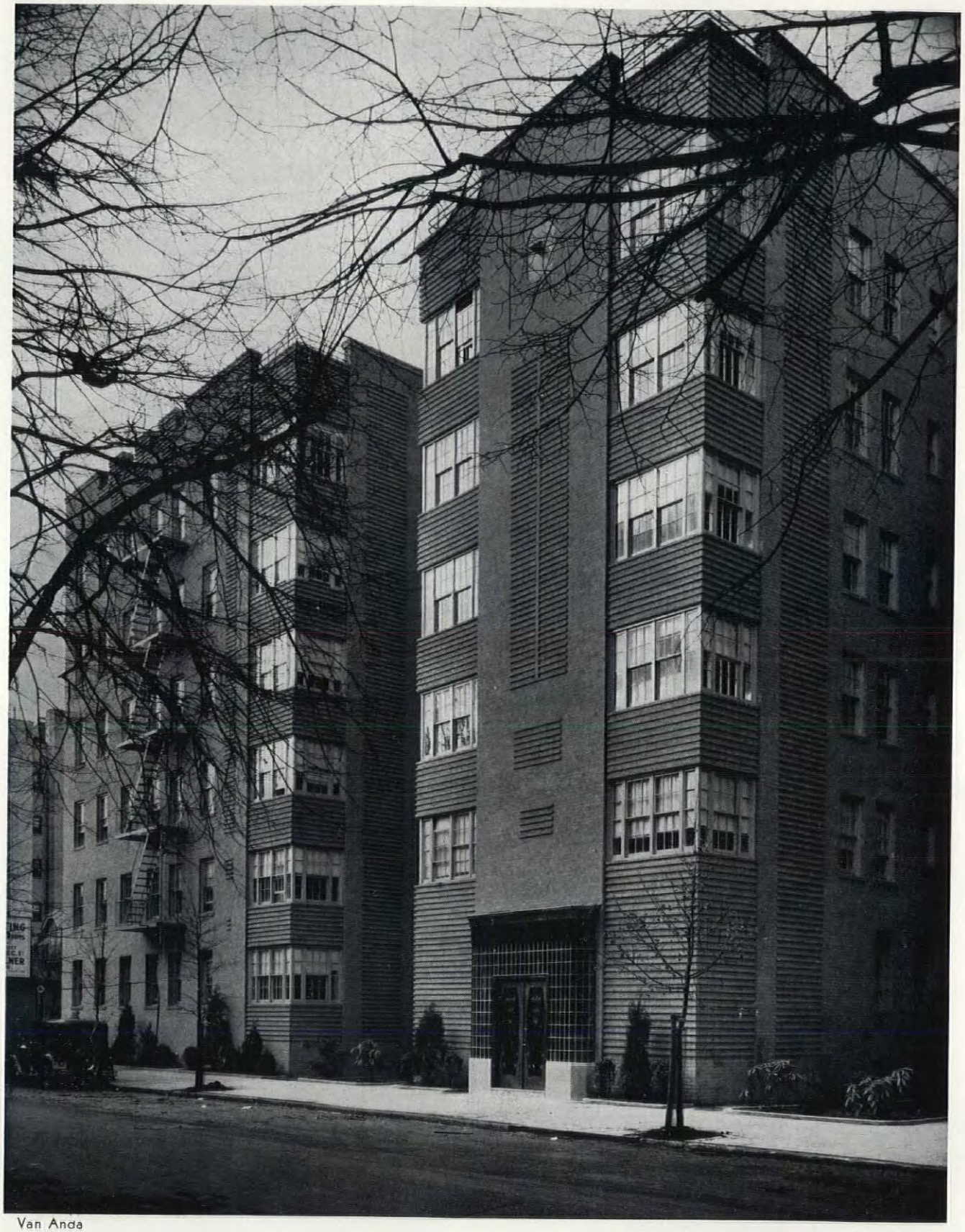




CENTURY APARTMENTS
NEW YORK CITY
IRWIN S. CHANIN, ARCHITECT

Galloway

CENTURY APARTMENTS
NEW YORK CITY
IRWIN S. CHANIN, ARCHITECT



Van Anda

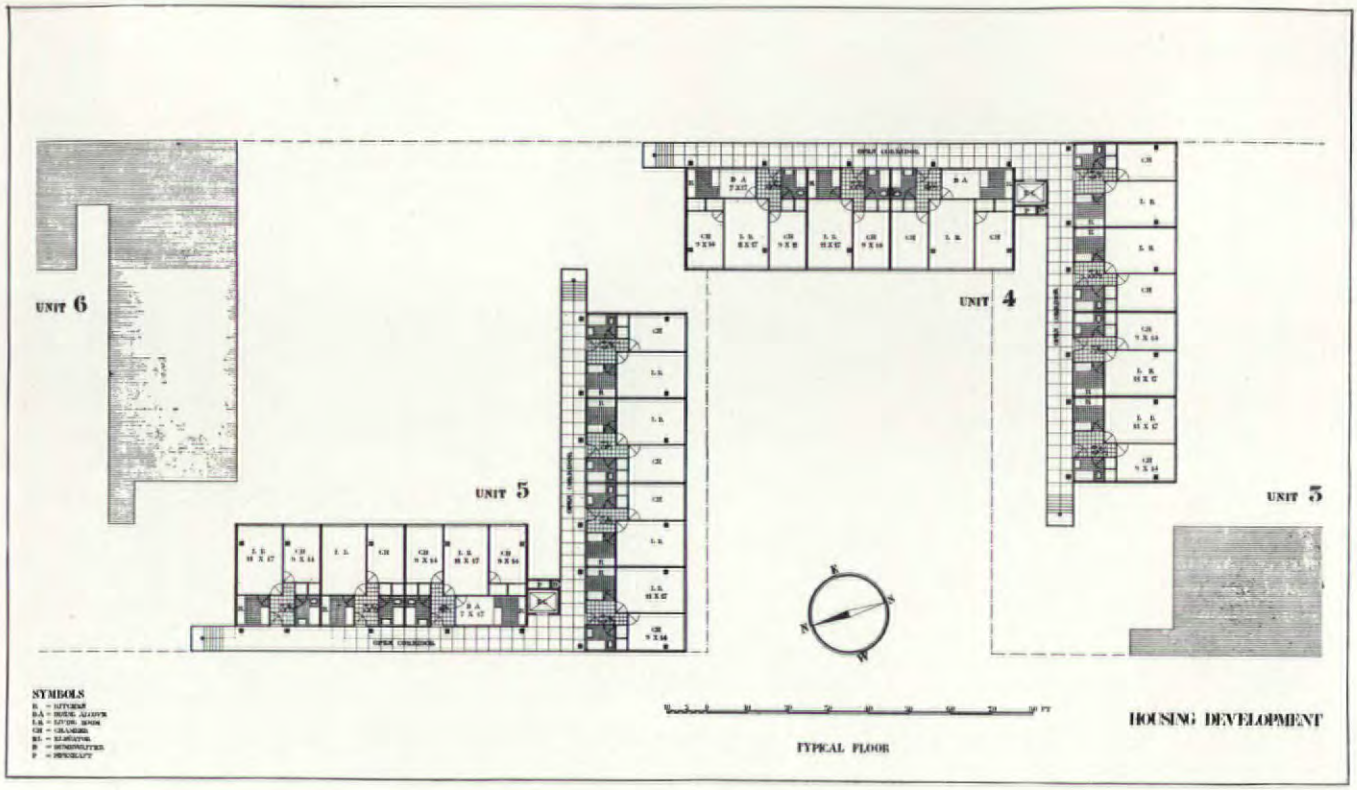
Façade of buff brick. Structural glass bricks are used for the entrance.

55 WINTHROP STREET APARTMENTS
BROOKLYN, NEW YORK
BORIS W. DORFMAN, ARCHITECT

Van Anda

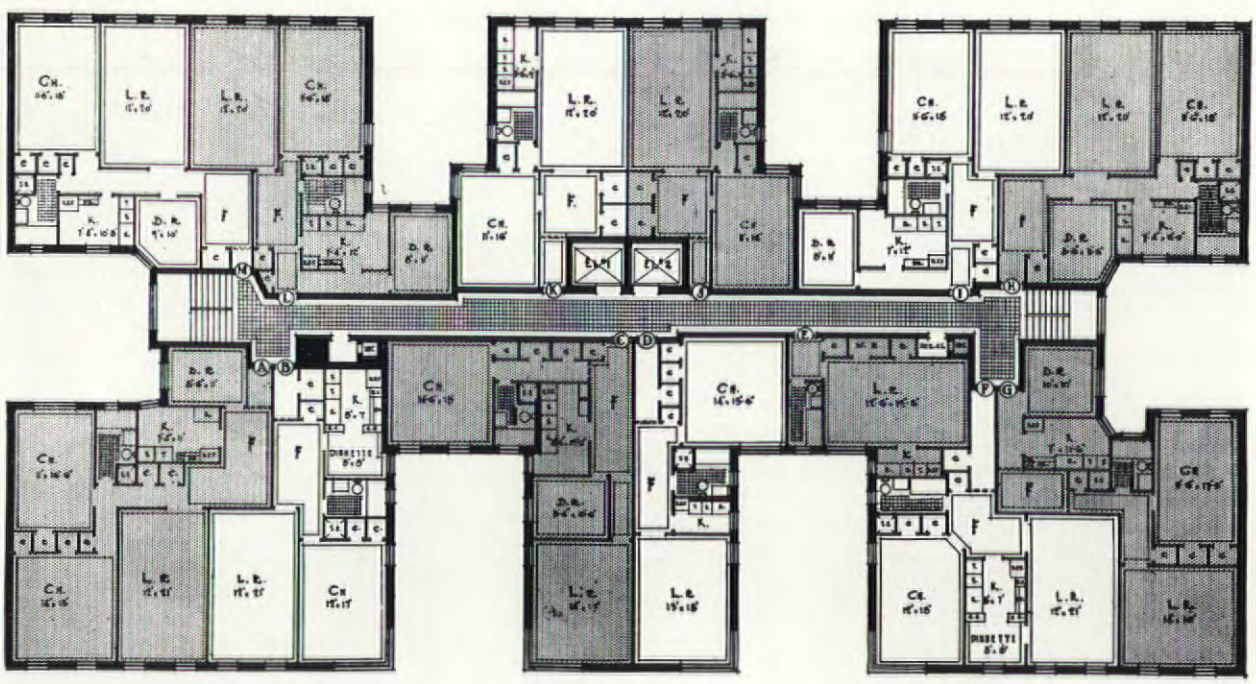
Entrance doors are made of ornamental iron enameled in color.

55 WINTHROP STREET APARTMENTS
BROOKLYN, NEW YORK
BORIS W. DORFMAN, ARCHITECT



PROPOSED CHRYSTIE-FORSYTH HOUSING DEVELOPMENT FOR NEW YORK CITY
HOWE AND LESCAZE, ARCHITECTS

Total area comprises 7 city blocks. Five building units will bridge the intervening cross streets. The "crank-shaft" arrangement of buildings allows sunlight to reach the playgrounds.



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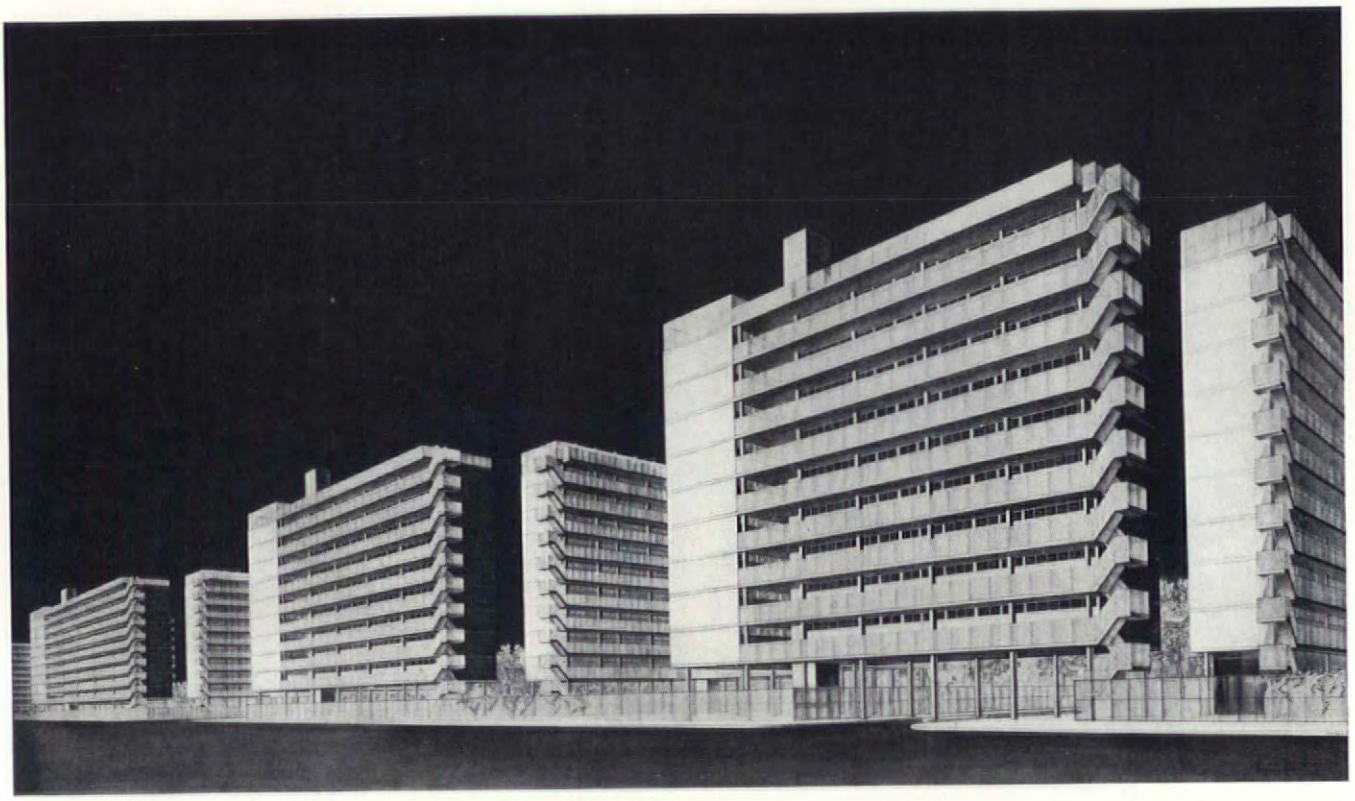
55 WINTHROP STREET APARTMENTS
BROOKLYN, NEW YORK
BORIS W. DORFMAN, ARCHITECT

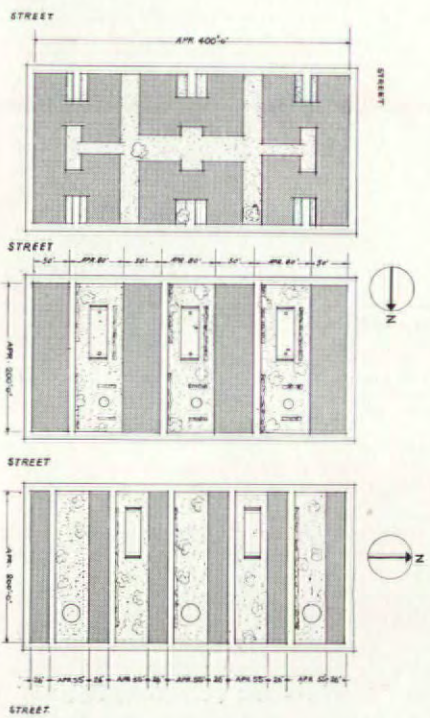


Bonner Studios

(Plan on opposite page.) Approximately 41 per cent of the park-playground is under the raised buildings which provide sheltered space for rainy days.

PROPOSED CHRYSTIE-FORSYTH APARTMENTS
NEW YORK CITY
HOWE AND LESCAZE, ARCHITECTS

Perspective of proposed buildings for Long Island City. (Plan Type 1).

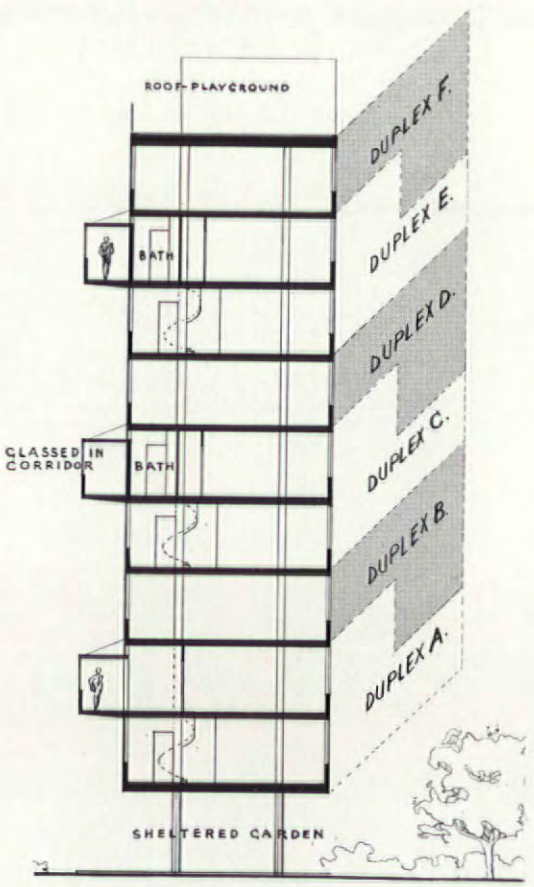


TYPE 1
Block plan as originally proposed.

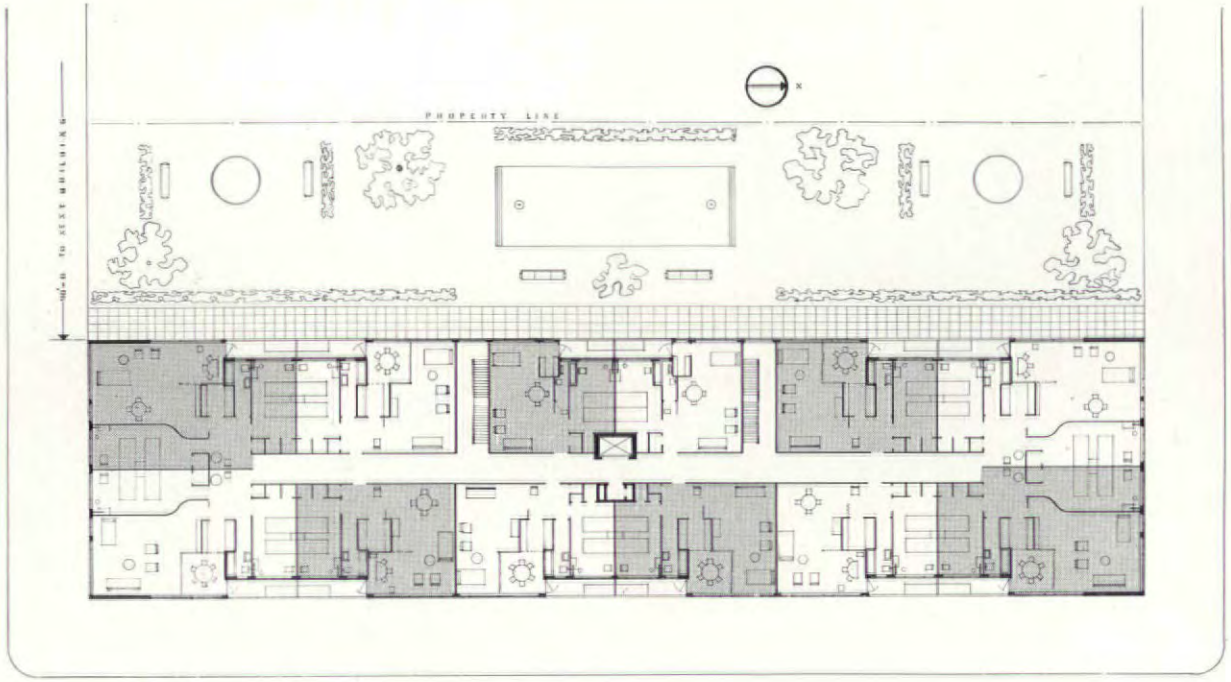
TYPE 2
Block plan offering better arrangement of buildings.

TYPE 3
In this arrangement all apartments receive the same orientation. See plans on opposite page.

GARDEN APARTMENT SCHEMES
DEVELOPED BY
CLAUSS AND DAUB, ARCHITECTS



Isometric section showing arrangement of duplex apartments in Type 3. Each corridor takes care of three floors of duplex apartments.



TYPE 2

STREET

TYPE 3

TWO APARTMENT SCHEMES
DEVELOPED BY
CLAUSS AND DAUB, ARCHITECTS

Nyholm and Lincoln

Furniture of chromium-plated metal and white leather.

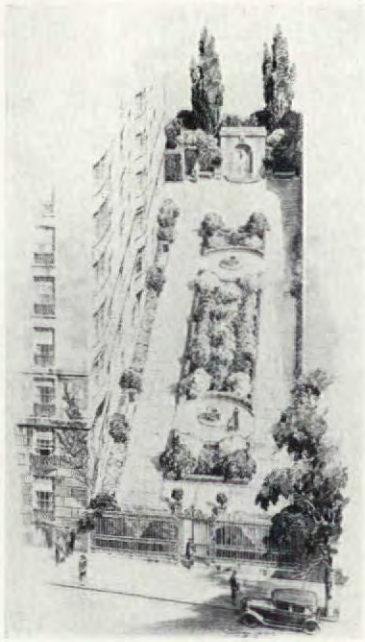
APARTMENT OF MR. ALFRED CLAUSS
LONG ISLAND CITY
CLAUSS AND DAUB, ARCHITECTS

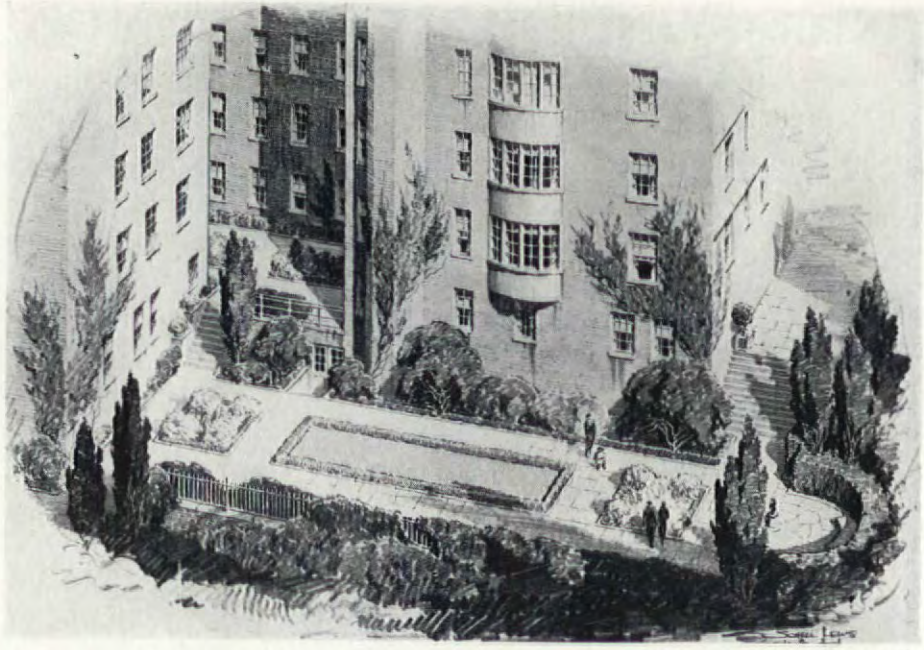
PRIZE-WINNING APARTMENTS IN NEW YORK

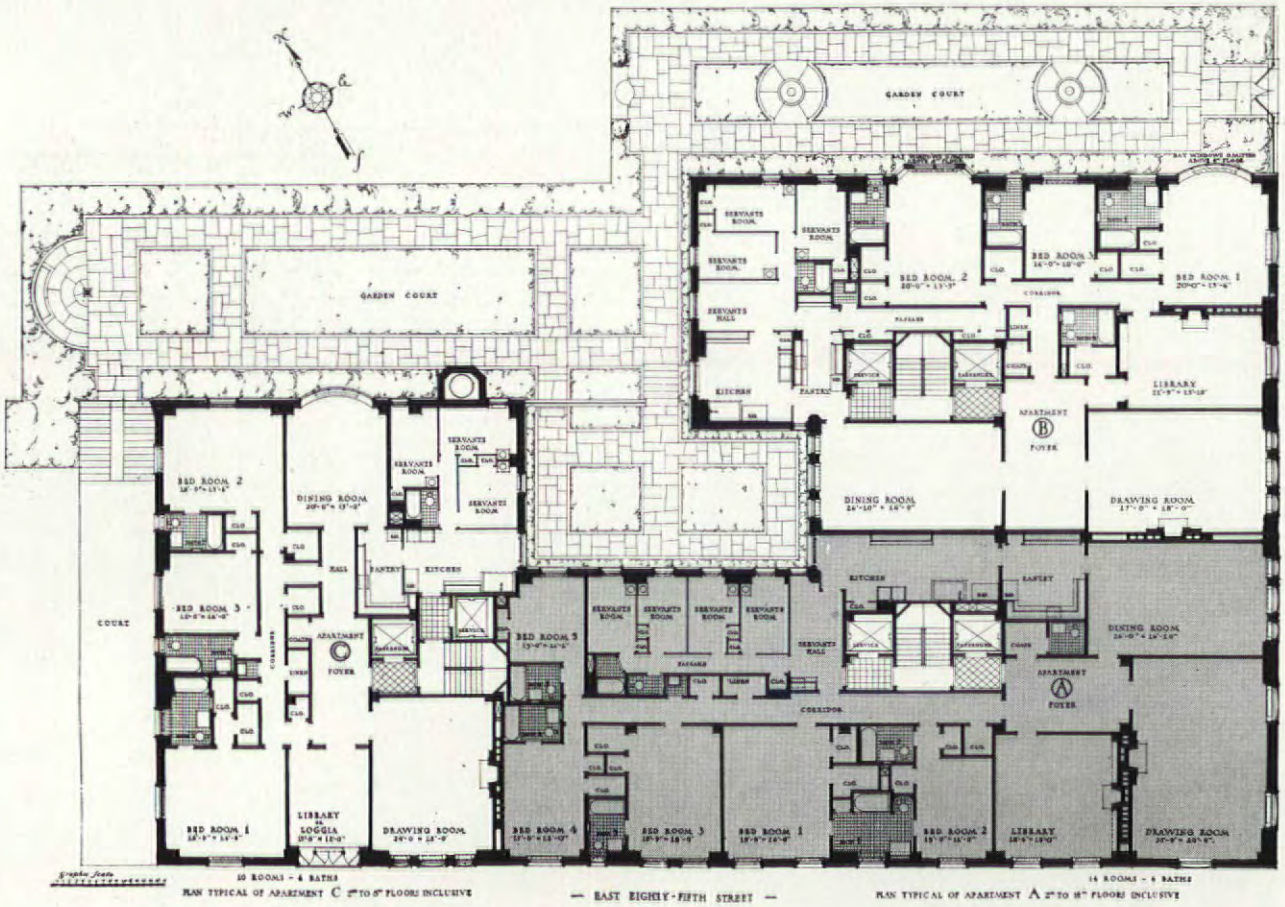
Guild

Awarded medal of honor for apartment on city plottage less than a block front.

120 EAST END AVENUE
NEW YORK CITY
CHARLES A. PLATT, ARCHITECT







120 EAST END AVENUE
NEW YORK CITY
CHARLES A. PLATT, ARCHITECT

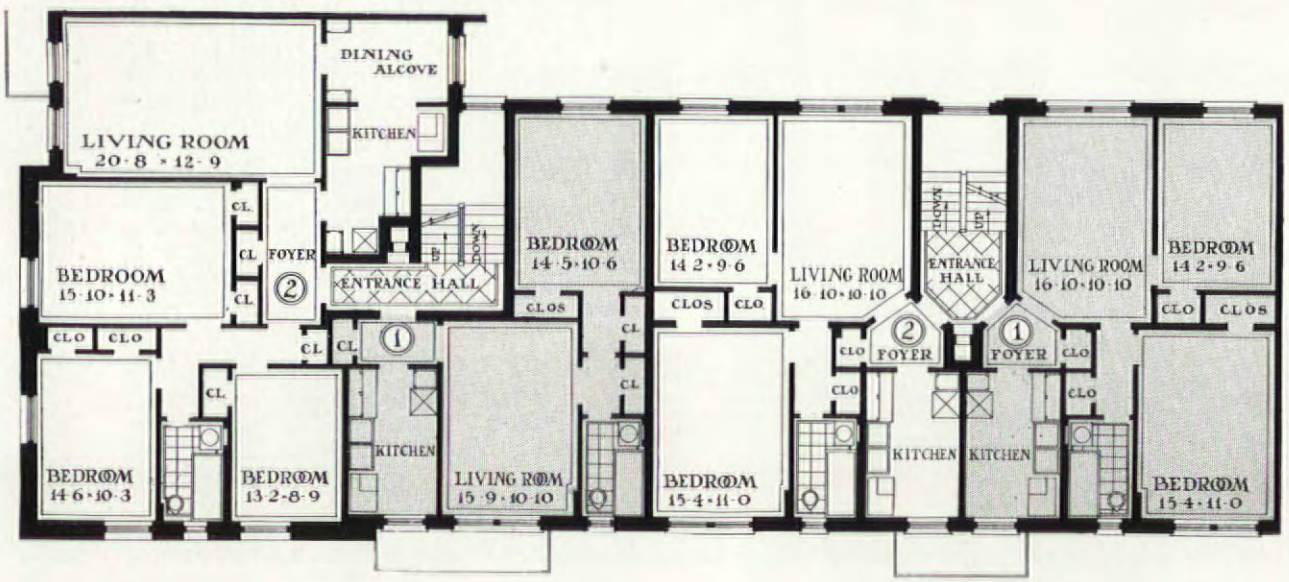
Honor award citation: "For excellence of plan and harmony between exterior design and the interior arrangement."

Wurts Bros.

Awarded medal of honor for large-scale planning.

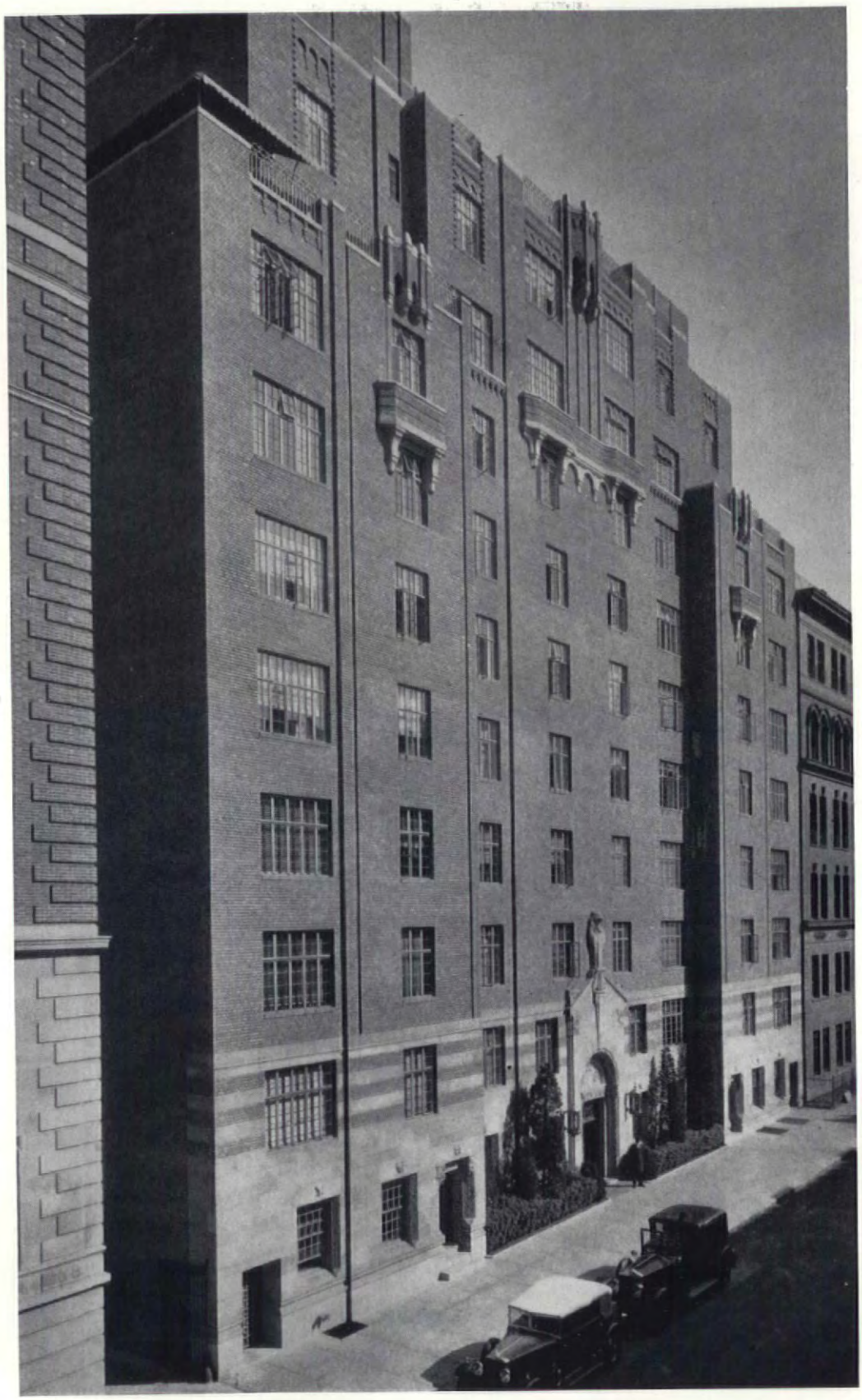
PHIPPS GARDEN APARTMENTS
LONG ISLAND CITY
CLARENCE S. STEIN, ARCHITECT

Wurts Bros.



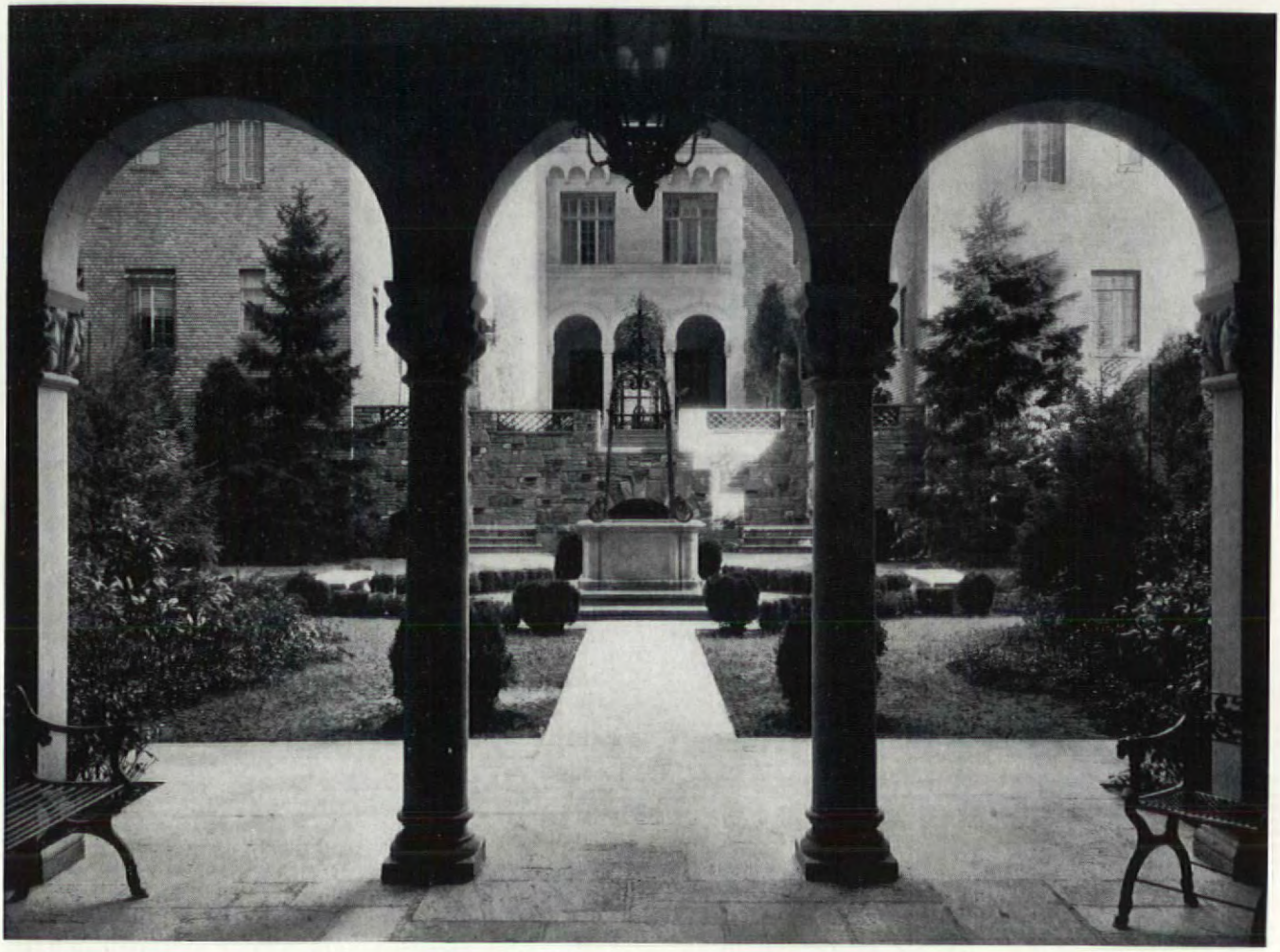
PHIPPS GARDEN APARTMENTS
LONG ISLAND CITY
CLARENCE S. STEIN, ARCHITECT

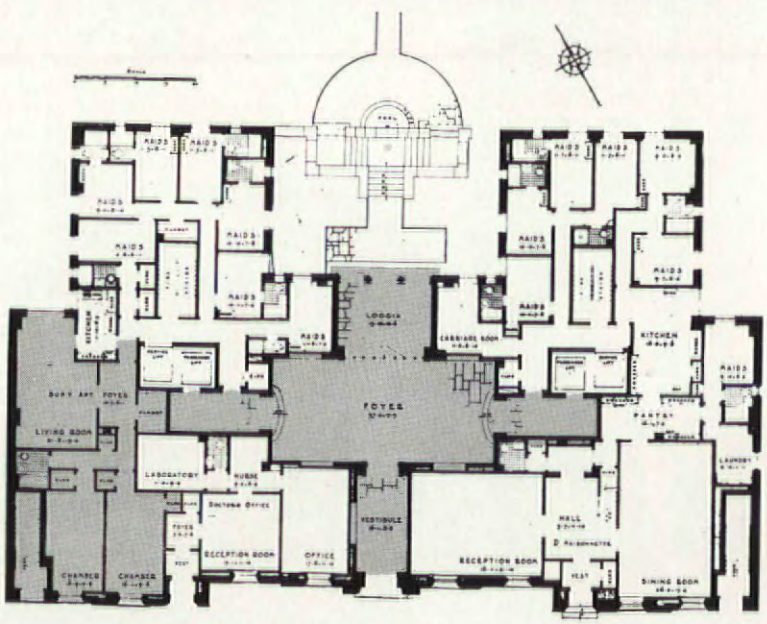
Honor award citation: "As an outstanding example of the social and economic value of openness of plan, permanent light and air and well-planned individual units at low rentals."



Awarded honorable mention for apartment on city plottage less than a block front.

116 EAST 68TH STREET
NEW YORK CITY
ANDREW J. THOMAS, ARCHITECT





116 EAST 68TH STREET
NEW YORK CITY
ANDREW J. THOMAS, ARCHITECT

Honor award citation: "In this project two buildings are grouped on opposite sides of a small but well-treated rear yard."

Amemya

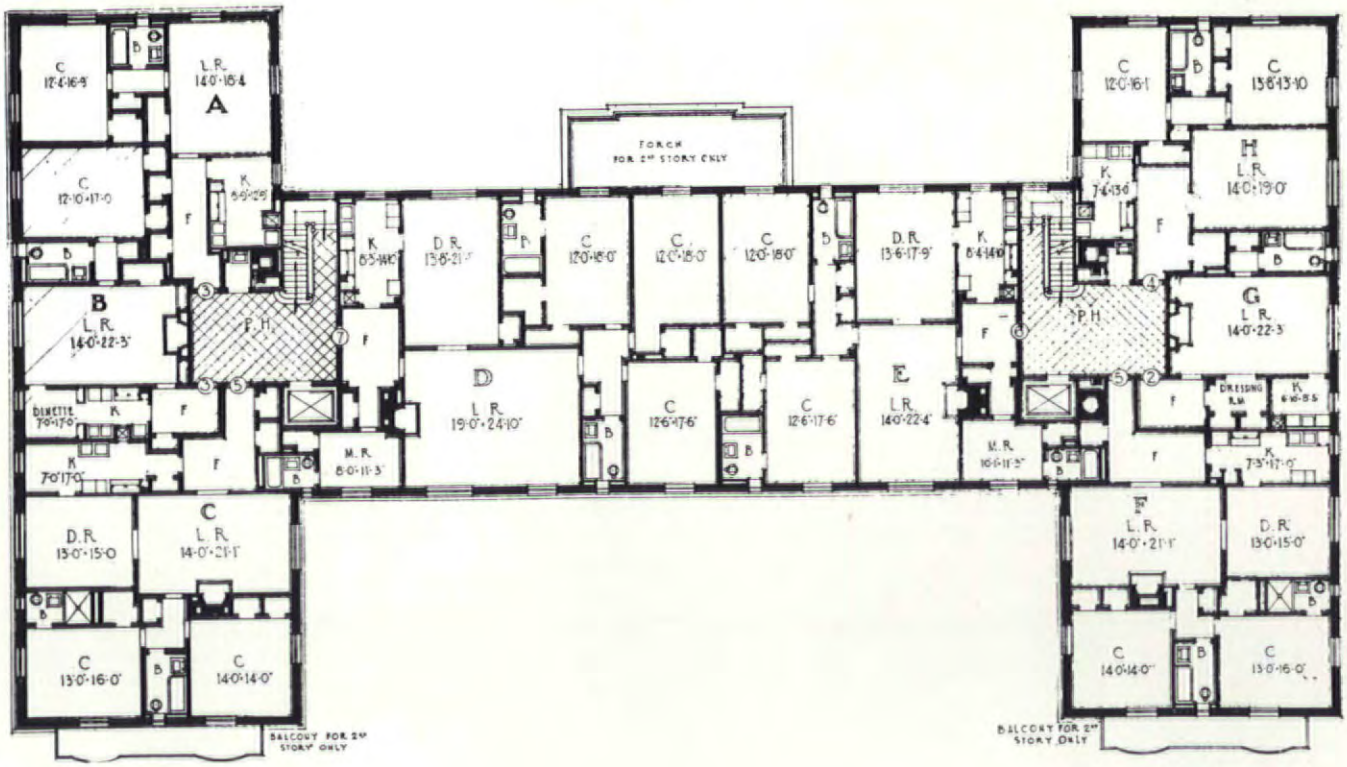
Awarded honorable mention for apartment on city plottage less than a block front.

400 EAST 57TH STREET, NEW YORK CITY
ROGER H. BULLARD, PHILIP L. GOODWIN,
KENNETH FRANZHEIM, ARCHITECTS

RIVER HOUSE, NEW YORK CITY
BOTTOMLEY, WAGNER AND WHITE, ARCHITECTS

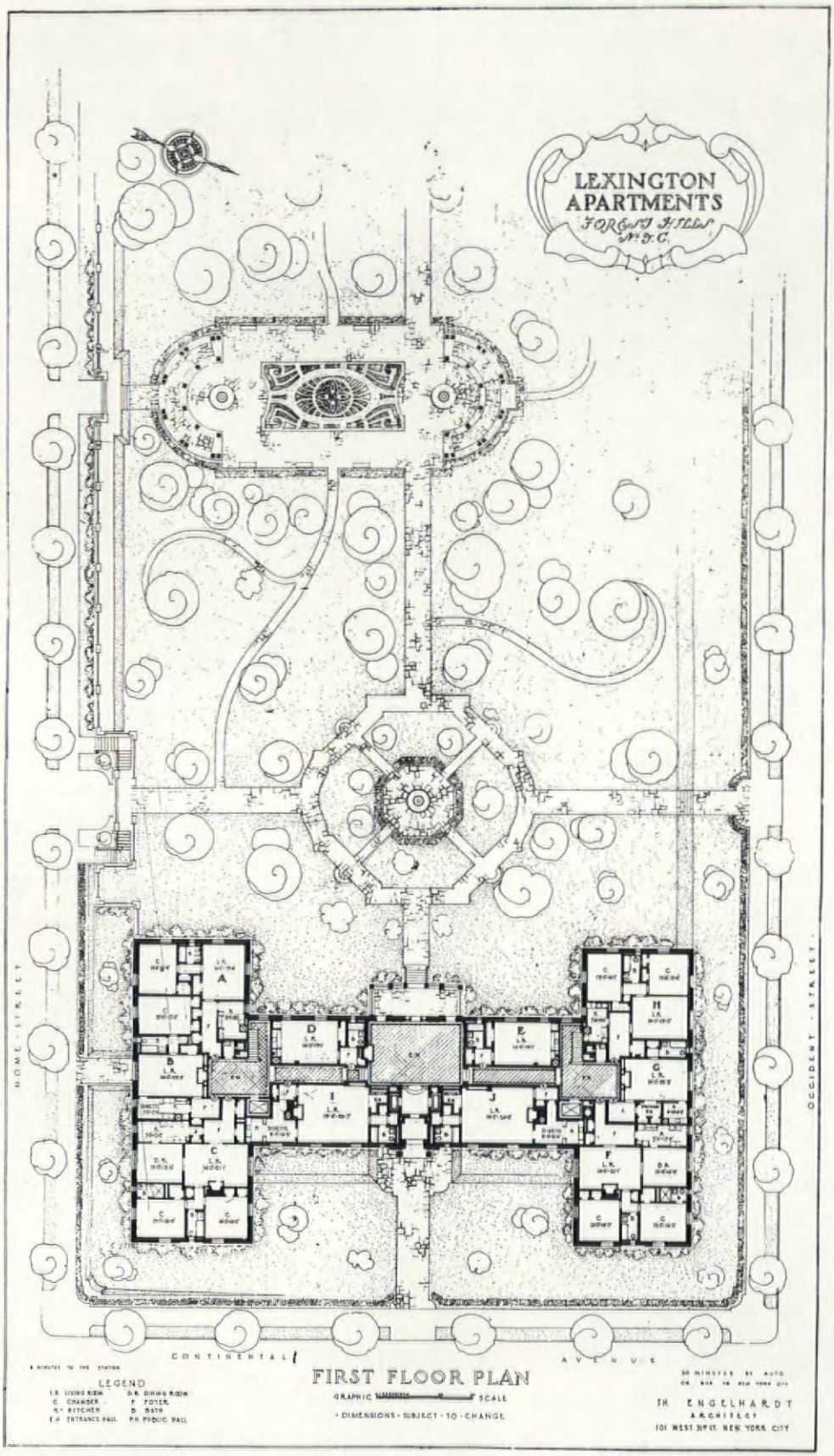
Awarded honorable mention for apartment of tower type.

Barrios



Awarded honorable mention for apartment of suburban type.

LEXINGTON APARTMENTS
CORD MEYER DEVELOPMENT
FOREST HILLS, LONG ISLAND
TH. ENGELHARDT, ARCHITECT

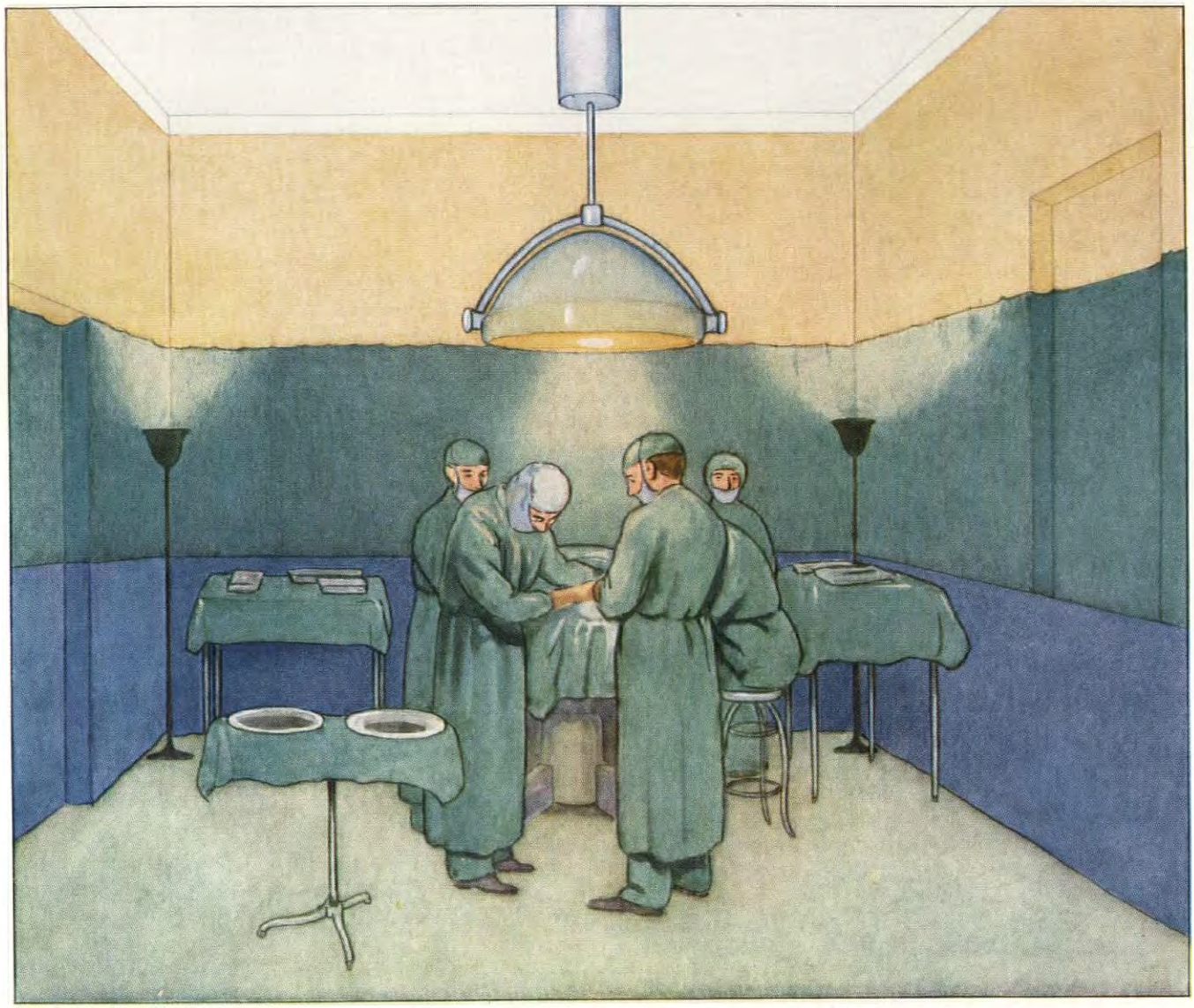


LEXINGTON APARTMENTS
CORD MEYER DEVELOPMENT
FOREST HILLS, LONG ISLAND
TH. ENGELHARDT, ARCHITECT

Honor award citation: "For excellence of plan and exterior design and the provision of adequate open space."

COLORS TO RELIEVE EYE STRAIN IN THE SURGICAL OPERATING THEATER

By J. EASTMAN SHEEHAN, M.D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University



Rendering by Alfred Feinberg

An operating room in the Doctors Hospital, New York City, in which, to relieve the glare of intense artificial light, Dr. Sheehan and Dr. P. J. Flagg have experimented with the use of colors. Eye fatigue, they have found, is eliminated by placing a filter of light yellow on the central lamp and by treating the walls in the primary colors of yellow and blue so that they absorb rather than reflect the glare.

The surgeon who is continuously engaged for any long period in a modern operating theater is likely to find himself, at the conclusion of the period, in a state of fatigue that is out of proportion to the mere labor, or even to the intensity of his preoccupation. This is primarily because of the eye strain produced by the artificial lighting contrivances with which the room is equipped.

What happens is, of course, that the pupils of the eyes adapt themselves automatically to the strength of the light, which they do so promptly and satisfactorily that one is quite unaware of what is happening. Vision calls for a certain volume of light, and the shutter opens or closes to admit just that much. In a dim light there is a wide opening; in strong sunlight a very small window suffices.

Whenever the contraction, if extreme, must be maintained over a long period (as sometimes in the operating theater) and the small delicate muscles which control the shutter are held at tension, there is strain upon them which increases in more than arithmetical proportion to the time. The explanation of this is to be found in the nature of the mechanism.

Reasons for Eye Fatigue

When the pupil is narrowed by the contraction of the iris, there is a movement of certain muscles in association. The ciliary muscle contracts, and so, simultaneously, does the sphincter muscle of the iris. As the contraction involves a change of focus, the eyeballs themselves must be adapted to the new condition, the eyes converge, and, to enable them to do so, the small rectus muscles lying along the eye surface nearest the nose are exerted.

The muscles of the iris are controlled by nerves of the sympathetic system, whose action is involuntary. Those to the dilator muscles take a long course, for they begin in the midbrain, pass down the spinal column to the lower cervical region, then upward to the base of the brain, and reach their place in the eye in company with the ophthalmic nerve. The nerves of the other muscles originate in that part of the brain which is the seat of another nerve (third). There is, we must assume, a state of openness of the pupil in which these opposing systems, and the muscles to which they are of service, are in a state of balance and therefore approximately of rest, whereas a state of extreme and long continued contraction develops antagonisms whose reflex action produces widespread disturbance. That this is what occasions the general fatigue is demonstrated by a simple experiment: one has only to close the eyes for a time and relax the body, and the fatigue will shortly disappear. But while it is at its worst, and the strain is most severe, there is an accompaniment of irritation that, to say the least, is best eliminated.

Matters are not improved, of course, by the continued strain upon the internal rectus muscle, which holds the eyes in the position of convergence, for all the time an effort is made by the similar muscle on the opposite side of the eye to restore the normal position.

Obviously, what is needed is a quality and volume of light which will be sufficient for the purposes of the work to be done in the operating room, and which will permit the pupils to function at a wider opening than the pin-point dimensions enforced by a light that is too brilliant and that reaches the eyes both directly and in reflection from glazed walls.

Problem of Artificial Light

Artificial light itself presents another problem. Our eyes, during hundreds of generations, have become accustomed to certain conditions. They have been familiarized with, and adapted to, the green of grass and leaves, the brown of the soil, the blues and grays of the sky. These tone to our use the elements of color in the spectrum of the sunlight. The eyes would be subjected to abuse if exposed for long periods to the glare of the sun. And this would obviously become worse if, instead of obtaining the relief afforded by green and blue and brown and gray, the light were to be reflected all the time from white and shining walls. Human eyes are not equipped for such conditions.

Besides, there is no guarantee, indeed little probability, that any of the strong artificial lights will reproduce, when broken up, the spectrum of the sun.

When light, as it comes from the sun, is resolved by the spectrum into its component elements, the various colors are observed to be ranged in certain proportions. The light produced by this combination is the light to which the eye is accustomed. Artificial light is not like sunlight in this important particular. There may be considerable variation in the relative amounts of red, yellow and blue, the primary colors, and of orange, green, violet or any combination of the principal or secondary tones, although sufficient illumination may be afforded for the purposes of vision. It follows that, where we have to do with artificial light, there may be complications resulting from the quality of the light, independent of the main consideration as to intensity. In the present-day operating theater strong artificial light is a factor to be reckoned with. Moreover, with the emphasis on cleanliness, there is a tendency to have walls which readily reflect the light, and even to accentuate the glare.

Experiments in Color Treatment of Operating Rooms

How, then, are we to go about finding relief from light conditions that are productive of eye strain, and still have the lucent atmosphere in which all objects and tissues are visible in their natural colors, and in which, nevertheless, the pupil openings will be of the degree that least exposes the participants in the operation to strain, irritation, or any other form of nervous waste?

The experiments conducted in the theater here described afford some indication of the answer.

First, the glare that is spread by the central lamp, usually one of high illuminating power, is relieved by a filter of light yellow interposed between the lamp at its lower portion and the objects below it. Should the ceiling and walls of the theater be of highly surfaced white, there would be only partial relief, as the glare from above the filter would be reflected from these surfaces. The walls, therefore, must be so treated that they will absorb rather than reflect the elements which produce the glare.

In the actual experiment, the ceiling has been left white, except for a border of yellow extending a foot or more from the wall. The wall itself, down to a certain distance, is given a yellow tone. Below this is a band of green produced, in terms of the light spectrum, of yellow and blue. Still lower down, and extending to the floor, is a band of blue. In the progress downward, therefore, the red in the spectrum has been modified gradually, and until it has ceased to be disturbing, by the other primary colors, yellow and blue.

All this, naturally, has the effect of reducing the intensity of the light below that at which it left

the lamp. But in doing so it has relieved the strain produced by excessive contraction of the pupils and the convergence of the eyes themselves. If the ideal condition has been attained, the pupil opening will be such that the strains are removed. Should it be found that in effecting this change the volume of light in the room has been reduced below what is necessary, that volume can be increased by the addition of lights in the corners of the room, thus throwing illumination to the ceiling, whence it returns again with altered characteristics as it encounters the bands of yellow, green and blue.

After some experimentation as to the results to be obtained from varying widths of the bands of blue, green and yellow, it was found that the restfulness of the atmosphere in the operating room was still further improved by giving to the floor a light green color, and again by substituting blue and green for the hard white in the garments worn by operator and attendants.

Two results have been noted, each well worth while. First, owing to the elimination of eye strain and of the fatigue-producing reflexes, those engaged can work for hours without being tired at the end, and can be free in the meantime of those irritations that so often are the despair of surgeon and assistants alike. Second, in this atmosphere from which glare has been eliminated, the patient is free of that nervous dread which is so often an additional difficulty for the surgeon.

THE NEED FOR A NEW HOUSING ECONOMY

By L. SETH SCHNITMAN

So long as architects, builders, speculators and investors were content to think of housing only in its material sense—in terms of commissions, speculative profits, rentals at "what the traffic will bear" levels—just so long was it natural that our housing economy should have been static. Now that the problem is being considered in a social sense—in terms of requirements, environment, family incomes, population trends, land values—a new philosophy is growing. Out of this will come a continuing housing *rationale* that will be correlated to the multiplying demands of a complex economic life and to the instrumentalities for supplying those needs.

It no longer suffices to think of housing only in terms of the small dwelling or the multiple-family house. Shelter in its broadest sense embraces the office building, the factory, the hospital, and even the Pullman car and motor boat. (Because of space limitations this article considers shelter in its generally accepted sense—as a combination of small and multiple-family dwellings.)

The popular belief that the apartment house is a sinister influence in American life still persists despite the fact that this dwelling type has been dictated largely by economic and social currents. As a result altogether too much stress has been placed on the importance of the small house without analyzing a changing order. It is not that the small house is on the road to extinction; it is rather that the extension of this dwelling type in the future will rest more fully than ever before on social and economic forces and not so much upon the ephemeral appeal of home ownership.

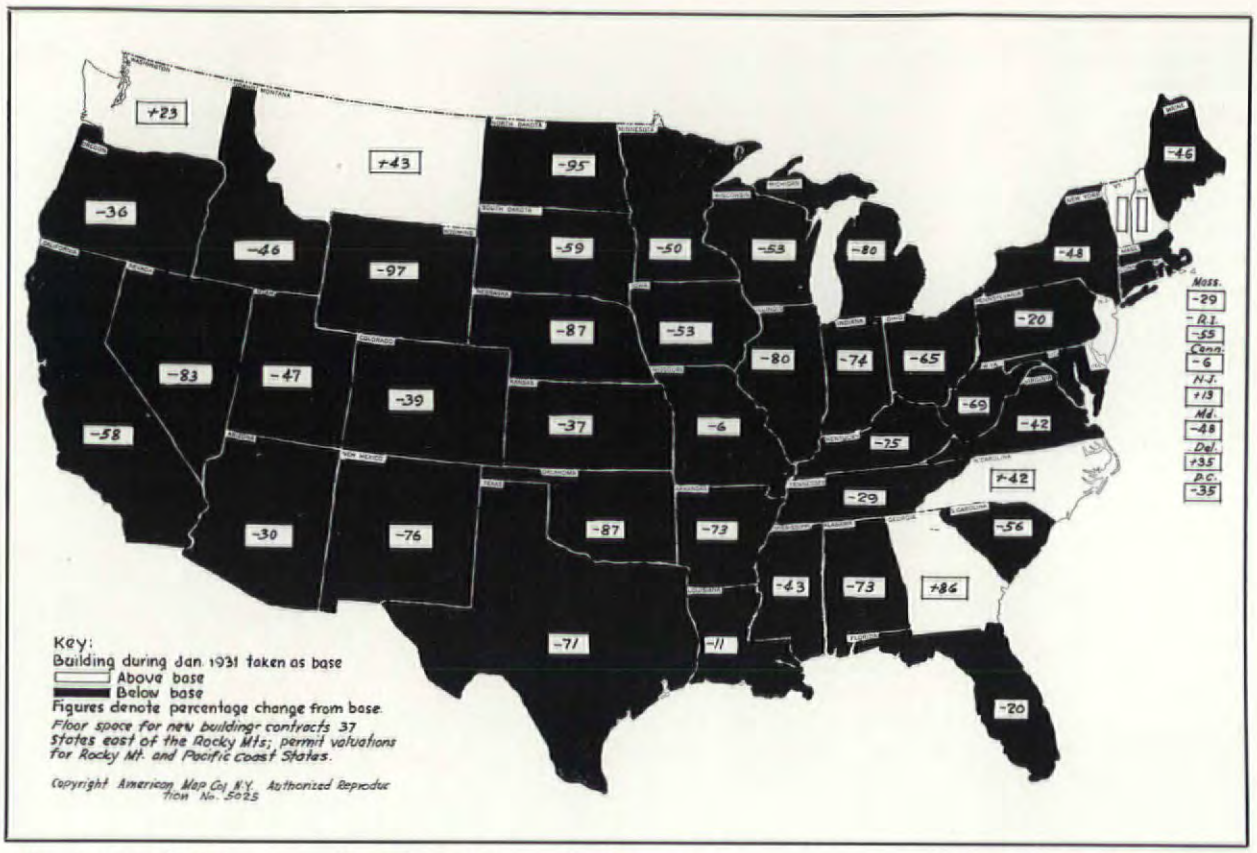
There is room in our changing system of housing for the small dwelling. There is room also for the multiple-family dwelling. Neither dwelling in the future will necessarily be a continuation of existing modes, for in fact such a condition would preclude the development of a dynamic economy toward which our efforts should be directed.

A survey of the evolution of the multiple-family dwelling type discloses that in its beginnings this housing type was the abode for the lowest-income classes; that in its glorification the multiple-family house became the abode of the highest-income groups; and that at present the trend is about midway between these two extremes.

More than twenty years ago in Berlin an apartment house with ultra-modern facilities was opened for occupancy. This apartment was erected not for the wealthy but for the middle class, although its appointments at the time were of standards high enough to meet the most fastidious tastes. Here is an object lesson for all who are interested in the development of a new economy as applied to housing: although architects, builders and investors have contributed much in the past to the betterment of housing standards in America, the larger problem now embraces coordination and integration to the needs of the masses with a full appreciation and a clear vision of the future. The multiple-family house, regardless of the form it may take as the future unfolds, appears destined for even further extension and development if any practical solution of the housing problem is to be effected. In the development of this type it is quite likely that a way will be found for housing our lowest-income groups.

If the multiple-family house is economic, and if it is suited to a rapidly changing social order wherein the mobility of industry and its employment opportunities has made the responsibility of home ownership burdensome, then it is altogether likely that multiple-family housing is destined to play an even more important role than it has in the past.

Such a trend would bring with it a new concep-



The January building map showed six states east of the Rockies where current building contracts were larger than in January 1931: New Hampshire, Vermont, New Jersey, Delaware, North Carolina, and Georgia. The December map showed eight states where the floor space totals of building contracts were higher than in the same month of 1930. Of the states to show increases in January a year ago, Vermont and Delaware reported gains in December.

tion of land utilization, investment opportunity and civic advancement, which is essential to the proper development of any housing economy. So long as embellishment, display, and ornate design characterize the multiple-family house, just so long will these factors operate as important limiting influences upon the economic extension of this housing type to embrace the classes of society who are asking for better living accommodations at prices which they can afford to pay.

Shelter is one of the basic needs of civilization and the desire for better, more livable accommodations persists. If architects, builders and investors will treat the multiple-family dwelling type functionally, with frankness and simplicity, there appears reason to believe that a new era in housing is in the making. In this development the conventional, particularly in pretentiousness and display, must be discarded. The multiple-family house must emerge from the speculative field to the arena of investment; housing will then become an industry in the public interest.

When this transition is accomplished we may expect to see greater tax-consciousness and less municipal extravagance, for the investor is more concerned with safety of principal than is the speculator. For many owners of real estate, it is not now so much the problem of meeting amortization on second mortgages or interest payments on first mortgages as it is a problem of meeting current and delinquent taxes which are prior liens on real estate. So long as the speculative fever pervaded, too little thought was given to the mounting extravagances of our municipal governments whose principal source of revenue was taxes derived from the land and improvements. If the speculative builder had a vision of profit on his building venture, he was not concerned with the taxes which his prospective purchaser would be called on to pay. Now that the owner of real estate has become aware of the burdensome tax structure it is likely that his conceptions of investments have been materially altered.

The future of housing in America is not without hope. Indeed its development can be epochal if as a nation we have begun to realize the need for a dynamic housing economy, well conceived, properly coordinated and methodically executed.

If in this development of our housing economy we integrate the social needs of our communal life in accordance with the forces of our economic fabric, then may we be sure that the current wave of deflation has brought a new outlook to insure against its recurrence.

COMPARATIVE COST STUDIES OF NEW GROUP DWELLINGS

Addenda of Cost Data Used in Determining New Housing for the Reconstruction of Slums* Outlined on Pages 147-156 of This Issue

By HENRY WRIGHT

Conclusions reached in preceding articles in this issue were that large areas of city land in need of rebuilding can be acquired at costs of $1 to $3 a square foot, and that these areas are usually in blocks of 250 to 300 feet from street to street, which will permit rearrangement of dwelling groups so as to cover from 40 to 50 per cent of the net area within the block with new buildings up to four stories in height. However, since no new apartment-type dwellings have been built recently at rentals necessary to meet average incomes, a method was sought by which new types of two- and three-story dwellings could be built advantageously.

The old types of two- and three-story flat apartments, at present typical of such city areas, have become too wasteful because of both their inefficient plans and their inefficient use of the ground area within blocks. Modern facilities for heating and for refrigeration without coal or ice delivery to the individual family unit permit a more intensive use of the land in court groups of low buildings as well as through the use of taller buildings.

The purpose of this study has been to determine the relative costs of known forms of efficient two-family dwellings as well as to evolve new forms of three-story nonapartment dwellings which would avoid the additional expenses of apartment-house services.

This study proceeded logically from the well-known costs of simple two-family dwellings expressed in rentals as compared with known costs of three- and four-story apartments. It was found that the former could compete in rent with desirable types of efficient garden apartments at higher land costs (up to $2 a square foot) than had been previously considered practicable. It was then assumed that if three-story dwellings to cover slightly less land area than these two-story flats could be so planned as to eliminate the additional costs of safety and service features in the apartment, such dwellings might prove advantageous in rentals at land costs in excess of those now considered feasible for only apartment buildings.

The three-story types which have been proposed in the preceding article would form desirable types of dwellings even if the rentals equalled those of three- and four-story apartments; the studies, however, have been successful in demonstrating that by efficient use of land, the new dwellings have an advantage over apartments in that savings in land cost are not offset by added building costs. This makes them available at substantially lower rentals than any dwelling form now in common use and adapted to average city land costs of $1 to $3 a square foot.

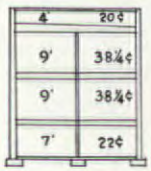
Because of its general interest as a method of procedure, as well as to substantiate the proposed solutions, the whole process is presented in this technical article.

The subject is complicated, and while care has been taken to secure accurate facts in regard to the less definite factors and particularly to apply them on a uniform basis, yet the possibility of a difference of practice or interpretation is not to be overlooked. The material should therefore be taken not as conclusive but rather as suggestive of a process by which to arrive at a new solution of a heretofore baffling problem.

A "yardstick" for measuring cost efficiency of known and theoretical types of small dwellings of similar construction was found in the detailed cost data concerning the efficient four-room two-story two-family flat built with flat roof for many years (type "B," page 433, December, 1931, issue). Practically identical four-room units in three- and four-story apartments were built at the same time, all 25′ wide between party walls (50′ for the double apartment unit) by 28′ 4″ deep except the four-story unit, which was 30′ 4″ deep. The 28′ 4 unit has 708½ square feet of gross area, 177 square feet per room, and provides two bedrooms of good size, a living room, bath and kitchen with space for breakfast table. While not ideal in plan, one bedroom being inconvenient to bath, the plumbing is placed most efficiently and only 8 per cent of the gross area is used for stairs, halls and passages.

*This information accompanies the article, "Low-Rental Dwellings," by Henry Wright, which appears on pages 151-156 of this issue.

Cost Distribution of Four-Room Unit*



	Cu. Ft.	a	b	c	d	
Roof	2834 @	18	2			$ 569
2F	6376 @	11½	2	12	12¾	2442
1F	6376 @	11½	2	12	12¾	2442
Bmt.	4959 @	9½	1½	½	10½	992
	20545 @	30¼c				$6445
						or $805 per room

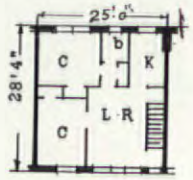
Explanation of Costs:

a. Cost of continuous building section, including plastering any type 28′ 4″ deep is approximately $86 a linear foot or about 11c a cubic foot.

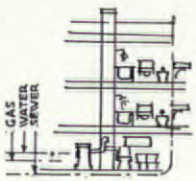
b. Cost of concrete block party wall and half chimney 25′ on centers.

c. Cost of "articulation" of use space, including stairs, doors, windows and other than bearing partitions.

d. Cost of equipment: plumbing, heating, wiring, kitchen and bathroom fixtures and tile. Utility connections allocated to basement.



Economies in the flat equipped with a single heating plant as built in New York areas are shown in comparison with similar row house, as follows:

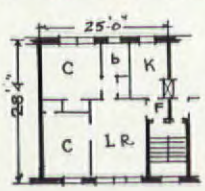


	6-Room 1-Family	4-Room 2-Family
Plumbing	$608	$404
Utility connections	60	30
Steam heating	201	124
	869 (100%)	558 (64.2%)

These economies are found in the reduction of plumbing and heating costs. If the heater is made an independent unit in the flat, the extra heating boiler and space for extra stair access to the basement will defeat much of the building economy as well as add to fuel cost. Even in a separate two-family unit with one heating boiler the fuel costs with inexpert firing are $18 to $20 per room per year, or from 80 to 100 per cent more than in the apartment. It has been assumed in this study that more expert firing in a community of such dwellings will keep this cost within $15 per room per year, the remaining difference of 66 per cent above the four-story apartment cost representing the inefficiency of the smaller boiler and the greater roof radiation.

Costs of Three- and Four-Story Apartments

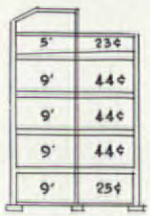
Applying the two-family "yardstick" to the known costs of three- and four-story apartments of almost identical plan and built in the same locality either the same or the following years (1925-26) we may compare their costs and set up the probable costs of a three-story nonapartment dwelling of similar construction.



Plan of four-room unit as built in three- and four-story apartment buildings.

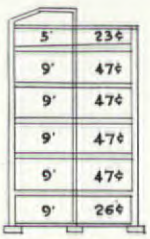
In the three-story the plan was practically identical, but in the four-story the building depth was actually 30′ 4″ in place of 28′ 4″, and 12″ instead of 8″ brick walls were required. The cost at 28′ 4″ depth was taken by deducting 40 per cent of the complete cubic cost for the interior two feet of reduced space. Room sizes would be slightly less than in lower buildings with 8″ walls.

Three-Story Apartment



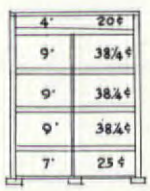
Roof 3540 cu. ft. @ 23¢ (higher parapet, penthouse) ...	$ 814
3 living floors each 6376 cu. ft. @ 44¢ (extra cost for fireproof stair, dumb-waiter, fire escape, higher hoisting)	2805
	2805
	2805
Basement 6376 cu. ft. @ 25¢.	1594
Total, 29045 cu. ft. @ 37¢	$10823
or 3 apartments with 4 rooms each, $3611 per apartment	
$903 per room	

Four-Story Apartment



Roof 3540 cu. ft. @ 23¢	$ 814
4 living floors each 6376 cu. ft. @ 47¢ (extra cost of 12″ brick walls and greater hoisting)	3007
	3007
	3007
	3007
Basement (thicker walls) 6376 cu. ft. @ 27¢	1721
Total, 35420 cu. ft. @ 41¢	$14563
or 4 apartments with 4 rooms each, $3641 per apartment	
$910 per room	

The saving in sharing basement and roof costs in a larger number of stories is much more than offset by the additional construction costs for service and safety features required in the apartment dwelling, sufficient in fact to balance gains in land use for land costs prevalent in all but strategically located city areas.



However, if a type of three-story group dwelling could be planned identical with the two-story "yardstick" plan (that is, if the third-story tenant were permitted to pass through second-story living room, and ignoring for the moment the need for fire escapes), the theoretical cost of such a dwelling of twelve rooms would be arrived at by inserting one more floor at a cost of 38¼c per cubic foot and increasing the basement sufficiently to include larger heater and hot-water plant.

The figures would be $569 plus three times $2442 plus $1165, or $9060, for three suites of four rooms each, or $3020 per suite, or $755 per room.

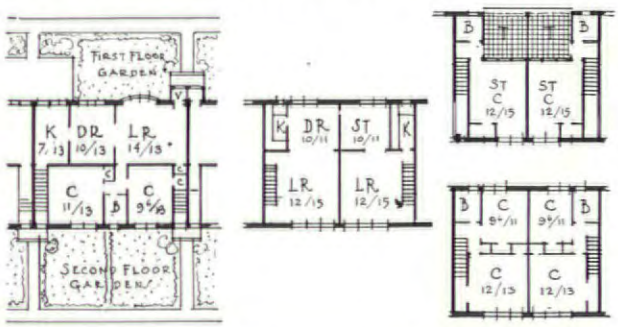
Of course, in this form such a dwelling would be impracticable. We could not place a third-story flat above two flats in the lower two stories without providing different stairs and safety features which would make it an apartment with apartment costs. But it would be altogether practical and safe (although not necessarily permitted by existing building codes) to place the living space in two stories (above a ground floor) in which each of the upper-floor families would have its main living rooms on the second floor, corresponding in position and means of access with the second-floor flat in the simple "yardstick"

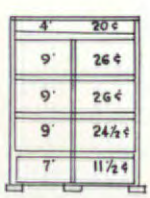
*See aforementioned article in December, 1931, issue of THE RECORD.

dwelling. In other words, we can superimpose on a flat 32′ wide by 28′ 4″ deep two four-room-and-kitchenette row houses each two stories in height and 16′ wide, corresponding with the row houses of the Buhl Foundation project illustrated in the October, 1931, issue of THE RECORD. The final development of this combined three-story flat and row house dwelling is shown in the main group dwelling scheme illustrated on pages 154 and 155 of this issue.

Narrow fully-equipped 4½-room houses cannot be built for the same cost per cubic foot (20c plus equipment items as shown in Table "B," December issue); they will cost slightly more than 22c, as will be demonstrated in a subsequent issue of THE RECORD. The resultant costs must be qualified further by slipping the flat unit in between the basement and the first story of the two-story houses and by including the extra set of stairs necessary to reach the two houses on the second floor. But no changes in construction, such as service or safety features, are necessary if, as contemplated, heat only is to be furnished in common. Mechanical refrigeration is to be supplied in all cases at a service charge not included in these comparative rents; incineration of wastes is also contemplated. (In figuring the service cost of apartments hereafter no charge is included for dumb-waiter since it is no longer required.)

Cost Diagram of Theoretical Group Dwelling With Two 16′ Houses Over 32′ Flat Plan





Roof 3628 cu. ft. @ 20¢	$ 726
2d fl. (Houses) 8163 cu. ft. @ 26¢	2157
1st fl. 8163 cu. ft. @ 26¢	2157
Flat 8163 cu. ft. @ 24½¢	2000
Basement 6349 cu. ft. @ 11½¢	735
Total, 34466 cu. ft.....	$7775

In this diagram of a group dwelling in which two 4½-room 16′ row houses have been superimposed on a five-room flat, the costs represent the building without equipment, which must be figured separately. The cost of the flat is taken at 24½c.* The house cost is arrived at through a somewhat complicated process (see the cost data in the December issue, Table "B," page 433), with allowances for increased cubic foot cost for the "tighter" 16′ house. To this total building cost must be added uniform items for tile baths, electric wiring and fixtures, three sets of kitchen equipment and interior decoration, and one extra stairs in the flat story, as well as plumbing adjusted to the number of stacks and utility connections, and one heating boiler of a size required for fourteen rooms. The totals are $1303 and $1834 (plumbing and heating), or $3337, to be added to $7775, which equals $11,112 for fourteen rooms or $793 a room.

We have now established on a uniform basis, and with a reasonable degree of accuracy, the building costs per room on a 1926-27 basis (New York area) for brick and wood-joist construction: (1) for actual two-story four-room flats, $805; (2) same plan, three-story apartments, $903; (3) same plan, four-story apartments, $910; and (4) theoretical group dwellings with five-room flats and 4½-room houses, 14 rooms per building unit, three stories high, $793. The gross floor area of the first three identical plans is 177 square feet per room; the area of the group dwelling (4) is, as drawn, 194 square feet. While some additional space is absorbed in stairs in the group dwelling, the rooms average somewhat larger, which imposes a slight handicap in land use at a coverage identical with the three-story apartment.

Economies make it possible to provide even better room sizes in the group dwelling at less cost for building than in the apartments or even the two-story flat. Three living floors share one basement and one roof between party walls 32 feet apart without requiring the added costs for fireproof stairs, penthouse, higher parapet wall or fire escapes. The extra cost of hoisting is absorbed in the omission of one masonry party wall between the two two-story houses at 26c per cubic foot for living floor cubage (the cubage cost for the complete height is 22c or 2c more than for the 20′ wide house, as shown in Table "B," December issue).

These are the savings in building or capital costs. For land costs the three-story group dwelling is on a par with the three-story apartment, saving 33 per cent of the cost of the two-story on the same coverage. The savings in service costs as compared with the apartment include the following: no lighting or cleaning or repairs of common halls or stairs; no care of lawns or outside spaces except cleaning, lighting and snow removal of paths and small play areas. Mechanical refrigeration and incineration are assumed as common to all types with special service charges or cost allowances omitted for lack of cost data and experience. Installation costs in even a special-type incinerator for the fourteen-room building doubtless will be somewhat more than for the four-story apartment, the present capital cost of which represents 9c in the monthly rent per room.

It seems reasonable to give some slight advantage to the lower types of dwelling in land coverage. In the following tables the coverages are taken as 50 per cent for two-story, 45 per cent for three-

*The 24½¢ for the cubage cost of the flat section is reached by deducting from the 38¼¢ of the "yardstick" costs, 12¾¢ for equipment and 1¢ for the simple continuous space of 32 feet instead of 25 feet between party walls, decreasing party-wall costs per cubic foot of area and reducing the proportionate amount of partitioning. The difference should be somewhat more, but a conservative allowance is included.

story, and 40 per cent for four-story buildings.

To arrive at comparative use costs or rentals for all of the foregoing dwelling types it is necessary first to set up all capital costs on which interest, amortization and depreciation must be equitably or uniformly charged. These factors are: (1) total building cost (taken as heretofore without profits, financing or fees); (2) land costs taken at $1 per square foot of land in plot to represent all land and improvement cost including yard work for convenience; (3) carrying charges on building at 6 per cent for six months on total building cost and 6 per cent for one year and taxes at 2 per cent on the land cost. Other amounts for carrying charges may be assumed with little effect on comparative rentals if applied uniformly.

TABLE A: Combined Capital Costs, Including Carrying Charges During Operation, for Buildings and Land for Four Dwelling Types

Building cost per room	Net	With Carrying Charges	Plus Land* at $1 per Square Foot		
			40% Coverage	45% Coverage	50% Coverage
A. Two-family two-story four-room	$805	$829.15	$238.68 $1067.83	$212.76 $1041.91	$192.93 $1022.08
B. Three-story four-room apartment	$903	$930.09	$158.76 $1088.85	$141.48 $1071.57	
C. Four-story four-room apartment	$910	$937.30	$119.34 $1056.64		
D. Three-story group dwelling	$793	$816.24	$174.96 $991.20	$154.44 $970.68	

Gross area per room per floor for A, B and C (177 square feet) at 40, 45 and 50 per cent coverage, equals 442, 394 and 354 square feet; D (194 square feet) at 40 and 45 per cent coverage, equals 485 and 431 square feet. These are to be divided by 2, 3 or 4 (number of stories) to give the land area per room required for each type at each assumed coverage.

The rental costs of dwellings of these types will be comprised of the following items, varying somewhat with differing conditions and habits in different communities. The items include only the net requirements of actual outlay and overhead in the case of an efficient and adequately financed operating company; they do not cover commissions and discounts on money other than 6 per cent per annum, or profits above an earning of 6 per cent on the total invested capital. Nor do they provide for vacancies. If rented continuously at the amounts shown, the amortization or depreciation would write off the whole capital investment in about 23 years, or it could at any time be credited in part toward rental reduction, if the dwellings are expected to be still suitable for use after the 23-year period. The costs are given not as a guide for investment but merely to set up careful and uniform comparisons. If building costs were to have dropped 20 per cent from these 1926-28 costs in suburban New York, then the charges attributable to capitalized building costs would be proportionately reduced.

The items involved in rental costs:

1. Interest on capital costs of building and land including carrying charges as above, 6 per cent.
2. Taxes on full capital costs including carrying charges to equal about 3 per cent on usual assessment, 2 per cent.
3. Depreciation on full capital cost of the building including carrying charges, 2 per cent.
4. Primary maintenance:
   a. Maintenance of internal common stairs, halls or other services, including public light.
   b. Fuel for heating and hot-water service (see notes below).
   c. Engineer or other help essential to (b).
5. Secondary or variable maintenance:
   a. Repairs and redecoration, including public halls which will offset extra roof, etc., saving of smaller nonapartment buildings.
   b. Maintenance of site including lawns except as by tenants, snow removal, etc.
6. Management, accounting and rent collection taken uniformly at 5 per cent of the preceding.

To apply these factors uniformly to all the types under construction has required considerable investigation and is still subject to some uncertainty in regard to janitor items. In the matter of fuel consumed the evidence is fairly complete. The actual cost of coal in individually-owned two-family dwellings of this type is known to be from $140 to $160 a year for eight rooms. This is excessive but readily explained because of: (1) inexperienced firing; (2) boilers which are not adapted to low-price fuel; (3) hot-water unit too small to be efficiently maintained throughout entire year. It is

(Continued on page 44, advertising section.)

*It is interesting to note that the capitalized land cost with carrying charges for land at $1 per square foot in the case of the D type at 45 per cent coverage, featured in this article, requires almost exactly $1 per month in the rental budget for interest and taxes. For each additional $1 per square foot of land cost, $1 per month is added to the rent.

Interiors, too, are *strikingly handsome*

De Vilbiss School (Toledo Board of Education), Architect, M. Ed. Gee, Board of Education, Toledo, Ohio
Painted throughout with 2400 gallons of Barreled Sunlight

Toledo's new De Vilbiss School chose Barreled Sunlight for *lasting* Beauty and Cleanliness —

BARRELED SUNLIGHT *is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight — its more pronounced whiteness, richer lustre and marked durability. (Note that both forms of Barreled Sunlight are readily tinted any desired shade.)*

IT IS easy to see why the Toledo, Ohio, Board of Education takes great pride in its fine new De Vilbiss School. Of strikingly handsome architectural design, exteriors embody both simplicity and charm. Interiors are distinguished by lasting beauty and cleanliness.

Painted with Barreled Sunlight, ceilings and walls will remain clean, bright, handsome for months to come. For the smooth, flawless surface of Barreled Sunlight can't hold dirt embedded. Finger prints, smudges, dust—so common to all public places—may be easily wiped off with a damp cloth. Repeated washings do not harm the soft depth — handsome finish of Barreled Sunlight. Its extreme durability materially reduces the necessity for repainting.

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An all-oil product, Barreled Sunlight may be easily tinted in soft, pleasant colors appropriate to the surroundings.

Our catalog is in Sweets, but for your own files let us send you the new booklet, "For Interiors of Lasting Beauty and Cleanliness." Write to U. S. Gutta Percha Paint Co., 22C Dudley St., Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

Barreled Sunlight

REG. U. S. PAT. OFF.

(Continued from page 216, editorial section.)

just possible that hot-water supply should be arranged as small independent storage tanks in each suite (as shown in Mr. Klaber's plan). For each added story there is some loss in radiation from vertical risers unless exposed, but there is a definite reduction in radiation loss through the roof and in basement chargeable to each story. The fuel charges assumed seem reasonably equitable at $15 a room for two stories with numerous small individual or even central plants because of length of distribution pipes and roof radiation; at $11.50 for all three-story types with not over 40 rooms per building; at $9 for four stories. This is at variance with the experience of the Bridgeport Housing Corporation where two- and three-story dwellings of spreading coverage have been averaging $12 per room per year.

TABLE B: Annual Rental Costs for Four Dwelling Types Used in This Study

Two-Story at 50 Per Cent; Three-Story at 45 Per Cent and Four-Story at 40 Per Cent Coverage; All on Land at $1 a Square Foot

Capital Costs	Two-Story Flat $1022.08	Three-Story Apartment $1071.57	Four-Story Apartment $1056.64	Three-Story Group $970.68
(1) Interest	$61.32	$64.29	$63.40	$58.23
(2) Taxes	20.44	21.43	21.13	19.41
(3) Depreciation	16.58	18.60	18.74	16.32
(4) (a) Maintenance of halls	0.00	2.50	2.00	0.00
(b) Fuel	15.00	11.50	9.00	11.50
(c) Firing	6.00	4.50	4.50	5.00
(5) (a) Repairs and decorating	12.00	12.00	12.00	12.00
(b) Maintenance of grounds	2.50	4.00	3.50	2.00
(6) Management and collection	6.69	6.94	6.68	6.14
Annual rent per room	$140.53	$145.76	$140.95	$130.60
Monthly rent per room	11.71	12.15	11.75	10.88

This table has been carefully checked for present costs; future adjustments will be due to new methods and new bases for heat distribution as a utility. Assuming that these would tend to offset each other, the whole matter seems to hinge on the provision of socially better conditions by placing the tenant in a more independent position and making him responsible for the daily maintenance of the entire building, except utility tunnels, and all the grounds except play areas and walks, thus eliminating service charges. Costs at higher land prices may be figured by proportionate additions to the capital land charges (Table A) at 8 per cent plus 5 per cent of the product for item (6).

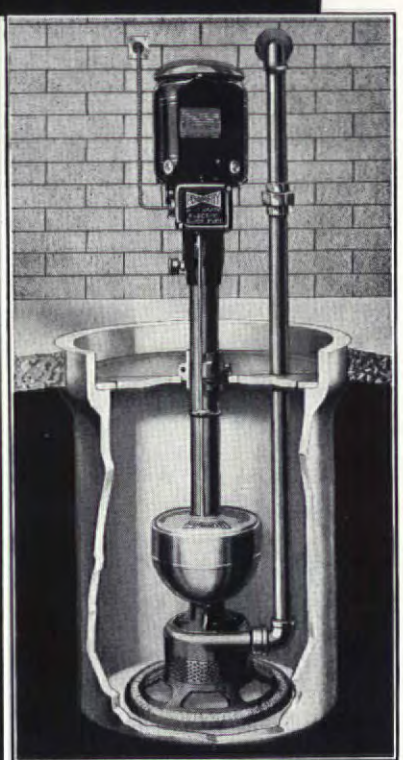
TABLE C: Annual Costs at Various Land Prices

Type	Two-Story Flat	Three-Story Apartment	Four-Story Apartment	Three-Story Group
Land at $1	$192.33	$141.84	$119.34	$154.44
Annual land charge	16.14	11.90	10.03	12.96
Annual building charges	124.39	133.86	130.92	117.64
	140.53	145.76	140.95	130.60
Monthly rent	$11.71	$12.15	$11.74	$10.88
Land at $3	48.42	35.70	30.09	38.82
Monthly rent	$14.40	$14.10	$13.41	$13.06
Land at $5	80.70	59.50	50.15	64.74
Monthly rent	$17.10	$16.11	$15.09	$15.20

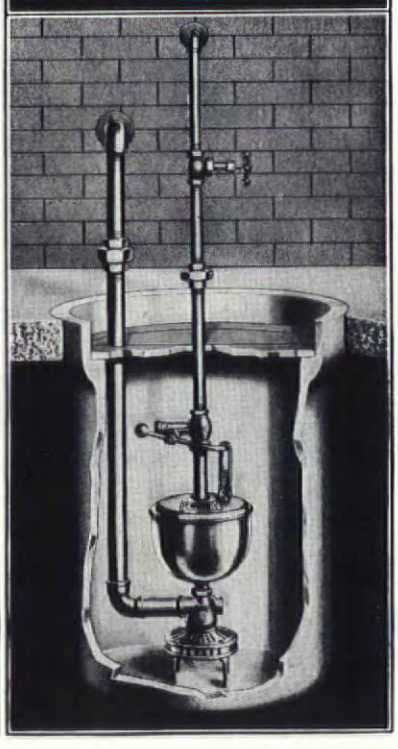
The three-story group dwelling therefore could replace in the field of moderate size low-cost dwellings all three-story buildings on any price land and four-story buildings at prices up to a maximum where neither type may be used to advantage over elevator apartments. The walk-up apartment is relegated to special situations where families require and are prepared to pay for more extensive services than are to be considered in this field. Other than economic conditions may of course require consideration, and changing construction technique will doubtless become a factor, but for immediate city rehabilitation there seems reason for a serious consideration of these principles.

RUST PROOF

COPPER AND BRONZE THROUGHOUT



PENBERTHY AUTOMATIC ELECTRIC SUMP PUMP



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PENBERTHY PRODUCTS

THE architect need not be told the many advantages of using copper and bronze in the construction of equipment for the removal of seepage water from basements, elevator sumps, piping tunnels, scale pits, etc.

Penberthy Automatic Electric Sump Pumps and Automatic (water operated) Cellar Drainers are built of copper and bronze throughout . . they cannot rust.

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There is a type and size of Penberthy Pump for every purpose. Sump covers for both electric and water operated units can now be supplied at slightly additional cost. Penberthy Pumps are stocked by leading jobbers everywhere.

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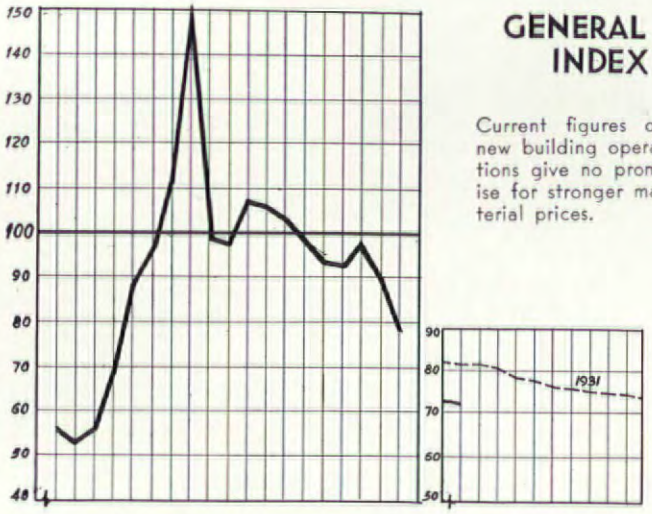
PENBERTHY PUMPS REMOVE SEEPAGE WATER

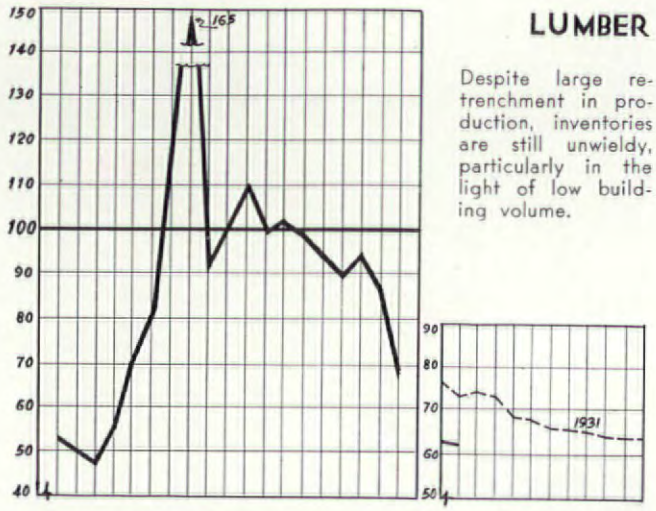
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average—100



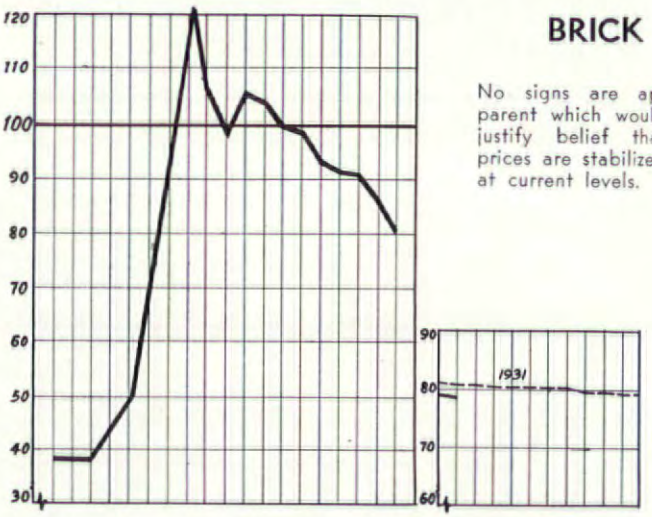
GENERAL INDEX

Current figures on new building operations give no promise for stronger material prices.



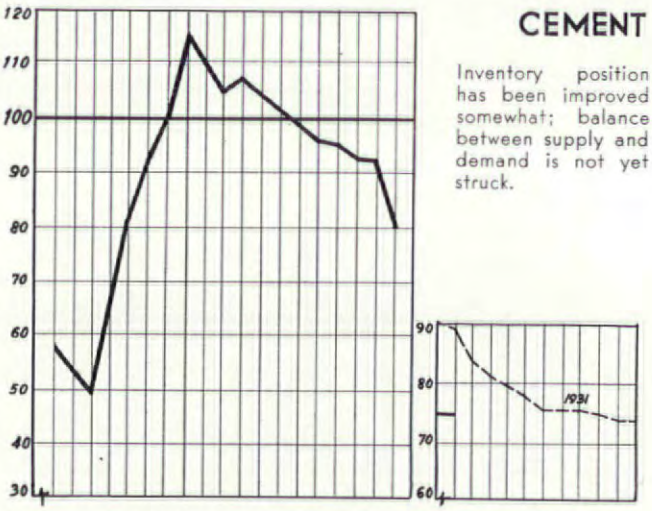
LUMBER

Despite large retrenchment in production, inventories are still unwieldy, particularly in the light of low building volume.



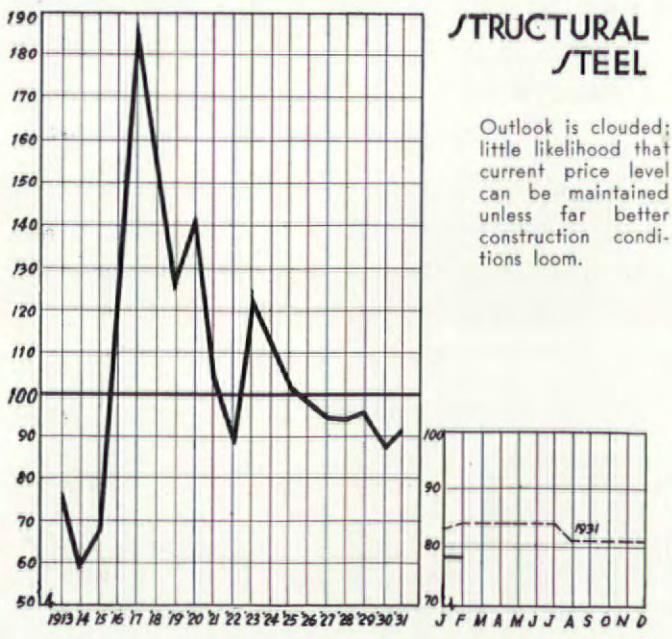
BRICK

No signs are apparent which would justify belief that prices are stabilized at current levels.



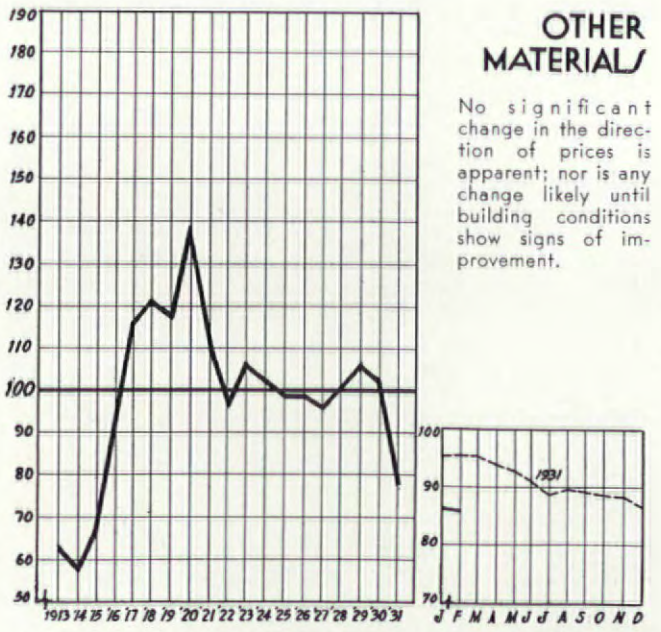
CEMENT

Inventory position has been improved somewhat; balance between supply and demand is not yet struck.



STRUCTURAL STEEL

Outlook is clouded; little likelihood that current price level can be maintained unless far better construction conditions loom.



OTHER MATERIALS

No significant change in the direction of prices is apparent; nor is any change likely until building conditions show signs of improvement.

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It is made of black plate glass—with a *suspended abrasive* uniformly dispersed throughout the glass *while molten.* Not just a top surface treatment that wears smooth and slippery, but a blackboard that is perfect *surface all the way through from back to front.* Experimental tests equivalent to *one hundred years wear* have left *Seloc* Glass blackboards as good as new.

A NEW COMPOSITION BLACKBOARD KNOWN AS "SELOC SLATE"

Composed of long length wood fibres, impregnated in oil, and formed under pressure of eight thousand lbs. to the square inch. Is waterproof, and will not warp or bulge. Guaranteed for ten years. Where price is a factor, here is best ob tainable material.

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HERE, at last is the final and completely satisfactory solution of all blackboard problems. Here is the *Seloc Glass* blackboard, guaranteed against the defects of previous plate glass blackboards because *The Seloc Can Never Wear Smooth.* Educational experts claim that black plate glass makes the ideal board—non-fading, obtainable in almost any lengths, easily installed, practically indestructible, and susceptible of a perfect finish. *Now* to these advantages we have added *Uniform Composition Throughout* by means of a suspended abrasive *uniformly dispersed throughout the black plate glass.* The result is a velvety surface that lasts as long as the board itself, cannot get "slick" as surface treatments do, and in end cost is by far the most economical to specify. On your next job—investigate *Seloc Glass*—it's the last word in blackboards and we cannot see that it will ever be surpassed. Guaranteed for the life of the school.

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QUESTIONS AND ANSWERS

PAINTING TRANSITE

"Can paint be permanently and satisfactorily applied to Transite?"

H.C.

Henry A. Gardner of the Institute of Paint and Varnish Research states: "It is my understanding that *Transite* is made with a mixture of portland cement and asbestos. If this is correct, I believe that such surfaces could be finished satisfactorily, provided they were well dried.

"The same type of finishes which give satisfactory service upon plaster walls or exterior cement walls will probably be entirely satisfactory for *Transite*. Usually such finishes comprise, in the priming coats, kettle-treated china wood oil compositions, which are excellent from the standpoint of moisture-proofing and withstand to a great extent the effects of any free lime which may be near the surface of the wall."

The Johns-Manville Company, manufacturer of *Transite*, suggests the following specifications for painting that product:

All surfaces to be painted must be clean and dry. All dirt and loose particles must be removed with a wire brush or stiff broom, after which the surface is to be primed with a sealer made of alkali-resisting sealer of a selected color.

The second and final coat shall be any standard oil paint applied as mixed by manufacturer, in color selected.

If it is desired to reduce the alkali-resisting sealer, this may be done with pure raw linseed oil or a small amount of turpentine.

PROMOTING COOPERATIVE APARTMENTS

"An acquaintance of mine is promoting a cooperative apartment house for a group of his friends. The plans must conform to their particular requirements. He has asked me to prepare preliminary sketches with the understanding that if the job goes ahead I will be given the commission for complete architectural services. He states, however, that I must purchase an apartment in the building out of my fee and that any difference between the cost of this apartment and the agreed fee will be paid in cash. I should like to consider this proposition seriously. Could you offer any suggestions for my guidance in arriving at a decision?"

C.R.W.

Answer by Charles H. Lench, architect and lecturer on "Financing Income-Producing Buildings" at Harvard University, Columbia University and Massachusetts Institute of Technology; author of "The Promotion of Commercial Buildings," Architectural Economics Press, New York:

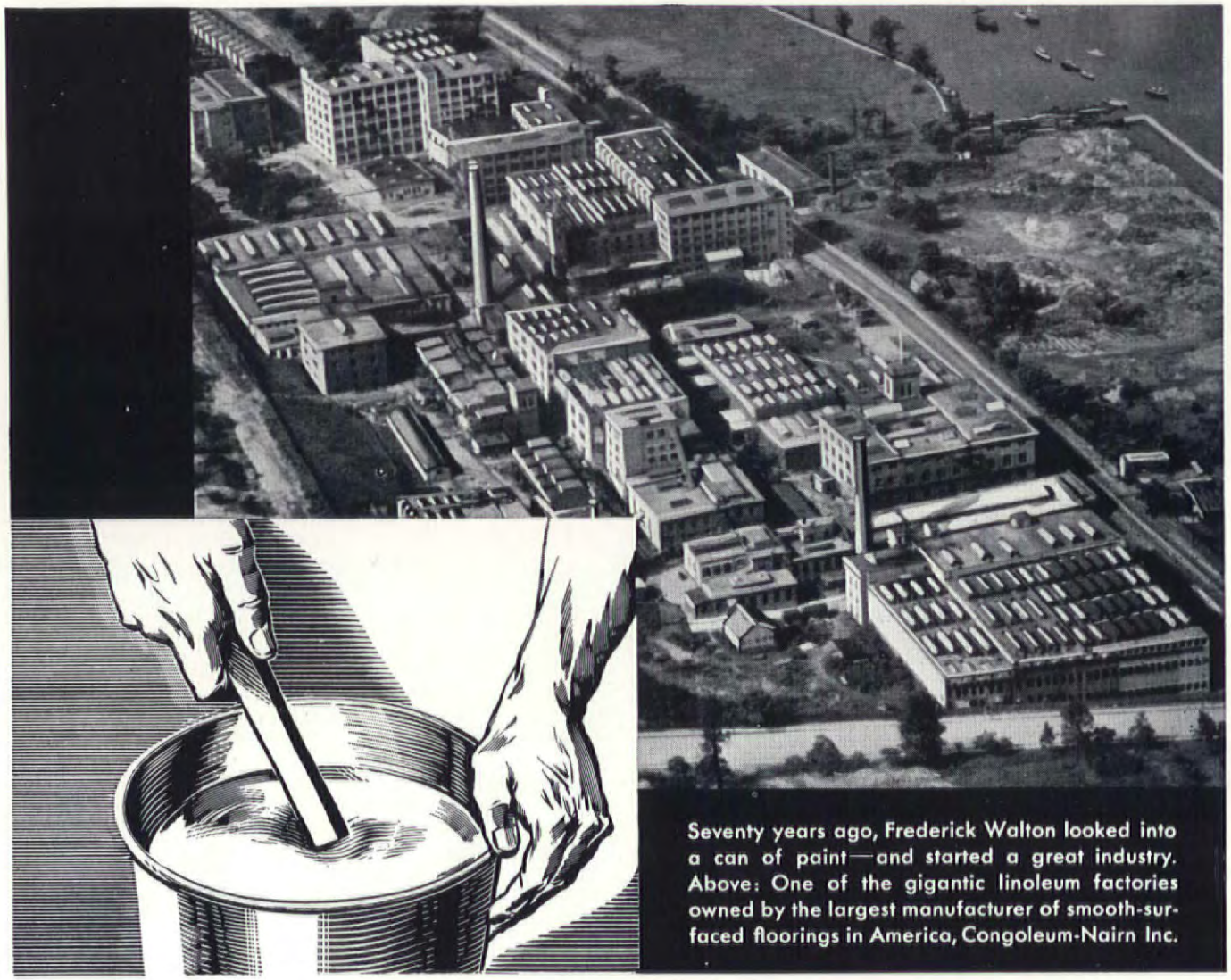
In the first place, one may suggest that an operation of this kind need not be wholly cooperative. Many promoters start out with the idea that their project is to be 100 per cent cooperative only to find later that they are unable to sell all the apartments in the building. Rather than abandon the promotion entirely, they then endeavor to make it partly cooperative. In such cases, the unsold apartments are rented and the income applied toward the carrying charges.

Promoters' set-ups for partially cooperative and 100 per cent cooperative apartment houses are somewhat different. Set-ups made to determine a price at which a building is to be sold to cooperative owners, however, are practically the same for both types. This sales price equals the sum of the items of land, building, normal carrying charges during construction, miscellaneous promotion expenses and a general promotion fee. A profit on the sale of the land to the cooperative owners is also included, as well as a profit on the sale of the building itself, although these profits are sometimes included in the general promotion fee. The tenant-owners must furnish cash in an amount equal to the difference between the purchase price and the mortgage or mortgages that the promoter has been able to arrange. If the building is say 50 per cent cooperative, the cash investment per room is determined by dividing the total cost involved by 50 per cent of the total rooms in the building. Assuming a required cash investment of say $5,000 per room, it is obvious that the cash required to purchase an apartment would be determined by multiplying the cash investment per room by the number of rooms purchased.

In a partially cooperative building, the income from the unsold rooms goes toward paying operating expenses, taxes, depreciation, and interest and amortization on mortgages. In computing income, however, some allowance first should be made for vacancies. The difference between income and expenses will show either a surplus or a deficit. This surplus or deficit is then divided by the number of rooms purchased by the tenant-owners to determine the surplus or deficit per room.

An investor in a cooperative apartment house must figure loss of income on his cash investment. This loss, in conjunction with surplus or deficit on operating, will determine whether or not he would be better off as a tenant-owner or a renting tenant. Compared with the cost of renting, a well-conceived, partially cooperative building should show the purchaser of an apartment a sufficient annual saving to amortize his cash investment in a very few years. And then, after his cash investment has been amortized his apartment should cost him considerably less than he would have to pay as a renting tenant, and should also offer money-making possibilities in case the property increases in value over a period of time.

In a 100 per cent cooperative, the tenant-owners' cash investment over and above the mortgages must be divided by the total number of rooms in



Seventy years ago, Frederick Walton looked into a can of paint—and started a great industry. Above: One of the gigantic linoleum factories owned by the largest manufacturer of smooth-surfaced floorings in America, Congoleum-Nairn Inc.

A long way from a can of paint!

A young man stares earnestly at the gummy film which has formed on the paint in an open can. What is it? Is it good for anything? Experiments followed. Young Frederick Walton combined this rubber-like substance (oxidized linseed oil) with this and that—finally with ground cork. And an amazingly useful new floor had been discovered—linoleum.

That was in 1863. Only a few years later, linoleum came to America. Ground was broken for the beginning of the great factory illustrated above—today the home of Sealex Linoleums.

It would take more room than we have here to tell the whole story of linoleum progress. Let us finish what we have begun by sending you two books:—

The first is a *book of pictures*—containing fifty-one actual photographs of modern, resilient floors in many different types of buildings. It will show you what distinctive effects may now be inexpensively achieved with these materials.

The second is a *book of facts* about school floors—written by architects. It gives you information that makes for *intelligent buying.*

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CONGOLEUM-NAIRN INC. . . . KEARNY, NEW JERSEY

SEALEX
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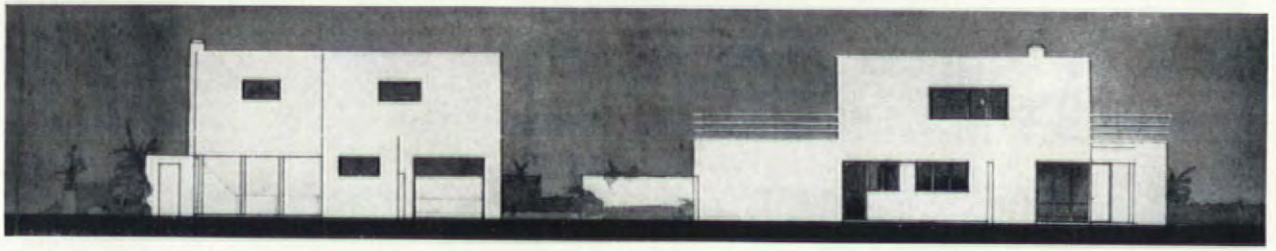
LINOLEUM FLOORS

the building to determine the cash investment per room. Multiplying the cash investment per room by the number of rooms occupied gives the cost of the tenant's apartment. The total annual charges, including interest on the cash furnished by the tenants, is divided by the total number of rooms in the building to determine the annual carrying charges per room. Unless these charges are lower than the rental price for similar rooms in the same neighborhood, there is no advantage to the tenant-owner in making a cash investment. Any saving over and above such rental cost, however, can be used to amortize his cash investment. When the cash invested by the tenants has been repaid, with interest, this item of interest will no longer be included in the annual statement of carrying charges. At this stage, dividing carrying charges by the number of rooms in the building gives the proportionate share of carrying charges per room that the tenant-owner will have to pay annually for his apartment after his money has been refunded. If, after the cash investment of the tenant-owner has been entirely amortized with interest, he can occupy an apartment at a low annual cost per room as compared with rentals for similar rooms in an adjoining building, and if, in addition, there are possibilities for increment in the value of the property over a period of years, there might be sufficient justification for making an investment.



NEWS IN BRIEF

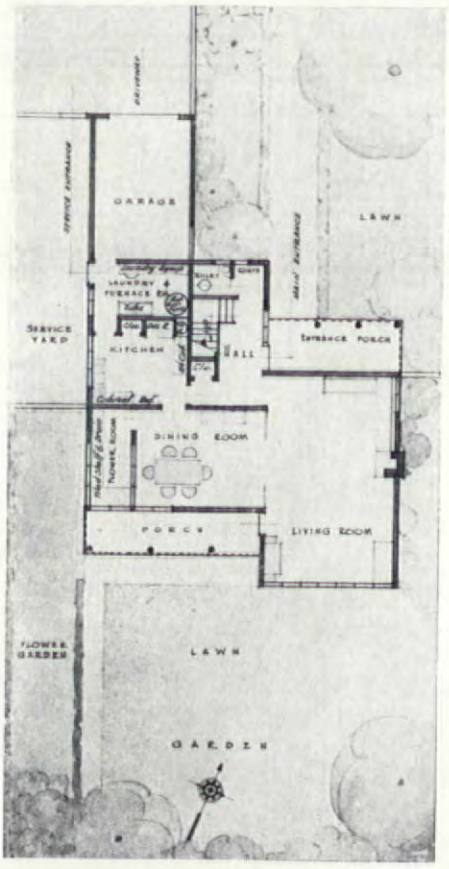
AWARDS IN UNEMPLOYED ARCHITECTS' COMPETITION

Cash prizes have been awarded by the Architects' Emergency Committee of the New York Architectural League in a competition among unemployed architects and draftsmen for the design of a "small house for mass production." The competition was in conjunction with the League's exhibition of architectural designs by Joseph Urban through which funds totaling about $12,000 were raised for the prizes.

The winners are: S. Clements Horsley, first prize; Erik Kaeyer, second prize; John Donald Tuttle, third prize; and Anthony A. Lione, fourth prize. Special work offered as added reward to the first four winners, according to Julian Clarence Levi, President of the Architectural League, will consist of research on housing in connection with exhibits now being planned for the Chicago World's Fair under the direction of Ely Jacques Kahn.

PALACE OF THE SOVIETS

A New York architect, Hector O. Hamilton, shares first prize with two Russian architects in the international competition for plans for the projected Palace of the Soviets to be erected in Moscow. Two other Americans, Oscar Stonorov and Alfred Kastner, were among several others awarded second prize. Designs by Thomas W. Lamb and Joseph Urban received favorable mention among the total of 272 schemes submitted.



PRIZE-WINNING DESIGN IN COMPETITION FOR "A SMALL HOUSE FOR MASS PRODUCTION" SPONSORED BY ARCHITECTS' EMERGENCY COMMITTEE OF THE NEW YORK ARCHITECTURAL LEAGUE
S. CLEMENTS HORSLEY, DESIGNER

LOUISIANA HAS A NEW CAPITOL . .

LOUISIANA STATE CAPITOL
BATON ROUGE, LA.
Architect: Weiss, Dreyfous & Seiferth, Inc., New Orleans, La. *Mechanical Engineer:* F. H. Chisholm, New Orleans, La. *General Contractor:* George A. Fuller & Co., Washington, D. C. *Plumbing and Heating Contractor:* American Heating & Plumbing Co., New Orleans, La.

THE "Pelican State" boasts a new and splendid capitol. The daring height of the structure and the disposition of its parts clearly reflect the modern age. Yet it bears marks of classic tradition and has the detachment and the dignity of setting appropriate to its use. All its various conveniences are of the most practical, approved, and advanced types and kinds. Against whatever vagaries of climate may need to be reckoned with, even in the warm land of the sugar cane, vacuum heat is provided. The aim of those responsible has been to secure, throughout, such permanence as the tower denotes, walled as it is with buff-colored stone, well buttressed, set on its base of white granite. In the choice of equipment for such a building and for such a purpose, it is of interest to record that the major pipe tonnage was NATIONAL—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL PIPE

SUPPORT FOR ARCHITECTS EMPLOYMENT BILL

More than 200 national and local organizations, representing all factors of the building industry as well as engineering, industrial, labor, civic and other groups, have joined the American Institute of Architects in urging the enactment by Congress of legislation to decentralize the function of the Office of the Supervising Architect of the Treasury which relates to the design of public buildings.

Among the national organizations supporting the position of the Institute are:

American Engineering Council, American Face Brick Association, American Institute of Steel Construction, Associated General Contractors of America, Building Trades Department, American Federation of Labor; Contracting Plasterers' International Association, Electrical Guild of North America, International Society of Master Painters and Decorators, National Association of Building Congresses, National Association of Building Trades Employers, National Association of Heating & Piping Contractors, National Association of Ornamental Bronze, Iron & Wire Manufacturers, National Builders Supply Association, National Roofing and Sheet Metal Association, National Slate and Tile Association. United Roofers' Association, the Construction League of the United States.

REAL ESTATE APPRAISAL INSTITUTE

The National Association of Real Estate Boards has approved and directed the organization of the American Institute of Real Estate Appraisers. Disorganized conditions in appraisal procedure, and errors and abuses that exist in real estate valuation, have prompted the organization of the Institute.

ARCHITECTS HONOR JAMES MONROE HEWLETT

James Monroe Hewlett, Past-President of the Architectural League of New York, was the guest of honor at a recent dinner given by the League to mark his appointment as Resident Director of the American Academy in Rome.

CAMPAIGN FOR REPAIR OF BUILDINGS

A national agency designed to aid in bringing about a revival of business through country-wide stimulation of the repair and improvement of residential, commercial, industrial and institutional property, implemented by local community organization, has just been put into operation in Washington. This undertaking is comprised in the program of the recently appointed Sub-Committee on Business Cooperation in Community Development of the Committee on Reconditioning, Remodeling and Modernizing of the Department of Commerce. The creation of this national committee is an outgrowth of the President's Conference on Home Building and Home Ownership.

CHRYSLER BUILDING COMPETITION

Six architects have been asked to submit designs in the competition for the Chrysler Corporation Building and Exhibit at the Century of Progress exposition to be held in Chicago in 1933. The architects are Eliel Saarinen, Holabird and Root, Voorhees, Gmelin and Walker, Paul Phillippe Cret, Roger Bailey, and Henry Hornbostel. Kenneth Franzheim is acting as architectural advisor.

EMERGENCY PLANNING AND RESEARCH BUREAU, INC.

To relieve unemployment in the architectural and engineering professions, the Emergency Planning and Research Bureau, Inc., has been organized by the Boston Society of Architects and engineering societies of Boston. The policy is to give unemployment relief and to provide useful employment adapted to the technical training of those employed. The general rate of wages will be $15 per week for five days' work. At the time of announcement on January 15, 57 men had been given employment.

The program of this organization involves contributions to be made by practising architects in weekly amounts according to their ability to pay, and by draftsmen according to a percentage of their weekly salaries. Representing the Boston Society of Architects in this relief work are Hubert G. Ripley, James F. Clapp and William Stanley Parker.

ARCHITECTS' SMALL HOUSE SERVICE BUREAU OPPOSED

Growing opposition to the Affiliation of the American Institute of Architects to the Architects' Small House Service Bureau, Inc., was brought out at the last meeting of the New York Chapter, American Institute of Architects. A self-constituted committee was formed to undertake an investigation for the information of members of this Chapter.

At the last monthly dinner meeting of the Brooklyn Chapter of the American Institute of Architects, members adopted a resolution stating that this Chapter stands opposed to "the approval or support in any official manner by the American Institute of Architects of any individual, group, association or organization, such as the Small House Service Bureau, selling or deriving any benefit by the sale, resale or distribution of architectural service in the form of stock plans or specifications."

CORRECTION

Photographs of the new operating rooms at Mt. Sinai Hospital which were used as illustrations in the February issue for the article by Dr. S. S. Goldwater on "Planning the Surgical Facilities" were incorrectly credited to York and Sawyer, architects. These operating rooms were designed by Robert D. Kohn and Charles Butler, associated architects.

For *Spandrels* . . . Revere Leadtex

LIGHT *in* WEIGHT . . . WORKABLE VARIETY *in* SHADE *or* PATTERN

Gabriel Moulin

The William Taylor Hotel and Temple M. E. Church, San Francisco, California. Lewis P. Hobart, Architect . . . Cahill Bros., General Contractors.

Designs that embrace regularity of vertical line without sacrifice of interest in detail continue to give importance to the spandrel.

The William Taylor Hotel rearing its 28-story Gothic Tower amid San Francisco's mid-town, includes 512 spandrels in the pattern of its facade . . . spandrels of Revere Leadtex . . . lead-coated sheet copper.

In Leadtex, the softening charm of lead is now added to the ease-of-working that belongs to copper. Intricate shapes and designs are easily wrought . . . and economically. Sharpness of line and detail is retained . . . in a combination of two permanent metals.

✣ ✣

Its light weight, too, is a distinct constructional advantage.

Finish and tone can both be varied . . . smooth or rough . . . from bright metallic to antique grey.

Revere Leadtex is equally adapted to a wide variety of other architectural uses . . . roofing, flashings, gutters and leaders, leaderheads, cornices and decorative applications. For complete data on Revere Leadtex or Sheet Copper, address Revere Copper and Brass Incorporated, 230 Park Ave., New York City.

Close-up photo of Revere Leadtex spandrels used in the William Taylor Hotel, showing 2 of the 5 designs. Fabricated and installed by Forderer Cornice Works. Note how well details of design are retained in these spandrels without loss of lead's mellowing influence.

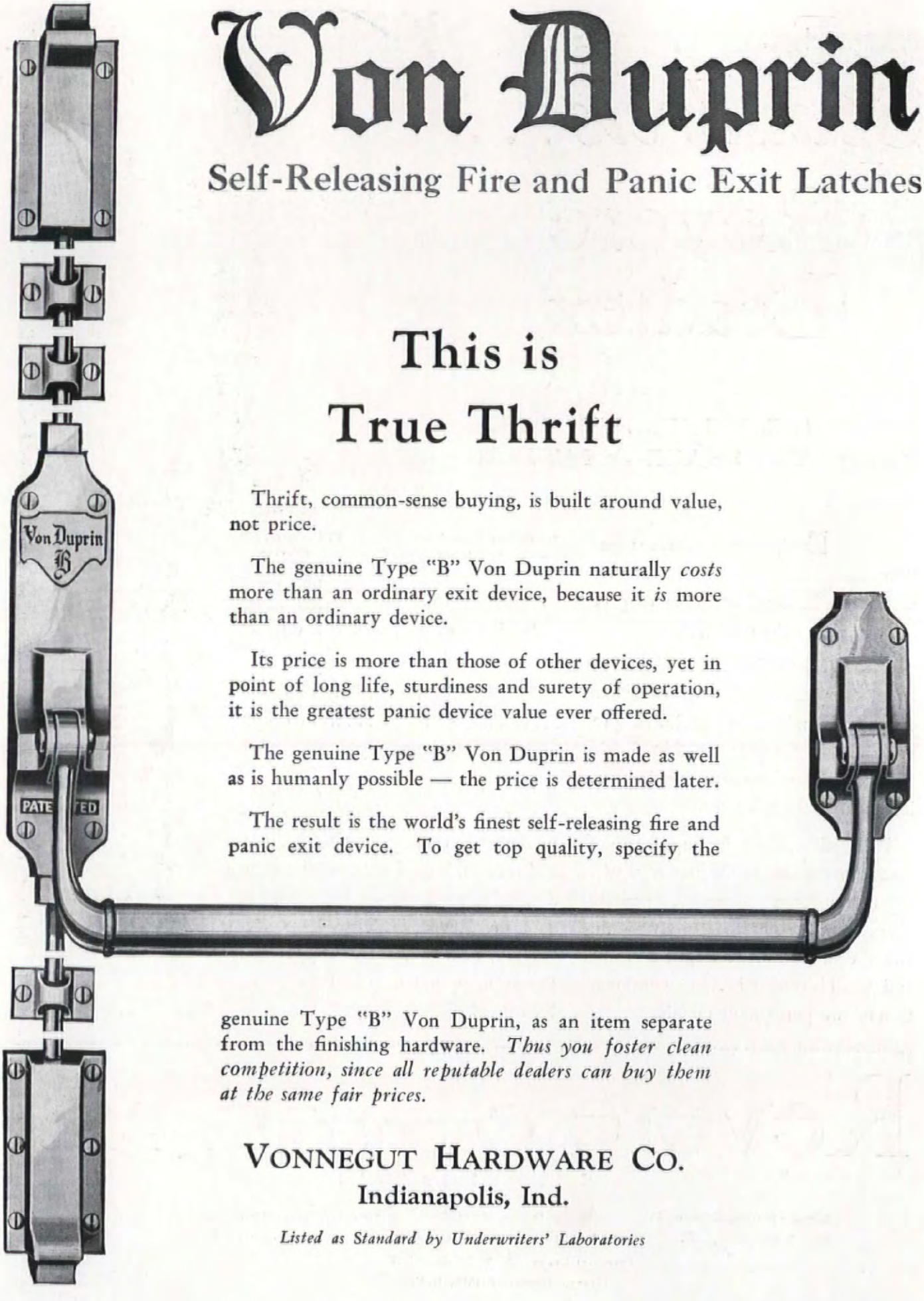
Revere Copper *and* Brass

INCORPORATED

Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N. Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.

Revere COPPER & BRASS Products



Von Duprin

Self-Releasing Fire and Panic Exit Latches

This is True Thrift

Thrift, common-sense buying, is built around value, not price.

The genuine Type "B" Von Duprin naturally *costs* more than an ordinary exit device, because it *is* more than an ordinary device.

Its price is more than those of other devices, yet in point of long life, sturdiness and surety of operation, it is the greatest panic device value ever offered.

The genuine Type "B" Von Duprin is made as well as is humanly possible — the price is determined later.

The result is the world's finest self-releasing fire and panic exit device. To get top quality, specify the genuine Type "B" Von Duprin, as an item separate from the finishing hardware. *Thus you foster clean competition, since all reputable dealers can buy them at the same fair prices.*

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

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Bathroom in which the walls are covered with a light-weight linoleum.

WALL COVERING

A new wall covering that has the same general characteristics as linoleum but is of much lighter weight is being offered under the trade name of "Sealex Wall Covering" by Congoleum-Nairn, Inc., of Kearney, N. J.

The new material is composed of a special composition of cork, pigments and linseed oil, keyed to a fabric backing. This is treated to present a waterproof surface which is impervious to the entrance of dirt and which can be easily cleaned with a damp cloth.

In applying the new wall covering a special adhesive is used which is also waterproof. This paste is applied as in applying linoleum; otherwise "Sealex" is hung in much the same manner as is ordinary wall paper.

Ten colors are available, all of which, however, are two-tone marbelized effects. "Sealex" weighs 7½ pounds per square yard and comes in rolls six feet wide and up to forty feet in height.

NEW FINISHING PROCESS

A device which will spray any one of a number of metallic coatings on wood, cloth, masonry or another metal is now being offered by the Metalizing Company of Los Angeles, Calif. The metallizer, as it is called, will spray a coating of lead, zinc, bronze, aluminum or other material depending on the coating desired.

Material is fed into the gun in wire form. The machine melts and projects the metal at a speed of 30,000 feet per minute, forming a coating on the object sprayed which it is claimed is as permanent as if coated with a sheet of the same metal.

Crucifixion Group of Bronze on granite base in Mount Elliott Cemetery, Detroit, Michigan. Modeled and cast by GORHAM.

Dimensions: Corpus, 9'3"; Other Figures, 8'6"; Cross, 20' high.

In the ecclesiastical field of art the permanency of a memorial is eternally assured in a sculpture cast in bronze.

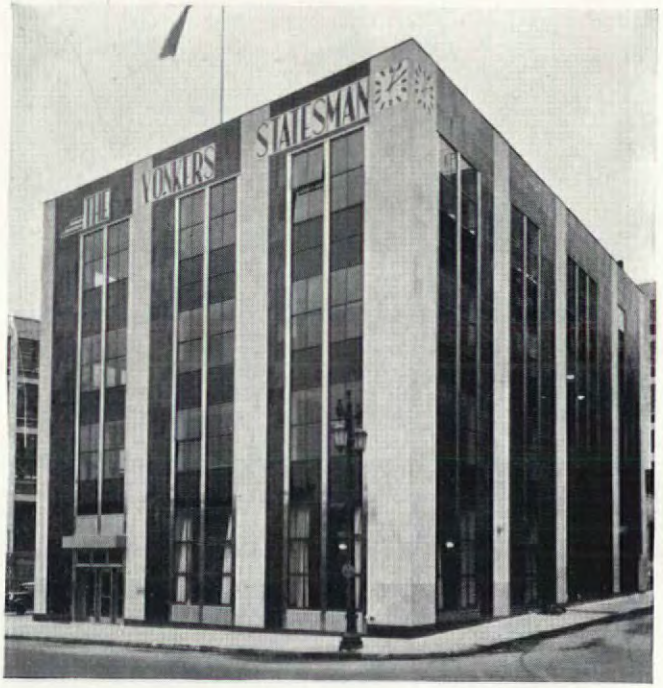
The "Gorham" interpretation of the architect's design or the sculptor's model is faithful. The workmanship indicates the master craftsman.

THE GORHAM COMPANY

Ecclesiastical Studios

576 FIFTH AVENUE -:- NEW YORK, N. Y.

A.P.W. Service for The YONKERS STATESMAN



J. Y. Rippin, Architect

A. P. W. Onliwon Toilet Tissue Service has been specified and installed in the washrooms of the new palatial home of The Yonkers Statesman, Yonkers, N. Y. The attractive A. P. W. Onliwon Chromium Finish Cabinets were selected because of their special sanitary and economical features.

Pioneers for Cleanliness since 1877

A.P.W.

TRADE-MARK REGISTERED IN U. S. PATENT OFFICE

A. P. W. PAPER CO., Albany, N. Y. AR-3-32

Please send, free, the new and complete catalogue of A. P. W. Cabinets and Fixtures.

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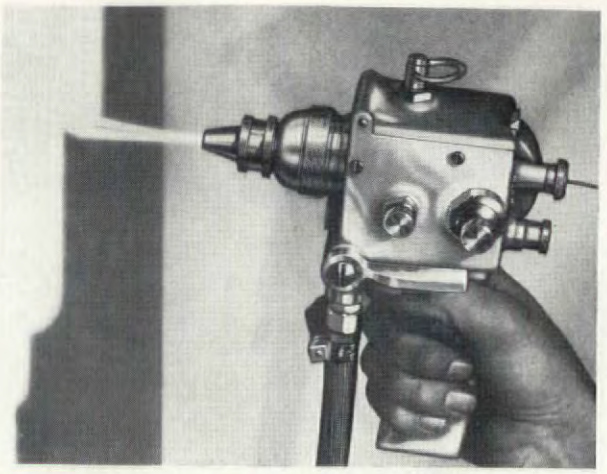
City ..... State .....



This metallizer can spray metallic coatings on wood, cloth, masonry or other metals.

Effective use was made of this process in the Wilshire Professional Building in Los Angeles, where elevator doors, mail boxes and stair-rails were sprayed with a nickel silver coating. Metal work in the foyer of the Warner Brothers' Theater in the same city was similarly sprayed with an aluminum coating.

The use of this device offers possibilities for building economies in many directions since the purpose of the metal can be served with just a coating, using cheaper though efficient materials for the body of the object.

AIR CONDITIONING

A new individual type air-conditioning unit that is attached to, and makes use of, the regular heating system is announced by the Frigidaire Corporation of Dayton, Ohio. The new unit is compactly built and available in walnut, oak or mahogany.

The Frigidaire units are made in three models, two of which are the floor type and one the suspended type. All three occupy 4 square feet of floor or wall space, the floor type being 46 inches in height.

In operation, the room air is drawn from the floor and into the conditioner by a centrifugal fan, and is blown over the cooling coil which is maintained at an average temperature of 45 degrees. In its passage over the cooling coil the air is chilled and excess humidity removed.

After the air is cooled, humidified and cleansed in its passage through the cooling coil, it is sent through a 20-degree grille located on top of the conditioner cabinet and is diffused throughout the room without creating a draft. Cooling begins instantly when the compressor is started. Air capacities range from 450 to 585 cubic feet per minute.

In the colder seasons the refrigeration unit is made inoperative and the heating coil is connected to the regular heating system. The heated air is moistened by the dissipation of water from the humidifier and is sent into the room by the centrifugal fan.

These Public Buildings Adopt Positive Cleanliness

EFFICIENCY marks the design of most of our new public buildings. The same cleanliness that has been obtained in hotels, office buildings and schools for years is now being adopted in all types of public buildings.

The Spencer Central Cleaning System not only reduces the amount of time required to clean a building but provides positive cleanliness, every hour. This system is so easy to operate and so quiet that it can be used during the day. It removes dust as well as dirt and thus protects rugs, furniture and decorations. It is satisfactory for concrete, linoleum, wood, marble, or any type of floor. Endorsed by leading architects—thousands in service. Complete data on request.

Town Hall, Bloomfield, N. J.
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Essex County Hall of Records, Newark, N. J.
Guilbert & Betelle, Architects

Connecticut State Office Building.
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Insulmesh has become very popular with plasterers, architects and owners, because it assures quality results at moderate cost. The overlapping steel mesh becomes imbedded in the plaster and prevents cracking. The corrugated board backing provides a perfect ⅜" air-cell insulation. The rigid Insulmesh sheets are easily handled, quickly installed and economically plastered. Write for sample and full information.

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Warehouses and Offices in Principal Cities. Dealers Everywhere

Shipping cartons, containing 25 sheets, protect the Insulmesh and facilitate handling and storage

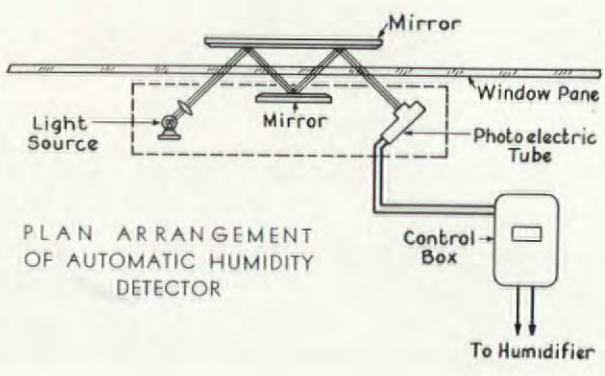
HUMIDITY DETECTOR

A new use of the photo-electric cell, namely that of regulating the control of air-conditioners through the relative amount of moisture on the window pane, has been developed by the B. F. Sturtevant Company in collaboration with the General Electric Company.

By directing a beam of light through the window and on a photo-electric tube, a method of control is produced which turns off the humidifying equipment at the proper time. The moisture on the glass obstructs the light and the sensitive photo-electric eye passes an impulse to a Pliotron tube which actuates a relay to stop the humidifier.

The photo-electric control is installed at a window, preferably on the north side of the house where the sun's rays will not interfere. In actual installations the light does not shine directly on the photo-electric tube but is reflected by mirrors back and forth through the window two or three times to cover a larger area of the window and thus make the equipment more sensitive.

The relay governs the starting and stopping of the motor driving the humidifier. As soon as sufficient moisture collects on the window pane to reduce the intensity of the light, the motor is stopped. When the moisture clears, the motor starts again.



PLAN ARRANGEMENT OF AUTOMATIC HUMIDITY DETECTOR

STEEL KITCHEN UNIT

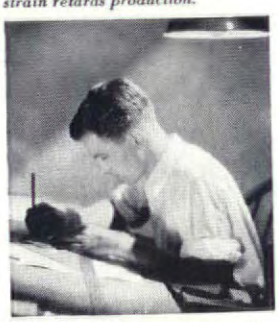
Economy in apartment floor space is in many cases centered about the kitchen functions. This economy has been carried forward by the use of combined kitchen units. A new unit of this type is now being marketed by the Parsons Company of Detroit, Mich. The new unit occupies a space of less than ten square feet and includes an electric range with oven, a sink and drainboard, a refrigerator for either ice or electric operation, and generous storage space. Connections are provided for water, drain, gas, electricity, and ventilating shaft. The units are built of steel throughout and are finished in lacquer of a number of different colors.

FIND NEW BUSINESS IN OLD BUILDINGS

Unbalanced

Reflected glare: *A constant annoyance to busy workers.*

Direct glare: *Resulting eye-strain retards production.*



Shadows: *Deep and sharp, instead of flat, "smooth" and subdued.*

Maintenance: *Complicated. Glass-changing should be easier.*

Balanced Lighting can light the way to 1932 remodelling plans

One of the outstanding features of remodelling projects this year will be better lighting. Architects have been quick to recognize the value of cheerful, up-to-date lighting to enhance the rental value of old buildings. They will make re-lighting the keynote of their remodelling plans.

Better lighting may be summed up in three words—"Graybar Balanced Lighting." It affords all the advantages of an installation planned to meet the requirements of modern construction with ample fixtures for special needs.

Graybar's experienced lighting specialists are equipped to make a complete recommendation for a balance of lighting factors on any or all your installations. Let us send you our interesting bulletin on Commercial Lighting. It includes a wide selection of the finest fixtures and glassware available . . . This coupon will bring it to your desk.

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OFFICES IN 76 PRINCIPAL CITIES
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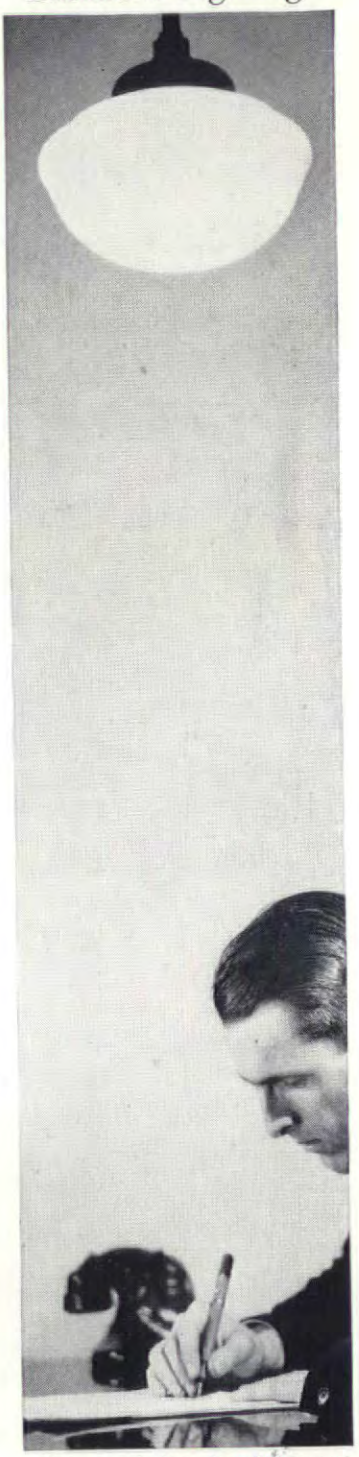
Balanced Lighting



Vision is at its best when all the many variable lighting factors are "balanced."

Graybar Electric Co., Graybar Building, Lexington Avenue and 43rd Street, New York, N. Y. AR3-32

Gentlemen: We are interested in knowing more about BALANCED LIGHTING.

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WRITE **YALE** INTO YOUR SPECIFICATIONS

Properly selected hardware, combines adornment with utility, distinction with durability. The hardware is, in effect, the "jewelry" of any structure.

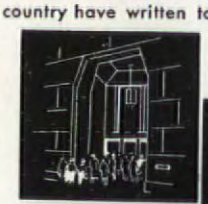
Yale Builders' Hardware provides security, strength and serviceability in most attractive form—in a rich array of designs from which you can select one to carry out virtually any architectural motif.

Upon occasion, we have found it advisable to create exclusive new designs for special purposes.

YALE CONCEALED DOOR CLOSER

Architects in every part of the country have written to congratulate us upon this remarkable new Yale Door Controlling Device. If you have not yet received our illustrated descriptive folder, we will gladly send you one.

Your correspondence invited.



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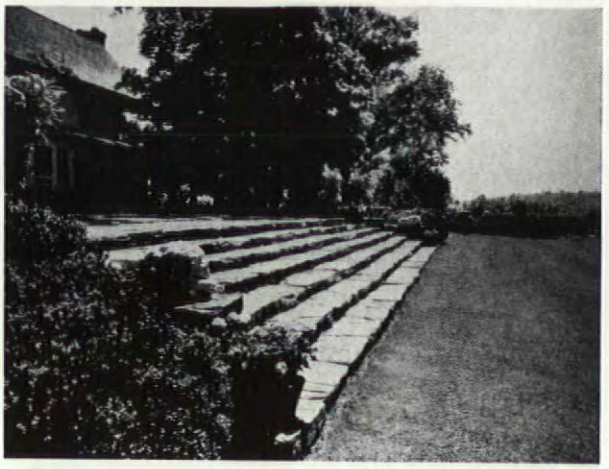

Estate of Mrs. Paul B. Belin
Waverly, Pennsylvania
C. W. Leavitt and Son, Landscape Engineers

YEAR BOOK OF THE NEW YORK CHAPTER, AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Catalog of the Eighth Annual Exhibition. Supplemented by Garden Sculpture by American Artists from The Fifty-Sixth Street Galleries. 1931 Architectural Catalog Co. Inc., New York. 22 pages of photographic plates. Price 50 cents.

Some exceptionally good photographic views illustrate work during the past year by members of the New York Chapter of the American Society of Landscape Architects. Centered mostly in or around New York State, the work varies in scope from gardening to the designing of swimming pools and terraces.

CALIFORNIA GARDENS. By Winifred Starr Dobyns. Published by The Macmillan Company, New York City. 223 pages, 207 photographic plates. Price $5.

These gardens in California are grouped according to various features or elements in landscape design. A foreword by Myron Hunt emphasizes the importance of landscape architecture at the outset of planning a home and during each suceceeding stage in the life of a garden. Excellence in photography and a wide variety of subject material make the book acceptable to architects and landscape designers.

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS. Illustrations of Work of Members. Published by The House of J. Hayden Twiss, New York City. Approximately 340 pages. Price $5 (cloth), $4 (paper).

This volume illustrates work by members of the American Society of Landscape Architects in all parts of the United States, and comprises many types of landscape design and architecture, executed mostly in private estates and gardens. Plans for townships, universities, amusement parks and cemeteries are also shown. Garden designs include swimming pools, terraces, steps and walks as well as the larger and more formal designs.

MORE THAN 1,200 ARCHITECTS

have *requested* detailed data on MUELLER-STURTEVANT CLIMATOR Air-Conditioning Equipment *for Home Installations....*

WE REPEAT . . . more than 1,200 leading architects throughout the United States have requested specifications and other data regarding Mueller-Sturtevant Climator Air-Conditioning Equipment for home installation.

This mass recognition, coming as it does from the group of men best qualified to know, reflects graphically the very apparent *need* and the growing *demand* for air-conditioning equipment such as Mueller offers.

The CLIMATOR is a complete matched-unit installation . . . an air-conditioning system that heats, washes, cleans, humidifies and circulates all of the air in the home, supplying the greatest degree of comfort, cleanliness and convenience.

Many existing warm air heating plants may be completely modernized by the addition of Climator blower, washer and filter units . . . installed as auxiliary equipment.

If *you* are not numbered among the 1,200 architects who have requested Climator data, may we suggest that you write today, for your Climator file. Address . . .

L. J. MUELLER FURNACE COMPANY
331 So. 2nd Street Milwaukee, Wis.
Makers of dependable heating equipment since 1857

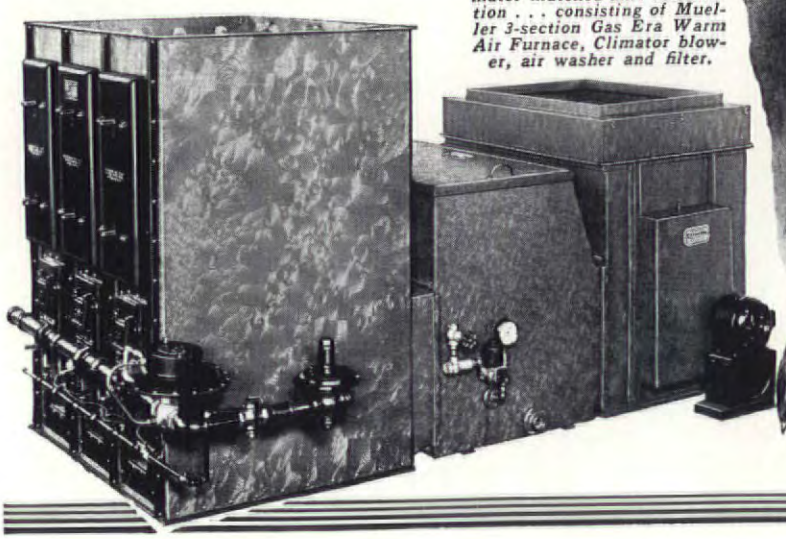

Illustration shows a complete Mueller-Sturtevant Climator matched-unit installation . . . consisting of Mueller 3-section Gas Era Warm Air Furnace, Climator blower, air washer and filter.

Rome

CONVECTORS

are built

UP TO A STANDARD . . .
NOT DOWN TO A PRICE

Rome Radiation Company, a Division of Revere Copper and Brass Incorporated, devotes its entire resources and enlarged manufacturing facilities to producing its quality concealed heating units . . . ROCOP and ROBRAS Convectors.

No Compromise with Quality

Rome Radiation has consistently refused to be stampeded into sacrificing quality for price. On the contrary, Rome is building its Convectors up to an even higher standard of quality than ever.

Standard Types and Sizes for concealed heating

In addition, Rome Radiation has standardized its Rocop Convectors as to types, sizes (of which there are 21) and methods of installation. This standardization was arrived at only after exhaustive researches and consultation with leading authorities had shown that such standardization would be a real service to building construction . . . by meeting all requirements, by simplifying estimating and installation, by eliminating errors and delays. Robras Convectors are available in a wider variety of types and sizes including types and sizes for out-of-the-ordinary requirements.

Architects specifying Rome Convectors are assured not only of quality, but also of real economy . . . a direct result of standardization.

For further information about design and construction details, tables of capacities and weights, dimension diagrams, etc., send for the ROBRAS and ROCOP Bulletins.

Rome

Radiation Company

DIVISION OF

Revere Copper *and* Brass Incorporated

ROME, N. Y.

THE ORDERS OF ARCHITECTURE. By Arthur Stratton, Architect; with an introduction by A. Trystan Edwards. Published by J. B. Lippincott Company, Philadelphia. 80 plates. Price $8.

Mr. Stratton approaches his subject from the æsthetic standpoint, analyzing the familiar orders with a view to their application to contemporary usage. The text is illustrated.

PLANNING FOR SUNSHINE AND FRESH AIR. By Alfred Hopkins, Architect. Architectural Book Publishing Company, New York. 238 pages. Price $5.

Choice of design, aspects, materials, roof lines and distribution of rooms and windows are among the subjects discussed. The book contains numerous photographs, sketches and plans, and the author's experience is drawn upon to exemplify his advice. European styles are studied and among them the Cotswold and the Spanish are stressed.

CORRESPONDENCE

THE SECOND ARCHITECTURAL LEAGUE OF NEW YORK

Are there two leagues as indicated by the title? This letter is intended to provide the facts that will justify such a statement.

There was an Architectural Sketch Club in 1879 and 1880, but it lasted only a short time. A number of draftsmen were living at that time at 20 Irving Place. These young men—C. H. Blackall, Francis Bacon, Cass Gilbert and Clarence Johnson—organized the First Architectural League with D. W. Willard as President, February 18, 1881. J. Knox Taylor and Pierce P. Farber were also in the first organization; also W. Bates, C. H. Walker and John P. Riley—18 in all—afterwards growing to 26 or 28 members.

This was the first League. It was purely a society of draftsmen. They met twice a month and submitted competitive sketches judged by such men as McKim, Haight, Atwood, and others. They were an unusual lot of men. Many of them became very successful and well known. In fact that is why the League did not last: they became busy architects quickly.

The second League, that is, the present League, came into being through an entirely new set of men whose sole object at the start was to found a society to carry on a yearly exhibition of architectural drawings. These men at their own expense of money and time brought about such an exhibition in January, 1886, three years after the first League was dead. I hope I shall not be accused of personal egoism in relating the actual facts.

I had seen the architectural exhibitions in London and Paris and had been impressed by them.

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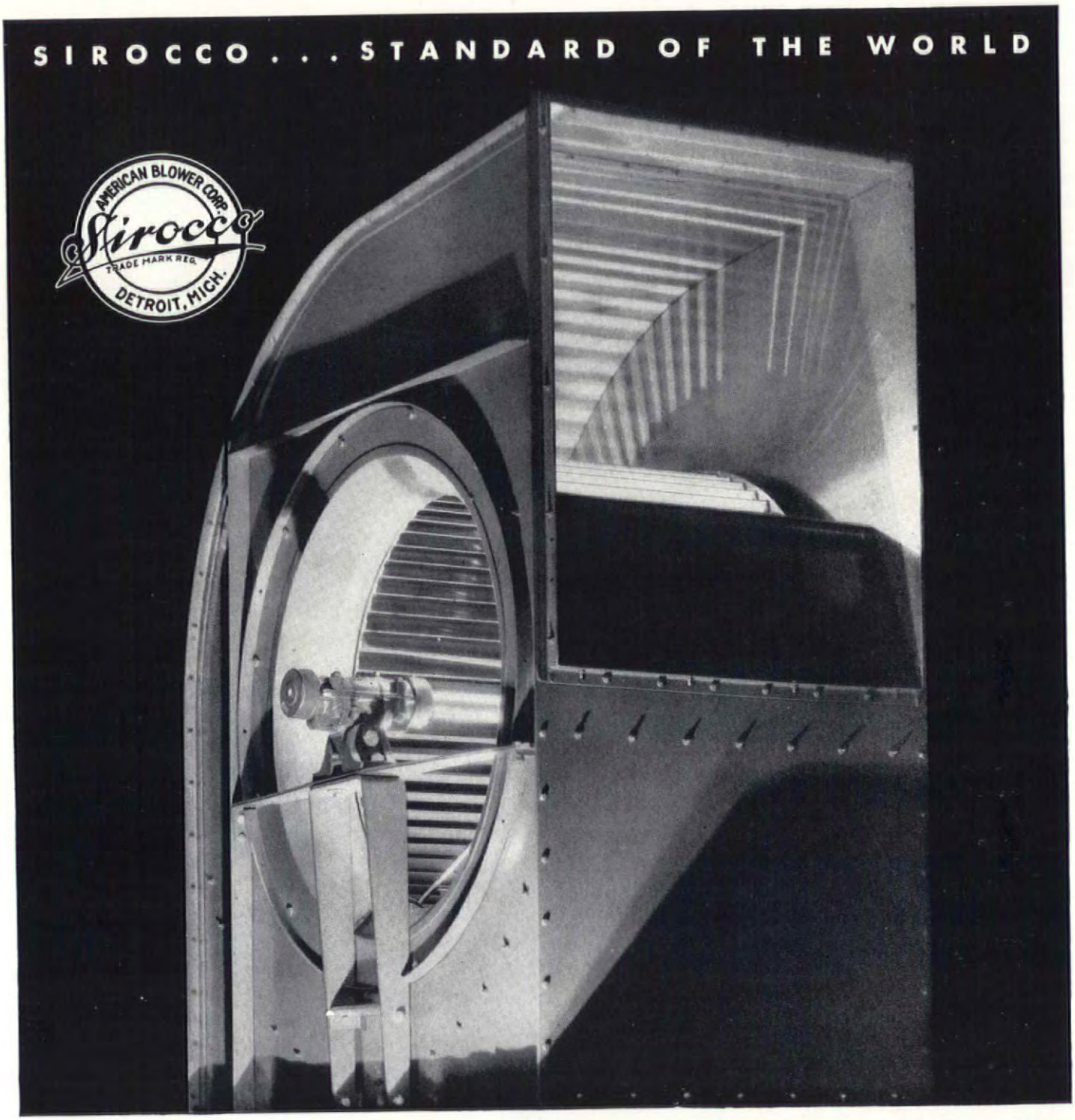

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In 1885 I was writing for *Architecture and Building*. Through its pages the idea of an exhibition was suggested and stressed. Finally I went to see Professor William R. Ware, head of Columbia College School of Architecture. He warmly seconded the scheme and urged me to carry on. Through him I secured strong assent from R. M. Hunt, regarded then as the leading American architect. Then we got R. H. Robertson and F. C. Withers. These were men of standing. Professor Ware had suggested H. O. Avery and the committee was filled out with William B. Tuthill. I acted as Chairman, and Avery and Tuthill formed the hanging committee. We formed subcommittees: in Boston, Cabot, Cummings and Wheelwright; in Chicago, Cobb, Burnham and Root; and in Philadelphia, Windrin, Chandler and Linroot. All who were approached were hearty in response.

Then with Avery and Tuthill we went before the Salmagundi Society. They welcomed us at once and set aside four galleries in the American Art Galleries, located in Twenty-third Street near Broadway, where they were to hold their yearly show in January, 1886. The exhibition was a notable success. It attracted a great deal of attention and favorable comment. We had some fine drawings from several famous London architects, some fine drawings from Paris and our committees at Chicago, Philadelphia and Boston sent on a lot of interesting things. This is now known as the First Exhibition of the Architectural League. The men who brought about this exhibition were in fact the founders of the Second, and permanent, League and the entire matter had no relation whatever to the old League.

Our committee authorized Avery, Tuthill and myself to go ahead and formulate a scheme of organization to carry on the work. We began at once and approached such men as John Beverly Robinson, H. Langford Warren, John Du Fais, A. W. Brunner, Bruce Price, C. A. Rich, C. J. Berg, E. H. Clark, D. W. Willard and many others, including E. K. Rossiter, my partner at that time. Meetings and dinners at the Studio, a chop house in Sixth Avenue, brought together the men who organized the Second League. Among them were a few of the First League. What better name could we have than Architectural League? There was no objection. In fact the name was suggested by these men as apt and appropriate. And so it was done.

Turning now to the year book of the League for 1932 we find it stated: "Founded in 1880." But in 1880 there was no League. The book then traces its development on the assumption that it was an actual and natural growth of the League of 1881.

One will very likely ask why these facts, all of which can be proven by documentary evidence, should be unknown to the present generation of members. The answer is carelessness and advancing age. The League went through a period of storm and stress once. It became strong. Very few of the early men are now alive. Why pursue a contentious attitude? Let well enough alone.

F. A. WRIGHT.

THE ARCHITECTURAL RECORD

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Frontispiece: ENTRANCE TO FORUM OF EDUCATION BUILDING, CAPITOL PARK, HARRISBURG, PENNSYLVANIA
Gehron and Ross, Architects

219-222 . . . THE STATE EDUCATION BUILDING AT HARRISBURG

223-232 . . . PORTFOLIO OF CURRENT ARCHITECTURE
Education Building, Capitol Park, Harrisburg, Pennsylvania—Gehron and Ross, Architects; "The Bachelors"—A Haberdashery, Hite-Bilicke, Ltd., Los Angeles, California—J. R. Davidson, Designer.

235-255 . . . PRIZE-WINNING SMALL HOUSES: 1931 "BETTER HOMES IN AMERICA" ARCHITECTURAL COMPETITION

Owner	Location	Architect
Francis Collins	Fieldston, N. Y.	Dwight James Baum
W. E. Risser	Santa Barbara, Calif.	Winsor Soule and John F. Murphy
Thomas McCall	Fieldston, N. Y.	Dwight James Baum
Stella Smith	Palos Verdes Estates, Calif.	Winchton L. Risley
Guest House, Estate of E. Hope Norton	Darien, Conn.	Charles S. Keefe
Gilbert Bloss	Palos Verdes Estates, Calif.	H. Roy Kelley
E. H. Corlett	Lake Katonah, N. Y.	Waldron Faulkner
440 Via Media	Palos Verdes Estates, Calif.	Winchton L. Risley
Herbert Hicks	San Marino, Calif.	Arthur R. Hutchason

256-260 . . . PLAN RENDERINGS OF NEW GARDEN DESIGNS
By J. J. Haffner, Professor of Architecture, Harvard University

261-267 . . . DESIGNING AND DRAFTING PROBLEMS: SEATING HEIGHTS AND SPACING TABLE SIZES AND HEIGHTS
By A. Lawrence Kocher and Albert Frey

268-272 . . . STADIUM SEATING
By Carl T. Washburn

273, 274 . . . CORRESPONDENCE FROM ARCHITECTS

275 . . . . AN APPRECIATION—WILLIAM AIKEN STARRETT

276-278 . . . ILLUSTRATED NEWS

279-288 . . . TECHNICAL NEWS AND RESEARCH: NEW MATERIALS AND BUILDING METHODS FOR CHICAGO EXPOSITION
40 (adv.) By Nathaniel A. Owings

42, 44, 46 (adv.) . BUILDING TRENDS INDICATED BY THE FEDERAL CENSUS: PART 7—THE OUTLOOK FOR CHURCH CONSTRUCTION
By L. Seth Schnitman

30, 32 (adv.) . THE ARCHITECTS' LIBRARY

34, 36 (adv.) . ARCHITECTS' ANNOUNCEMENTS AND CALENDAR—THE MAY ISSUE

48, 50 . MANUFACTURERS' ANNOUNCEMENTS
52, 54 (adv.) .

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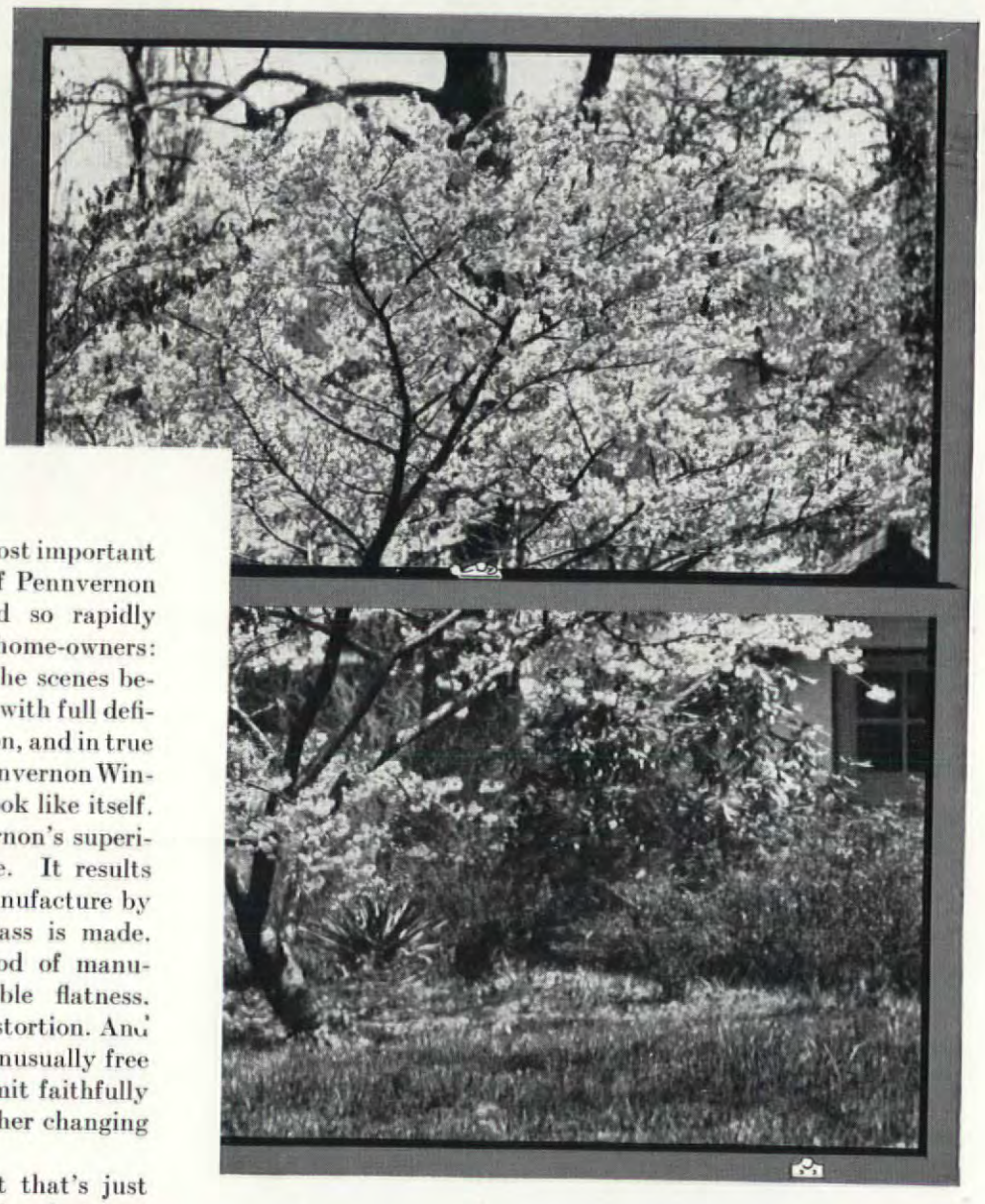

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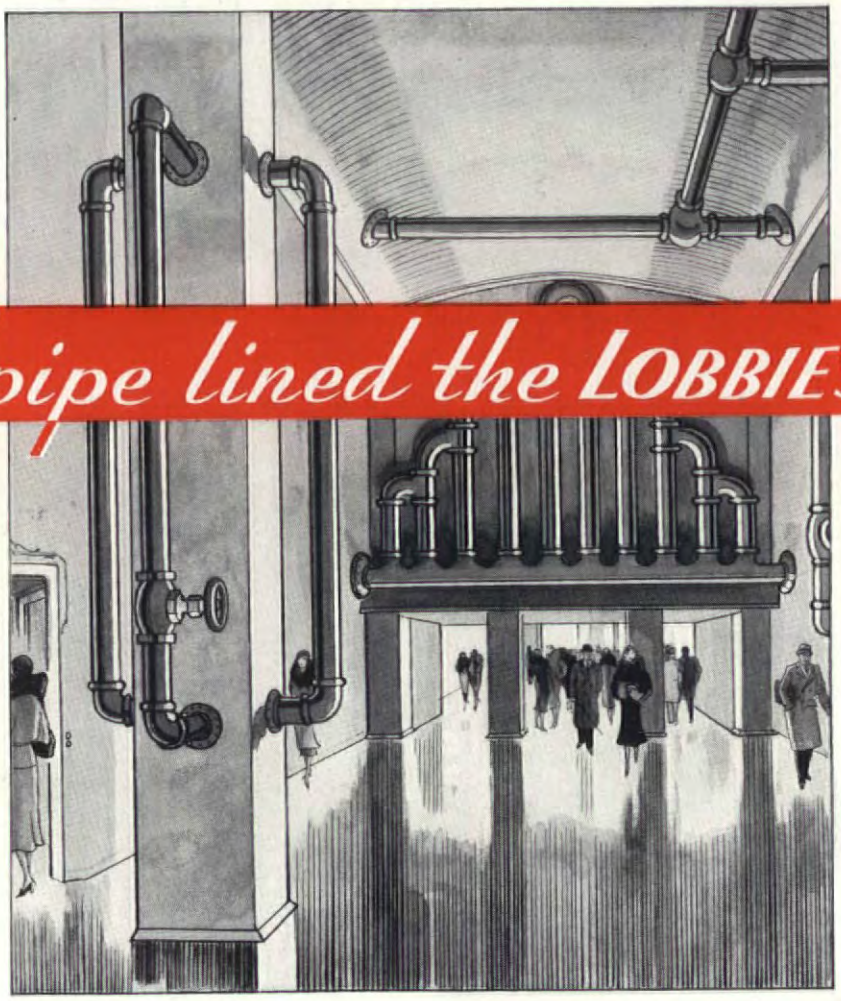

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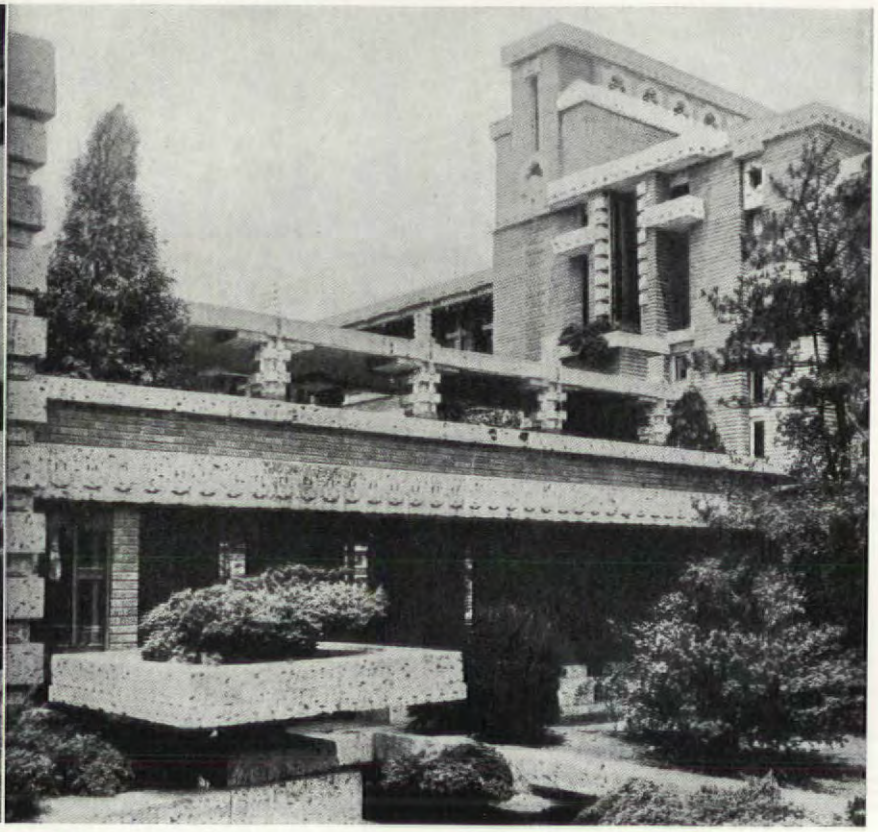

Two Photographs from the Autobiography of Frank Lloyd Wright

MR. WRIGHT — THE IMPERIAL HOTEL IN TOKIO

AN AUTOBIOGRAPHY: FRANK LLOYD WRIGHT. Longmans, Green and Co., 25 Fifth Avenue, New York City. Price $6.

This book, a landmark in the history of American architecture, has just come off the press. It will be reviewed critically by Fiske Kimball in the next issue of THE ARCHITECTURAL RECORD.

•

NEWS OF NEW BOOKS

"Planning for Residential Districts," Volume 1 of the final report of the President's Conference on Home Building and Home Ownership, is now ready for distribution. It contains a foreword by President Hoover and an introduction by the editors, John M. Gries and James Ford. Ten other volumes are in preparation. Each is priced at $1 plus 15c postage, or the set of 11 volumes at $10 plus 50c postage. Address: John M. Gries, President's Conference on Home Building, New Commerce Bldg., Washington.

An estimate of Architecture as a career, by Harvey Wiley Corbett, architect, will be issued again when Doubleday Doran republishes "An Outline of Careers," a practical guide to achievement, edited by Edward L. Bernays.

TWO LECTURES ON ARCHITECTURE BY FRANK LLOYD WRIGHT. The Art Institute of Chicago. 63 pages, illustrated. $0.75.

The first lecture is labeled "In the Realm of Ideas;" the second, "To the Young Man in Architecture." Both voice again the Taliesin idealism—the vision of the machine as the line of freedom for man, a new integrity (which has always been Mr. Wright's) working for this freedom and for an architecture preserving human values.

MEN AND BUILDINGS. By John Gloag. Published by Country Life Ltd., and Charles Scribner's Sons. 246 pages. Price 8s. 6d.

This book may be classed as a descriptive narrative of the art of architecture rather than a technical book or textbook on architectural development. Mr. Gloag traces the development of the "English Tradition" through the Roman, Saxon, Gothic and Renaissance periods. He discusses present-day problems and achievements, including the various forms of "modernism" and trends that may possibly be developed in the future. He gives a supplementary list of books by other authors who deal with the subject in a more formal or technical manner. Numerous references are made to standard works, and an index completes the volume.

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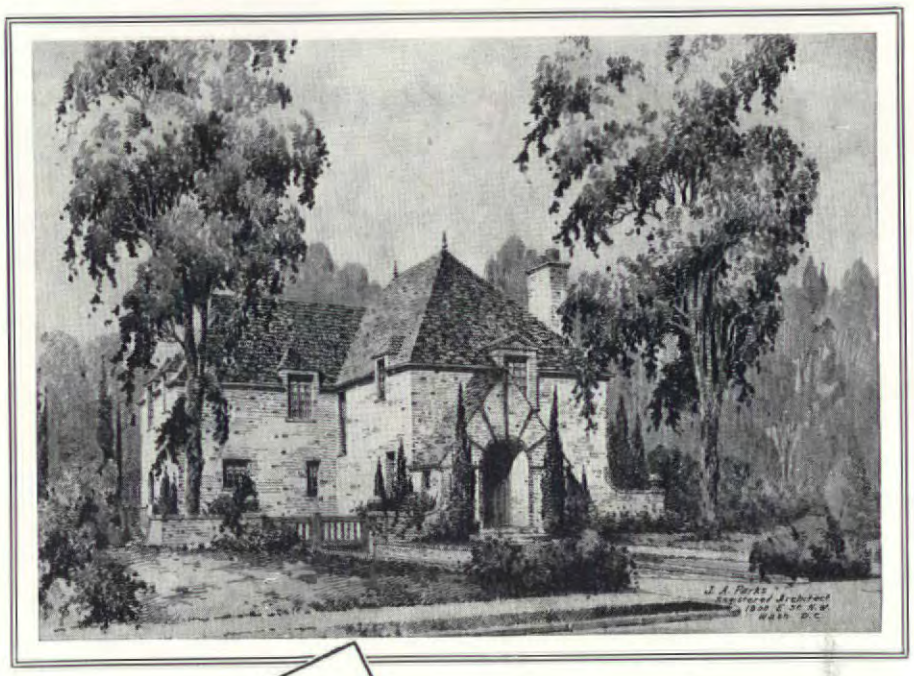

Residence at 2607 Thirty-first Street, Massachusetts Avenue Park, Washington, D. C. Joseph A. Parks, A. A. I. A., Architect. Sears, Roebuck and Co., Contractors.

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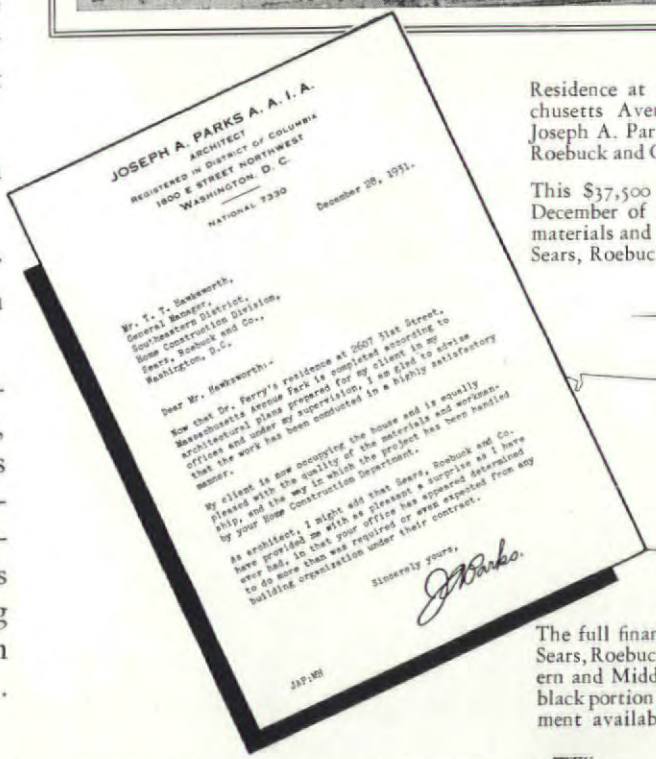

JOSEPH A. PARKS A. A. I. A.
ARCHITECT
REGISTERED IN DISTRICT OF COLUMBIA
1800 E STREET NORTHWEST
WASHINGTON, D. C.
NATIONAL 7330

December 28, 1931.

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In 1931 Sears reproduced Mt. Vernon for the U. S. Government, at the French Exposition Colonniale Internationale. Sears is now reproducing this Historic American Shrine in Prospect Park, Brooklyn, and also a replica of Federal Hall in Bryant Park, New York City, for the Washington Bicentennial Commission.

SCHOOL BUILDINGS OF TODAY AND TOMORROW. By W. K. Harrison, architect, and C. E. Dobbin, deputy superintendent of school buildings, New York City. Compiled and edited by R. W. Sexton. Architectural Book Publishing Company, Inc., New York City. 233 pages, illustrated. $16.50.

The book is illustrated profusely. The many photographs, plans, sections, working details and descriptive matter should be of large practical use. Much stress is laid on standardization of school buildings—elementary, junior high and high—as well as of their construction. The standard details, developed by the Architects of the New York Board of Education, are comprehensive and serve the purpose of reducing drafting and construction costs.

CALIFORNIA GARDENS. By Winifred Starr Dobyns. Published by The Macmillan Company, New York. 223 pages, 207 photographic plates. $5.00.

This volume contains more than 200 full-page illustrations showing California gardens of all types. A foreword by Myron Hunt emphasizes the importance of landscape architecture at the outset of planning a home and during each succeeding stage in the life of the garden, and expresses appreciation of the work done by women along this line.

Excellence in photography, good reproductions in offset printing, and a wide variety of subject material make the book desirable.

Photograph from "California Gardens"

ESTATE OF I. EISNER, LOS ANGELES
GORDON B. KAUFMANN, ARCHITECT
PAUL G. THIENE, LANDSCAPE ARCHITECT

Photograph from "The Brown Decades"

SCHLESINGER AND MAYER BUILDING, CHICAGO
LOUIS HENRY SULLIVAN, ARCHITECT

THE BROWN DECADES. A Study of the Arts in America: 1865-1895. By Lewis Mumford. Published by Harcourt, Brace and Company, New York City. 266 pages. 12 photographic plates. Price $3.

In this book Mr. Mumford brings to light America's Renaissance, the years immediately following the Civil War, and the pioneering that took place in the arts.

Beneath the insincere imitations of foreign styles which exemplify the popular bad taste of the post-war period, "a new life was stirring in departments of American thought and culture that had hitherto been barren, or entirely colonial and derivative." This simple, sturdy growth found its best expression in the architectural works of Richardson, Root, Sullivan and Roebling; in landscape restorations and improvements by Marsh, Olmsted and Eliot; and in the paintings of Eakins and Ryder. Similar trends in literature have been surveyed by the author in "The Golden Day."

To produce an architectural style appropriate to industrial usage from the existing chaos of heavy romanticism and embellishment was the problem confronting the architect of the day. Richardson exerted a powerful influence and laid the foundation of the tradition afterwards followed by Root and Sullivan; their work bears testimony to their understanding of the requirements of a building and its relation to society. Their successors, McKim, Mead and White, and Frank Lloyd Wright, comprise a direct link with contemporary development and ideals.

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EXHIBITIONS AND EVENTS

Until April 11	Exhibition of work by members of the American Union for New Architecture at the Hotel Winthrop, 47th Street and Lexington Avenue, New York City.
April 17-May 1	Annual exhibition of the Richmond Academy of Arts, Richmond, Va. Open to all artists native of or residing in Virginia. Address Secretary, 1110 Capitol Street, Richmond.
April 25-May 5	Exhibition of the Westchester County Society of Architects in connection with the second annual Westchester Home Show, county center, White Plains, New York.
April 26	Twelfth annual convention of the National Council of Architectural Registration Boards, Mayflower Hotel, Washington, D. C.
April 27-29	Annual convention of the American Institute of Architects in Washington, D. C.
May 26	Second annual meeting of the Porcelain Enamel Institute in Cleveland. Talks on architecture are scheduled. A new porcelain enamel on metal house will be open for inspection.
June 20-24	Annual meeting, in Atlantic City, of the American Society for Testing Materials.
June 25-August 19	Modern architecture tour of Europe, conducted by Prof. Talbot F. Hamlin of Columbia University. Address The American Institute of Educational Travel, 587 Fifth Avenue, New York City.
July 30-August 14	Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City.
October	International Congress for Modern Architecture at Moscow, U. S. S. R. Program: "The Functional City."

COMPETITIONS

April 4-5	Preliminary examinations for Rotch Travelling Scholarship. Apply to C. H. Blackall, 31 West Street, Boston.
April 12	Closing date of competition for filling station design sponsored by The Architects' Emergency Committee, 115 East 40th Street, New York City.
April 20	Closing date for applications for Princeton prizes in architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
May 2	Closing date for final drawings in annual competition by the American Institute of Steel Construction for "the most beautiful steel bridge design."
June 15	Closing date for entries for Douglas Fir Plywood Manufacturers design competition. Address C. H. Alden, professional advisor, Skinner Building, Seattle, Wash.

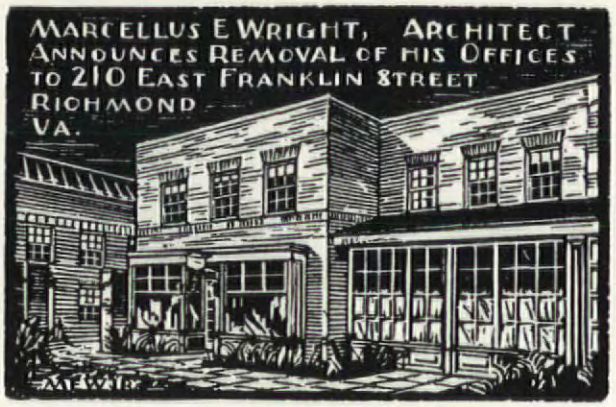
COMPETITION FOR UNEMPLOYED DRAFTSMEN

The architects' Emergency Committee of the Region of New York announces prizes aggregating $975 for plans of filling stations which will not mar the appearance of the countryside. Only unemployed architects and draftsmen living or working in the metropolitan district, and registered with the committee on or before April 2, are eligible to compete.

A first prize of $100, a second of $75, and a third of $50 and additional prizes of $25 each are offered.

Each entrant in the contest, which closes Tuesday, April 12, may submit only one design. Committee headquarters: 115 East 40th Street, New York.

ANNOUNCEMENTS



Dunn and Copper, architects, announce the opening of their new offices in the Hanna Building, Cleveland, Ohio.

Max A. Bernhardt, architect, has moved from 127 S. 18th Street to 721 Walnut Street, Philadelphia, Pa.

William Bernhard, architect, has moved from 232 East Erie Street, Chicago, to Eppraim, Wisconsin. A. Garey Lambert, having accepted a position with the architects for the Williamsburg Restoration, the firm of Baskerville and Lambert has been dissolved by mutual consent. Henry E. Baskerville and H. Coleman Baskerville will continue the practice of architecture under the firm name of Baskerville and Son, 2202 Central National Bank Building, Richmond, Virginia.

A group of registered architects of Chicago has recently formed the Architectural Guild of Small Home Design. Registered architects interested in small-house work costing less than $10,000 are invited to inquire of The Architectural Guild, 540 No. Michigan Avenue, Chicago.

The Cambridge School of Domestic Architecture and Landscape Architecture announces a summer session, June 27 to August 5. Address: 53 Church Street, Cambridge, Mass.

Rexford Newcomb, for the past fourteen years Professor of the History of Architecture at the University of Illinois, has just been appointed by the Board of Trustees of that institution as Dean of the newly established College of Fine and Applied Arts.

ANNUAL CONVENTION OF THE A.I.A.

The American Institute of Architects will attack the national housing problem from the economic standpoint at its seventy-fifth annual convention on April 27, 28 and 29 in Washington, D. C.

The Producers' Council, affiliated with the Institute, and composed of sixty companies and associations of manufacturers in the field of building materials and appliances with a combined capital of $22,500,000,000, will also convene during the convention period. The Institute and the Council, it is explained, are actively cooperating to advance their common interests.

Columbia University Medical School, Bard Hall, New York, N. Y. Architect: James Gamble Rogers; Contractor: Marc Eidlitz & Son, Inc.

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Fenestra

PROJECTED FENMARK WINDOWS

FEATURES IN THE MAY ISSUE

A PORTFOLIO OF SHOPPING CENTERS . . . of which this village development for New Canaan, Connecticut, by Alfred Mausolff, architect, is characteristic. Many communities have found that grouped shopping facilities add to the physical betterment of the locality. An accompanying article suggests methods which architects in other towns or small cities may adopt as a basis for developing similar projects.

MODERNIZATION AND REMODELING . . . a series of articles and examples of old buildings converted to profitable new uses. These "before" and "after" views of a remodeled house on Long Island by George Fred Pelham, architect, illustrate the possibilities of modernization at small cost. Also included will be a presentation of two remodeled dwellings at Framingham Centre, Mass., by George F. Marlowe, architect; remodeled store buildings by F. P. Platt and Brother, architects; and a city residence made over as an apartment house, by Rodgers and Poor and L. B. LaFarge, architects.

In addition to these features . . . The prize-winning Rochester Bridge by Gehron and Ross . . . The Reed Memorial Library at Lake Forest, Ill., by Edwin H. Clark . . . A church at Aurora, Ill., by George G. Elmslie . . . Discussion of Current Problems by Architects . . . News of Architectural Clubs and A.I.A. Chapters . . . Building Trends.

AMONG THE CONTRIBUTORS IN THE PRESENT ISSUE

JAMES FORD is executive director of Better Homes in America.

Professor JEAN-JACQUES HAFFNER teaches architecture at Harvard University. He is a winner of the "Grand Prix de Rome."

CARL T. WASHBURN is a civil engineer specializing in stadium design.

N. A. OWINGS is development supervisor for a Century of Progress, Chicago.

PHELPS DODGE COPPER PRODUCTS CORPORATION

The Phelps Dodge Copper Products Corporation will specialize in the manufacture and sale of products made from copper mined by Phelps Dodge Corporation.

It has taken over and is now operating the following fabricating units as divisions:

American Copper Products Division, with mills at Bayway, N. J., manufacturers of copper rods, wire and strip, bus bars and special shapes, stranded cables, trolley wire, bronze and brass wire, and weather-proof wire.

British American Tube Division, with mills at Bayway, N. J., manufacturers of condenser tubes, brass, bronze and copper tubes and pipe.

Inca Manufacturing Division, with mills at Fort Wayne, Indiana, and Los Angeles, California, manufacturers of enameled copper wire, coils and magnet wires.

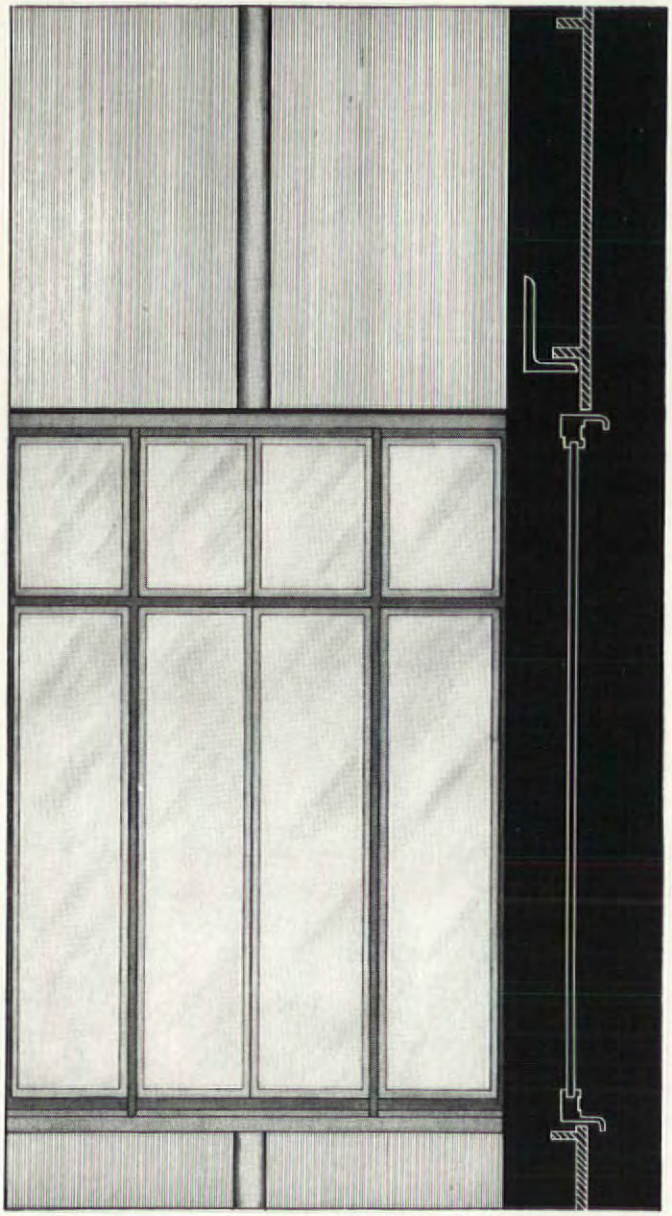
P-M-G Metal Division, with mills at Bayway, N. J., manufacturers of copper and copper alloy products having special corrosion resisting qualities and high physical properties.

Habirshaw Cable and Wire Corporation will maintain its separate corporate existence and will be operated as a subsidiary of Phelps Dodge Copper Products Corporation. With mills at Yonkers, N. Y., and Bridgeport, Conn., it manufactures rubber and lead covered copper wire, paper and varnished cambric insulated power cables, telephone and telegraph wires, signal wires, Parkway cables and miscellaneous cables of all kinds.

The general offices of Phelps Dodge Copper Products Corporation and of Habirshaw Cable and Wire Corporation are at *40 Wall Street, New York, N. Y.*

Wylie Brown, *President*

Phelps Dodge Copper Products Corporation



At left, note how assembly of spandrels and windows of Alcoa Aluminum allows rapid erection—assures complete weather protection.

City Hall and Court House, St. Paul, Ramsey County, Minnesota. Architect: *Ellerbe & Co.*, St. Paul; *Holabird & Root*, Chicago, Associates; General Contractor: *Foley Brothers, Inc.*, St. Paul; Sub-Contractor on Aluminum: *Coleman Bronze Co.*, Chicago.

Alcoa Aluminum's soft color attracted them

... *its low maintenance cost was important*

Rich gray in color, both the cast spandrels, and the windows which are made from extruded shapes, blend with the stone facade. Rust proof, corrosion resistant, non-staining, requiring no painting and having all the strength yet only 1/3 the weight of parts made of other structural metals! These genuine advantages tell why spandrels and windows of Alcoa Aluminum were used in St. Paul's new Ramsey County Court House and City Hall.

In this case, 879 spandrels, 522 fixed sash, 529 fixed transoms and 494 windows of Alcoa Aluminum were used. To further insure the stone facade against stain, Alcoa Aluminum was used as anchorage supports for the mullions. In addition, the base shoe, window screens and toilet stall doors were made of this modern metal.

The distinctive advantages of Alcoa Aluminum recommend it for an increasing number of uses. To obtain absolutely satisfactory architectural aluminum, specify Alcoa Aluminum and its alloys, made by Aluminum Company of America. In planning the use of Alcoa Aluminum in your next building project, we urge you to accept the cooperation of our representatives.

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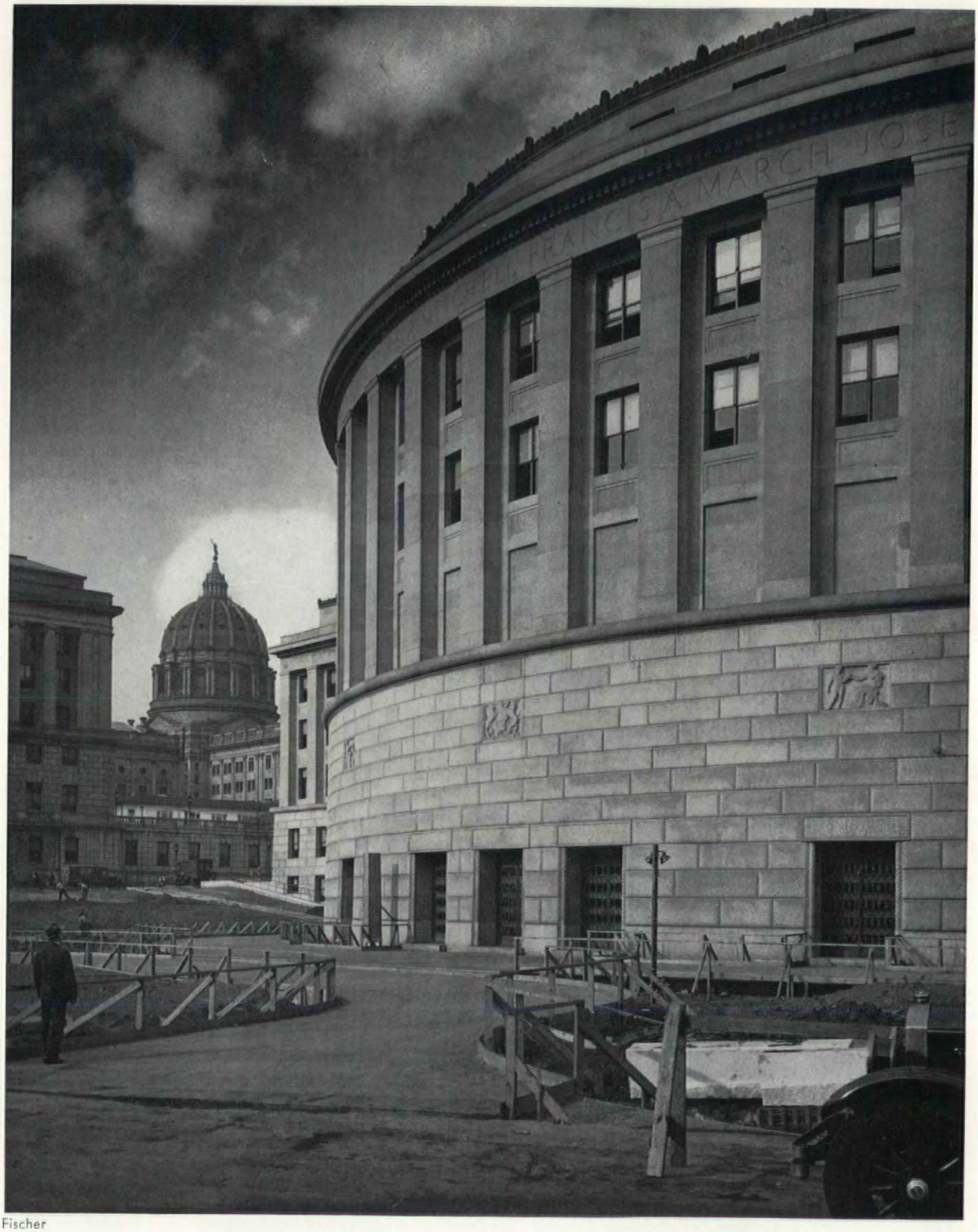
ALCOA ALUMINUM



Fischer

ENTRANCE TO FORUM OF EDUCATION BUILDING
CAPITOL PARK, HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

THE ARCHITECTURAL RECORD APRIL, 1932
VOL. 71—NO. 4

THE STATE EDUCATION BUILDING, HARRISBURG

WILLIAM GEHRON and SIDNEY F. ROSS are the architects of the Educational Building.

ERIC GUGLER and RICARD BROOKS, designers and painters of the murals and the ceiling of the Forum.

LEE LAWRIE, sculptor of the bronze gates and doors.

C. PAUL JENNEWEIN and HARRY KREIS, sculptors of the carved panels and the modeled decoration.

VINCENT MARAGLIOTTI, painter of entrance lobby ceiling.

The Education Building is one of five buildings that will form the Capitol group of the Commonwealth of Pennsylvania at Harrisburg. In 1916, when the present Capitol Park development was planned by Arnold Brunner, architect, the Capitol Building (completed in 1906) was taken as the focal point around which the other buildings were to be grouped. On the east the Capitol is flanked by the new North and South Office Building, connected by a U-shaped terrace and forming the inclosure for a great stone paved forecourt. The Educational Building, the third and largest so far constructed, together with the proposed new Finance Building and the Soldiers and Sailors Memorial Bridge will complete the development as planned.

The Education Building was designed to house the various activities of the Department of Public Instruction, also to express its purpose and at the same time to be in itself an instrument of education.

The exterior of this building has been designed in a simplified classic architecture, to harmonize not only with the Capitol but also with the pylons of the Soldiers and Sailors Memorial Bridge; this treatment is also in keeping with the simpler tastes of today as compared with the period when the Capitol was built. The building was, therefore, planned with a minimum of moldings and architectural ornament. Wherever ornament or detail exists it is intended to symbolize something in particular or to stimulate the imagination.

Sculptural Designs

Bronze grilles at the main entrances symbolize the many different activities of modern man, whether he labor by hand or by mind. The farmer is represented with the plow, the banker with the dollar, cent and per cent signs, the artist with the palette, and so on. The bronze doors at the entrance of the Forum represent man's creative and recreative occupations: here the Fable, the Circus, and the Mythological Tale are recognized, and Art, Poetry, Music, the Drama, Science and Philosophy find their place.

The stone frieze on the exterior of the building has inscribed on it the names of the thirty-five educators, philanthropists and statesmen who have rendered outstanding service to education within the commonwealth.

The Main Lobby and Ceiling

An expansive ceiling illustrates the rich symbolism of the interior: here the visitor is enjoined to "learn" the arts, sciences and handicrafts.

Thirteen beams span the room, alternately pictorial and decorative. Beginning at the east the first pictorial beam represents sports and diversions, golf, swimming, baseball, tennis and football, with similar representations of other sports depicted on the surrounding panels. Two inscriptive panels adjoin, one of which urges the development of humanitarian purposes, and the other represents the essentials of sport and play.

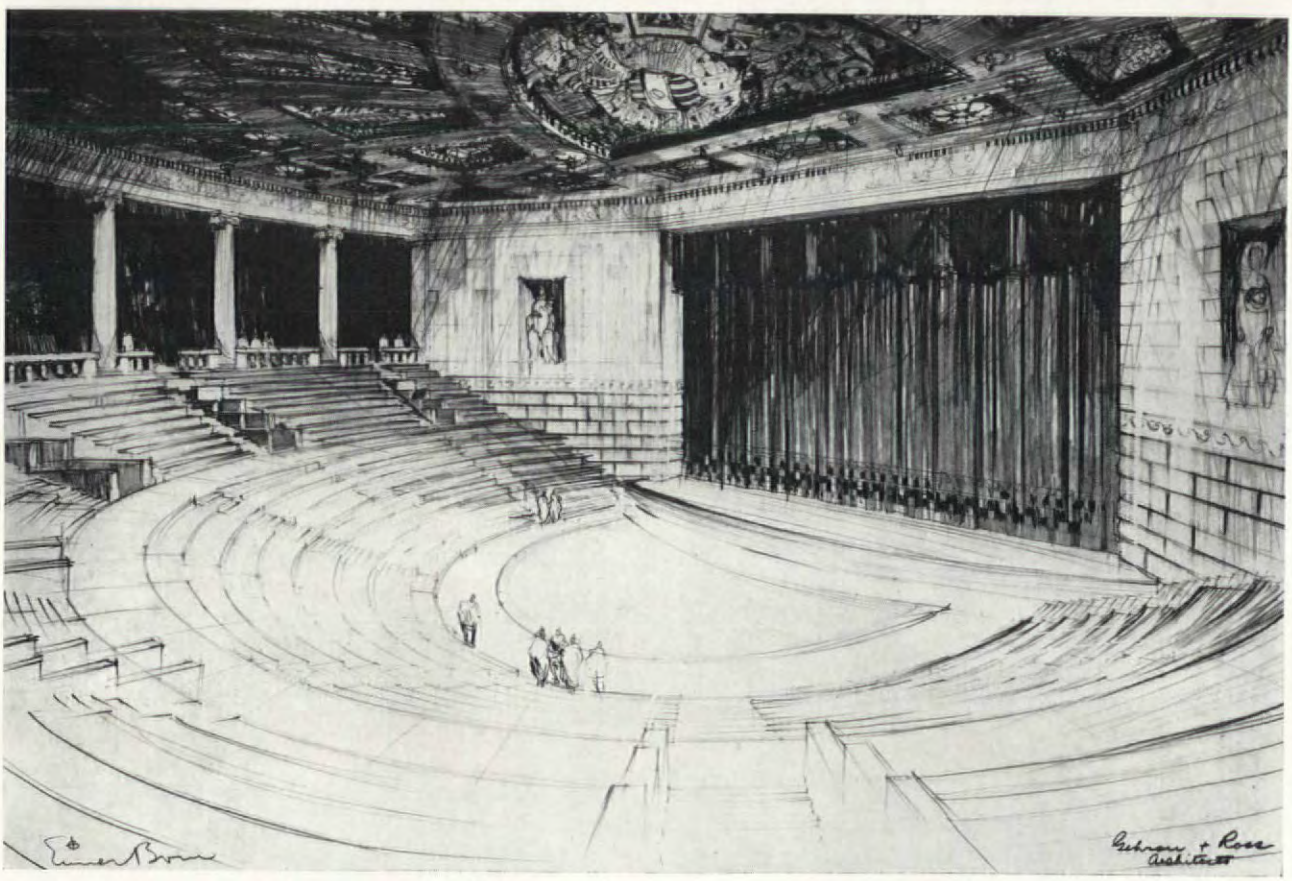
The second pictorial beam is devoted to the Arts. In the classical dress and form, architecture, sculpture, painting, literature, drama, music, the dance, poetry and oratory are shown, with the injunction to create.

The third beam is representative of the sciences of education, medicine, mathematics, astronomy, physics, mechanics and biology, with panel inscriptions sharing the learning of the sciences with the importance of discovery.

The fourth beam is divided between religion and

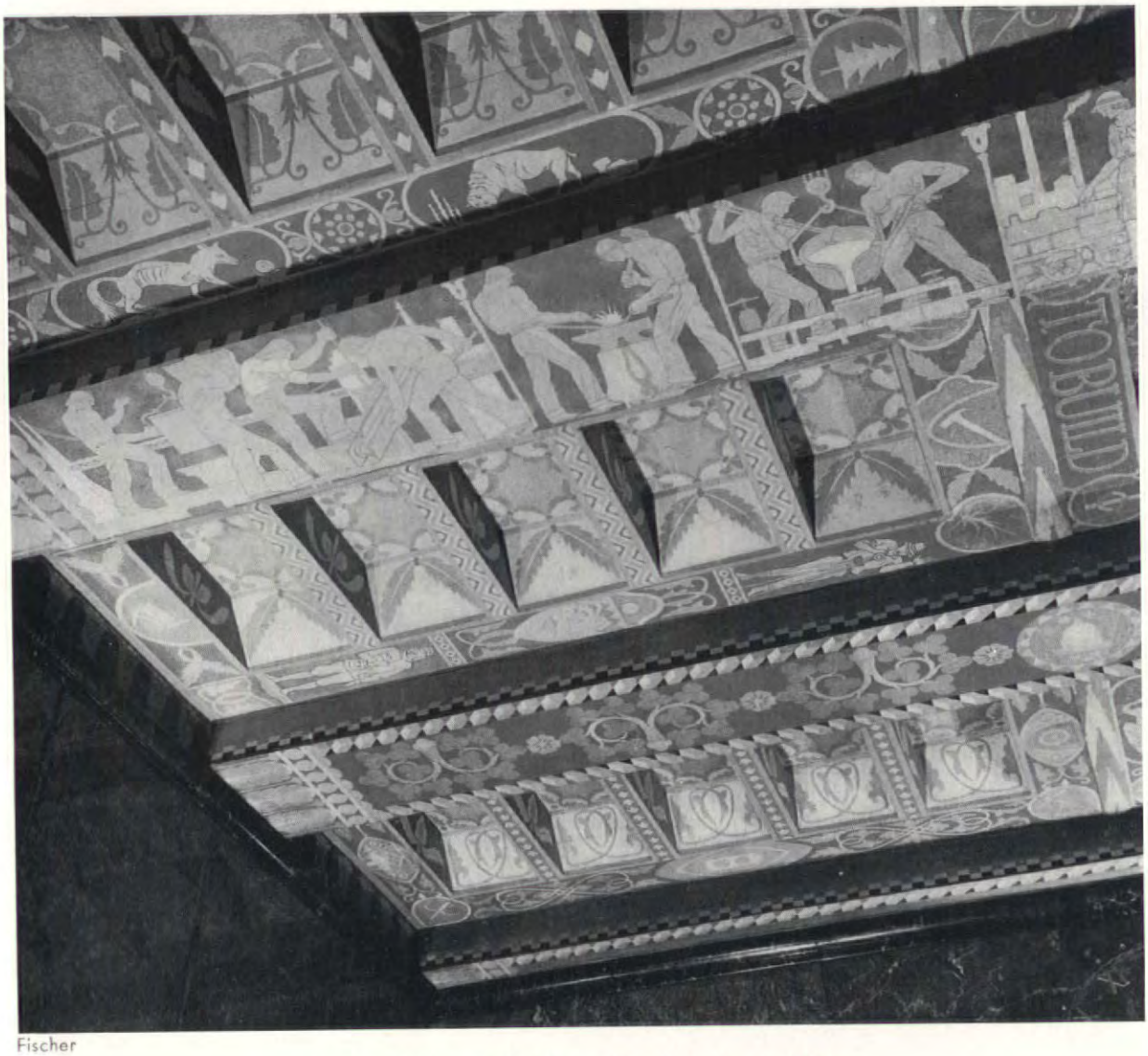
Gilkison

South elevation.



Early study of the Forum — rendering by Ernest Born.

EDUCATION BUILDING AT HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS



Fischer

Detail of blue and white ceiling in entrance lobby.

EDUCATION BUILDING AT HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

philosophy showing scenes of mercy, forgiveness, faith, and justice, with inscriptive panels emphasizing the virtues of obedience and belief, of reason and doubt.

The fifth beam represents the commercial, agricultural and transportation phases of modern life. Scenes of banking, farming, and of road, rail, air and marine transportation are shown. The adjacent inscriptive panel enjoins one to sow, to reap, to trade, to market and to save.

The sixth and last beam is devoted to industry with special emphasis on those for which Pennsylvania is famous. Here are depicted a coal mine, a typical factory workman, steel workers, blacksmiths and bridge erectors, with the injunction to learn, to build, to serve and to share.

In the main entrance lobby are five openings with carved jambs representing the various branches of learning, such as geography, astronomy, literature, physical culture, music, sculpture and painting, zoology, history, botany, physics and chemistry. The sculptors, Paul Jennewein and Harry Kreis, have attempted to show from what widely divergent sources original knowledge of each subject has come.

The Forum

The Forum, as the name implies, was planned so that there could be free discussion not only from the stage but from any part of the amphitheater. This was considered important because of its specialized use.

The room is semi-circular in plan with a colonnaded promenade in the rear. On the circular walls of the promenade are map paintings and chronological tables alternately arranged covering the history of the world from the dawn of civilization to the present era. Beginning at the west

end of the arc with the ancient occidental civilizations and at the east end with those of the orient, they portray step by step the gradual development of civilization, meeting at the center of the arc in the rear, in the fourteenth year of the twentieth century. Here are recorded the important epochs and events of historic man.

Beginning the oriental culture with the early Chinese, the chronology passes through that of the Aryan, the Indian, the Japanese, the Korean and the Mongolian. Beginning the western civilization with the early Egyptian, it passes through the Babylonian, the Chaldean, the Sassanian and the Greco-Roman.

Toward the center, later times are represented. In recent times the histories of the Western World and Oriental World are merged and the center of the arc is taken up with representations of culture down to 1914.

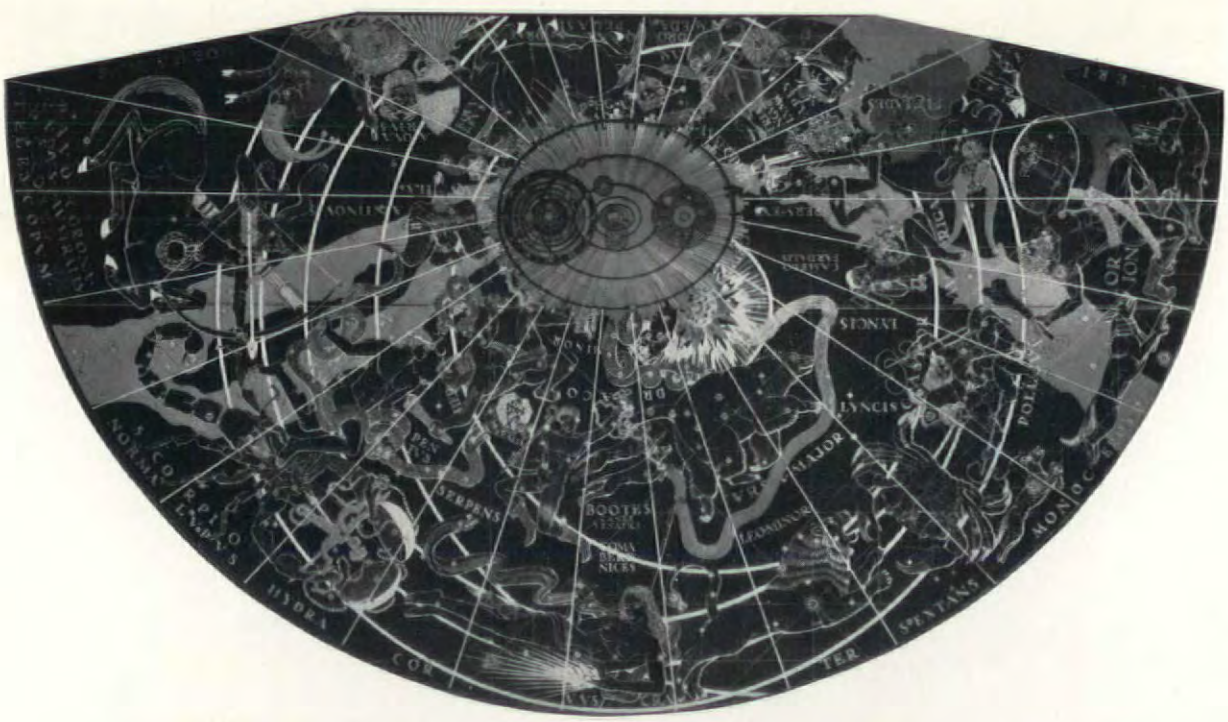
The Ceiling Painting

The ceiling painting by Eric Gugler and Ricard Brooks consists of a representation of the heavens, and on it are pictured mythological figures representing the various constellations. More than a thousand stars are designed in their proper positions. Three hundred and eighty-five illumination in graded brilliance, according to their respective magnitude.

In painting the ceiling of the Forum, the designers have made an effort to achieve some idea of the grandeur of the heavens. By projection, the relative positions of stars have been accurately ascertained by astronomers. The stars are in four magnitudes shown in the proper relationship to the celestial bodies to which they belong. Around the frieze the names of the constellations are so placed, as are also the major stars, that they can readily be found in the ceiling nearby.

The history of these constellations is unknown. From 6000 to 4000 B.C. is often quoted, but it is known that in the northern hemisphere the constellations were determined much as they are known today as early as 3500 B.C.

In the center of the ceiling is a sunburst which covers the air intake. On this sunburst is applied a design depicting the three theories of the solar system: the Ptolemaic of the second century which held the earth to be the center of the solar system, the Copernican which held the sun to be the center of the circular orbits, and the modern Keplerian theory recognizing elliptical orbits. These orbits are applied on the silver rays of the sunburst.



Ceiling painting in the Forum by Eric Gugler and Ricard Brooks. The figures are outlined in gold on a dark blue background. The radiating lines are gold and the orbits white. A silver sunburst with designs illustrating the three solar systems covers the air intake in the center of the ceiling.

EDUCATION BUILDING AT HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

PORTFOLIO OF CURRENT ARCHITECTURE

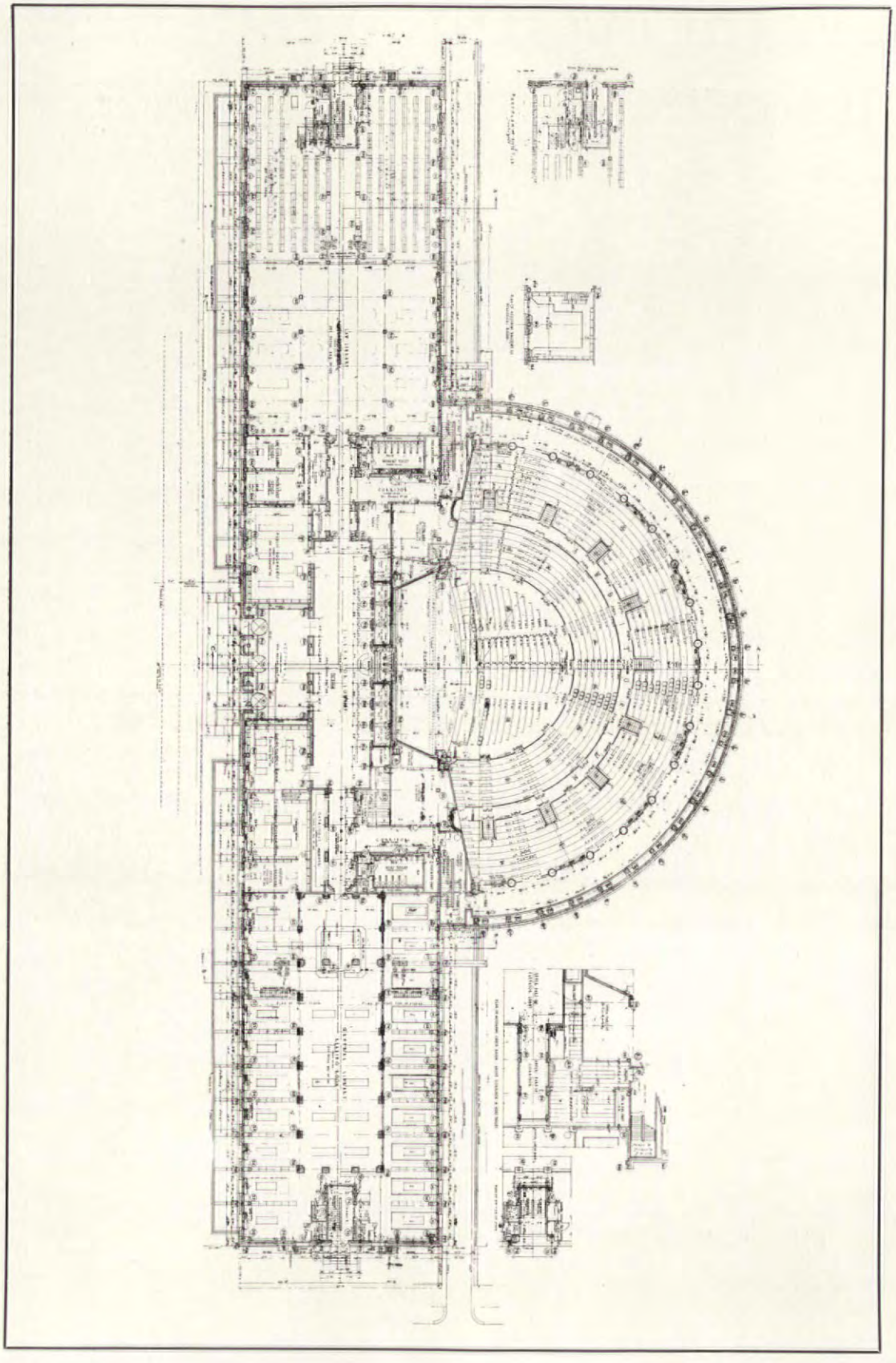
Fischer

FORUM IN THE EDUCATION BUILDING
CAPITOL PARK, HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

BUILDINGS ILLUSTRATED IN THIS PORTFOLIO

STATE EDUCATION BUILDING, CAPITOL PARK, HARRISBURG, PENNSYLVANIA — Gehron and Ross, Architects.

"THE BACHELORS," A HABERDASHERY OF HITE-BILICKE, LTD., LOS ANGELES — J. R. Davidson, Designer.



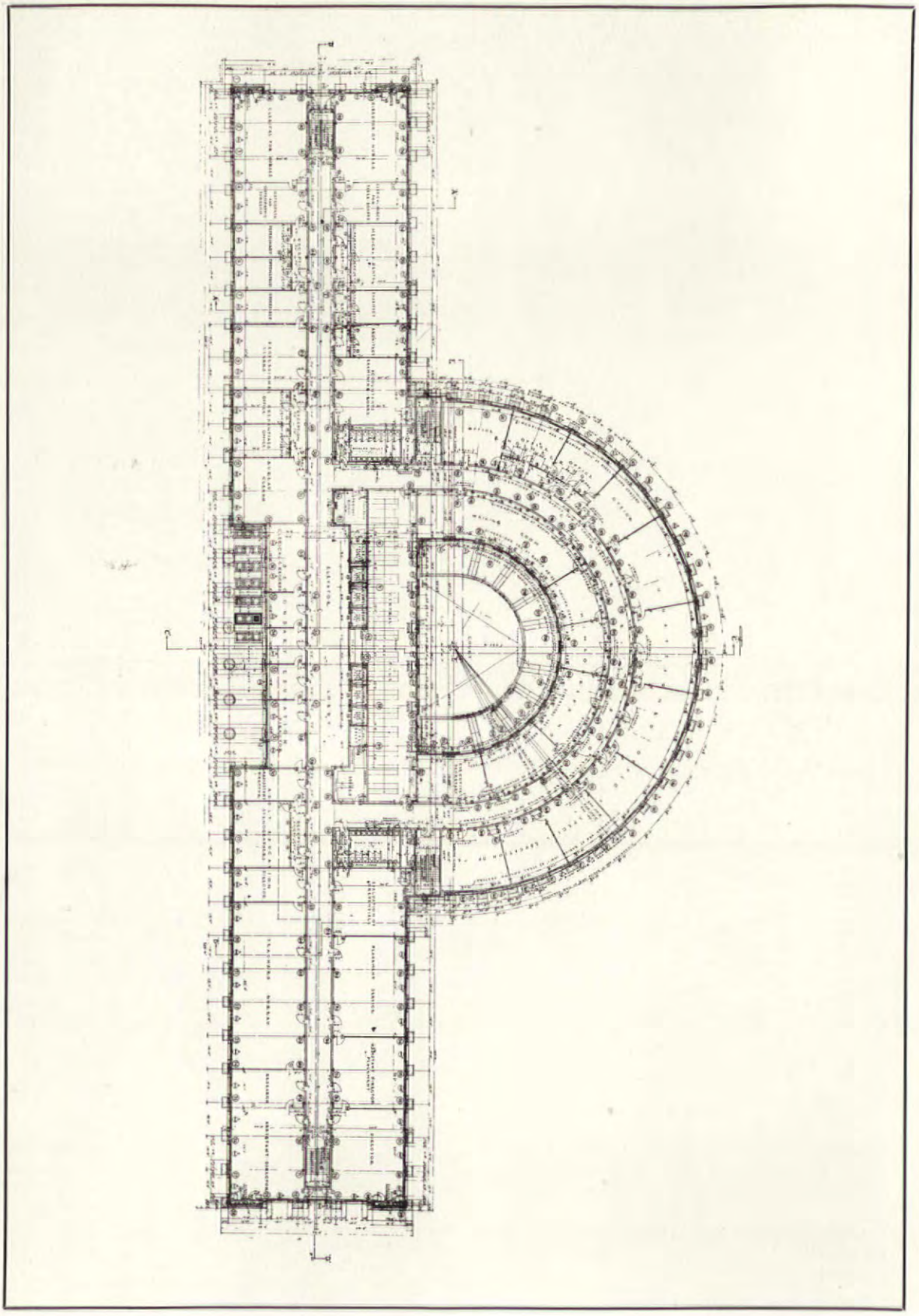
Ground floor plan.

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

Fischer

Entrance to Forum. Bronze doors by Lee Lawrie. Limestone panels by C. Paul Jennewein.

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS



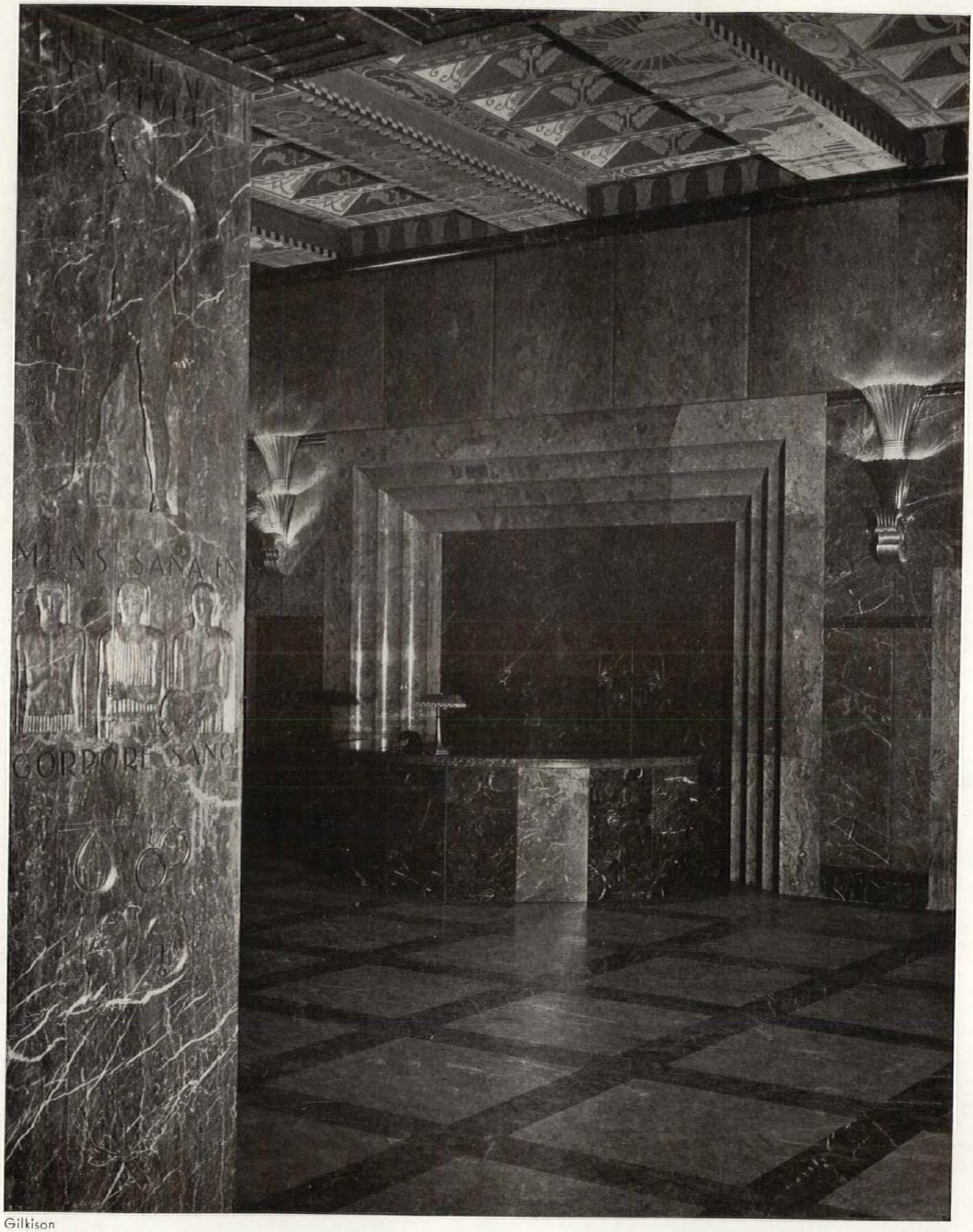
EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

Office floor plan.

Fischer

Detail of south elevation.

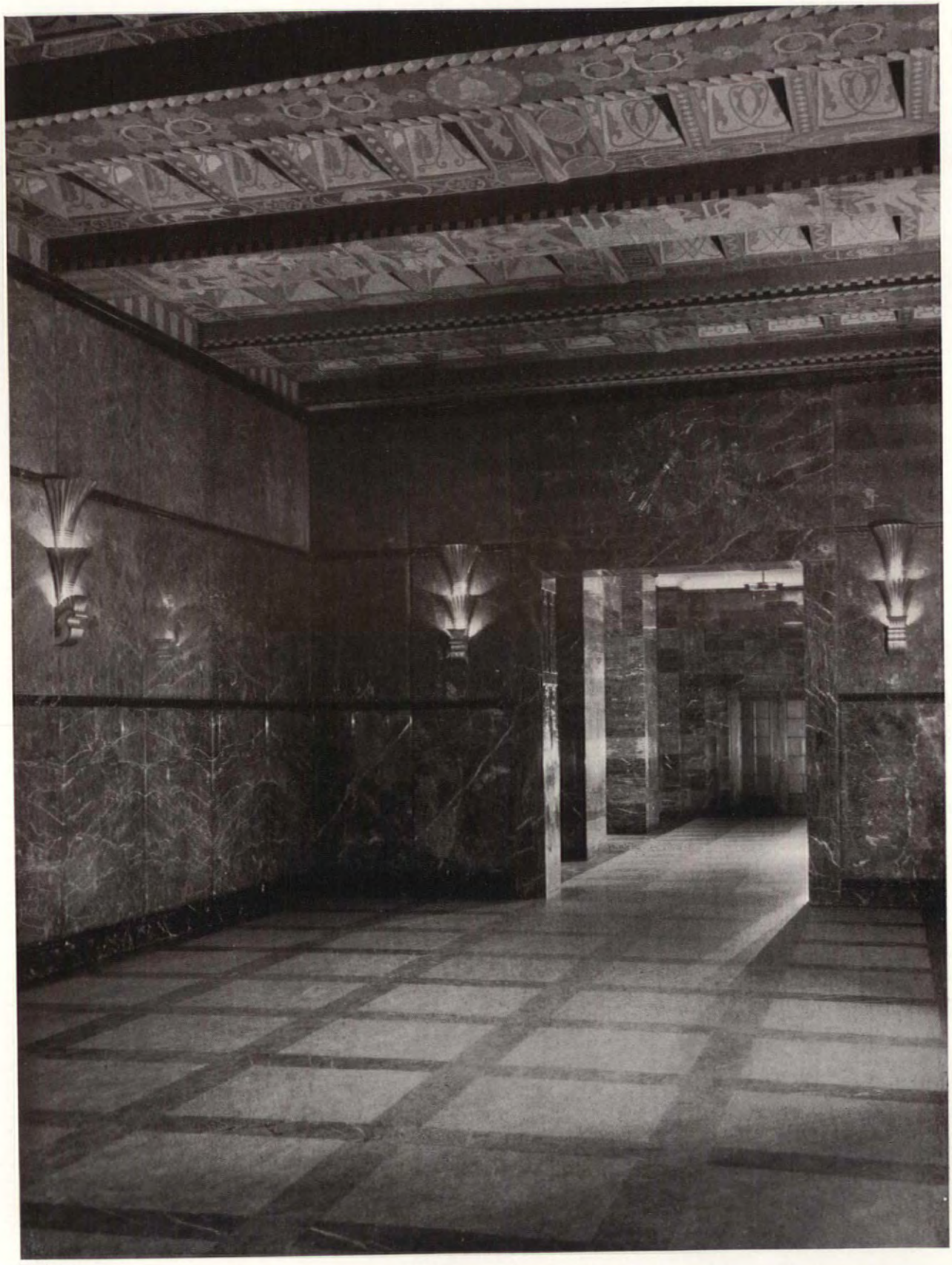
EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS



Gilkison

Main lobby and information desk.

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS



Fischer

East end of entrance lobby.

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

Fischer

Colonnade at rear of Forum.

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

Fischer

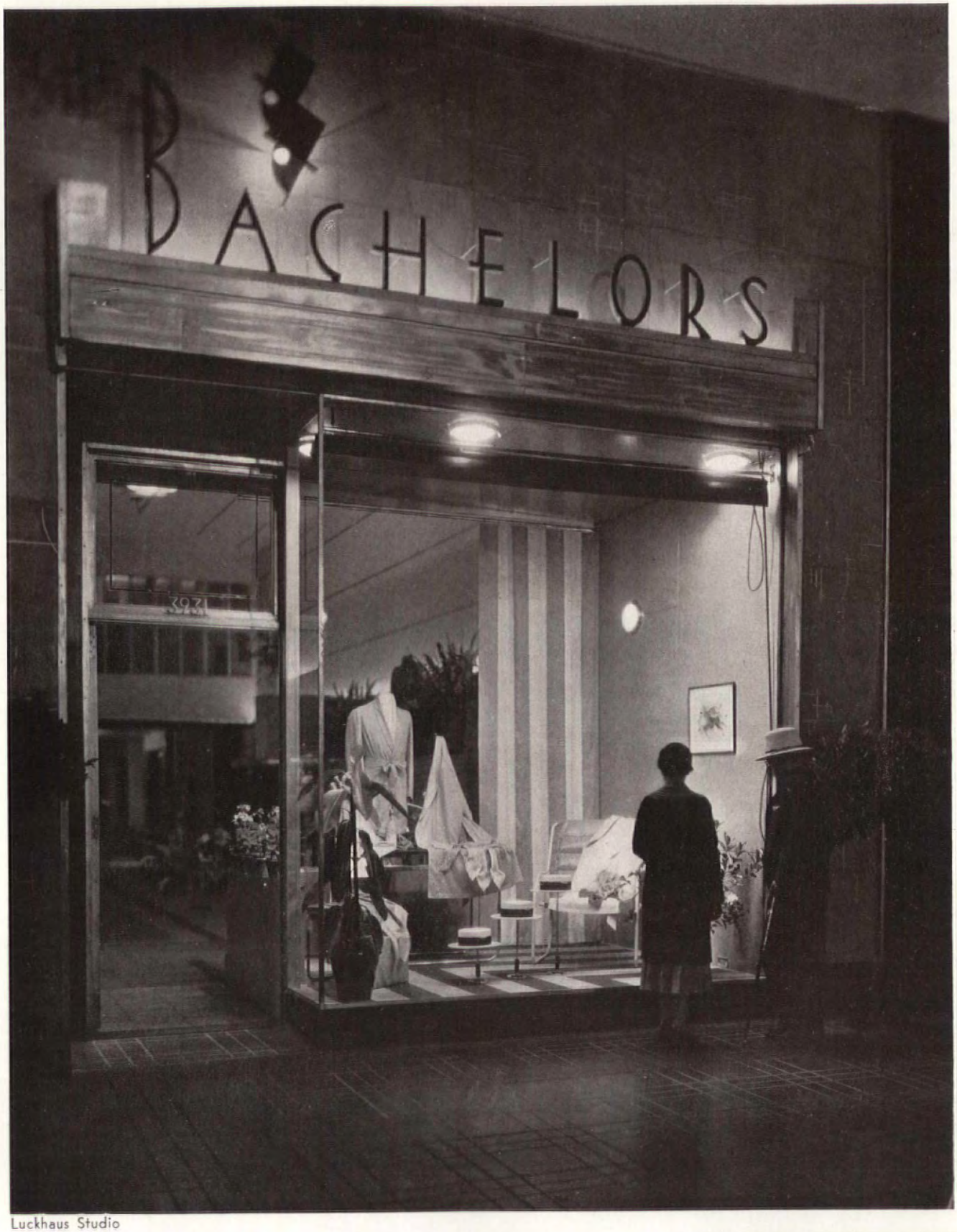
Detail of colonnade. Columns of polished terrazzo with brass strips.

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

Fischer

EDUCATION BUILDING
HARRISBURG, PENNSYLVANIA
GEHRON AND ROSS, ARCHITECTS

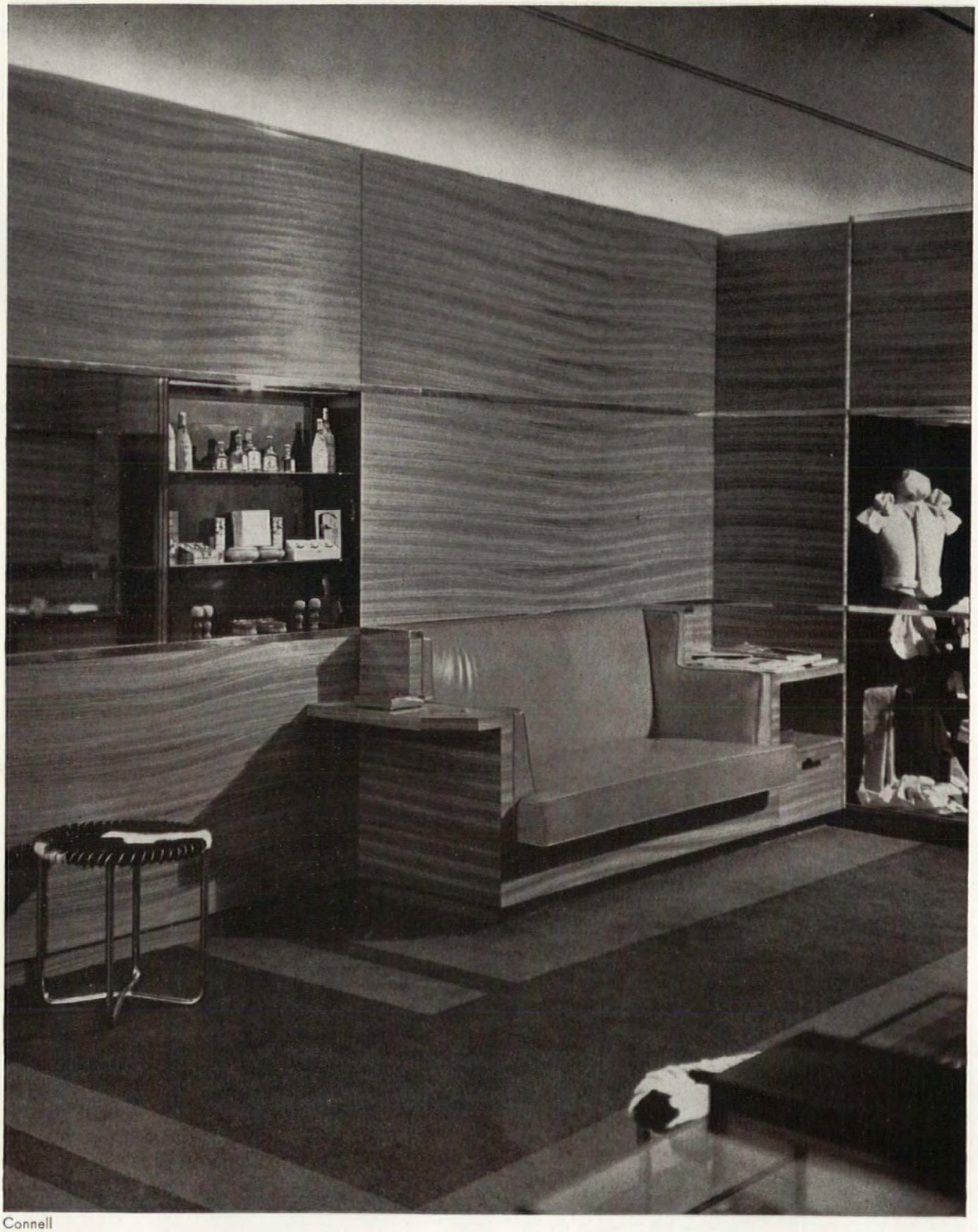
Promenade in Forum. The chronological tables and charts by Eric Gugler and Ricard Brooks are painted in black, white, old ivory and gold. Carpet in dark green.



Luckhaus Studio

The show window is treated as a stage with movable lighting fixtures and variable sets, curtains and "atmospheric" props.

"THE BACHELORS"—A HABERDASHERY
HITE-BILICKE, LTD., LOS ANGELES
J. R. DAVIDSON, DESIGNER



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"THE BACHELORS" — A HABERDASHERY
HITE-BILICKE, LTD., LOS ANGELES
J. R. DAVIDSON, DESIGNER

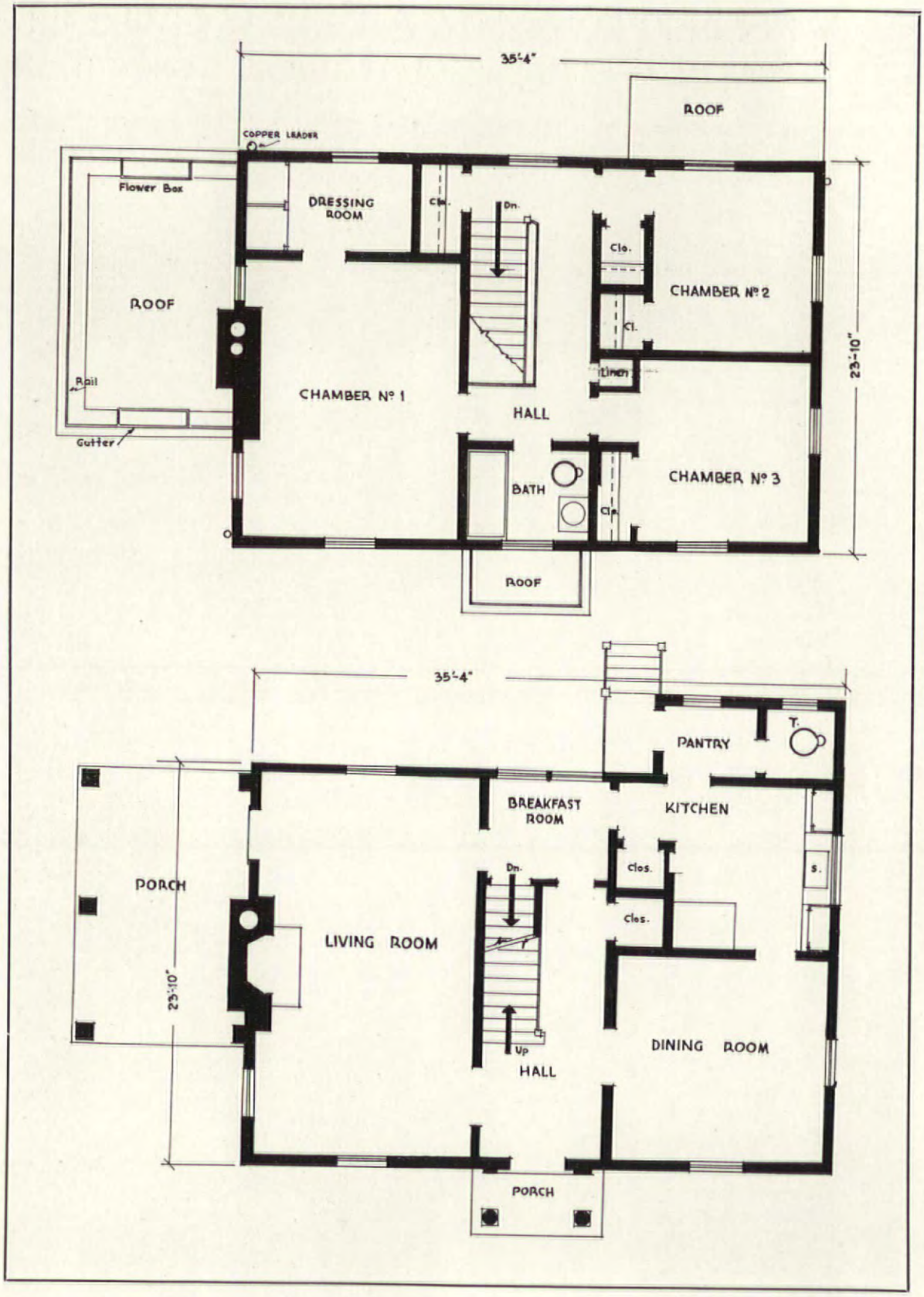
Paneling in zebrawood, natural color and waxed. Polished aluminum strips. Built-in seat in light tan cowhide. Carpet in two tones of green.

PRIZE-WINNING SMALL HOUSES

1931 "BETTER HOMES IN AMERICA" ARCHITECTURAL COMPETITION

Gottscho

GOLD MEDAL — TWO-STORY CLASS
HOUSE OF FRANCIS COLLINS, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT



1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF FRANCIS COLLINS, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

Gottscho

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF FRANCIS COLLINS, FIELDSTON, NEW YORK
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Gottscho

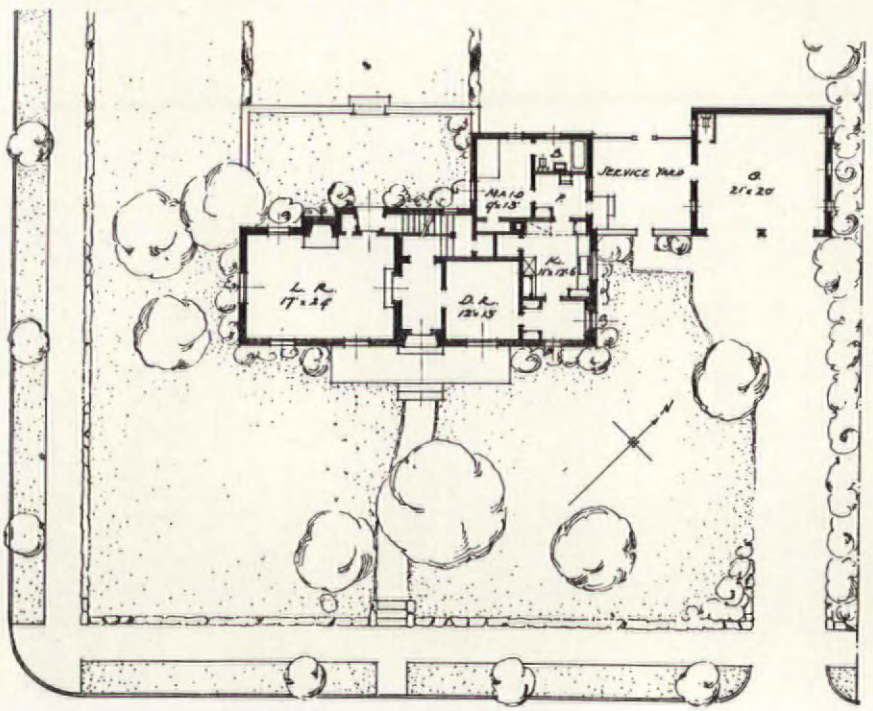
1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF FRANCIS COLLINS, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

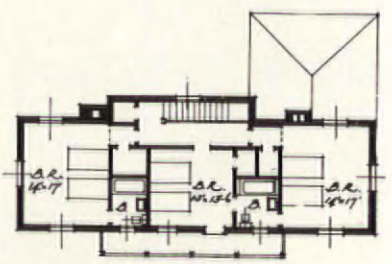
Collinge

Honorable Mention — Two-Story Class

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF W. E. RISSER, SANTA BARBARA, CALIFORNIA
WINSOR SOULE AND JOHN F. MURPHY, ARCHITECTS

Collinge





SECOND FLOOR PLAN

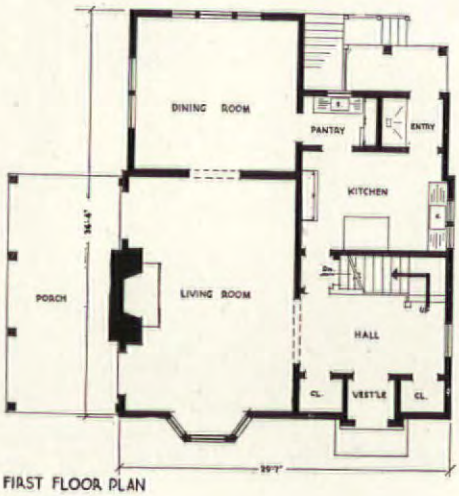
1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF W. E. RISSER, SANTA BARBARA, CALIFORNIA
WINSOR SOULE AND JOHN F. MURPHY, ARCHITECTS

Gottscho

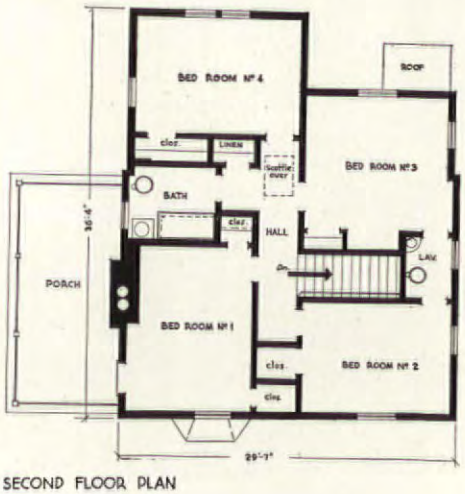
Honorable Mention — Two-Story Class

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF THOMAS McCALL, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

Gottscho

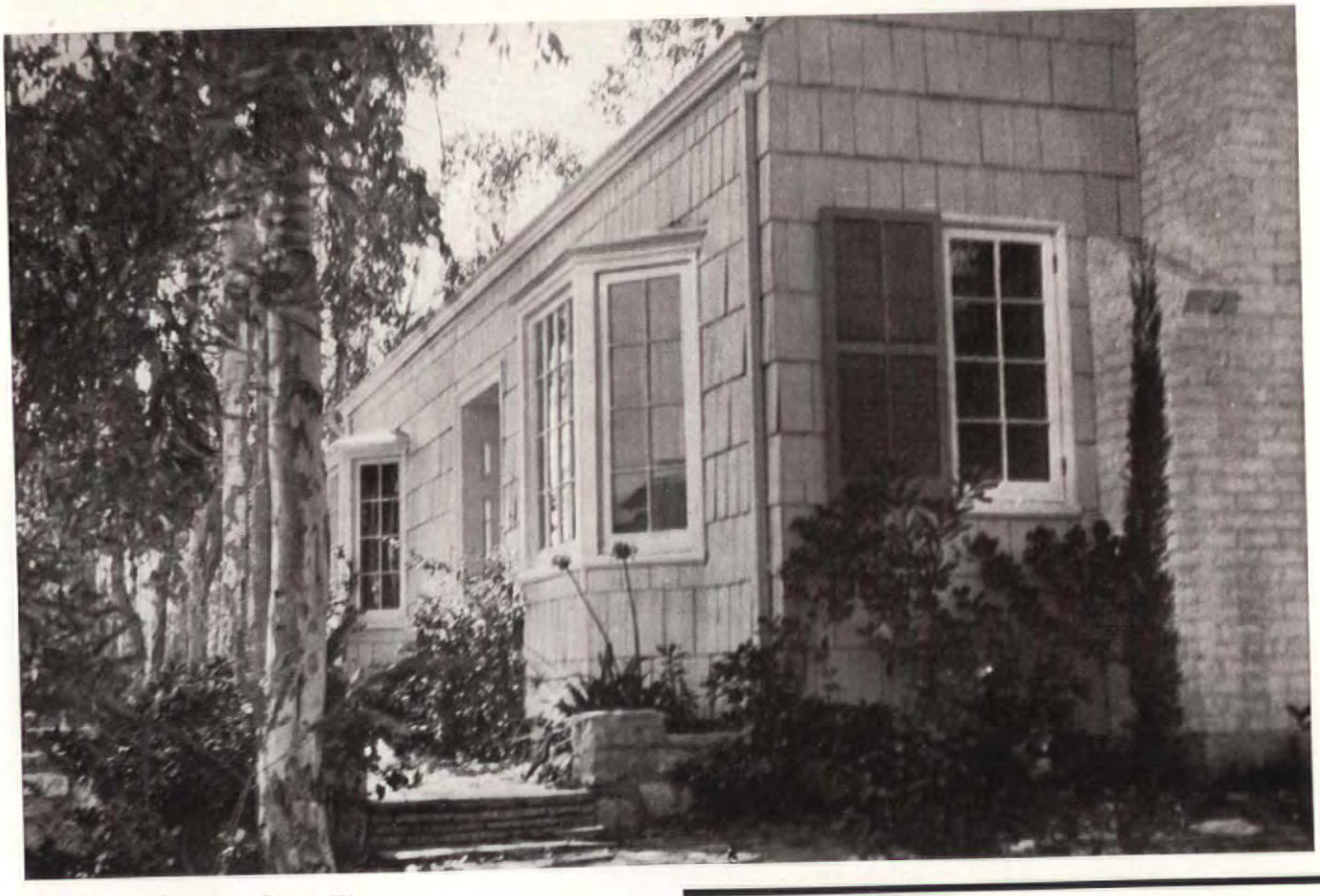


FIRST FLOOR PLAN



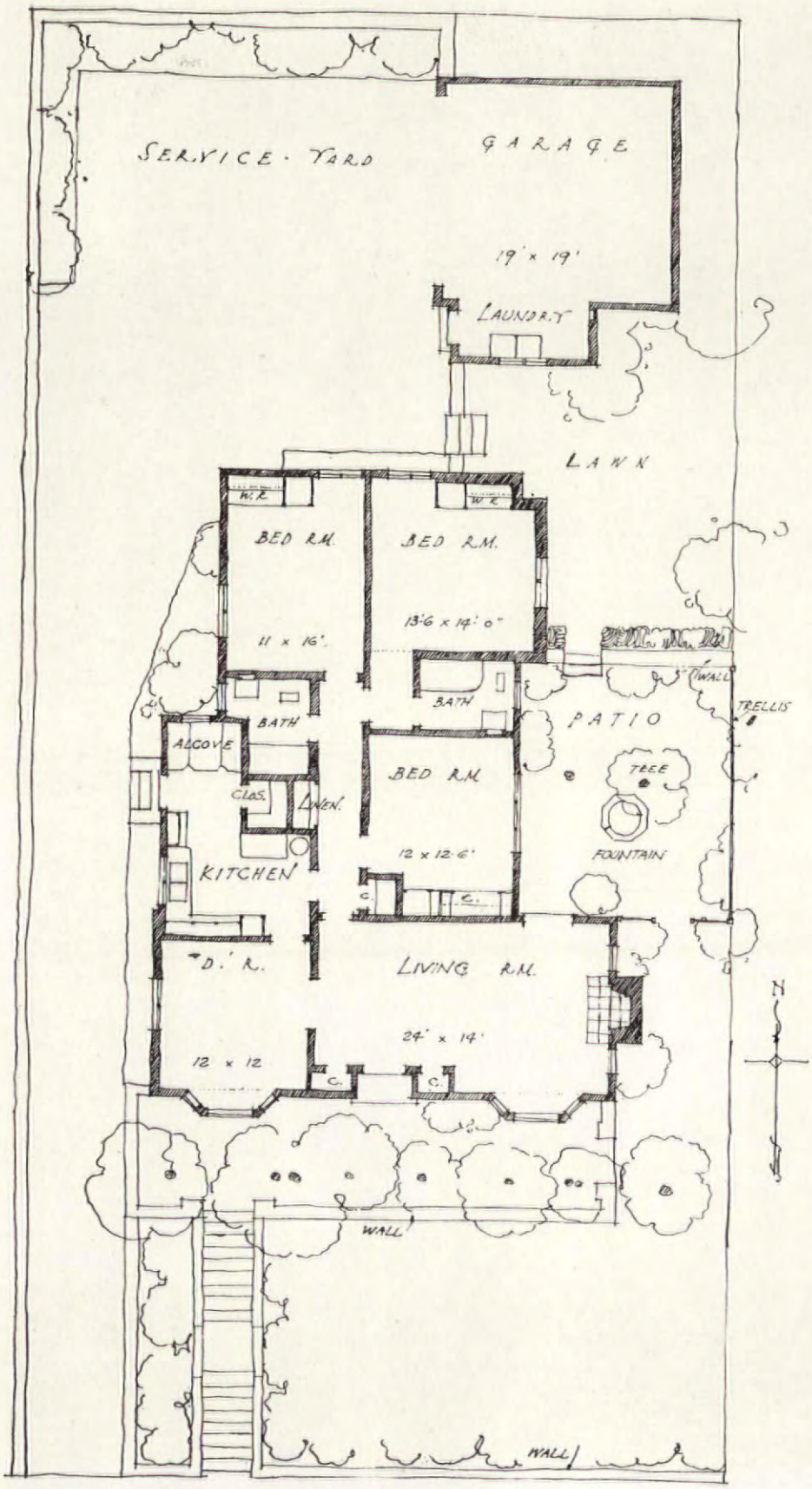
SECOND FLOOR PLAN

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF THOMAS McCALL, FIELDSTON, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT



Gold Medal — One-Story Class

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF STELLA SMITH, PALOS VERDES ESTATES, CALIFORNIA
WINCHTON L. RISLEY, ARCHITECT



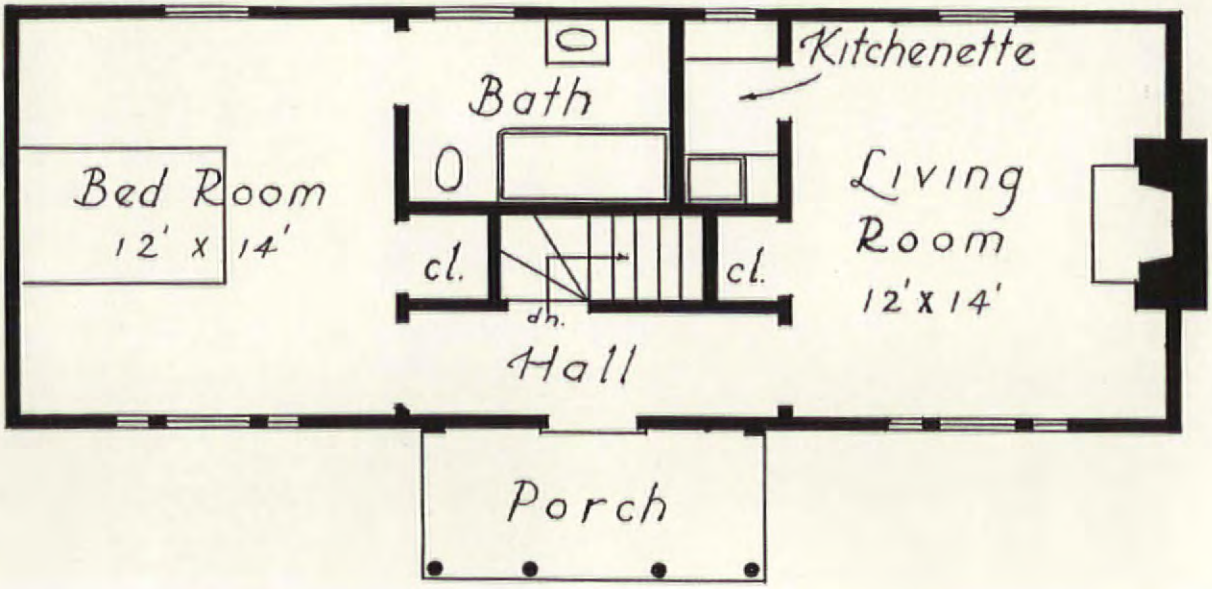
1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF STELLA SMITH, PALOS VERDES ESTATES, CALIFORNIA
WINCHTON L. RISLEY, ARCHITECT

Dreyer

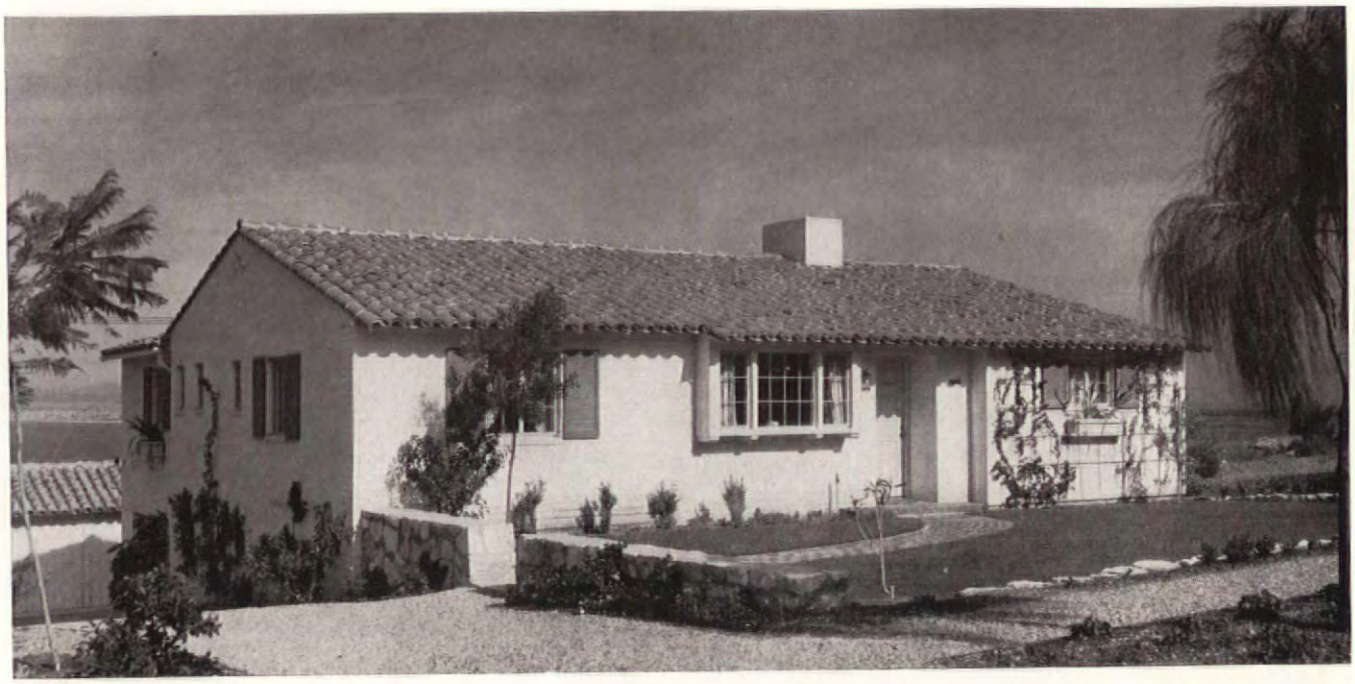
Honorable Mention — One-Story Class

1931 BETTER HOMES IN AMERICA COMPETITION
GUEST HOUSE, ESTATE OF E. HOPE NORTON, DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Dreyer



1931 BETTER HOMES IN AMERICA COMPETITION
GUEST HOUSE, ESTATE OF E. HOPE NORTON, DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT



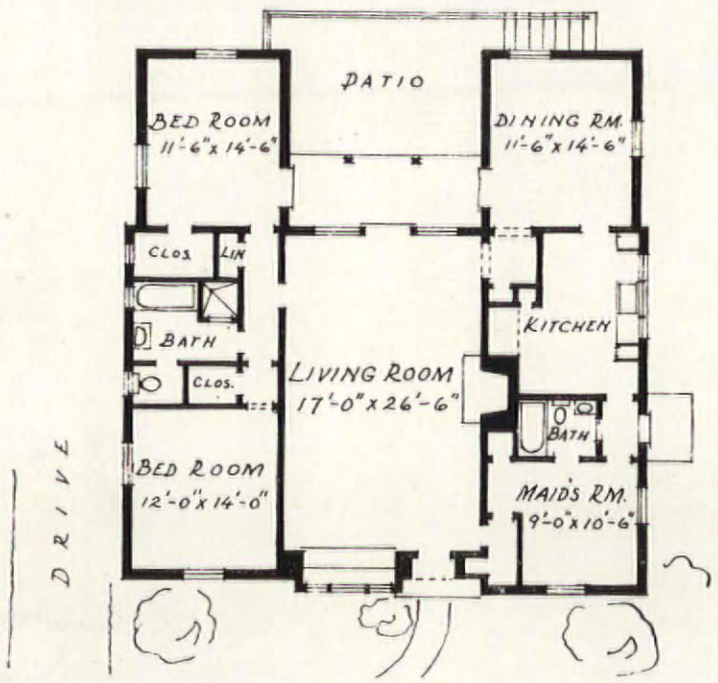
Haight

Haight

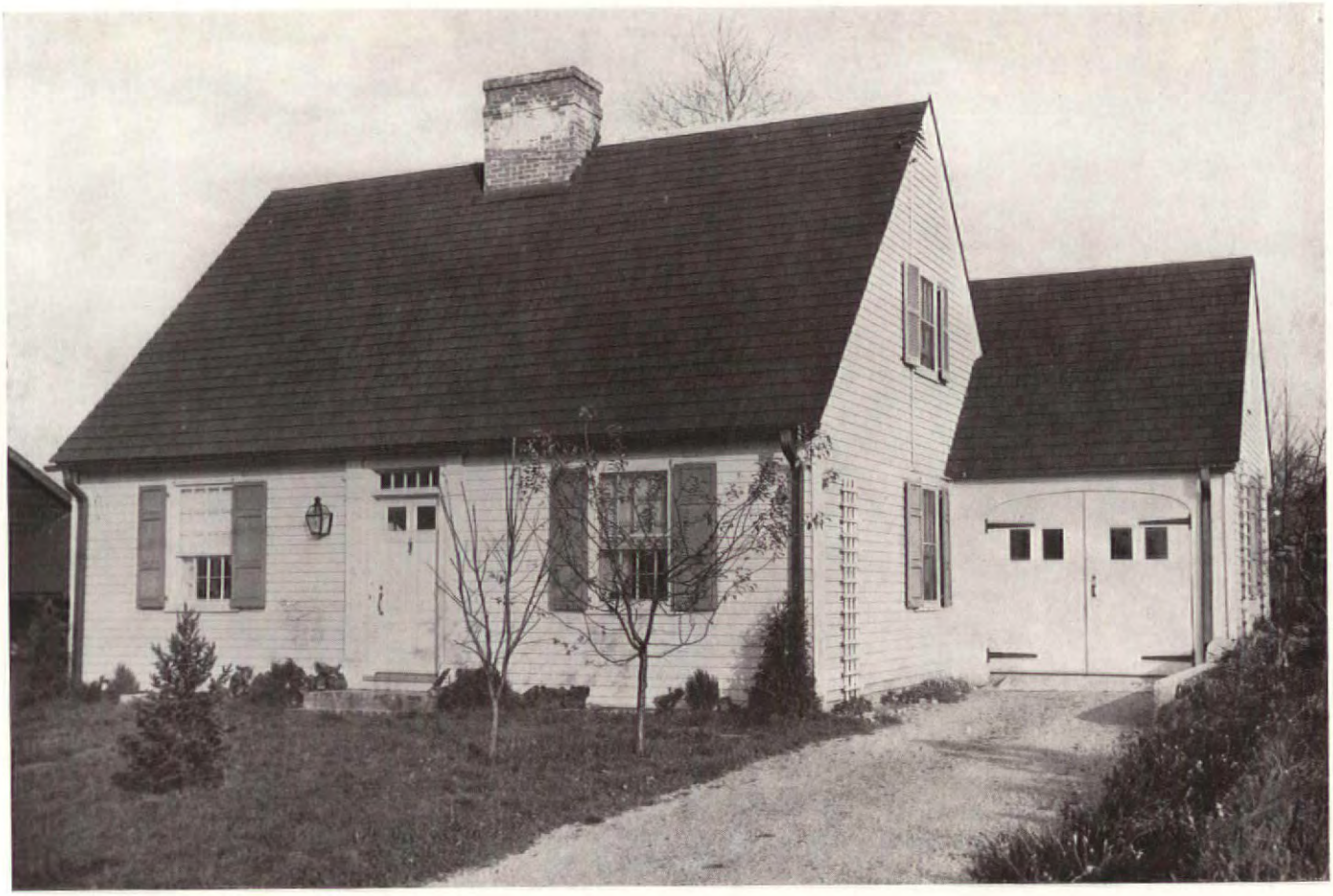
Honorable Mention — One-Story Class

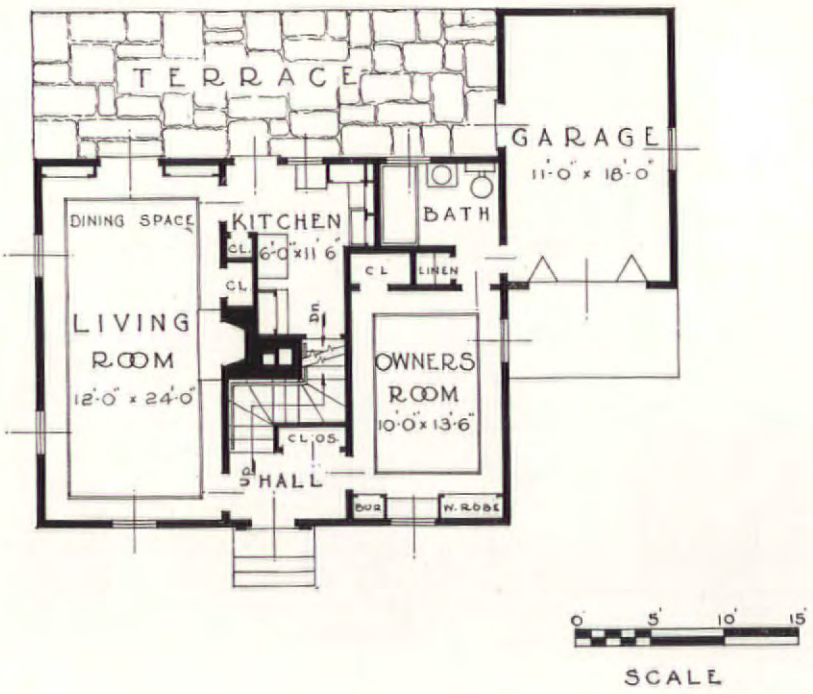
1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF GILBERT BLOSS, PALOS VERDES ESTATES, CALIFORNIA
H. ROY KELLEY, ARCHITECT

Haight



1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF GILBERT BLOSS, PALOS VERDES ESTATES, CALIFORNIA
H. ROY KELLEY, ARCHITECT





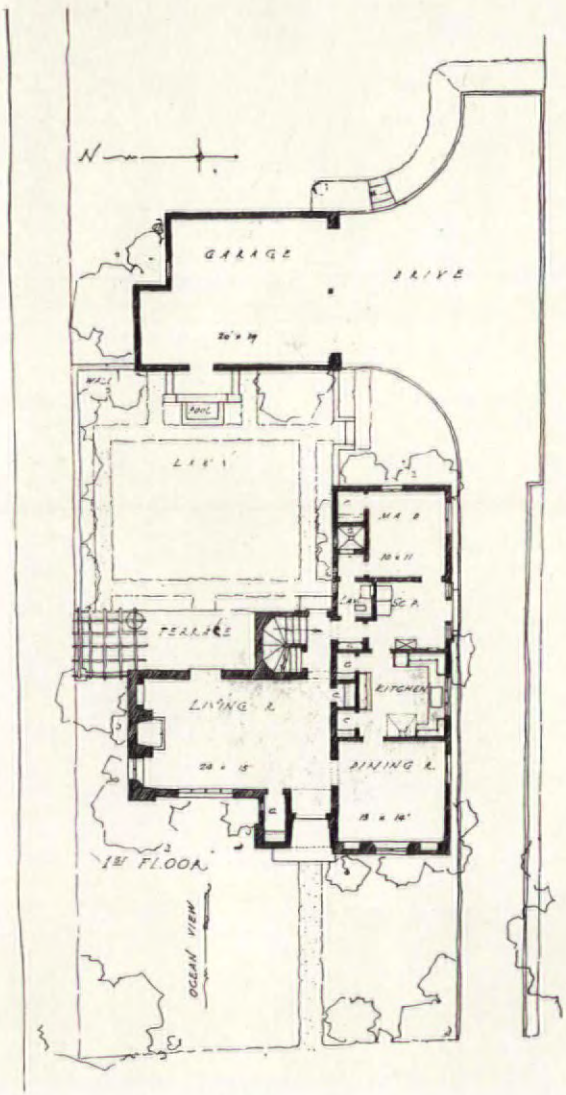
Honorable Mention — Story-and-a-half Class

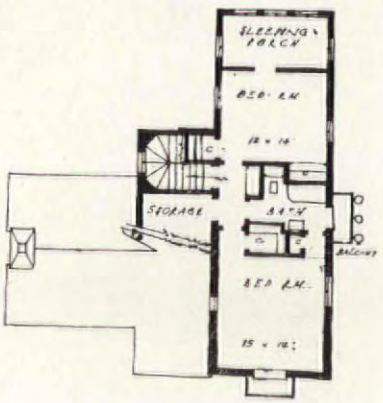
1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF E. H. CORLETT, LAKE KATONAH, NEW YORK
WALDRON FAULKNER, ARCHITECT

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF E. H. CORLETT, LAKE KATONAH, NEW YORK
WALDRON FAULKNER, ARCHITECT

Honorable Mention — Story-and-a-half Class

1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE AT 440 VIA MEDIA, PALOS VERDES, CALIFORNIA
WINCHTON L. RISLEY, ARCHITECT





1931 BETTER HOMES IN AMERICA COMPETITION
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Stoughton

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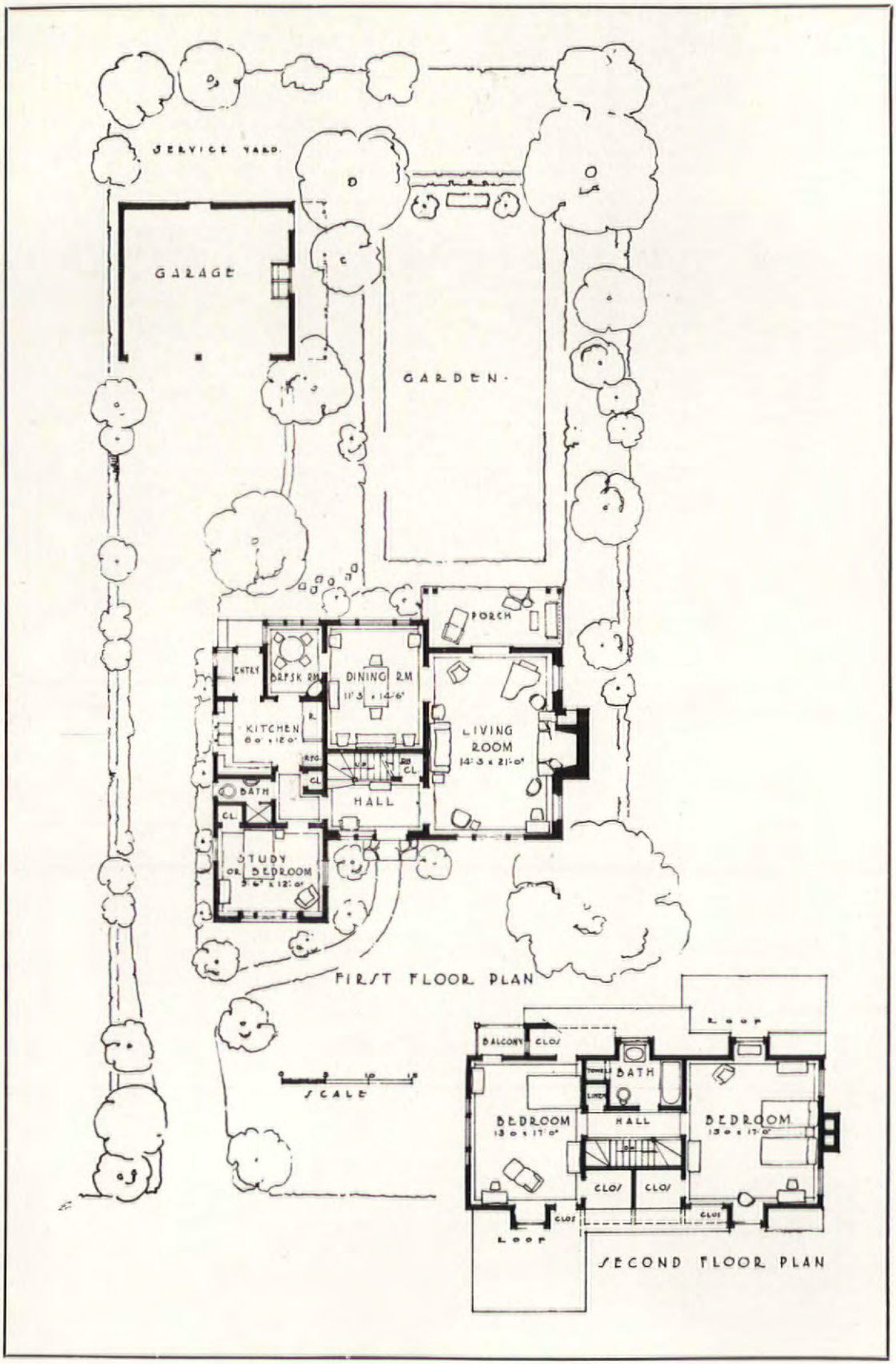
1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF HERBERT HICKS, SAN MARINO, CALIFORNIA
ARTHUR R. HUTCHASON, ARCHITECT



1931 BETTER HOMES IN AMERICA COMPETITION
HOUSE OF HERBERT HICKS, SAN MARINO, CALIFORNIA
ARTHUR R. HUTCHASON, ARCHITECT

THE 1931 "BETTER HOMES" SMALL HOUSE ARCHITECTURAL COMPETITION

By JAMES FORD

The great majority of small houses built in America are still ugly in design and inconveniently planned. The builders and buyers of small homes know little of architecture and fail to realize that architectural beauty and distinctiveness are qualities which are within their command. Their investment buys "just another house" rather than a home that will be convenient and livable and a community asset.

The Small House Architectural Competition conducted by Better Homes in America was undertaken to serve two purposes: first, to interest leading architects in small house design so that the standards of such design may be raised and second, to acquaint the American public with good small house architecture. It is definitely hoped and intended through these annual competitions to discover and call to public attention the very best of the small houses that have been designed and built anywhere in the United States in recent years.

Better Homes in America, organized ten years ago with the help of President Hoover, then Secretary of Commerce, is supported by philanthropic funds and established to stimulate the improvement of homes in every particular. Its 8,000 local committees annually organize contests, lecture programs, tours to improved homes and house demonstrations. Dr. Ray Lyman Wilbur, Secretary of the Interior, serves as its Chairman. William Stanley Parker of Boston is the architectural representative of the Board.

Two years ago Mrs. William Brown Meloney, Vice Chairman of the Board, offered the first gold medals for an annual architectural competition to be judged by a committee appointed by the American Institute of Architects. The competition is unusual in that the awards are made for houses actually constructed. The contest in 1930, in which Reginald Johnson of Los Angeles won the gold medal, covered houses built in the preceding year. The second competition, which closed last December, covered houses built within the preceding five years. The medals were designed by Gutzon Borglum and the presentation was made for the first contest by President Hoover at the White House in April, 1931.

This year's contest, which closed last December, was judged by a Committee consisting of Frederick L. Ackerman of New York, Chairman; William J. Sayward of Atlanta, Georgia, and Arthur B. Heaton, Irwin S. Porter and Waddy B. Wood, all of Washington, D. C.

The Report of the Committee:

"While the designs submitted came from a very wide geographical area, many states were not represented. Considering the fact that the competition was open to houses completed between the years 1926 and 1930, inclusive, and that during that period, to the knowledge of the Jury, many houses of excellent design were built, it is to be regretted that a larger number of submissions were not offered in competition.

"In the report of the Jury, covering 1930, it is stated that 'this being the first competition of the kind conducted by Better Homes in America, the Jury was mindful of an unusual responsibility in respect to this first award which would in a measure establish a precedent as to quality of designs that should be premiated.'

"In confining the award of medals to the one-story and two-story classes the Jury was of the opinion that the establishment of the medal standard in the story-and-a-half group might well be deferred.

"The Jury awards the gold medal in the two-story class to Dwight James Baum of Riverdale-on-the-Hudson, New York, for the residence of Francis Collins of Fieldston, New York. It was felt that this design represented a direct approach to the problem through simple means and the skillful handling of proportions, resulting in a house combining dignity and a homelike character. Within this same group the Jury gives honorable mention to the following:

"Winsor Soule and John F. Murphy of Santa Barbara, California, for the residence of W. E. Risser of Santa Barbara, California.

"Dwight James Baum, of Riverdale-on-the-Hudson, New York, for the residence of Thomas McCall of Fieldston, New York.

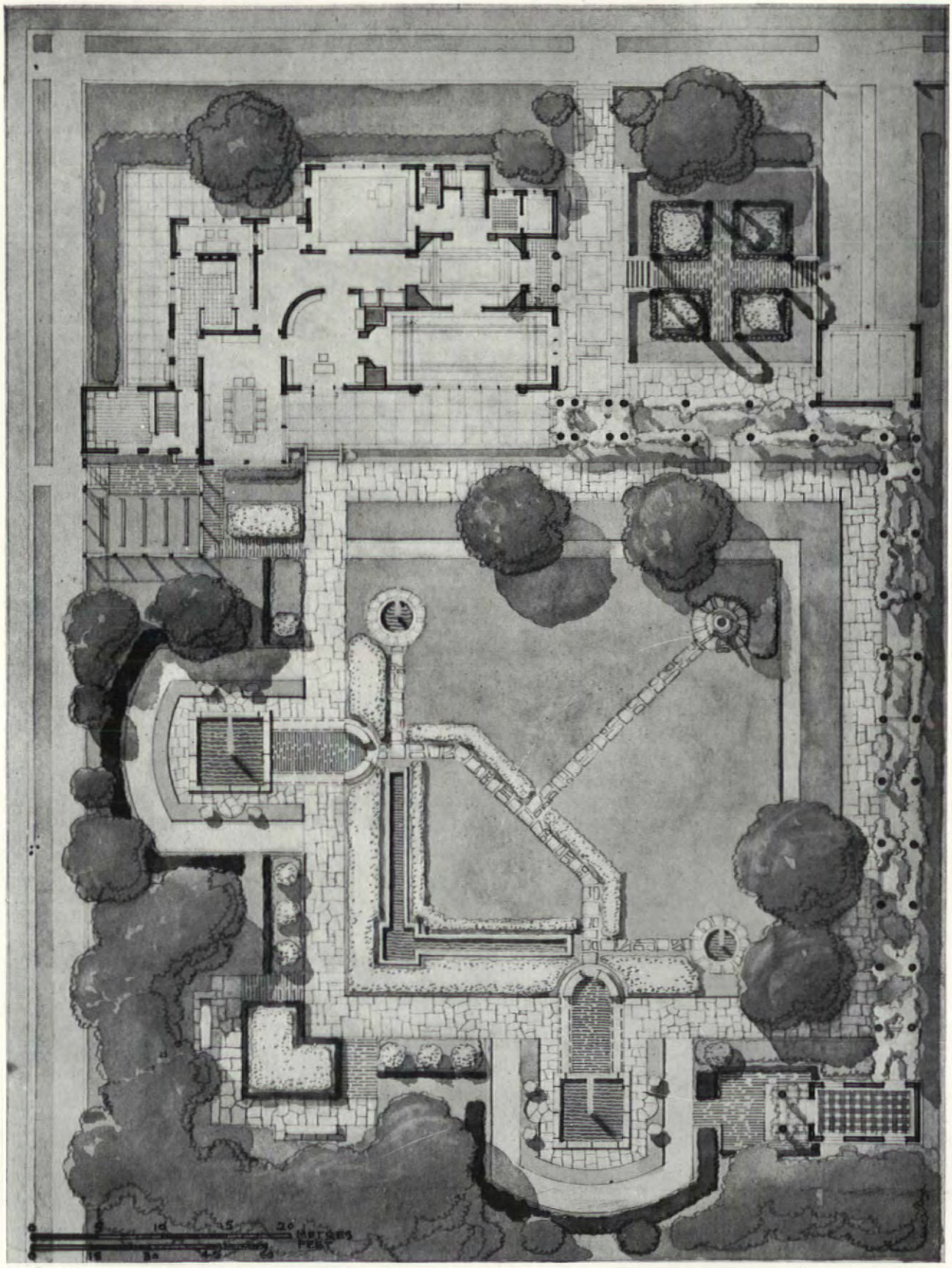
"In the one-story class the Jury awards the medal to Winchton L. Risley for the residence of Miss Stella Smith, Palos Verdes Estates, for a simple and altogether charming solution of the problem. An honorable mention is awarded to:

"Charles S. Keefe, of New York City, for the guest house at Homewood on the estate of E. Hope Norton, Darien, Connecticut.

"H. Roy Kelley, of Los Angeles, California, for residence of Gilbert Bloss, Palos Verdes Estates, California.

The Next Competition

This year's competition, which will close on December 1, 1932. Plans and photographs of each house built between the years 1927 and 1931 inclusive may be submitted, provided the cubage for houses in the one-story and story-and-a-half groups does not exceed 24,000 cubic feet above the level of the first floor or 26,000 cubic feet in the case of two-story dwellings.

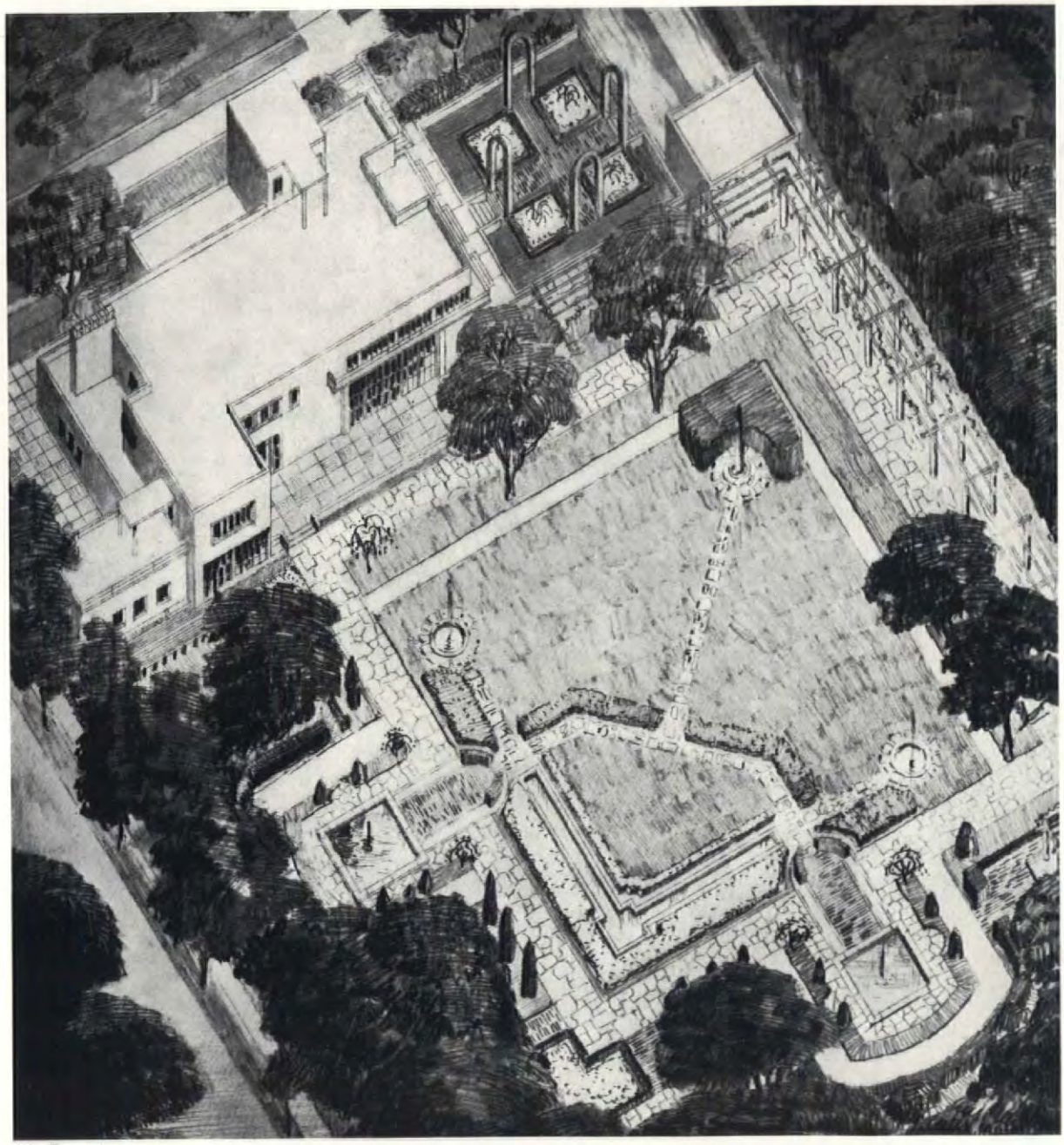


M. Gravot

"The treatment of modern gardens consists of extending to the surrounding grounds the principles of architectural design which govern the house."

COMPOSITION OF HOUSE AND GARDEN

DESIGNED BY J. J. HAFFNER, ARCHITECT



M. Gravot

PLAN RENDERINGS OF NEW GARDEN DESIGNS*

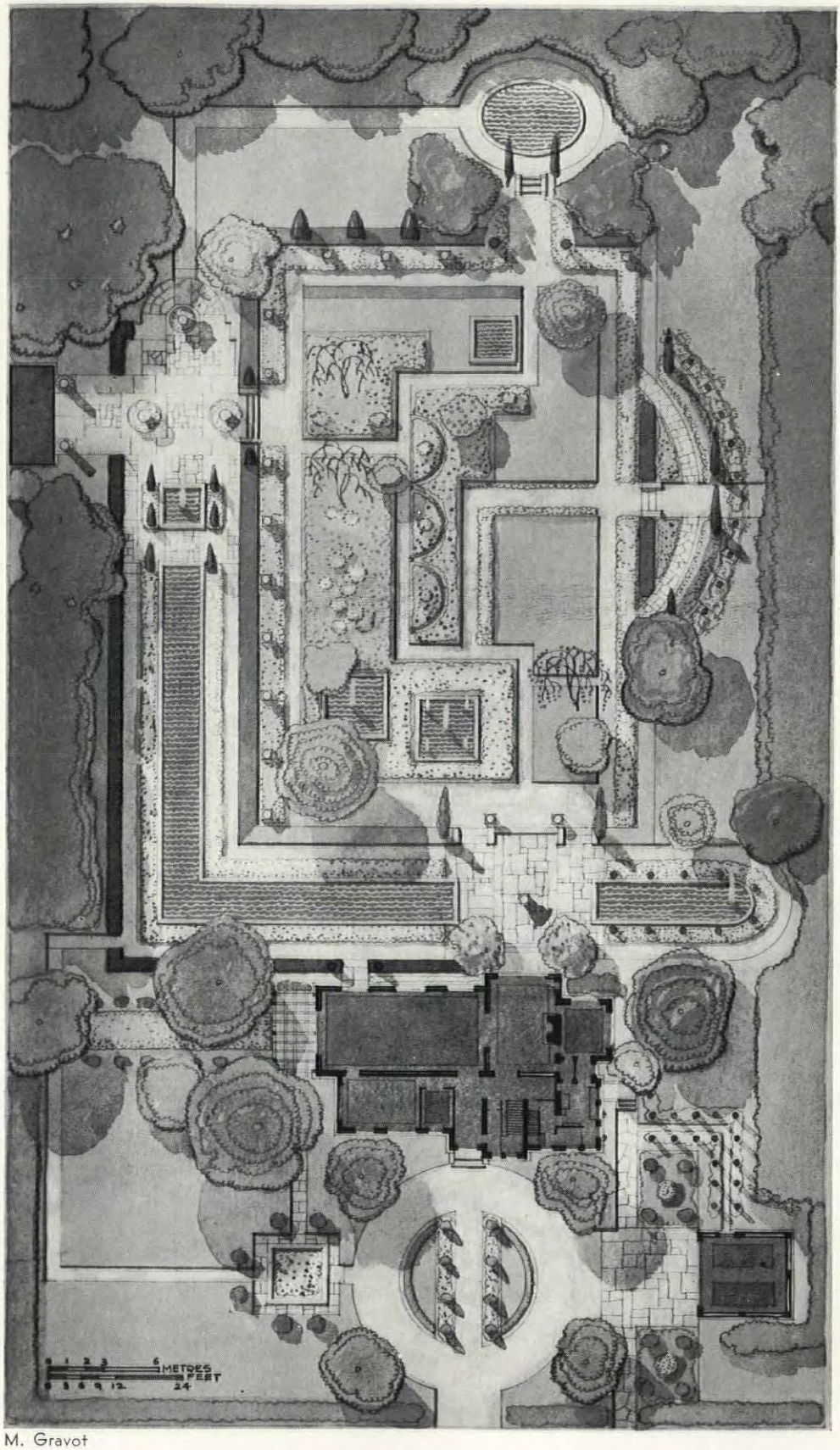
By J. J. HAFFNER, Professor of Architecture, Harvard University

Actual changes in architecture, the number and novelty of experiments made in all branches of art can leave no one indifferent. Nevertheless, order is to be found in these changes: where order is found, one may think of measure, proportions, unity, harmony.

All these qualities are the expression of tradition. Only the surface of tradition is altered entirely; harmony and unity should be obtained whatever the processes of construction, whatever the materials, whatever the dimensions or shapes of buildings. In this era we find only a different and new expression of tradition. Unfortunately we are not yet always gratified with harmony and unity in all our architectural experiments.

Whatever the future solution of the housing problem, families will have homes of some kind. Individuals will recognize the right of choosing their own designs for house or garden built according to the new aspects of tradition, but with the personal variation that free and sensitive human beings will always desire.

*Plans used as illustrations in this article are included in "Compositions des Jardins" by J. J. Haffner. Vincent Fréal, editors, 4 rue des Beaux Arts, Paris.

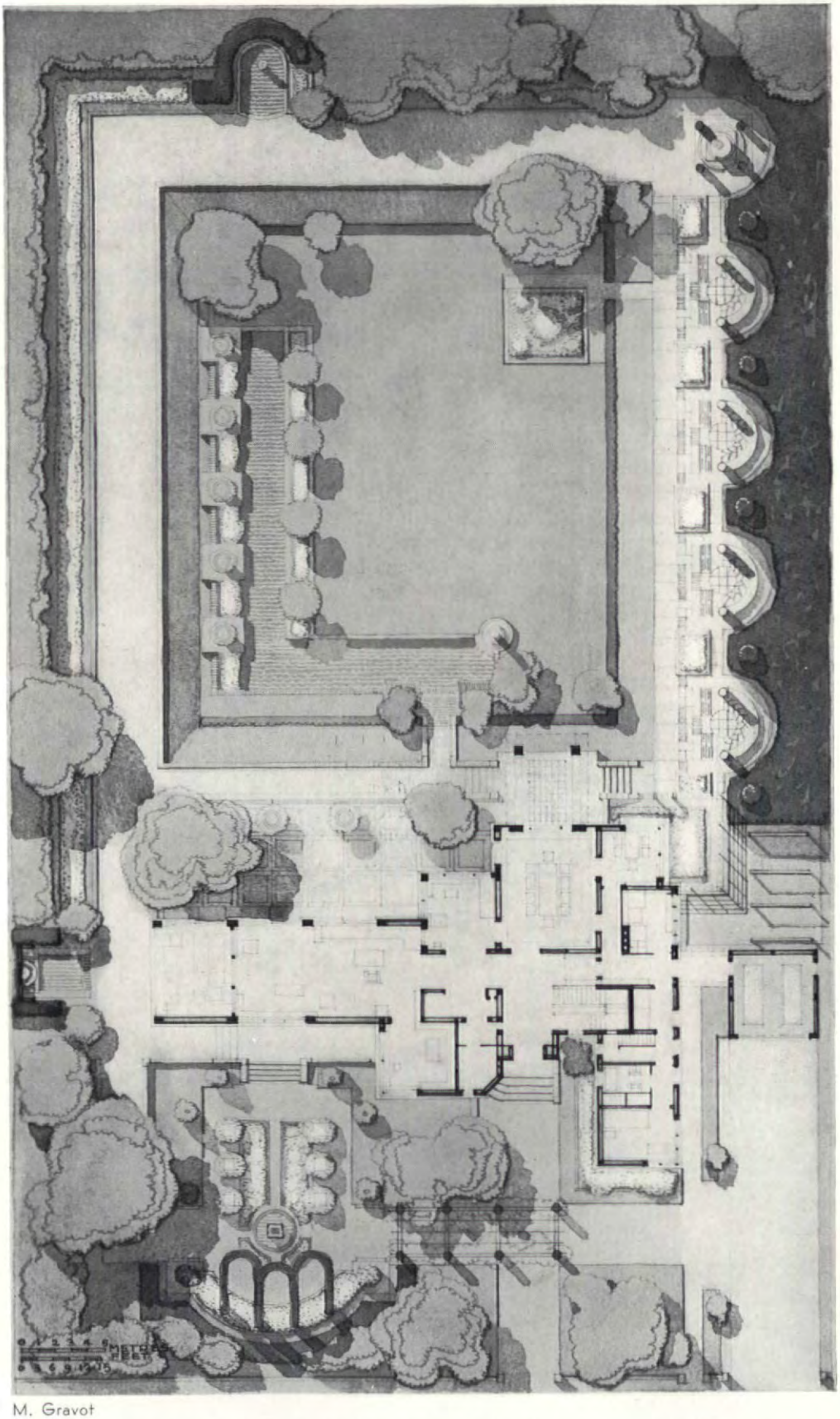


M. Gravot

"Freedom, informal balance, harmony in scale and color, good proportion of flowers, greens and paths—such is the new garden study."

SUBURBAN GARDEN DESIGN

J. J. HAFFNER, ARCHITECT



M. Gravot

"When one considers the location, the landscape, the climate, it appears that new garden designs are in infinite variety."

SUBURBAN GARDEN DESIGN

J. J. HAFFNER, ARCHITECT

Art is essentially creative. The disposition of the elements of the house is the work of imagination; so, too, should be the garden composed with it. With the hope that our leisure will increase in the future, why not think of the ideal garden as a place where we shall be able to spend restful hours?

It is pointed out definitely that the new gardens presented in this article are not supposed to surround and compose with any of the "style" houses, those reproductions of Tudor, Anglo-Norman, French eighteenth-century, Georgian or Colonial residences: gardens existing for such houses have been made and repeated over and over again, copied or inspired from those delightful old estates in England and France. To the new forms of architecture, to the use of new materials, let us apply new forms and new materials for building the modern garden.

The treatment of modern gardens should be called the architectural treatment, for it consists of extending to the surrounding grounds the principles of architectural design and composition which govern the house; the object of relating both elements is to bring about unity and harmony, to make the house integral with its surroundings.

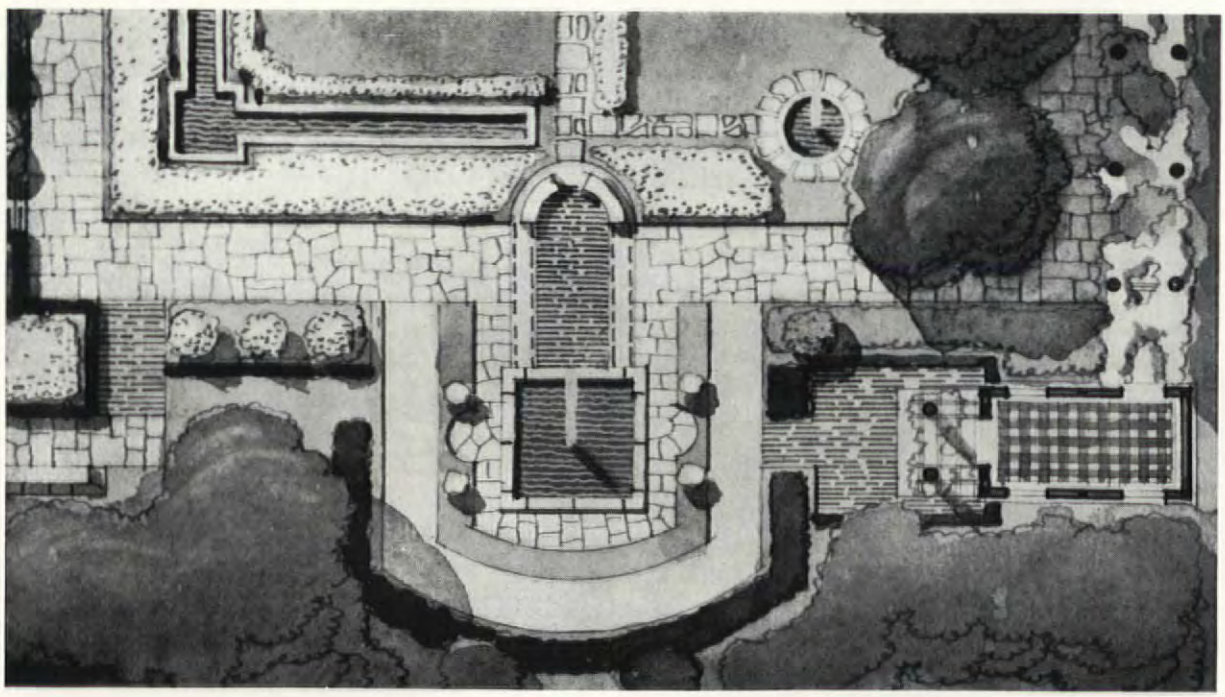
We have lost the *raison d'être* of the garden—which should be the continuation of the house in outdoor areas, and not a more or less agreeable combination of scattered features unrelated to each other and unrelated very often to the house.

The garden of the future will be the transition between the abstract volumes of the house and pure natural forms. We need this transition for two reasons. The first, which is sufficient in itself: close harmony between the two elements. Second reason: one of adaptation to social needs, developments, transformations. We entertain less in our gardens, more in clubs. We have no time to walk to distant features of the garden; we must enjoy them from the house, or from areas immediately adjacent to the house.

One other reason, a reason of observation and experience, is that the house of today cannot satisfactorily be placed on an unarranged plot of ground, with nature as the setting. A Colonial house or an Anglo-Norman cottage looks perfectly at ease in untouched nature. The modern house appears unsettled, demanding "atmosphere"; it needs accompaniment in open spaces of studied areas which will be the link between the abstract and the natural. If well studied, these areas will imperceptibly relate the house to pure nature. Great freedom in the general composition, informal balance of masses, harmony in scale and color between them, good proportion between the amount of flowers, greens and paths—such are the directives of the new garden study.

Other characteristics: greater variety of forms; more play with differences of level in the setting of flowers, the hedges, paths and water surfaces in relation to turf; greater use of contrast in masses of color for foliage, in character of plants and flowers and bushes. More opposition in setting of flowers—high, vertical, divided types of flowers contrasting with other massive, creeping, spreading types. A more comprehensive use of square-cut shrubs or hedges, of pergola or trellis work, always related in disposition and scale to the house which remains the climax.

When one considers that the location, the configuration of the ground, the character of the landscape, the climate are also elements not to be neglected, it appears that new garden designs are in infinite variety.



ENLARGED DETAIL OF PLAN, SHOWING RENDERING TECHNIQUE

DESIGN AND DRAFTING PROBLEMS

SEATING HEIGHTS AND SPACING
TABLE SIZES AND HEIGHTS

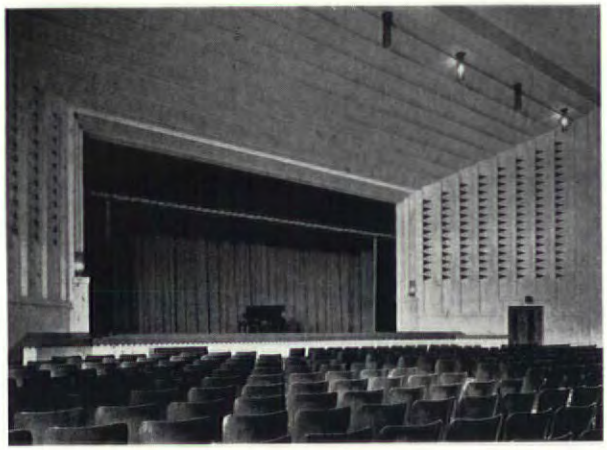
By A. LAWRENCE KOCHER
and ALBERT FREY

Holophane Co.

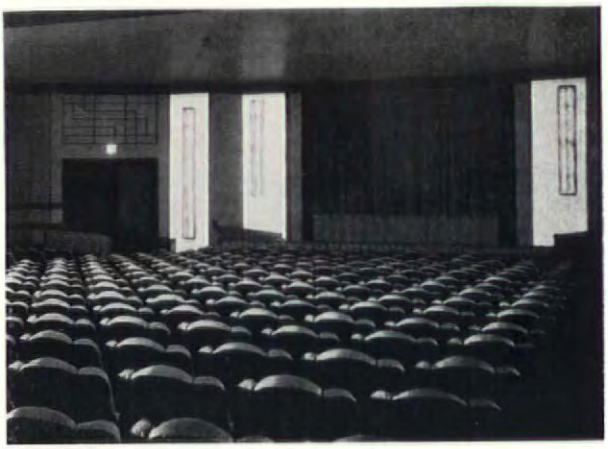
Classroom seating arrangement for general use with daylighting from left wall.

Tebbs and Knell

Bench seating in churches induces close relationship in congregational worship.



Individual seats have been adopted for the auditorium. Note relation to stage for seeing and hearing.



Van Anda

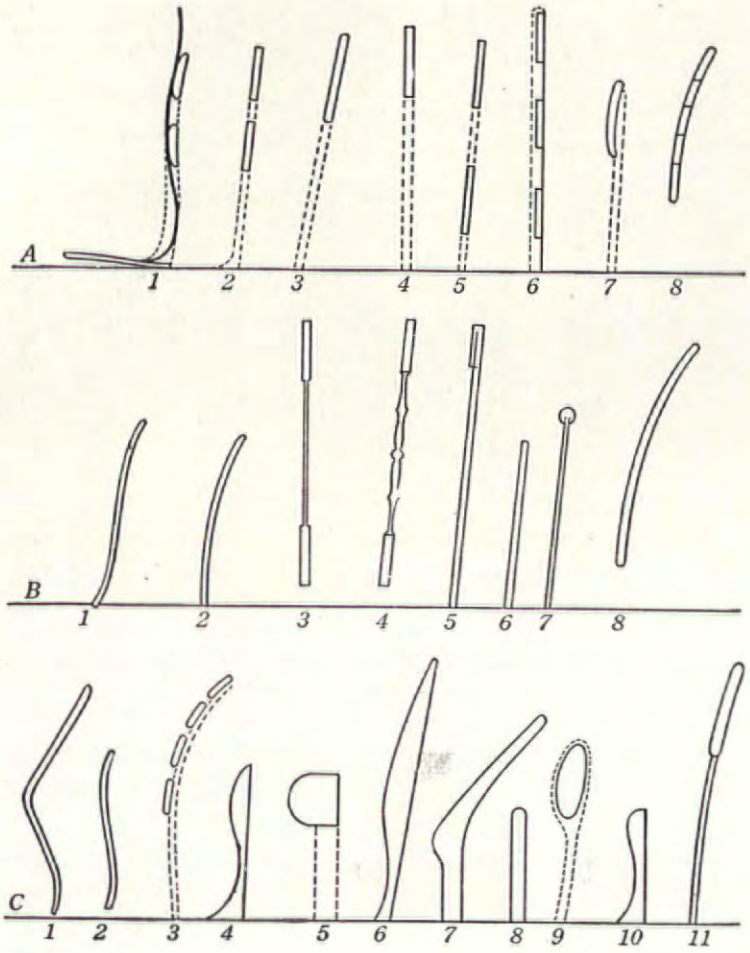
The theater to which we are attracted for pleasure demands individual seats of maximum seating comfort.

Galloway

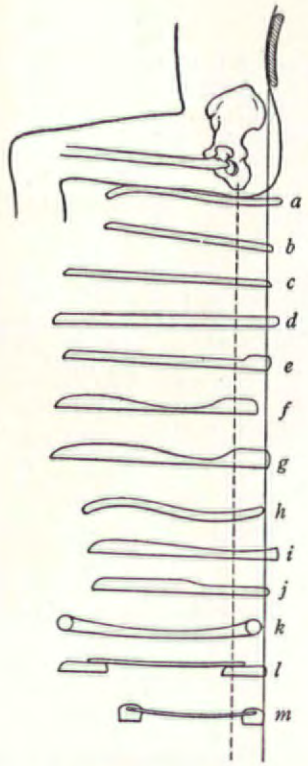
Spectators accept a more compact seating in viewing outdoor sports. Viewing a football game at Yankee Stadium, New York.

Galloway

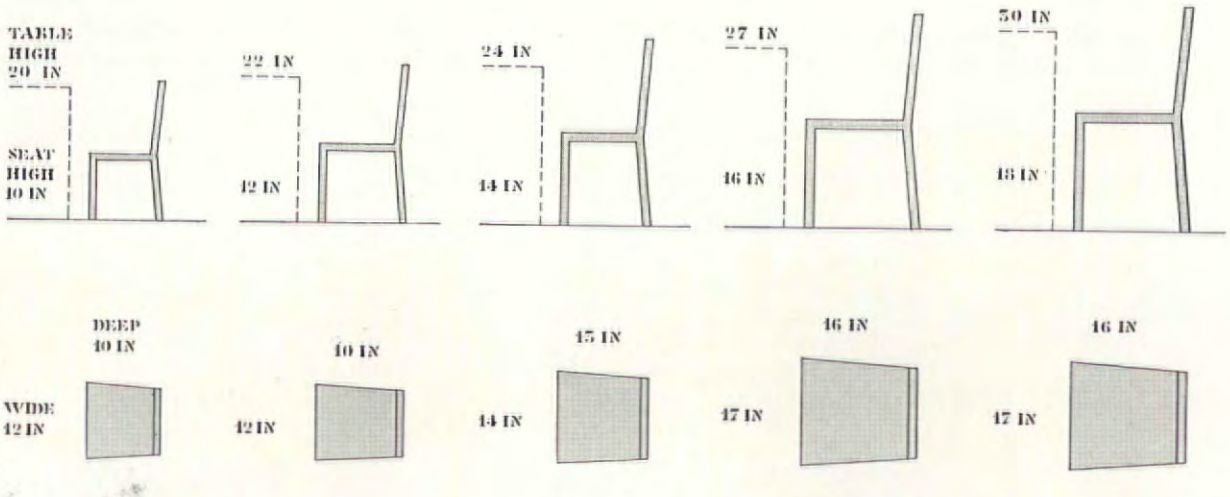
Stadium of elliptical shape determined by maximum accommodation around an oval play field. Attention is focused downward and toward oval.



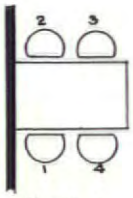
Various types of back supports used on school seats. First row: slat or cross-strip backs. Second row: vertical spindles or solid backs. Third row: various types used in European schools. All are sections along the center line. From "School Posture and Seating" by H. E. Bennett.



Seat forms in use on school furniture. Diagram at "a" shows relation to person seated. The seat shape that is concave toward back as shown at "a" is most desirable. There should be convex lumbar support to back of sitter.



Dimensions of available chairs of same type for different school grades and for adults. The seat height is adjusted to height of table. Tables used for reading and writing should have sloping tops.



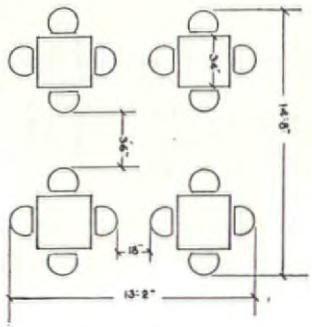
PLAN A

PLAN B

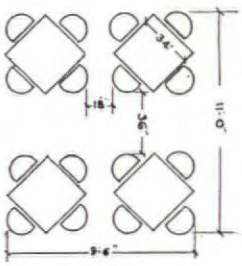
In restaurants two couples will occupy tables in plan B, while two separate parties will not occupy table in plan A unless all other seats are taken.

Troy Studio

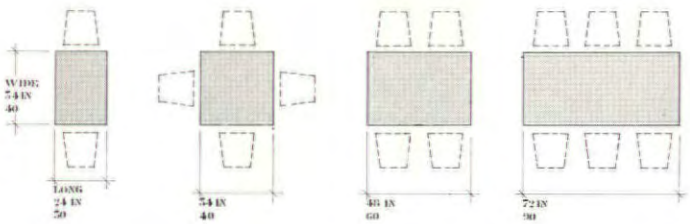
Children should have furniture suited to their size. Specialists in child welfare have discovered that children develop more favorably in a setting with furniture and surroundings proportional to their size.



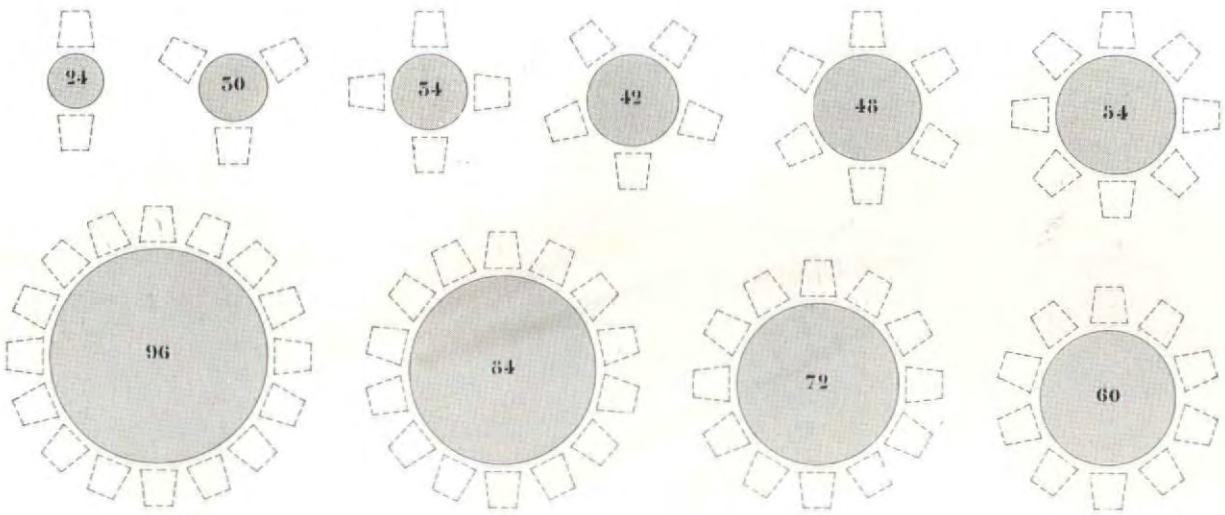
Spacing of tables in a restaurant at right angles to wall.



Tables spaced at an angle occupy less space than when placed parallel.

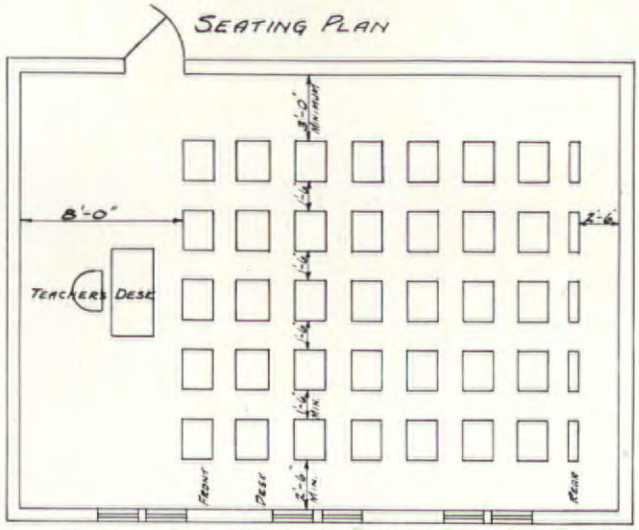


Square and rectangular dining tables of 29″ height, showing required table-top area in relation to number of seats. Dimensions are indicated for minimal and comfortable accommodation.



Round table of 29″ height for dining. Numbers at center of circles indicate desirable diameter in inches for tables of varying accommodation.

SCHOOL SEATING



CONSULT STATE AND LOCAL BUILDING CODES FOR AISLE SIZES

TABLE No. 1

NUMBER OF ROWS IN A ROOM

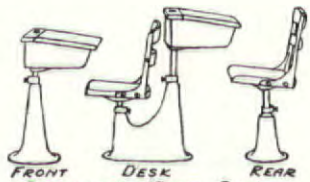
WIDTH OF ROOM	SIZE OF DESKS Nos. 1 & 2	Nos. 3 & 4	Nos. 5	SIZE "A"	SIZE "B"	SIZE "C"
18 FEET	4	4	4	4	4	4
20 "	4	5	5	4	4	4
22 "	5	5	6	5	5	5
24 "	5	6	6	5	5	5
26 "	6	6	7	6	6	6
28 "	7	7	8	7	7	7
30 "	7	8	8	7	7	7
32 "	8	8	9	8	8	8
34 "	8	9	10	8	8	8

TABLE No. 2 – NUMBER OF DESKS PER ROW

LENGTH OF ROOM	SIZE OF DESKS Nos. 1 & 2	Nos. 3 & 4	Nos. 5	SIZE "A"	SIZE "B"	SIZE "C"
24 FEET	5	6	6	4	4	4
26 "	6	7	7	5	5	6
28 "	7	8	8	6	6	7
30 "	8	8	9	7	7	7
32 "	8	9	10	7	8	8
34 "	9	10	11	8	8	9
36 "	10	11	12	9	9	10
38 "	11	12	13	9	10	10
40 "	11	13	14	10	10	11

TABLE No. 1 INDICATES THE NUMBER OF ROWS OF DESKS THAT MAY BE PLACED IN ROOMS OF VARIOUS WIDTHS
TABLE No. 2 INDICATES THE NUMBER OF DESKS THAT MAY BE PLACED IN EACH ROW IN ROOMS OF VARIOUS LENGTH

UNIVERSAL TYPE DESK
MOVABLE – ADJUSTABLE
MADE IN SIZES A-B-C



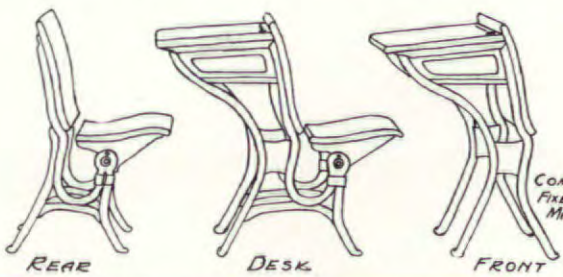
PEDESTAL TYPE DESK
FIXED TO FLOOR – ADJUSTABLE
MADE IN SIZES A-B-C

DESK SIZE		SIZE OF TOP	HEIGHT OF TOP	HEIGHT OF SEAT	SPACING BACK TO BACK
FIXED DESKS	No. 1	16" x 23½"	30"	17 3/8"	31"
	" 2	16" x 23½"	28¼"	16 1/8"	30"
	" 3	14" x 23½"	26½"	14 7/8"	28"
	" 4	14" x 23½"	24 3/4"	13 5/8"	27"
	" 5	12" x 17½"	23"	12 3/8"	25"
ADJUSTABLE DESKS	SIZE A	17½" x 23½"	26" TO 31"	14" TO 18"	35"
	" B	17½" x 23½"	23" TO 28"	12½" TO 16½	33¼"
	" C	17½" x 23½"	22" TO 27"	11" TO 14"	31½"

GRADE	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	HIGH SCHOOL
AGE	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13 UP
DESK SIZE	5	5	4	4	3	3	2	1	1
SIZE SELECTION	100%-5	90%-5 10%-4	90%-4 10%-3	60%-4 40%-3	40%-4 60%-3	30%-4 70%-3	80%-2 20%-1	60%-2 40%-1	40%-2 60%-1

	ADJUSTABLE COMBINATION DESKS								
DESK SIZE	C	C	C	B	B	B	A	A	A

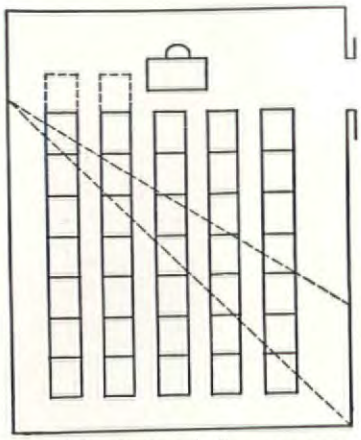
SEATING PLANS FURNISHED WITHOUT COST OR OBLIGATION BY MOST SCHOOL DESK MANUFACTURERS



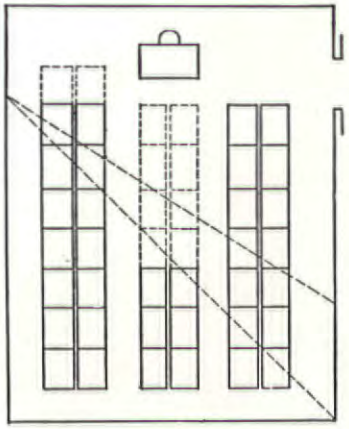
COMBINATION TYPE DESK.
FIXED TO FLOOR – NON-ADJUSTABLE
MADE IN SIZES 1-2-3-4-5

ABOVE DATA FURNISHED BY COURTESY OF AMERICAN SEATING CO.

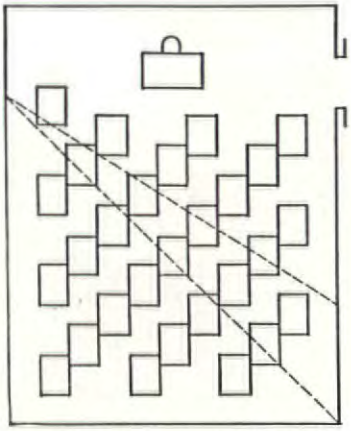
The trend in school seating is toward individual units for each pupil which will permit adjustment of seat and desk to different sizes and grades. Supporting parts are either of steel tubing or pressed steel. Parts which touch the body are of wood. The combination of a desk with a seat in front economizes material for each unit and space in the row.



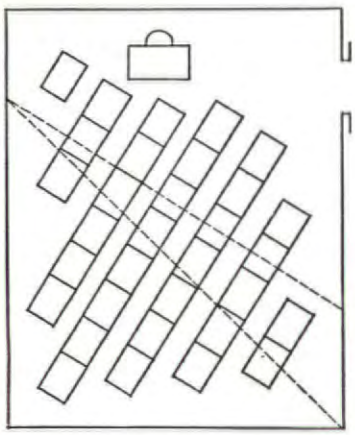
Traditional straight-line arrangement of seats. Pupils sitting behind the lower diagonal line face a serious glare and those behind the other diagonal, a slight glare.



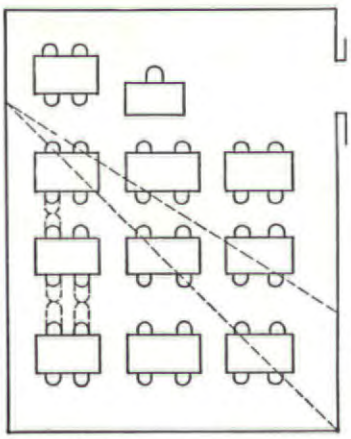
Seats arranged in double rows, making maximum seating possible but with many obvious objections. Aisles are required to do double duty. There is also too close a relation of pupils.



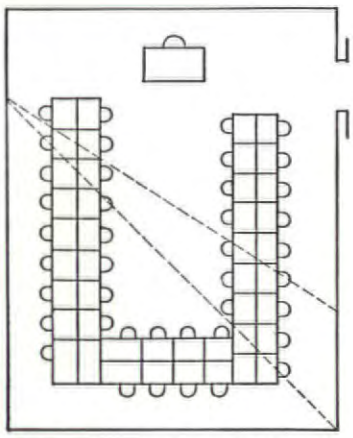
Sawtooth plan to avoid pupils' sitting close behind each other. Access from right side. Light is no better than in traditional plan. Scheme uses excess of floor area.



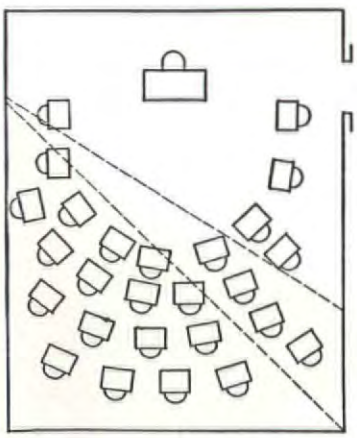
A very desirable grouping arrangement in which pupils face toward angle of classroom. Lighting from left; straight aisles and economical use of floor area.



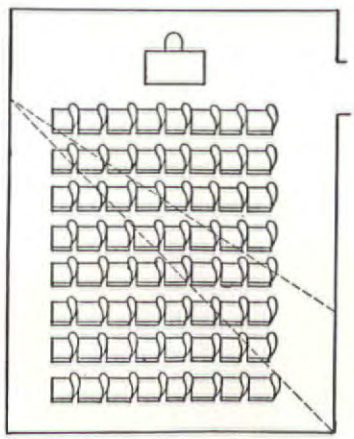
Formal arrangement of large tables with pupils facing each other. Lighting is not uniformly satisfactory. Chair movement results in confusion and waste of floor space.



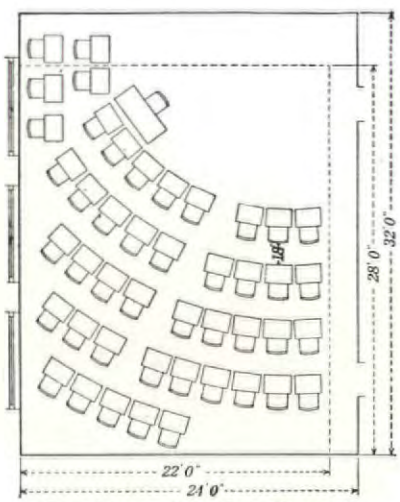
Hollow square plan, suited to primary grades "to provide open space in center and an informal socialized arrangement." Light bad for almost all pupils. This plan is extravagant of space.



Informal semicircular layout: "unitary focus," but disorderly, and facing of many pupils in relation to light is undesirable. Radiating rows of seats usually extravagant of space.



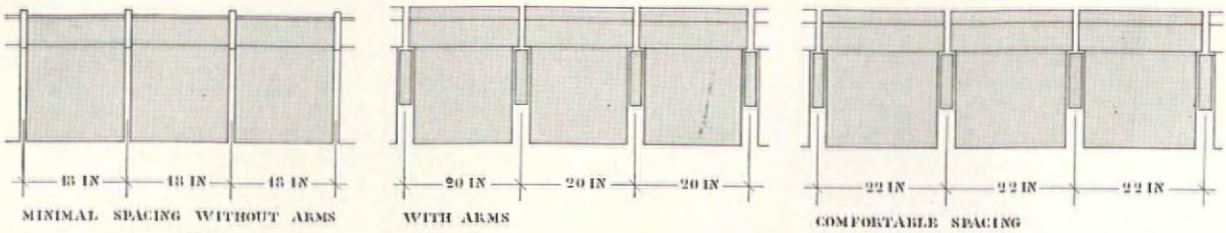
An arrangement of tablet arm chairs with maximum seating (sixty-four sittings). Suited only for lecture purposes.



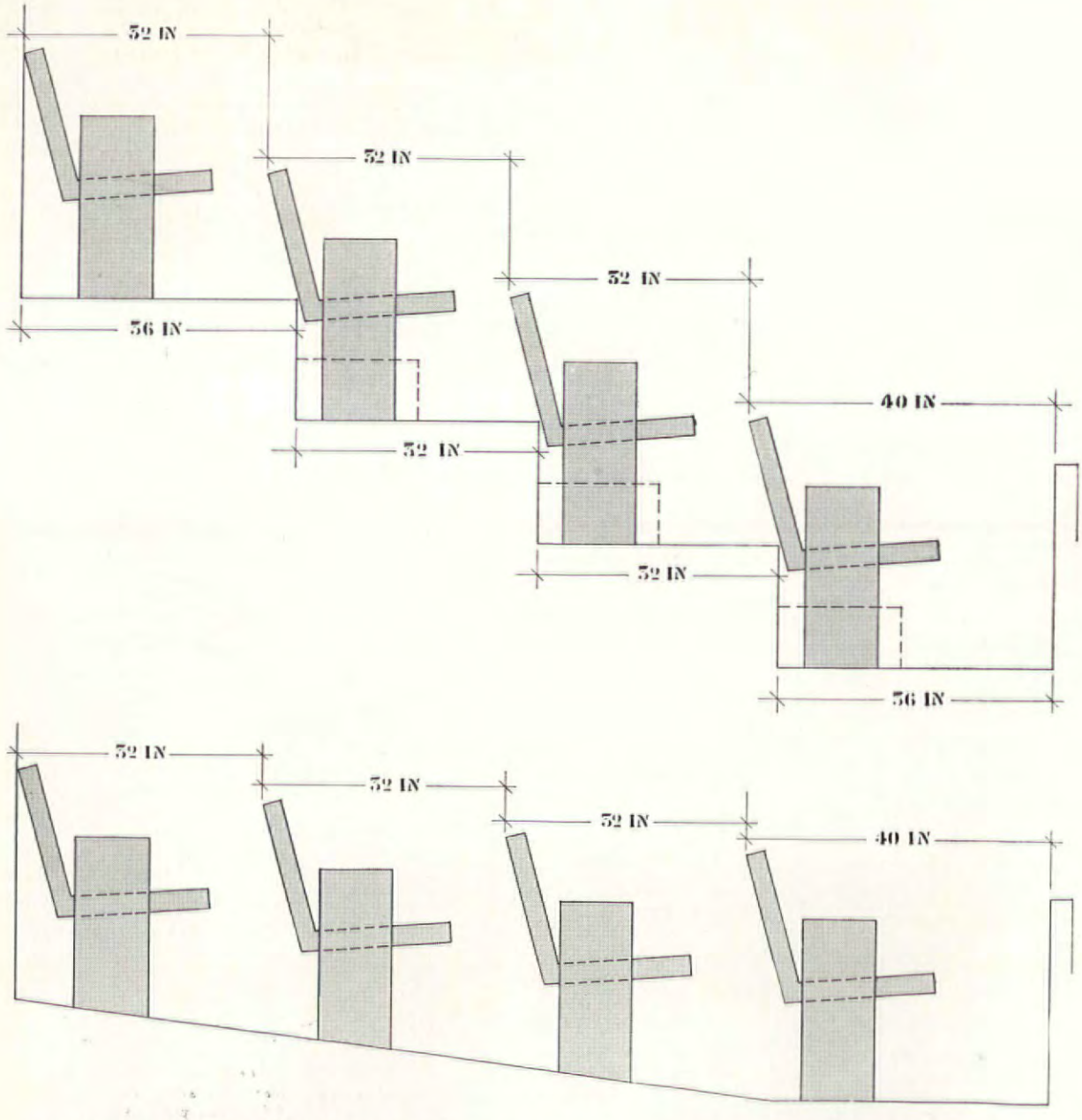
Quadrant plan of seating with excellent light for each pupil. All face toward the better lighted blackboards. A large well-shaped space for class activities.

Seating arrangements for the standard size school classroom 21' by 28'. Aisles between desks are 18". Aisles next to outer walls are not less than 24". Aisles adjoining inner walls are not less than 30" wide.

Drawings and comment on this page from "School Posture and Seating" by H. E. Bennett.



SEATS DESIGNED FOR ROWS, generally used for auditoriums, movies and other theaters. Building codes limit width of seats at 18" or 20" measured at the top of seat backs. The maximum number of seats in any row extending from one aisle to a wall is 7 (see local code). Chair-arms are usually about 9" above the seat.



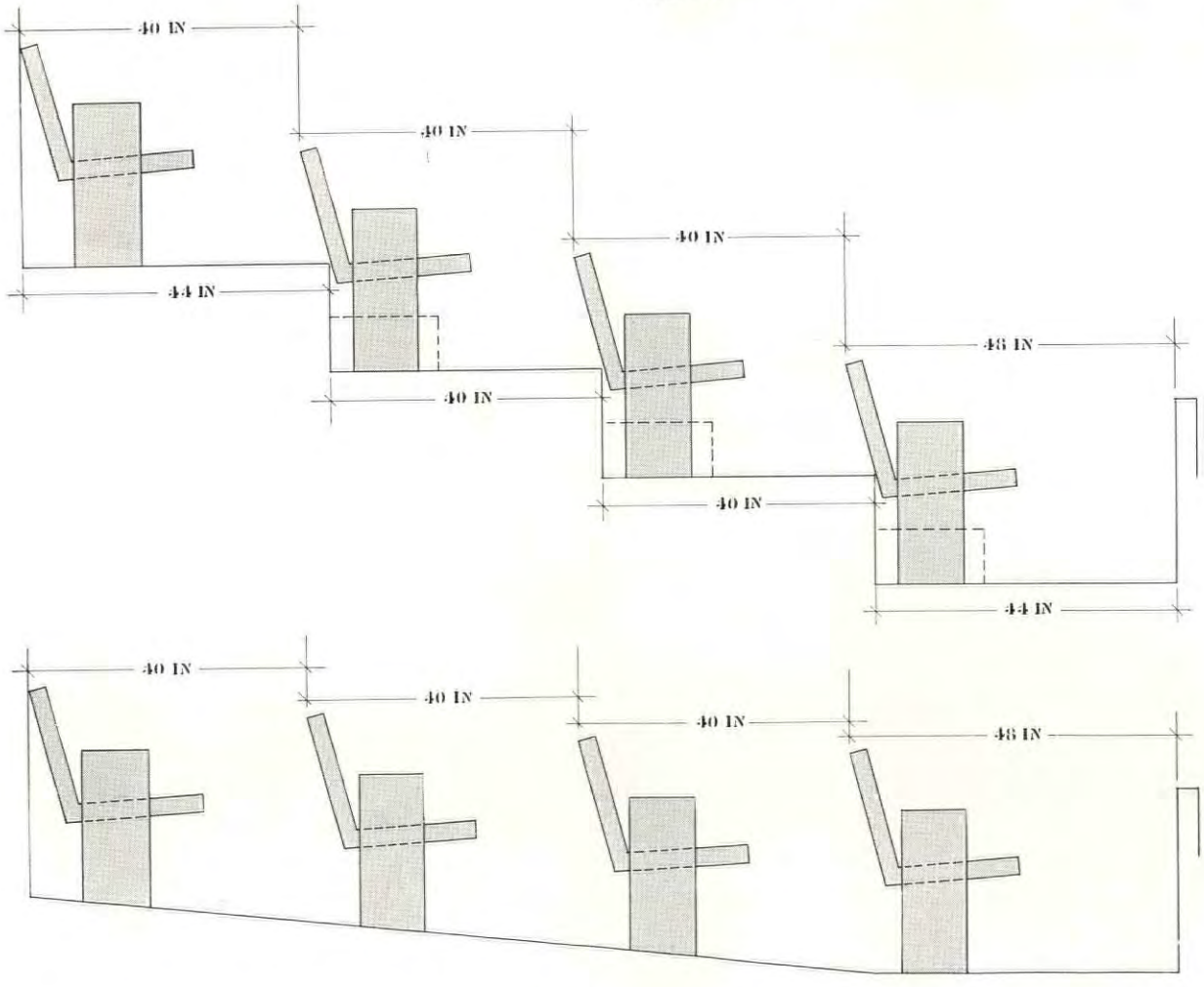
MINIMAL THEATER SEATING: section showing the minimal dimension required from back to back, and with access to the first row. Extra thick upholstery of the seat back requires additional space. On account of seat-lifting, theater and opera chairs with plywood back may be spaced as close as 31" back to back but local codes usually accept 32" as minimal.

Draftsmen in indicating theater seating on plans should make exact drawings of the audience space to an accurate scale, laying out the seating to the required back-to-back and arm-to-arm spacing. There is no accurate method for estimating the seating capacity of theatres and audience-rooms, although the following rule is frequently observed: estimate 7 to 8 square feet to each seat when on a curve and 6 to 7 square feet for straight rows. Comfortable seating, as indicated on this page, requires approximately 9 square feet per person. Allowance for aisles is included in these rules.

The minimum spacing for church pews, back-to-back, is 30 inches. Where there is ample space, placing of church seats should be 36 inches back-to-back for comfort. This permits a person to pass another without causing inconvenience. For pews and benches 18 inches is considered a "sitting."

Galloway

AMPLE SPACING: this photograph shows clearly how a more ample seat spacing permits a person to enter or to leave a row without inconveniencing the persons seated. This arrangement is particularly desirable for news reel and other motion picture theaters.



THEATER SEATING COMFORTABLY SPACED: the increase in dimension from back to back requires larger floor area for a given number of seats. This would be compensated in practice by an improved average in patronage.

Dyche Stadium in shape of crescent. The backless seat is satisfactory for viewing outdoor athletic events. James Gamble Rogers, architect. Gavin Hadden, associate.

Temporary sectional steel seating in foreground, erected over running track in front of permanent seats. Franklin Field, University of Pennsylvania. Gavin Hadden, engineer.

STADIUM SEATING

Hedrich-Blessing

Chicago Indoor Stadium with individual seats facing toward square for boxing. Hall, Lawrence and Ratcliffe, architects.

Harvard Athletic Building. Steep tiers of seats necessary to see the center of all swimming lanes. Coolidge, Shepley, Bulfinch and Abbott, architects. Gavin Hadden, associate.

STADIUM SEATING

By CARL T. WASHBURN*

General Considerations

The design of a stadium structure for seating depends on (1) kind of contest or exhibition to be viewed, (2) comfort and convenience of seated spectators, (3) comfort and convenience of entering spectators, (4) probable behavior of spectators (whether they will sit back and "take it easy" or whether they will be in a constant state of restlessness and excitement as at a football game), (5) proper balancing of cost against the degree of comfort desired or deemed advisable.

In order to determine comfortable seating the following human dimensions, obtained by Dr. R. Tait McKenzie, Director of Physical Education at the University of Pennsylvania, were used:

Hip width of adult male varies from 14.3" to 11.6". Ave. 13.1".

Hip width of adult female varies from 15.1" to 10.5". Ave. 12.1".

Shoulder width of adult male varies from 18.9" to 12.6". Ave. 16.3".

Shoulder width of adult female varies from 15.1" to 13.0". Ave. 14.2".

These and other studies have shown that width for one seat (lengthwise of the row) of less than 17" is uncomfortable. The latter is generally considered a comfortable and economical minimum for football stadiums. Where space is unrestricted a width of 18" may be used, which is of course more comfortable but also more costly.

It has been found that about 15" should be allowed for the knees of spectators and for room for entering spectators.

A height of seat from the deck of 18" has been found satisfactory. This should be as high as possible because it gives more toe room to spectators in the row behind and also because with spectators sitting in a more upright position they take up less room horizontally. Higher than 18" is uncomfortable for women.

Other Considerations of Space

Designs should also consider (1) whether seats are to have back rests or not, (2) room for feet under seat, (3) room for toes under seat in front.

Seats for baseball stadiums usually have back rests because (1) nature of game is conducive to spectators sitting at ease, (2) spectators expect them and in many stadiums, such as the major league parks, have individual seats as well. Seats for modern football stadiums usually have no back rests because, unlike baseball, the spectators seldom use the backs even if they are provided. This makes for (1) decreased cost, not only because of the decreased seat material but because it allows of narrower deck tread widths, (2) less danger of injury to spectators when standing up in exciting moments, (3) lower maintenance costs.

*Information and drawings in this article were obtained from the office of Gavin Hadden, Civil Engineer, 607 Fifth Avenue, New York City, designer of numerous structures and playfields for athletic purposes.

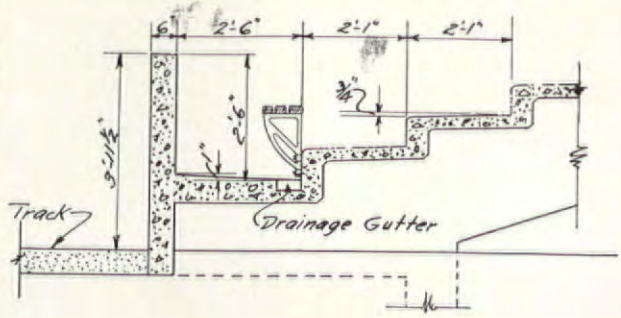


FIGURE 1

Dimensions of spacing and heights. Section of deck at front wall.

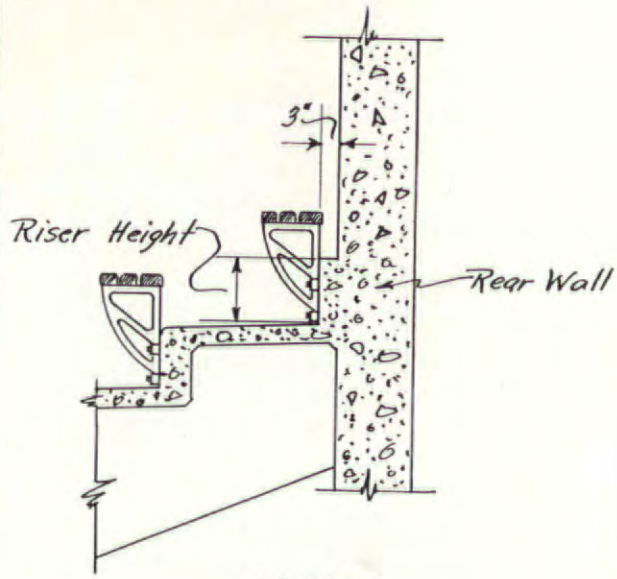


FIGURE 2

Section of deck at rear wall.

Space for knee and passage clearance at first row should be about 20" instead of the 15" mentioned above because (1) concrete front wall prevents leaning away from spectators as is possible when entering all other rows, (2) there is no additional toe room in front as in most other rows. Figure 1 illustrates a typical front section of a stadium with 25" treads, except the first tread which is 30". The height of the front wall from the first tread should be about 2' 6", as shown, for the usual football stadium, but this may depend on the sight lines from the lower rows. The heights from the track may of course vary greatly.

No extra space is allowed beside an end seat which is against a wall, but 3" is allowed back of the last row of seats. Figure 2 illustrates this.

As a guide to the total area required for a stadium, given the number of seats desired, we may use the following for a stadium with 25"

treads, 3′ 0″ aisles and portals about 43′ center to center:

(a) Up to 20 rows, 3.4 sq. ft. per seat.
(b) Up to 40 rows, 3.3 sq. ft. per seat.
(c) Other treads in proportion.

General Arrangement

Sections between aisles may be from 24 to 32 seats wide; 26 or 28 are favored because (1) they are even numbers, (2) 28 is also divisible by 4 in case seats are ordered by groups of 4 instead of 2, (3) they are a good compromise between efficient movement of traffic and maximum seats per area, (4) in the framing of concrete members of the deck they lend themselves to efficient lengths and sizes of girders and beams.

End sections (with wall at one side) may be from 12 to 16 seats wide and should contain an even number of seats. This is permitted in stadiums but usually limited to about 7 by the building laws for indoor auditoriums.

Any other unusual division of seating areas, such as between portals, should be arranged if possible with an even number of seats.

The above principles will be made clearer by a study of the seating chart as explained below.

Numbering of Seats

For a stadium of 50 rows or less the accepted method of designating seating is: section (or portal) by number; row by single letter up to 25 and double letter up to 50, omitting "I" because it looks like "one": seat by number.

Sections should include the aisle and on both sides halfway to the adjacent aisles.

Seats should be numbered odd on one side of the aisle and even on the other to facilitate traffic handling.

Where portals make fewer seats per row the numbers should be in line with all other numbers, and therefore do not begin with 1 and 2, but (since a portal usually cuts out two seats on each side) with 5 and 6.

Figure 3 illustrates part of a typical seating chart. It will be noticed that the seat numbers at the end of the stadium are "28," while at the intermediate sections the number is "26." This is because we have 26 seats between aisles in the intermediate sections, half of which would be 13, but we want an even number at the end section, hence we use 14 and the seats are therefore numbered "2" to "28," using only even numbers.

One of the most satisfactory and permanent methods of marking the seats and rows is by means of Monel metal markers with embossed numbers and letters. These are fastened to the wood seat slats with brass, nickel-plated, barbed escutcheon pins (barbed in order that they may not easily become loose or be pried loose with a knife blade).

Stadiums with more than 50 rows or with more than one portal per aisle usually offer particular

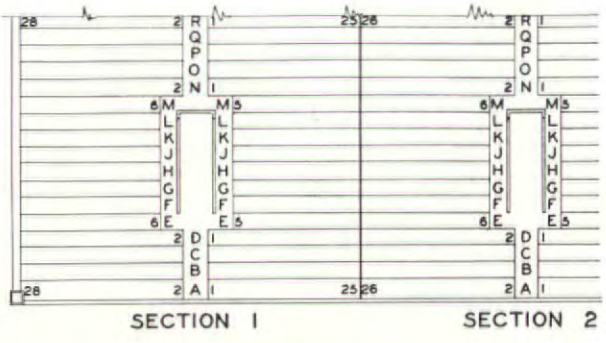


FIGURE 3
Part of typical seating chart.

problems and no particular way of designating seating can be given, but the general method as outlined above can usually be applied. Some changes will be necessary, such as numbers to designate rows (since triple letters are unwieldy).

Details of Construction

Figure 4 illustrates a typical *seat* and bracket without back rest. This seat, which has given good results, is of 3 strips of wood, continuous except at expansion joints, where a space of 1″ is left. Lumber should be edge grain Gulf Cypress or Redwood. This lumber will give satisfactory results even when untreated. This seat has been found to be quite comfortable and is believed to have the following advantages over a solid seat: (1) deteriorates more slowly, (2) more springy, (3) easier to replace if broken, (4) dries out more quickly after rain, (5) less liable to warp.

The *bracket* illustrated in Figure 4 was developed in Mr. Hadden's office and has proved eminently satisfactory. Dimensions are shown. Material is gray cast iron, with all parts hot galvanized. These brackets should be spaced between 4′ 6″ and 5′ 0″ on center. It will be seen at once that the bracket in Figure 4 cannot be used on risers of less than 9″ in height. For lower risers a similar bracket is used with 3 anchor bolts (2 upper and 1 lower) placed closer together.

This form of seat and bracket has the following facts to recommend it:

(1) It allows spectators to put their toes under the seat in front when the riser height is not more than 14″ or 14½″.

(2) It allows spectators ample foot room beneath the seat itself. This also means that there is more room to change the position of the feet, which is especially appreciated by long-legged men. This is a decided advantage over seats placed directly on the concrete both because of the greater comfort and because—

(3) It permits a tread width of 25″. Since the cost of construction per seat of a stadium varies very nearly in direct proportion to the tread width, the use of a 25″ tread instead of, say, a 30″ tread means a saving of 17% in the cost of the structure.

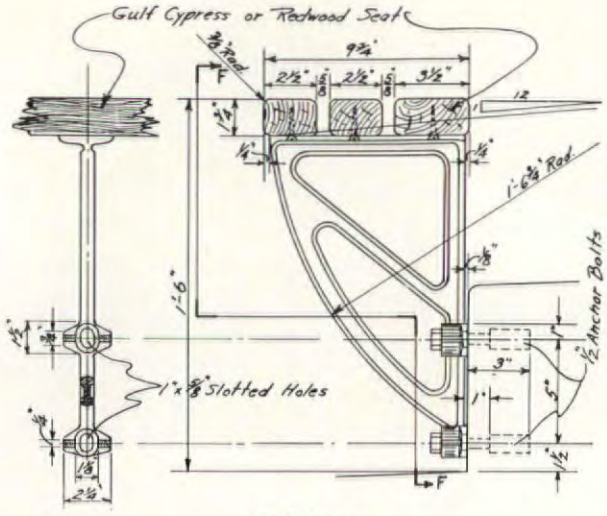


FIGURE 4

Working detail of backless stadium seat, similar to seats of Dyche Stadium, page 268.

(4) The bracket is in itself economical since there is a minimum of metal in it.

(5) It permits easy and thorough cleaning of the deck.

Figure 5 shows a seat and bracket with back rest. Except for the back rest it is very similar in materials and construction to that in Figure 4. All the arguments and discussion also apply except that a minimum tread width of 30" is required. This seat is, of course, more comfortable for the seated spectators than the seats without back rests, but there is no difference to entering spectators between a 25" tread without back rest and a 30" tread with back rest. As we noticed in Figure 4 this particular bracket can be used only for certain riser heights, but by changing the 9" dimension between the anchor bolts and by making other corresponding variations in the design, it can

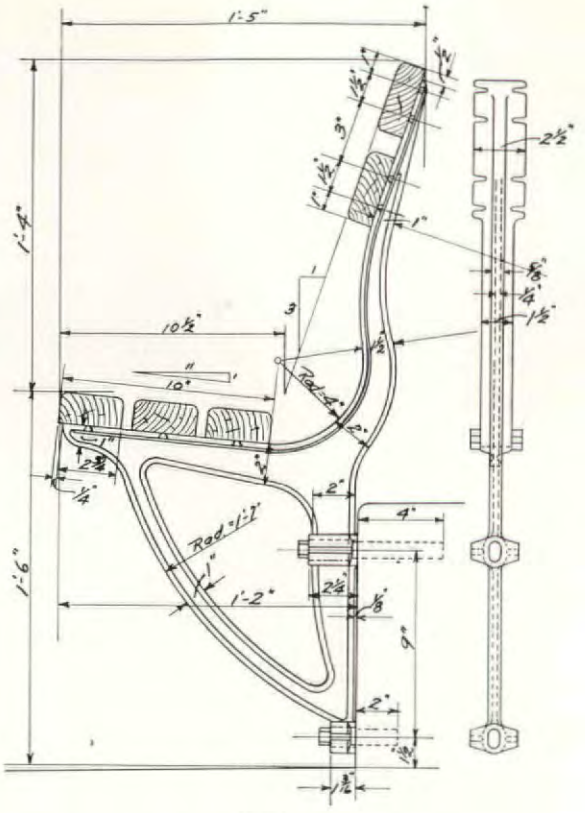


FIGURE 5

Working detail of seat with back rest, used at Harvard Athletic Building, see page 269.

easily be accommodated to almost any riser height. The photograph on page 268 is of the Dyche Stadium at Northwestern University, designed by Mr. Hadden in association with James Gamble Rogers, Architect. The photograph on page 269 is of the Harvard University swimming pools for which Mr. Hadden was the consulting engineer.

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Davison, R. L. *Procedure in Designing a Theater.* The Architectural Record, May 1930, p. 457.

SCHOOL SEATING*

A Study of School Posture and Seating. Elementary School Journal, pp. 50-57, September 1925.

A valuable summary of the result of studies of school seats and seating as conducted with facilities provided by the Experimental Schools of the University of Chicago and a leading industrial organization engaged in the manufacture of school seats.

Adopt Standards for Folding and Portable Chairs. American School Board Journal, p. 72, April, 1928.

Distributors of folding and portable wood chairs in cooperation with the Bureau of Standards of the U. S. Department of Commerce set definite standards.

Anderson, C. A. *The Problem of Classroom Seating.* American School Board Journal, pp. 87-89, 126, January 1925.

Proposes some general principles to be observed in school seating. Evaluation is made of various seating arrangements.

Bennett, H. E. *School Posture and Seating.* American School and University, 1928-1929, pp. 226-229.

*Comment by John W. Sahlstrom, Department of Educational Administration, Columbia University.

CORRESPONDENCE FROM ARCHITECTS

IS THE EQUITY TRUST A PRACTICAL MEANS OF SLUM CLEARANCE?

To the Editor:

In any article by Arthur C. Holden one expects to find much that is provocative and much that is practical as well. "Facing Realities in Slum Clearance," in your February issue, contains both of these ingredients in generous measure; but I wonder if some different or added ingredients may not be essential before a wholesome pudding can replace our present housing stew.

If you will ask Mr. Holden to answer through your columns the questions which follow, you and he may aid in clarifying one of the most important and difficult of our present-day problems.

(1) In introducing his Equity Trust idea, Mr. Holden suggests that "if individual owners can be *made to* act together in such a way that individual rights will not be injured and at the same time the public interest will be better served, then the state can afford to grant owners, who *agree to* cooperate in such a way, special rights for development and a special franchise under which to act."

The italics are mine; they emphasize what I fear would prove to be an impracticable combination of compulsory and voluntary action. Assuming that most of the property owners in a slum block or blighted district would gladly unite in an Equity Trust for the reconstruction of the area, how would Mr. Holden handle property owned by incompetents, minors, scattered heirs of old estates, or others unable or unwilling to join voluntarily in the project? If by law the majority were given the right to compel the minority to join in the scheme, is it likely that such action would be held legal by the courts unless the property were purchased for cash? And in that event where would the cash come from and how would excessive awards be prevented?

(2) As Mr. Holden well points out, "no pooling of equities could be accomplished without consideration of the very large mortgage interests involved. . . . Savings, trust and life insurance institutions cannot afford either to take or to permit any action to be taken which would jeopardize their trust funds. Therefore, such action as is taken must be with their approval and must serve their advantage."

Here is another tough ingredient. Would it not become quite indigestible if the same right of veto were given—as I assume would be legally necessary—to all individual holders of mortgages on the property to be assembled?

(3) "New capital must, of course, be attracted if a really comprehensive rehabilitation is to be undertaken," says Mr. Holden; and he suggests that such capital "may be obtained by borrowing if the economic situation warrants, or it may be admitted to a direct share of the Trust." Has consideration been given to the fact that borrowing, if resorted to, would have to be by securities subordinate to the pooled first and second mortgages previously existing; and that if construction were financed by the sale of shares in the Equity Trust, the earning power of the new capital would be diluted considerably by the inflated values without which most of the property owners in the district could never be tempted into the Trust. Mr. Holden states that "the participant owners are all alike interested in keeping both capital values and annual charges due to capital as low as possible." Would it not be more accurate to say that the owners *all together* have such an interest; but that as individuals they are *all alike* interested, when exchanging property for Trust shares, to make their own capital values and annual charges as *high* as possible?

I hope Mr. Holden has convincing answers for all of the foregoing questions. If not, maybe he will some day join the slowly growing ranks of those who see no other practical pathway out of the slums than that blazed by Henry George half a century ago.

HAROLD S. BUTTENHEIM,
Editor, *The American City*

A REPLY BY ARTHUR C. HOLDEN, ARCHITECT

To the Editor:

Mr. Buttenheim's letter is both pertinent and helpful. Before proceeding to the detailed consideration which it deserves, it is well to note that all three of Mr. Buttenheim's specific questions are closely related to that one paramount question which has puzzled man since ancient times. That question is: "Why is it, that, although man is a reasonable creature, he constantly neglects to make use of his reason to plan the course of action he is to follow; but only makes use of his reason afterwards to rationalize the predicament he has got himself into by allowing his emotions to control his actions?"

Immediate self-interest is recognized today as the dominating motive force in what we are pleased to call "our civilization." Those who have

read history with understanding know that it has been self-interest which has obscured man's vision and made him refuse to think.

But to admit that man has acted so frequently as a shortsighted greedy creature, is not to admit that his case is hopeless. In times of adversity and under a common danger men act together as instinctively as in the ordinary course of untrammeled life they act as selfish individuals.

These *are* times of adversity. We are seeing the extraordinarily delicate and complicated forces of production which we have built up for the service of one another, threatened with dissolution because we are unable to offer a reward for individual service which will maintain individual men in the standards of life we believe to be desirable. Production according to past standards has become unprofitable. To make up the deficiency we are living upon and consuming accumulated capital. We do this because capital has lost a large part of the values which it had as a productive force. Capital values are being dissipated. Capital values in land and real estate are no exception to the general decline, because real estate is dependent for its earning power upon the total productive ability of society.

Here is the root of the difficulty which is faced by real estate and by its servant, the building industry. As architects, bereft of an outlet for the activities for which we are trained, we are today deeply concerned with fundamentals. Hence it behooves us to throw our energy and intelligence into the balance and to attempt to awaken our bewildered brothers to a realization of the common danger which confronts us.

Herein lies the direct answer to the first of Mr. Buttenheim's questions. He asks how are we to handle those unable or unwilling to join voluntarily in the project. Let me make clear that I dealt with "blighted areas" because their case being nearer "hopeless" they are that much nearer to a realization of the peril which confronts them, and, therefore, more apt instinctively to act for their common safety. Mr. Buttenheim used the word "unable" advisedly. Present legal restrictions alone justify the use of the word "unable." The aid of the law not only "may" but "should" be invoked to protect the interests of incompetents, minors, scattered heirs of old estates, etc. Permissive legislation would place in the hands of such owners trust certificates in negotiable form which would retain for them the usufruct of the property and place its administration in the hands of competent trustees. There is no new principle involved here. What is recommended is a modernization of processes which are antiquated.

The state may by law determine the criteria whereby "blighted areas" may be recognized as a burden to the state and the owners of such properties for that reason given forms of paper as evidence of their ownership different from those which are held by owners of economically productive properties. In the final analysis a piece of paper called a deed, against which the legal practice of centuries has built up certain encumbrances, should be no greater comfort to an owner than a piece of paper known as an equity trust certificate against which the encumbrances have been redefined by new legislation.

Herein lies the answer to Mr. Buttenheim's second question. The special franchise granted by the legislature for the incorporation of an equity trust for a blighted area would set down the method for dealing fairly with the present owners of mortgages. It is my own opinion that it should be made legal for mortgage institutions to accept the scientific valuation set upon properties within blighted areas. In view of the conditions existing in these areas, it is in the public interest that acceptance should be made mandatory. Such legislation involves only a single step in advance of legislation already enacted. In cases of bankruptcy legislation has set down proceedings to be followed for the abrogation and equitable adjustment of contracts which are impossible of execution. The proposed step, in cases where bankruptcy is recognized as inevitable, sets up an equitable method of relief applied in advance in the hope of restoring economic balance without resort to bankruptcy.

Permissive legislation should be passed giving reasonable discretion to mortgage institutions to accept various combinations of types of securities in exchange for their present mortgages. This permission should take into consideration possible reductions in the rate of interest, possible necessary writing down of capital values, and possible conversion of mortgages into equity trust shares. The petition of a reasonable proportion of mortgage holders in addition to a reasonable proportion of equity owners should be a prerequisite to the organization and chartering of an equity trust. Such a petition having been entered, the trust should be formed subject only to the findings of the committee on scientific valuation.

As to Mr. Buttenheim's third question which involves the relation of new capital to present interests as vested in both equities and mortgages —it should be sufficiently evident from what has already been said that the proposal does not contemplate the taking over of either equities or mortgages at prices listed on the books of present owners. What is contemplated was suggested merely in outline in THE ARCHITECTURAL RECORD for February. It involves the determination of a ratio of values between individual parcels and the whole property. Equity shares will be expressed not directly in money values, but in fractional values of the whole. Briefly, this means that the district will be administered as an economic unit and the income received will belong to the participating equity owners in direct proportion to the fraction represented by the shares held.

There is perfectly good precedent in receiver-

ship procedure for a generai reorganization with the rearrangement of security issues. It should be made clear that the proposed equity trust procedure is not a parallel to foreclosure proceedings and that it does not contemplate "wiping out any interest." It proposes a revaluation and a reassignment of the shares justly due as a result of changed values to the several parties concerned. The effort should be made to write fixed charges down to a minimum. Any mortgage bond issue should, therefore, be made as small as possible and the effort made to induce present mortgage holders to receive a part of their interest in equity shares, but it is clear that such a substitution cannot be compelled.

It must be recognized on the other hand, that it will be an exceedingly delicate matter to place a price upon equity shares at which they can be sold to the investors of new capital. Any effort to sell equity trust shares as a bonanza would be fatal to success. I should recommend that equity shares should not be salable directly to the public but only exchangeable for mortgage certificates; all exchanges to be made in such amounts and on such terms as set by the trustees. A nice balance must be maintained between fixed and variable charges. The financial structure of the equity trust should be carefully worked out, and provision made for reasonable variations of obligations in good and bad times.

I have no illusions as to the difficulties which must be overcome before a completely rounded equity trust can be put into operation. Many of the principles should be tried out separately.

It must be remembered above all things that while administrative direction and control is sought, the purpose of this control is not to destroy individual initiative but to direct and protect it. It aims in the first place to supply the users of real property with a correct understanding of the economic principles involved and to put into their hands tools to make this knowledge effective. In the second place it aims to prevent the exploitation and spoliation of property. In the third place, it offers a way out of some of the perplexities which beset our local governments.

The closing sentence of Mr. Buttenheim's letter invites special comment upon this latter phase of the subject. The fiscal policies of our municipalities have apparently followed the desires of those most influential in real estate. Possibly it is largely for this reason that our municipalities have over-obligated themselves for expansion into new districts. Under the equity trust system where emphasis is put upon the administration of properties for earning power instead of upon sale and turnover, the relation between taxation and economic rent will tend to become more apparent. It would not be unreasonable to grant to districts administered by trustees the right to apportion taxes on the basis of the rental equivalent. I favor such a step because it would be an additional step in the progress back to economic sanity in real estate administration.

ARTHUR C. HOLDEN, Architect.

WILLIAM AIKEN STARRETT

Word is received of the death of Colonel William Aiken Starrett, President of the Starrett Construction Corporation of New York City, on March 25 at his home in Madison, New Jersey. He was associated with the construction of the Empire State Building, 40 Wall Street Building, the Starrett-Lehigh Industrial Building and numerous other structures.

After leaving the University of Michigan, Colonel Starrett was with the George A. Fuller Co., and later, with the Thompson-Starrett Co., builders, until 1913 when he left this firm to join his brother Goldwin and others in forming the architectural firm of Starrett and Van Vleck. During the War he was Chairman of the Construction Committee of the War Industries Board. In 1922 he joined Paul Starrett and Andrew J. Eken in forming Starrett Brothers, Inc., now known as Starrett Brothers and Eken, Inc.

In addition to his building activities Colonel Starrett was well known for his accomplishments as a writer and speaker. He was the author of a book, "Skyscrapers," published by Scribner's, and a series of articles on building in the Saturday Evening Post.

WILLIAM AIKEN STARRETT, 1877–1932

ILLUSTRATED NEWS

Fuermann and Sons

A DOMELESS STATE CAPITOL

Holabird and Root, architects, are associated with Joseph Bell DeRemer and W. F. Kurke in the design of this $2,000,000 capitol building to be erected at Bismarck, North Dakota. It will be the third State Capitol Building to be domeless, the Capitols of Nebraska and Louisiana now having towers instead of the customary domes. The rendering is by Gilbert T. Hall of Holabird and Root.

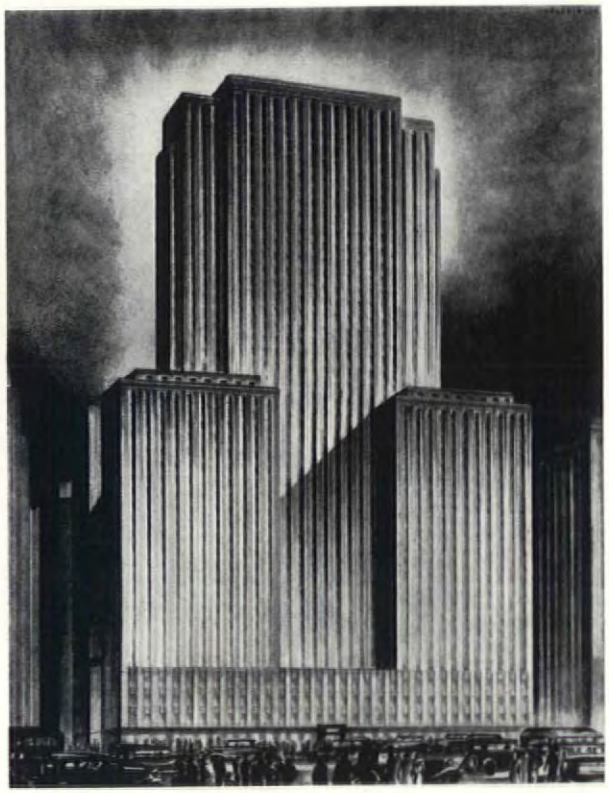
Westinghouse Photo

PUSH-BUTTON MACHINES FOR AUTO PARKING

This automatic parking machine, developed by the Westinghouse Electric & Manufacturing Co., allows the vertical parking of 48 automobiles within a ground area equal to approximately one seventh of that required by ordinary parking. This unit in Chicago is the first to be constructed as a commercial enterprise. The operation of the machine was described in the May 1931 issue of THE RECORD.

LOUIS LA BEAUME C. HOWARD WALKER
LOUIS JALLADE E. H. PRICHARD

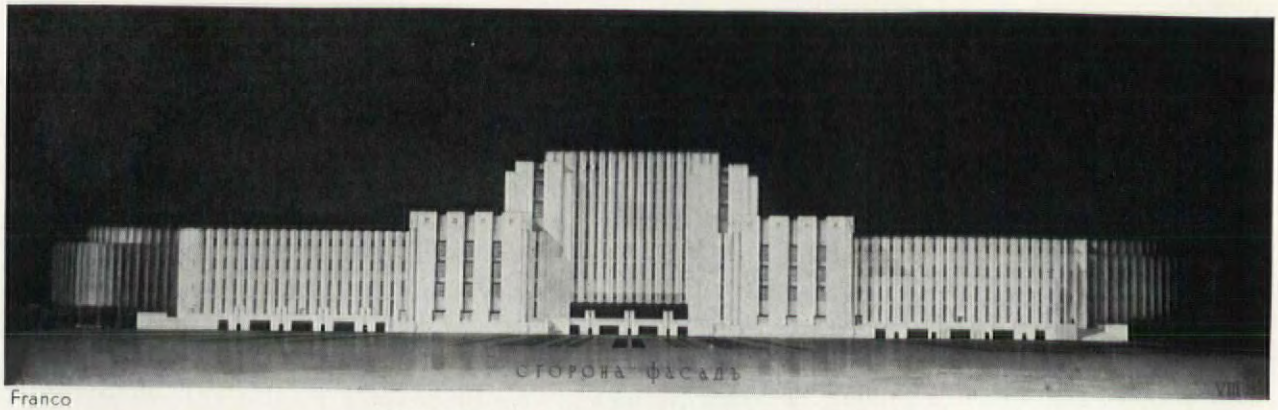
Mr. Louis La Beaume, second from the left, is active at present, as Chairman of the Public Works Committee of the American Institute of Architects, in urging the enactment by Congress of legislation to decentralize the function of the office of the Supervising Architect of the Treasury, which relates to the design of public buildings. (This picture was taken while the Society of Beaux Arts architects was on its Pilgrimage to the Ecole des Beaux Arts in Paris last summer.)



FIELD BUILDING, CHICAGO, ILL.
This building, designed by Graham, Anderson, Probst and White, architects, is now under construction on the site of the old Home Insurance Building, one of the earliest skyscrapers to be built in Chicago.

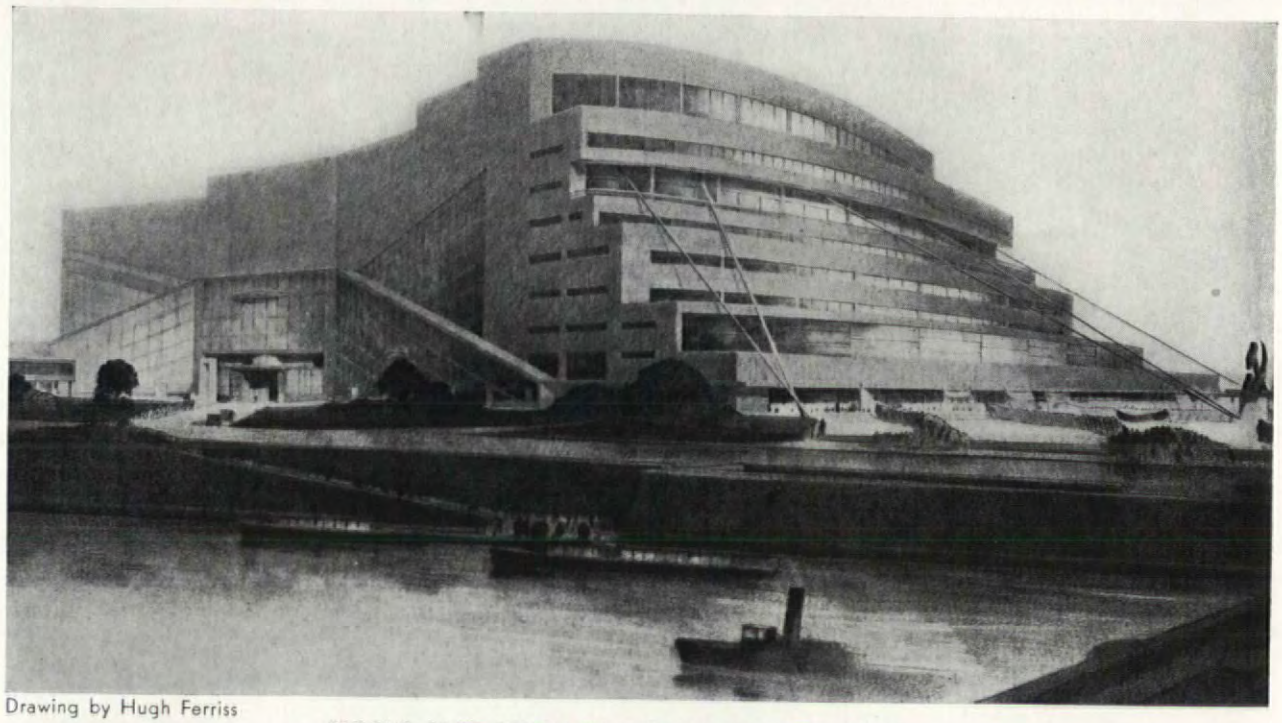
HOUSING PROJECT FOR LOWER EAST SIDE OF NEW YORK CITY
This rendering illustrates the first unit in a slum-replacement program. The building is designed by the Fred F. French Companies, who will also finance, construct and manage the development.

Woltz
WINNING DESIGN IN THE APPOMATTOX COURT HOUSE MEMORIAL COMPETITION
The War Department has announced this design by Harry Sternfeld and J. Roy Carroll, Jr., architects, and Gaetano Cecere, sculptor, all of Philadelphia, as the first award in the competition for a memorial commemorating the ending of the Civil War. The central shaft of this monument will be either granite or marble.



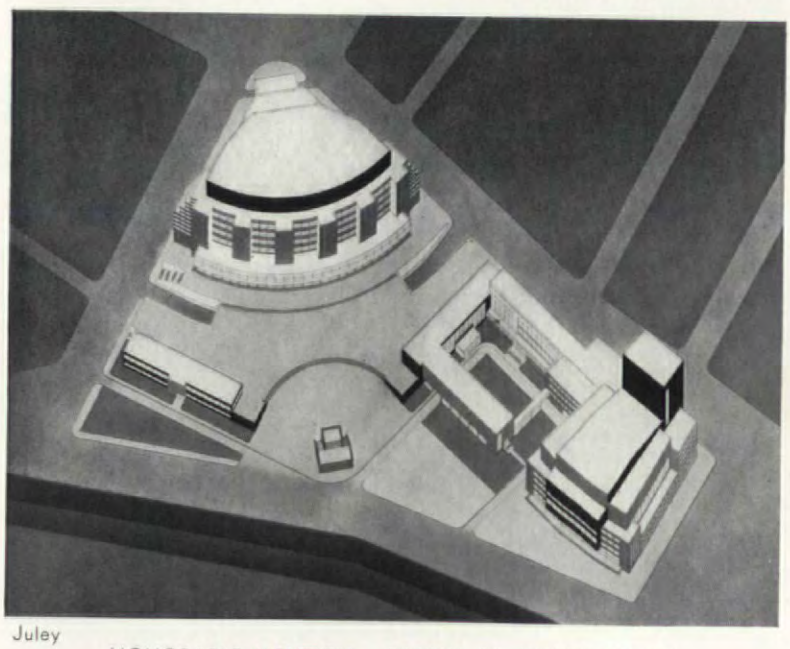
Franco

WINNING DESIGN BY HECTOR O. HAMILTON



Drawing by Hugh Ferriss

SECOND PRIZE DESIGN BY KASTNER AND STONOROV



Juley

HONORABLE MENTION — DESIGN BY JOSEPH URBAN

PRIZE-WINNING DESIGNS FOR THE PALACE OF THE SOVIETS IN MOSCOW

Hector O. Hamilton, New York architect, shares first prize with Professor I. V. Imoltovsky and B. M. Iofan, Russian architects, for the best Soviet Palace design. Alfred Kastner and Oscar Stonorov are second prize winners. Joseph Urban and Thomas Lamb are among the American architects to receive honorable mention in this competition.

The Palace of the Soviets will be one of the largest capitol buildings in the world. Two auditoriums, one of 15,000 seats and one of 6,000, are to be used for meetings of the Soviet Congress and other governmental bodies. The building will be completed by the end of next year.

NEW MATERIALS AND BUILDING METHODS FOR CHICAGO EXPOSITION

By NATHANIEL A. OWINGS

Construction of the exposition buildings of "A Century of Progress" (1933 World's Fair in Chicago) presents a problem totally different from the building of commercial or domestic architecture. Consequently, an analysis of these buildings shows a strange mixture of construction methods and materials. Methods used by our grandfathers may be found side by side with the most modern, prefabricated and standardized to the "nth" degree.

It is believed, however, that many of the departures from standard building practices outlined in this article are fundamentals which must be observed if the cost of construction is to be materially reduced. Summed up, these include:

1. Drastic revision of existing building codes.
2. Increase in the allowable stress of building materials, especially steel.
3. The acceptance aesthetically of the temporary look of a building, skimmed down to its essential requirements.
4. The substitution of a "skin" or thin surface covering for the exterior of buildings in place of thicker materials, which have been used primarily to give an impression of permanency, solidity and strength.
5. The willingness and ability of manufacturers to cooperate intelligently and efficiently in developing new materials and methods of construction.

Life of Buildings

The life of the exposition buildings is relatively short. This fact permits a great range in the use of materials developed by experimentation.

Demolition

Demolition at the termination of the exposition is mandatory. Therefore, ease of demolition is an important factor. The relative economy of materials is judged by their original cost. Theoretical salvage value is not taken into account, although to gain ease of demolition the tendency is to develop materials with a high salvage value.

Application of ribbed metal siding for exterior wall covering of main hall, Electrical Building.

Location of Site

The exposition grounds are on the shore of Lake Michigan, where high winds and violent storms are frequent during the winter season. These conditions have raised the standards by which materials chosen for use in the buildings must be gauged.

Soil Conditions

The site is on "made land," which consists of fill above the lake bottom averaging 20 to 30 feet in depth. This fill varies in consistency from a miscellaneous assortment of junk and rubbish to good sand. Beneath the lake bottom is a layer of soft silt-like clay and sand averaging 45 feet deep. Under this is found hardpan.

Test borings through the top fill, taken as close as 15 feet apart, give entirely different results, illustrating the difficulty of establishing a sound ground bearing value for spread foundations. Load tests made in various locations show a decided settlement below the loaded areas and a raising of the area immediately adjacent. This condition made necessary the use of a piling system.

FOUNDATIONS

Generally, a pile will drop 15 to 20 feet with the first blow of the hammer. Piles, averaging 65 feet in length, extending through the silt-like layer, are required to obtain a satisfactory bearing value. Since the column loads are generally small, the necessity of using a minimum cluster of three piles under each column makes a comparatively expensive foundation. To obtain economy, a system of using single piles under exterior columns and a minimum of two piles under interior columns has been followed. A 6-inch eccentricity is permitted in driving piles to exact theoretical location in reference to column center. A typical one-pile footing is shown in Figure 1. Exterior columns are connected by a wall beam between pile caps or column bases, as shown in section in Figure 2, to take the moment of the eccentricity about axis 2-2. The column, at right angles to the wall, is designed for a 6-inch eccentricity of load, placed with its strong section resisting the resulting moment, about the axis 1-1. The exterior pile caps are further tied to the interior pile caps with tierods placed below the surface of the ground to keep the wall piling from spreading out. The floor on fill is utilized to keep the wall piling from moving in. The column footings for interior isolated columns, with a minimum of two piles, shown in Figure 3, are arranged so that the moment, due to the eccentricity of the piling about axis 2-2, is taken by the value of the two piles. About axis 1-1 the strong section of the column is designed for the moment of the eccentricity. It is evident that this system reduces the number of piles required. Figure 4 shows a photograph of a typical piling layout.

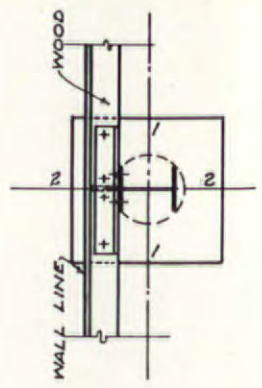


FIGURE 1
One-pile footing.

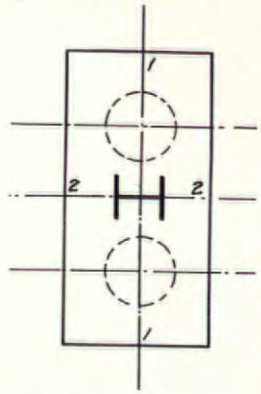


FIGURE 3
Two-pile footing.

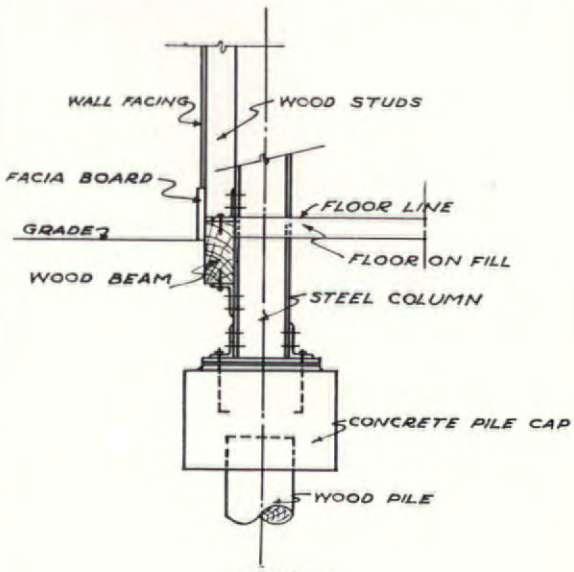


FIGURE 2

Footing and Wall Beam Detail

Reinforced concrete proves the most economical method of providing level foundation surfaces and easy anchorage for the column bases. Concrete has been used thus far for the wall beams to connect exterior column footings and to receive the exterior stud walls, as may be observed in Figure 5. Decided economy is obtained, however, by utilizing a wood beam of sufficient strength to take the possible moment of the eccentricity of the pile, plus the wall load; see Figure 2. This wood beam, of the same width as the studs, is connected to the exterior column above the column base with angles. This eliminates considerable excavation, expensive formwork and finishing of concrete beams, and further increases ease of demolition. A facia board is attached to the wood beam above grade to receive the exterior wall board facing, as illustrated in Figure 2.

FIGURE 4
Typical pile foundation layout, Hall of Science.

Fire Restrictions

To establish a uniform rating for fire insurance, the underwriters have established a Board which passes on each building. In general, they have stipulated that the buildings should be so constructed as to warrant an hour rating. To meet these conditions a steel frame is used with incombustible interior covering and, as approved by the Board, exterior covering to provide a one-hour fire resistance.

ECONOMY OF PLAN

For general exhibition requirements and for economy in foundations and in the use of steel, it has been determined that two-story structures are the most suitable. Comparative costs of piling and framing have been calculated for various spans of girders and consequent column and piling spacing. These have been set up in the charts, Figures 6 and 7. An ideal theoretical column layout, from an economic point of view, may thus be established, fully utilizing the piling to its ultimate capacity, and consequently further reducing the number of piles required.

From the charts for the various conditions, the most economical layout can be readily determined for preliminary studies. This layout, of course, must be altered in many cases to satisfy the requirements of the plan.

STEEL FRAME

Structural Steel

Structural-steel shapes are designed for unit stresses not to exceed 21,000 pounds per square inch and steel joists for 18,000 pounds per square inch, limiting deflections to 1/360 of the span. The structural-steel frame is a system of columns and girders supporting trussed steel joists. Bracing beams are used parallel to the joists on column centers. A module system of 20 feet is generally used as a standard, as this proves to be an economical joist span. Typical girder-to-column connections are field bolted to facilitate demolition, except where greater wind bracing is required. In such cases, connections are designed for wind and are field riveted.

Steel Trussed Joists

The joists are secured to the beams with a simple bolted clip assuring a full bearing and stiffened with bridging clipped to the top and bottom chord and spot welded to the steel beams parallel at either end of a panel (Figure 8).

Advantages of trussed steel joists:

1. Adaptability to either metal or wood decks.
2. Simplicity of connection with beams.
3. Open type of construction which permits the use of the space between the finished ceiling and the finished floor as a ventilating duct.
4. Greater economy.

Decorative Use of Exposed Steel

Exposed steel is utilized wherever practicable as a part of the decorative effect. In many cases the roof construction is designed so as to serve as the decorative ceiling. In one case indirect lighting has been used to cast the shadow patterns of the bar joists on the roof deck above. In the case of the Great Halls of the General Exhibit Group, which are to be about 50 feet in height, the steel columns will be exposed to the exterior of the wall on one side of the Hall and exposed to the interior of the opposite side of the Hall. Serving as a main feature of the decorative scheme, this will permit the use of a single stud wall and eliminate the necessity of boxing in or the furring of the columns.

FIGURE 5

Typical column base and concrete wall beam supporting wood stud wall framing.

Use of Cantilever Construction

In some instances architectural design or concession space requires the extension of the exterior walls beyond the outer row of columns, in which case cantilever foundation beams, extending over the pile supports, are used for the outer row of columns to receive the wall beams, thus avoiding additional piles for the light wall loads. Projecting canopies are generally framed with cantilever beams for large projections and cantilevered wood joists for small projections, eliminating brackets or exposed rod hangers. The use of continuous girder framing, made possible by alternate panel girders cantilevered past columns to receive suspended intermediate girders, was given consideration. This was deemed impractical owing to a large variation in live load possibility compared with the extremely light dead loads. All cantilever framing is riveted.

Insulation

It is considered necessary to provide insulation in roof decks and exterior walls to exclude excessive summer heat.

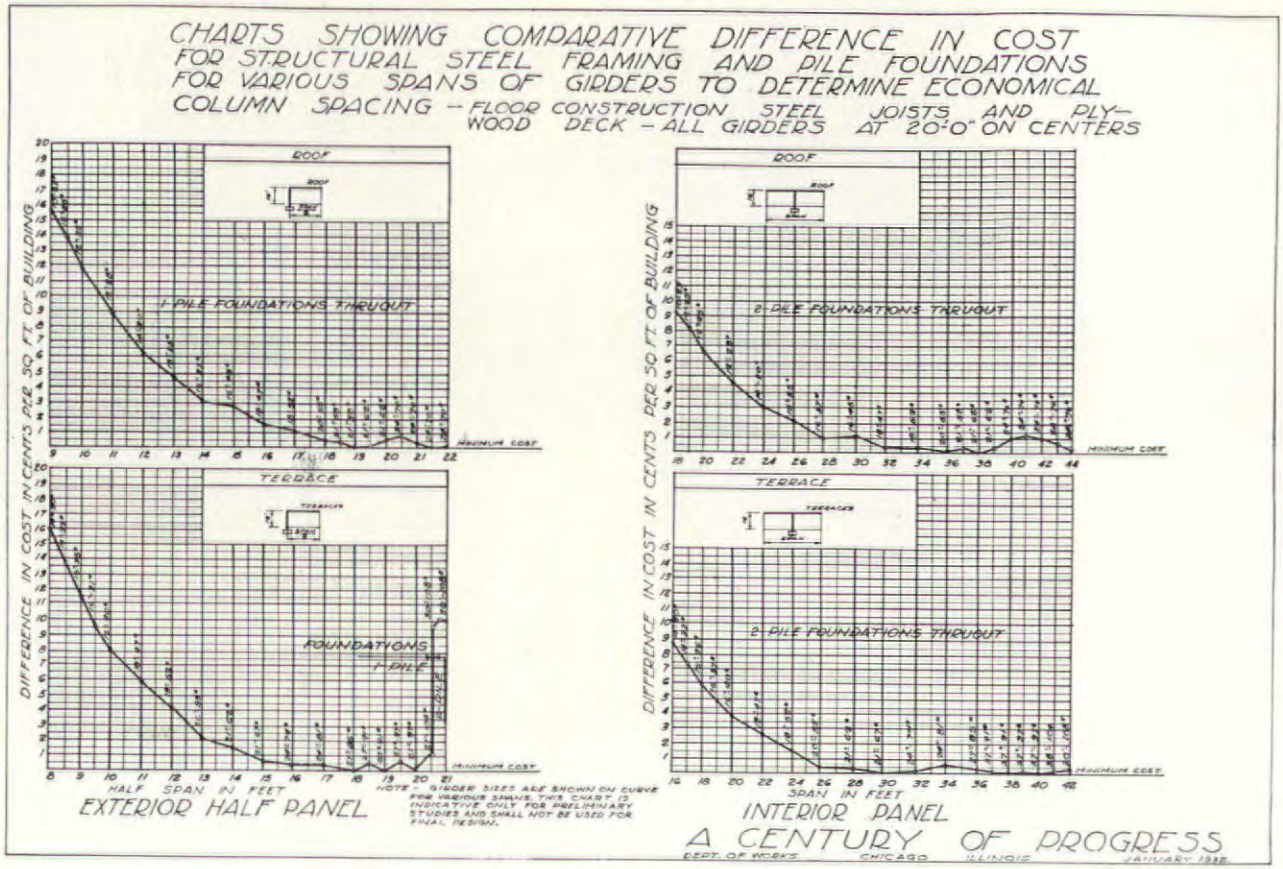


FIGURE 6

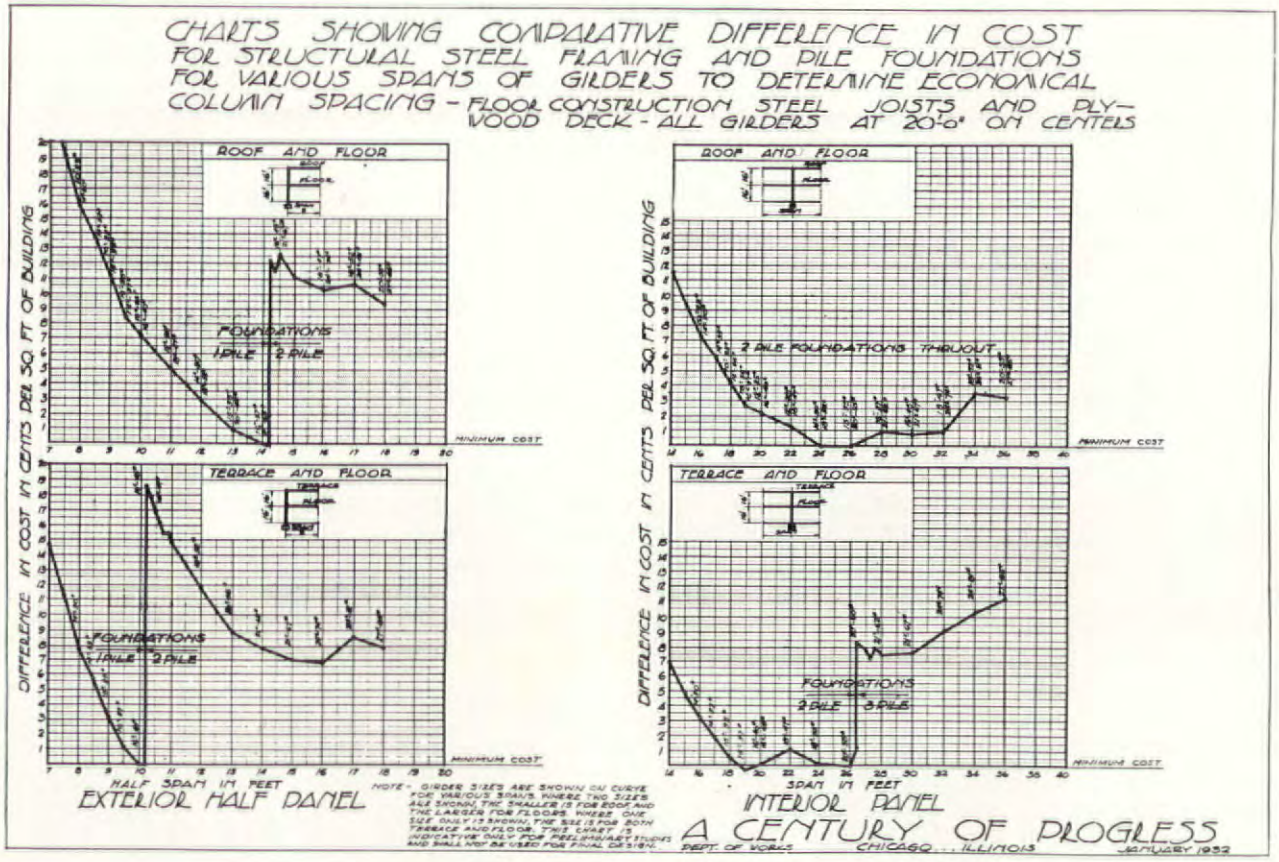


FIGURE 7

FLOORS

Floors and terraces are designed for a live load of 100 pounds per square foot and roofs for a live load of 25 pounds per square foot. "A Century of Progress" must furnish a finished corridor floor and a good subfloor for exhibit space. Therefore, in considering the merits and costs of various types of floor deck, the suitability of the deck for a subfloor, and the cost and relative difficulties of laying a finished floor on each type, must be taken into account.

Metal Deck

This type of deck is usually fabricated of 20-gauge steel with ribs 4″ or 6″ on center, ¾″ or 1¼″ deep respectively. Metal deck has been used in the Administration Building and in the Travel and Transportation Building. One type is made of individual interlocking units 6″ wide and another in 16″ widths with 4 ribs 4″ on center in each unit. There are several makes of metal floor decks of this type available. Following are some of the conditions that have been experienced with metal deck:

1. Easily dented after setting; requires mastic fill to permit laying of finished floor.
2. No sound insulating value without mastic fill.
3. Relatively expensive without considering finished floor.
4. Requires a subfloor over mastic for exhibits.
5. Incombustible.
6. Presentable in appearance so that it can be left exposed underneath; permits omission of ceilings.

Plywood Deck

A five-ply ⅝″ laminated Douglas Fir board, obtainable in large panels generally 3 by 8 feet is also used for decks. Extensive tests made on this material proved it to be of ample strength and of practically no shrinkage in any direction. The plywood is laid with tongue and groove joints, and is furnished by the mills with inspection to insure plies, thoroughly glued with water-resistant glue, free from starved joints.

The use of plywood for floors, roof decks and terrace decks has reduced the per square foot cost of the former floor deck system, which included the finished floor, by approximately one half. The Hall of Science and the Electrical Building have this type of deck throughout. Figure 8 shows this deck in place. The conclusions, as follows, reveal results of experience gained in using this material:

1. Laid in place at a very low cost.
2. Slow burning as used with incombustible ceiling below.
3. Serves as subfloor for exhibit space without additional covering.
4. Surface permits inexpensive finished floor.

FIGURE 8

Typical plywood deck on steel truss joists, showing typical bridging.

5. Permits greater latitude of finishes for exhibitor.
6. Greater insulating value—permits ½″ insulation on roof instead of 1″ required with metal.

ROOFS

Coping tops on roofs and terraces are generally 4 inches above deck to permit blowing off of snow and to bring roofing membrane up over coping to serve as flashing. All roofs and terraces are pitched to drains. This has proved much safer and more positive than the dead level roof method of drainage. With the use of light construction it is practically impossible to assure a dead level roof. Two-ply tar and gravel membrane roofing is laid over insulating material. Where colored roofs are desired, canvas may be applied direct to plywood decks in lead and oil. This is used for roofs of cantilevered canopies, etc.

TERRACES

A ¾″ precast asphalt plank tile laid over two-ply membrane roofing is the most economical type of terrace so far developed. Its resiliency, its non-slip quality and its lightness have made it safe, comfortable and economical, the main difficulty being that the colors in which it is obtainable are limited so far to black, brown and a dull red. Materially reduces dead load requirements over other types of terraces.

EXTERIOR WALLS

Practically all exhibit space is to be artificially lighted, permitting the exhibitor to display under the most favorable conditions. The illumination of the booths, consequently, is not variable due to the weather or the hour of the day.

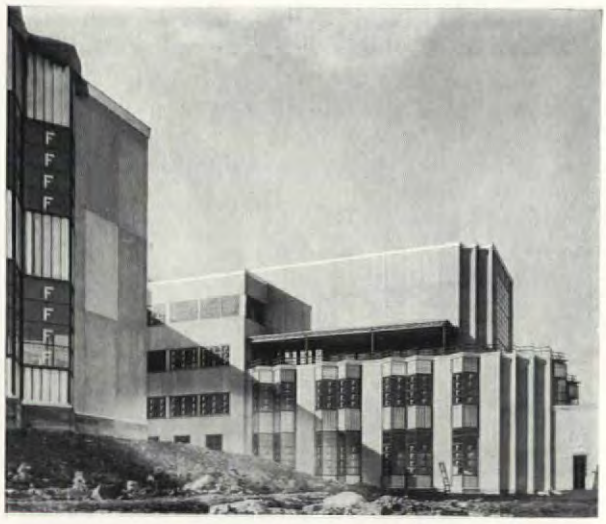
The resulting large unbroken wall areas make the use of standardized units of wall covering economical. Over-all decorative treatments are obtained by the arrangement of the battens, which are required to protect the joints of the wall covering material.

Single Thickness Type

The most economical type of wall covering system would be one wherein a single thickness would serve as both the interior and exterior wall surface.

Attempts have been made to produce such a wall. All types yet investigated have contained a core of insulating material covered on both sides with a finishing material. One type has thin sheet steel on either side; another a veneer of asbestos cement board. Each type is available in standard sheets 4 by 8 feet.

The wind stresses on the standard bay of 20 feet center to center of column, and 14 feet floor to floor, require a horizontal girt and hangers, exposed to the interior, which are of such dimensions as to make any of these systems unsuitable for use as an interior wall surface. In domestic work where the ceiling height is less and the wind stresses lower, this system should prove of great value.



FIGURES 10 AND 11

Asbestos cement exterior wall finish, Administration Building.

FIGURE 9

Foundations, Administration Building.

Types of Studding

Many types of metal stud have been investigated, but have not proved as satisfactory or as economical as the ordinary wood stud wall construction. One type of metal stud was used throughout the Administration Building.

The stud wall construction is kept outside the steel frame with the wall covering material, both exterior and interior, placed directly on either side of the studs, leaving the steel column exposed. In general the studs are continuous for the full two floors carried on the wall beam at ground level. The air space obtained between the outside and interior wall covering serves as wall insulation. A wood fire stop, the full depth of the studs, is placed at the mid-point of each story height. All types of wall covering yet used require studs 2 feet on center with blocking behind all horizontal joints. This wall construction is evident in Figure 5.

WALL COVERING

Large unbroken areas require a more or less flexible wall covering, which can absorb expansion and contraction. Since paint is depended on for the exterior effect, the material must have a satisfactory surface for painting; it should be light enough to be erected easily, yet stiff enough to withstand wind; it must not warp easily; it should be fairly waterproof.

Asbestos Cement Board

This product is precast board made of asbestos and cement. It may be obtained in practically any thickness, from ⅛" up to ¾", in either flat or corrugated surfaces. Asbestos cement pipe is also available, varying in diameter from 6 inches to 5 feet. This material has considerable expansion and contraction and must be applied leaving ½" spaces between all edges. Being 4 by 8 feet in size, the center of the board is nailed to the intermediate stud, and battens are applied over the joints so that the board is clamped between the batten and the stud; the screws are placed through the center of the batten directly into the stud, leaving the edges of the board free to expand and contract. On horizontal edges "Z" strips are necessary to act as flashing under this batten.

This asbestos cement board is relatively expensive, both in initial cost and cost of erection. It is quite heavy and extremely brittle. Difficulty has been experienced in obtaining a satisfactory paint job on this material. It is, however, extremely durable and has an excellent natural color. It has been used exclusively on the Administration Building and on parts of the Travel and Transportation Building.

Ribbed Metal Siding

This is made of 20-gauge interlocking steel, generally in 6" wide units and available in any length up to 80 feet. The ribs or legs of the channel are ¾" or 1¼" in depth, as illustrated in Figure 12. This type of siding may be easily attached by clipping to horizontal girts 8 feet on center. It adapts itself readily without additional expense as a covering for curved surfaces. When used for exterior walls, it requires insulating material applied to the back, or an inside wall covering must be used.

So far no economical method has been developed to utilize the structure provided for the outside wall covering as the sole support for the interior wall covering. The principal objection to this type of wall covering, from an appearance viewpoint, is the narrowness of the individual unit; in fact, it is sometimes mistaken for wood siding. Though relatively expensive, this material has been used on the walls of the Travel and Transportation Building, together with asbestos cement, and on the curved surfaces of the Electrical Building and the Hall of Science. Figure 12 and the illustration on page 249 show the detail and application of ribbed metal siding.

Gypsum Wall Board

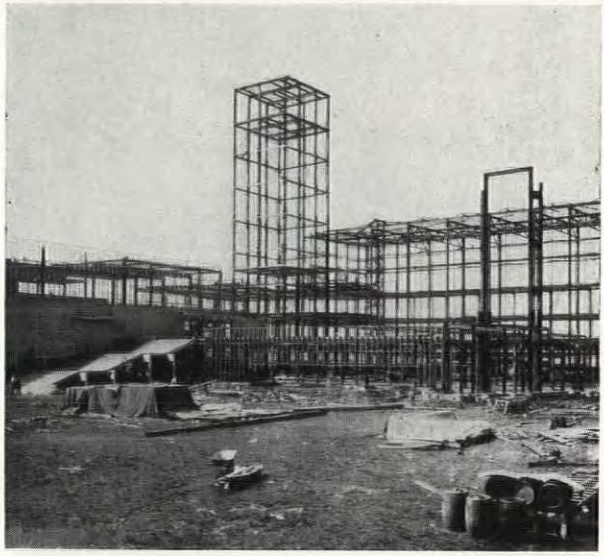
These are 4 by 8 or 4 by 12 foot sheets—¼" to ¾" in thickness. The board consists of a gypsum core, covered on both sides and two edges with heavy calendered paper. The boards are dipped in aluminum paint at the mill. Thickness must be suitable for strength and weatherproof qualities

FIGURE 12

Typical ribbed metal siding for exterior wall covering, column base of Electrical Group Hall.

FIGURE 13

Typical sheet rock exterior wall covering.



FIGURES 14, 15 AND 16

Construction views: main hall and tower framing, Hall of Science.

for exterior wall covering. Boards are bent to curved surfaces at the mill by steaming. The long edges are placed horizontally and are tongue and grooved to weather; all joints are buttered with a waterproof mastic as they are placed; vertical joints are butt-edged and covered with battens. Fewer battens are required with this type of board. The initial cost of the material is much less than plywood and the cost of erection is about equal. This board provides the most satisfactory paint surface yet developed (Figure 13).

Plywood Wall Board

This is ½" five-ply Douglas Fir laminated board, generally obtainable in standard units of 4 by 8 feet, butt-jointed where battens are used vertically, ship-lapped on horizontal joints and where joints are exposed, thus eliminating "Z" strips necessary for weather-stripping the asbestos cement board. The specification is similar to plywood deck, except that boards are primed with hot linseed oil at the mill. Considerably less expensive in initial cost and cost of erection than asbestos cement board. Takes paint well; adaptable to curved surfaces and offers greater flexibility in developing decorative batten treatments. Large areas unbroken by batten may be had by using tongue and grooved board. It has been used throughout the Hall of Science (Figures 15 and 16).

VENTILATION

The large windowless buildings necessitate artificial ventilation in which an exhaust system is used. The space between furred ceilings and floor deck is utilized as a duct through which air is drawn to fan rooms from slots in the ceiling of each exhibit booth; door openings furnish the fresh air supply. This system has proven economical.

RAILINGS

Rails in general are of open type to permit long vistas and to increase the visibility from various levels.

A welded pipe rail, as illustrated in Figure 17, has been used thus far. Additional economy is obtained by the use of the rail, which has just been developed (Figure 18). This detail permits roofing membrane to be carried over parapet under coping to serve as flashing. The railing clips over the coping, eliminating piercing and consequent expensive flashing. The strut on outer wall face is lag screwed to wall structure. This type of rail reduces labor costs, requires no additional flashing and may be used with pipe or angles.

FIGURE 17

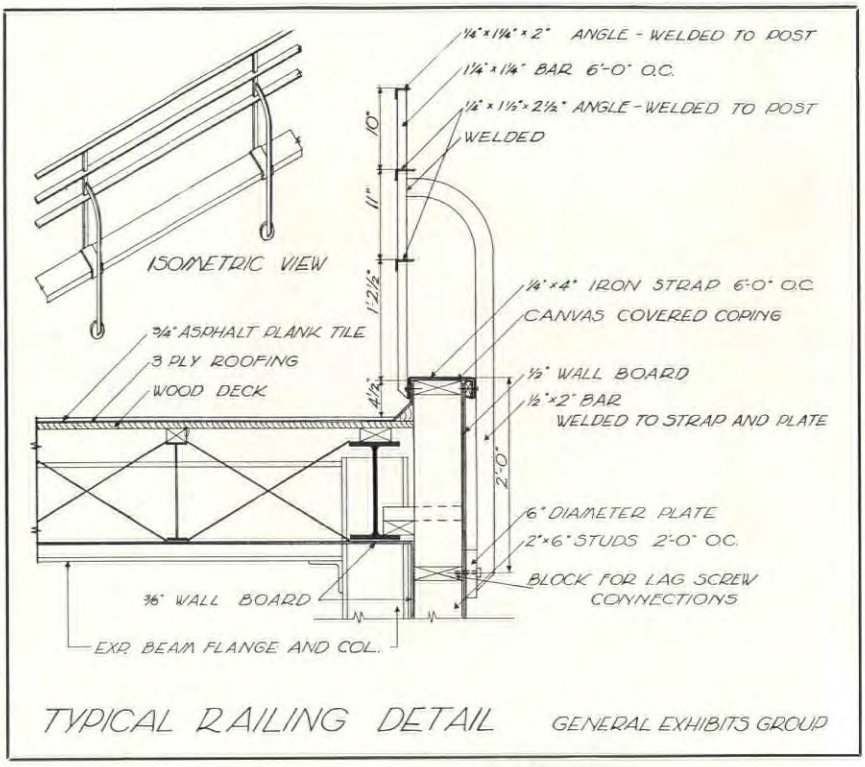


FIGURE 18

Typical exterior welded pipe railing and new detail, showing roofing membrane carried over parapet to serve as flashing.

DOORS

The doors are accordion type, made up of a series of solid panels hung on a track, thus permitting unobstructed openings necessary with great crowds. This system reduces hardware costs and allows the use of the least expensive type of door.

SPECIAL CONSTRUCTION

Each of the buildings has an architectural feature such as a large hall, tower, or other attraction requiring special design. Figure 19 shows the frame of one exterior wall of the main hall of the Hall of Science. The hall is 50 feet high in the clear, 56 feet from floor to roof deck. The roof is framed on trusses of 60-foot span. The photograph shows, secured to horizontal girts, the wood studs which are to receive interior wall board. The unusual light effect is caused by daylight filtering through an open pattern work in the triangular-pointed bays erected on the exterior of the wall. These bays extend the full height of the wall and form the decorative feature of the exterior façade. This pierced pattern produces an interesting shadow pattern in daylight and, illuminated from within, presents an ever-changing color pattern at night.

The great exhibition hall of the power section of the Electrical Group is curved in plan, 500 feet long, and varies in stepped-up heights of about 56, 64 and 72 feet. The roof is supported on 48-foot span girders radiating normal to the curvature of the wall. The columns, which can be seen in Figure 12, are composed of two H-shaped sections laced together to give sufficient stiffness for the great height. Horizontal girts, 8 feet on centers, to which the metal wall facing is attached, frame to the columns. The columns, girders, roof joists and underside of the metal roof deck are to be left exposed.

The location of this great hall on the edge of an island, directly exposed to the open lake, shows the necessity for the rather heavy steel.

Figures 20 to 23 inclusive are of the Railroad Dome unit of the Travel and Transportation Building. This structure has the most unusual framework that has been introduced into the Exposition Buildings to date, and probably involves construction that has not been similarly used for buildings anywhere heretofore. This feature is the suspension of the roof deck construction from cables, exposed above the roof and hanging in catenary curves from the top of columns which project above the exterior walls surrounding the hall.

The cables have a center to center span of about 208 feet; the columns extend 150 feet above the

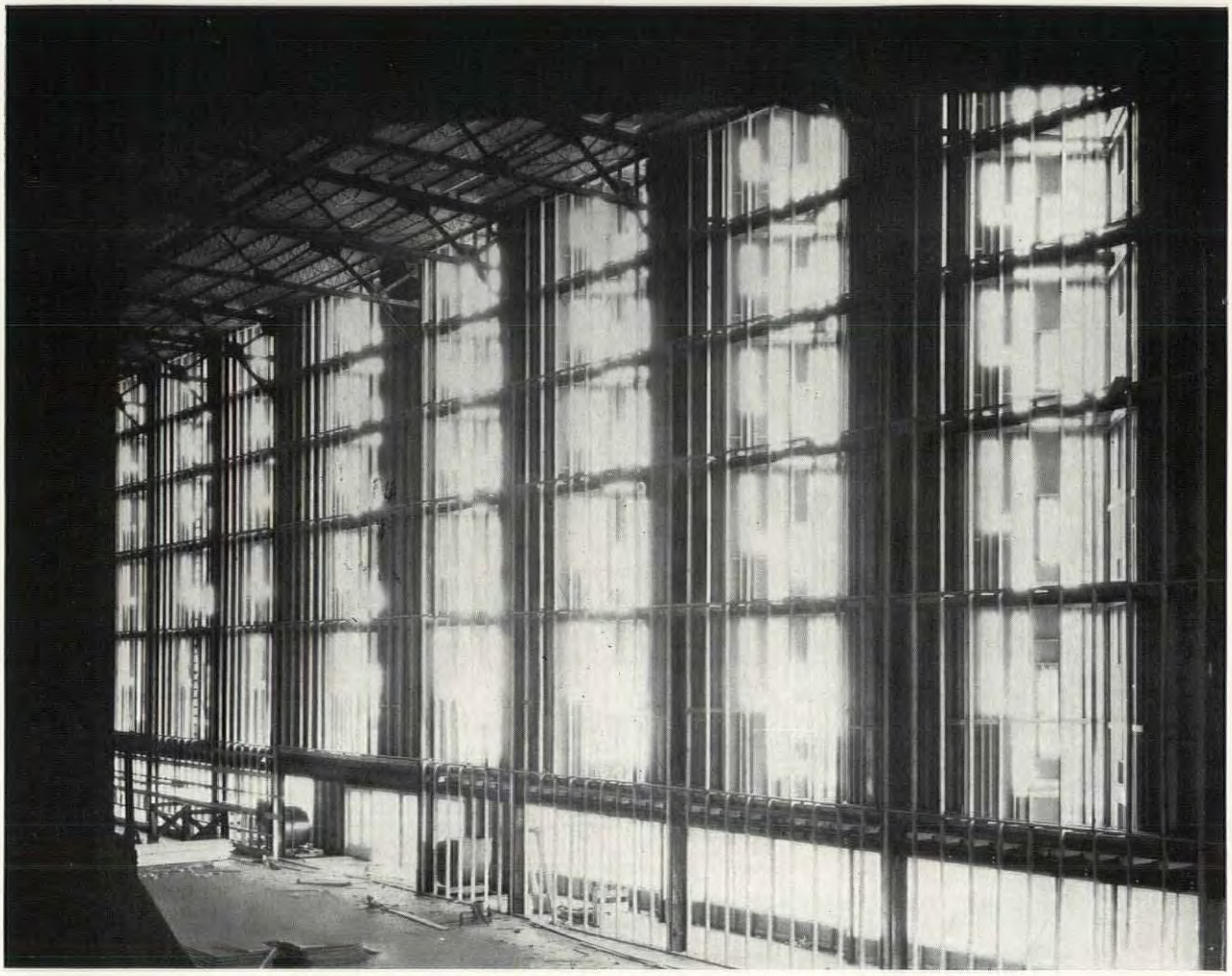


FIGURE 19

Interior of Main Hall, Hall of Science

floor; the crown of the dome is 125 feet high; the edge of the dome is about 100 feet above the ground. There are three columns in each quadrant of the circle of the Hall thus formed. The roof deck is supported by hangers from the cable as shown. Anchorage cables or back stays extend down and out from the top of the columns to concrete deadman anchorages in the ground, located 50 feet away from, and radially in line with, the columns. The back-stay cables resist the horizontal pull of the suspension cables toward the center of the dome.

The roof construction consists of a metal-ribbed deck supported on light channel purlins which frame into radial ribs consisting of light beams. Figure 22 illustrates the web-like roof structures being erected without centering.

On each of the four sides of the structure there is a large window, built not to light the interior, but rather as an exterior lighting effect. A continuous cyclorama will line the interior of the walls. Between the cyclorama and the windows, an illuminating apparatus will be provided to give a scintillating lighting effect of various colors in motion for exterior decorative treatment at night. The exterior wall between the windows does not follow the circle on which the columns are placed, but forms recessed "V's" between each column. At the inner angle of these "V's" and at each side of the window panels, projecting fins extend vertically, housing lighting units to illuminate the adjacent wall surfaces.

A low structure surrounds the domed hall, extending about 50 feet out, and the back-stay cables terminate at the deadman anchorages within the low structure, as though the cables were held by buttresses on the face of its walls; these cables are at a sharp angle with the columns. A slight increase in stress and a consequent slight elongation of the back-stay columns, due to snow load on the roof, or wind loads, will permit the top of the columns to move in toward the center of the structure. The maximum horizontal movement of the top of the columns may be 6 inches. As this movement occurs, the suspension cables will sag causing the crown of the dome to drop down. To

(Continued on page 40, advertising section)

Announcing

A SENSATIONAL NEW FLAT WALL FINISH—

The new Barreled Sunlight Flat Wall Finish is easy to tint any appropriate shade with pure oil colors.

. . .

THAT "SLIP" . . .! It tells the time- and labor-saving story of this sensational new flat wall finish. No other flat flows off the brush so easily . . . covers so many square feet of surface per gallon.

Distinctly Handsome—with amazing economical qualities . . .

REPEATED tests—in our own laboratories—and by impartial, independent painters—justify the use of superlatives regarding this new flat wall finish.

Never before has a flat paint combined such lastingly handsome appearance with such amazing economies . . . economies heretofore impossible in the flat paint jobs you specify.

The unusual savings brought by Barreled Sunlight Flat Wall Finish are due to its remarkable "slip," or ease of flow. Veteran painters say no other flat paint flows off the brush so easily . . . with so little drag.

This "slip" speeds up the painter without hurrying him . . . materially reduces time and labor costs . . . by far the greatest painting expense.

Then, too, there is less paint to buy when Barreled Sunlight Flat Wall Finish is used. Its paint-saving spreading power has been proved to be from 16% *to* 50% *greater than that of other high-quality flat paints.* This without loss of effective coverage.

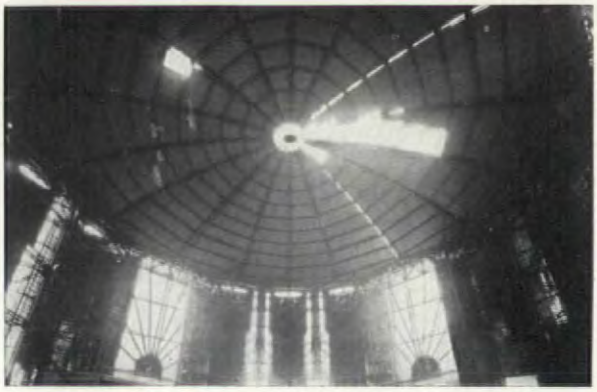
When the job is done—savings continue. Barreled Sunlight Flat Wall Finish dries smooth—tight. No brush marks—no laps. It is dirt- and dust-resistant—easy to wash.

You can reduce your appropriations for flat paint by specifying this sensational new Flat Wall Finish.

Write for further details to U. S. Gutta Percha Paint Co., 22-D Dudley St., Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

THE NEW **Barreled Sunlight** *FLAT WALL FINISH*

REG. U. S. PAT. OFF.



FIGURES 20, 21, 22 AND 23

Railroad dome suspended from cables, Travel and Transportation Building.

(*Continued from page 288, editorial section*)

permit this movement in the structure, a system of joints is used. Each set of three columns is rigidly braced to move as a unit, and all the columns have rocker bearings. As each group of columns moves in, the wall surface attached to the framework moves in also, forming a truncated cylinder effect. To permit this, the wall sections with the windows are suspended from trusses at the top, which are supported on sliding bearings at the adjacent columns. The walls have vertical interlocking joints at either side of this suspended surface to permit the truncating of the wall surfaces. Horizontal trusses at the top and bottom of these suspended walls take the wind stresses to each group of columns. To permit the crown of the dome to drop, it is quartered by four radial lapped joints, thus permitting the perimeter to adjust itself to this movement. The circumferential edge of the dome overhangs a gutter deck secured to the column and wall framework, permitting the top of the walls to move in, the gutter moving in with it under the edge of the dome. All of these movements occur gradually as the weights of the component parts of the structure resist the movement with their inertia.

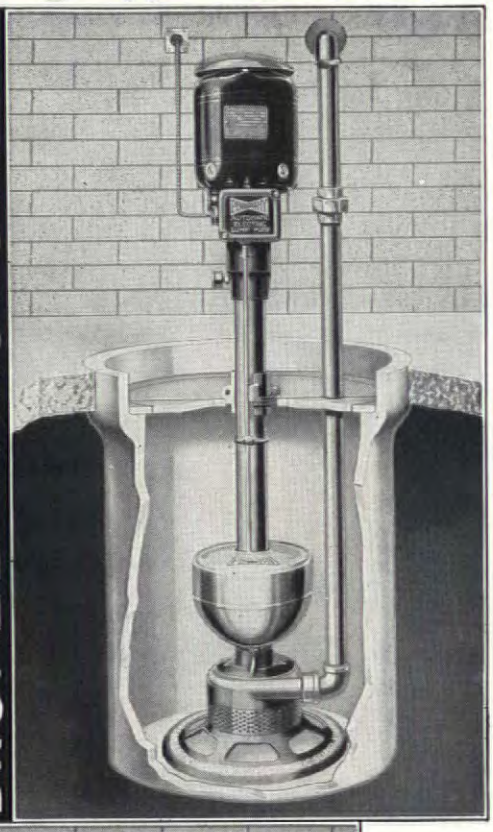
The use of this suspension design developed from the following assumptions and analyses:

1. Vertical interior wall surfaces of great heights were desired for an interior panoramic light mural and dramatic lighting of exhibition space from above.
2. This would make necessary a heavily-braced wall construction supporting a ring dome framework.
3. High tensile strength of cables permits taking the roof load to wall columns, which in turn support the loads in direct compression to the foundations. A much lighter construction of the roof results by introduction of frequent hangers from the cables.
4. The suspended roof construction is easily erected by working out progressively from the center intersection of the cables. This procedure eliminates costly centering which would have been required for erection of a ring dome. This is evident in Figure 22.
5. The exposed cables and upper extension of the columns provide an unusual architectural feature for an exposition building.

The results of the tests and the research work of various types of materials used in the construction of "A Century of Progress Exposition" naturally cannot be considered as final or complete. As a matter of fact, the work has actually just begun; the surface has barely been scratched. Observations on various materials are intended in no way to be a condemnation of them. Further study may reveal that certain materials, abandoned or not used at the present time, have under different circumstances extremely valuable and additional uses than they have hitherto been regarded as possessing. Future researches into the utilization of materials, as the building program of the exposition progresses, promise to yield some highly interesting and significant results.

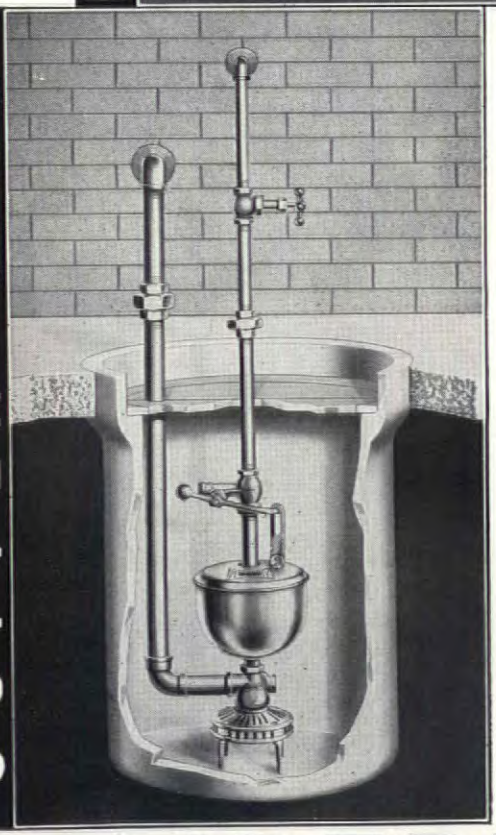
A few reasons why— many Architects specify..

BRONZE THROUGHOUT



TRADE PENBERTHY PRODUCTS MARK

COPPER AND



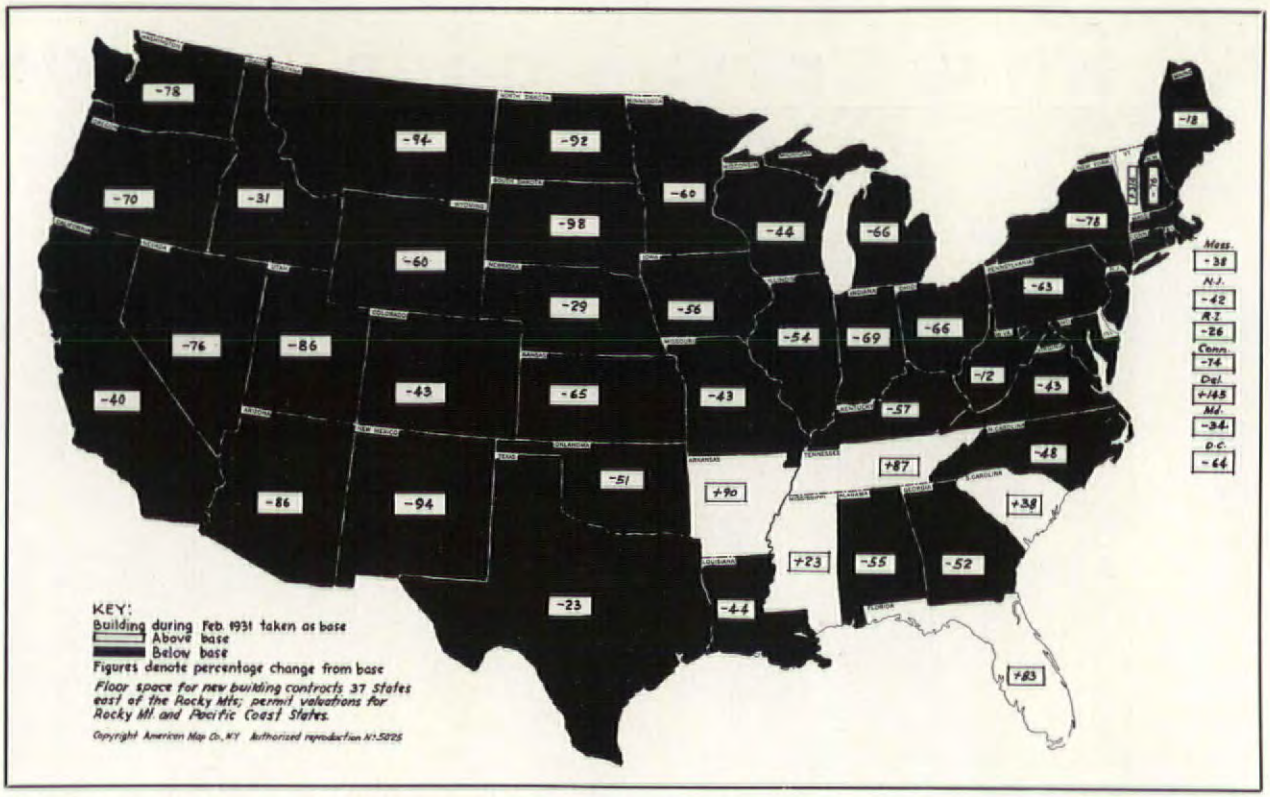
TO dispose of seepage below sewer level—or where sewerage facilities are not available—many architects prefer one of the units illustrated here. Local conditions determine whether the electric or hydraulic unit will be most economical—but both pumps have many characteristics that appeal to the architect.

Both the Penberthy Automatic Electric Sump Pump and the Penberthy Automatic Hydraulic Cellar Drainer are immune to corrosion—they are copper and bronze throughout. Both are thoroughly dependable under the most severe operating conditions, and are economical of electricity and water power. They are fool-proof, require no kid-glove handling, and are easy to install.

Manufacturing a complete line of both electric and hydraulic units in a full range of types and sizes, the Penberthy organization is especially well qualified to recommend the correct equipment for any specific case. Leading jobbers throughout the country stock both electric and hydraulic units.

PENBERTHY INJECTOR COMPANY
Established in 1886 — DETROIT — Canadian Plant Windsor, Ont.

PENBERTHY PUMPS REMOVE SEEPAGE WATER



The February building map showed seven states east of the Rockies where floor space totals of new building contracts were higher than in February, 1931: Vermont, Delaware, South Carolina, Florida, Tennessee, Mississippi and Arkansas. In January the map showed only six states where awards were higher than in the corresponding month of last year, while the December 1931 map showed eight states with higher contract totals. Of the states to show gains in February over a year ago, Vermont and Delaware reported increases for the third consecutive month. Of all the states that reported losses in February as compared with 1931, the best relative conditions were shown for West Virginia where the decline was 12 per cent, and Maine, with a decline of 18 per cent. The poorest states comprised New York, Ohio, Indiana, Pennsylvania, Connecticut, Kansas, Minnesota and the Dakotas, where the losses were in excess of 60 per cent.

BUILDING TRENDS INDICATED BY THE FEDERAL CENSUS

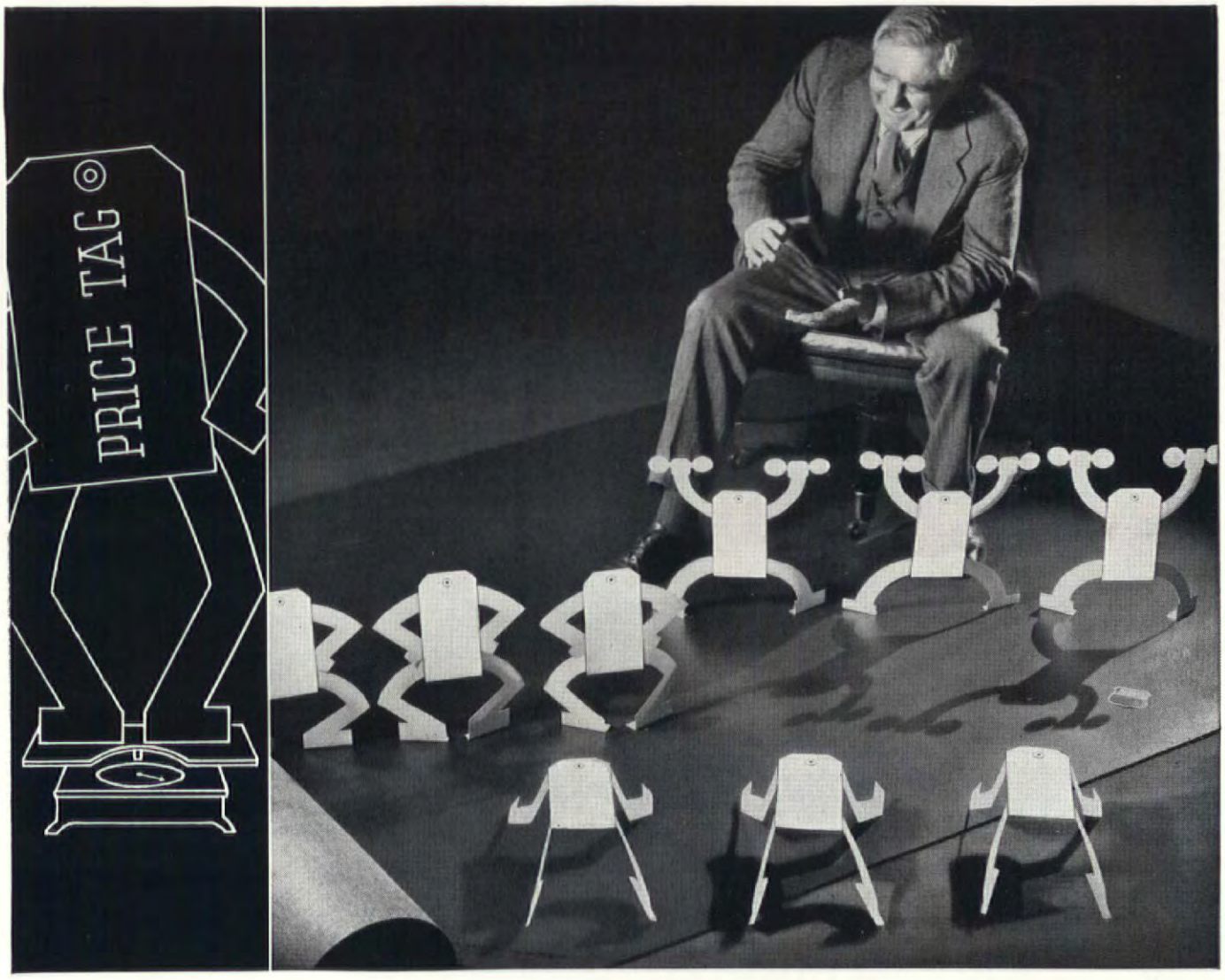
PART 7—THE OUTLOOK FOR CHURCH CONSTRUCTION

By L. SETH SCHNITMAN

Church architecture in America appears destined to undergo fundamental changes. As we come to recognize a varying social and economic structure, our churches will rely more heavily on income-producing facilities for support. The church structure of the past will very likely continue to be the pattern until we more fully appreciate the new forces, but as the difficulties of raising necessary monies increase and the competition for the charity dollar enlarges, self-preservation will dictate new structural forms. Then our churches will once again become landlords and our real estate interests will face a new competition in the sale of housing and office space.

New churches erected throughout the United States during the ten-year period, 1921-1930, inclusive, showed a contract value approximating $1,100,000,000. During the same period total construction of all descriptions aggregated $71,800,000,000. Thus it will be seen that $1.56 was expended for new churches for each $100 of all other classes of work. It is perhaps of far larger interest to compare church construction with residential building over the period; on this basis, approximately $225 went into new churches for each new housing unit representing $5,000 of residential contracts. (Approximately 4,900,000 housing units were erected during this decade.)

For the thirteen largest American cities, i.e., those having 500,000 or more inhabitants in 1930, new church building during the decade totaled approximately $275,000,000. These were the cities that accounted for almost 40 per cent of all new housing units which were erected in the United States during the ten-year period. Yet for these thirteen largest centers only $142 was spent for new church buildings for each new housing unit ($5,000) erected. These cities, housing 17 per cent of our entire population and 30 per cent of our urban population, accounted for 25 per cent



Reducing exercises for our price tags . . .

The reduced "figures" of our 1932 price tags should prove interesting to you. *Sealex Linoleum prices have gone down.* The excellent investment Sealex floor materials have always represented is even more attractive now. Their cost today is lower than it has been in many years.

Now is the time to make your funds go farthest . . . to make worth-while improvements at minimum expense. Replace all your hard-to-clean, noisy, unsightly old floors with sanitary, quiet, good-looking Sealex Floors. Save in first cost — and in maintenance cost, too. You'll find Sealex Floors economical to maintain—no scraping, no painting. An occasional waxing will keep your Sealex Floors looking like new.

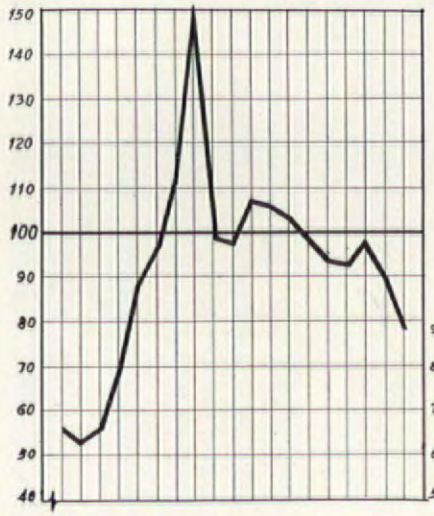
Write today for further facts about these modern, resilient floors . . . and for full information on our Bonded Floors expert installation service, in which Sealex materials are backed by Guaranty Bonds.

CONGOLEUM-NAIRN INC. KEARNY, N. J.

SEALEX
LINOLEUM FLOORS

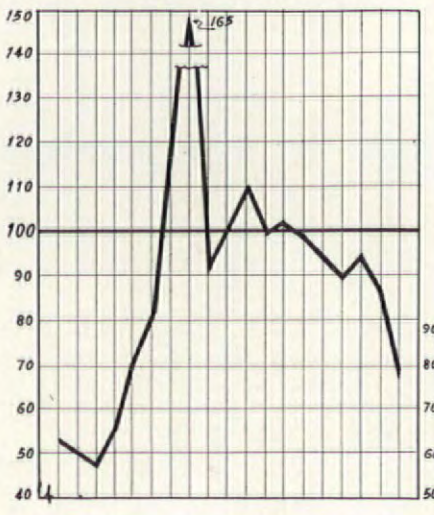
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average — 100



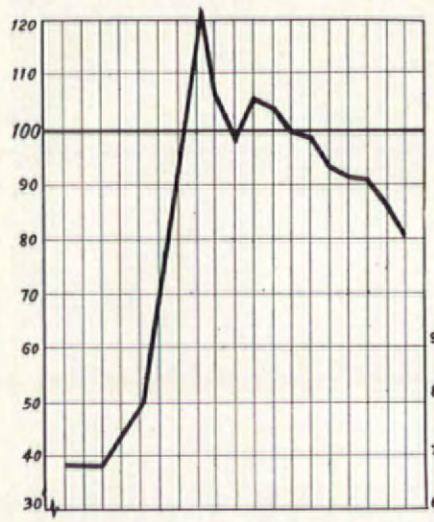
GENERAL INDEX

The price level will likely sink further over the next few months.



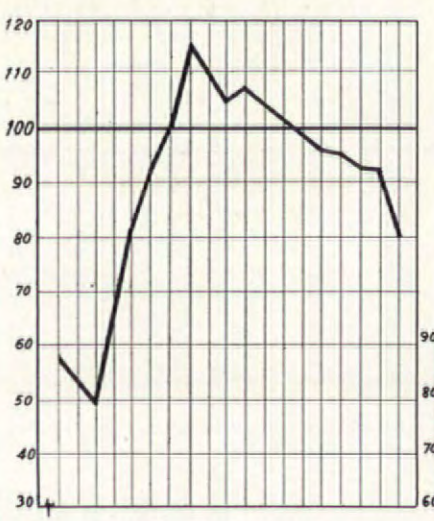
LUMBER

Additional weakness appears indicated for lumber prices.



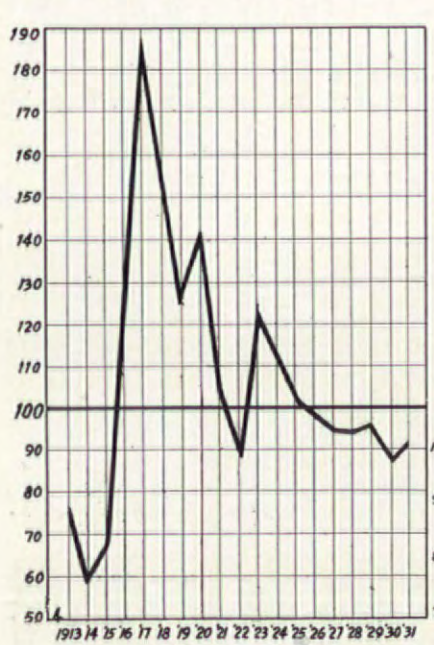
BRICK

There is little to justify belief that prices can stabilize at existing levels.



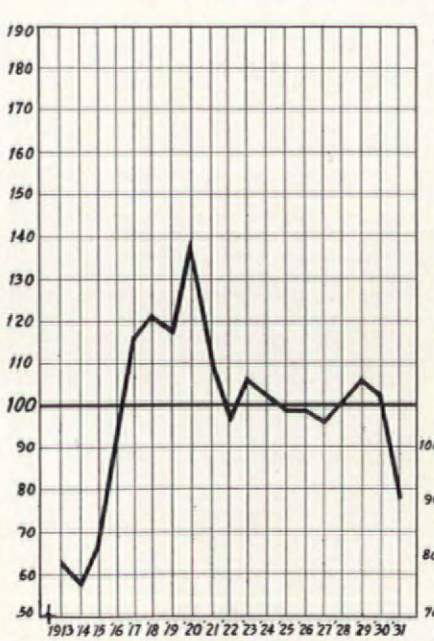
CEMENT

Apparent firmness cannot long obtain in the face of small construction volume.



STRUCTURAL STEEL

Present firmness is more apparent than real; testing of existing levels will likely occur over next two or three months.



OTHER MATERIALS

So long as the trend of building continues downward, it is not likely that any arrest of the downward move in prices will occur.

The MAGNIFICENT National Newark Building

The National Newark Building
Newark, New Jersey

Architect: John H. & Wilson C. Ely, Newark, N. J. *Htg. & Vent. Engr.:* Meyer, Strong & Jones, Inc., New York City. *General Contractor:* Starrett Brothers & Eken, Inc., New York City. *Heating Contractor:* Baker, Smith & Co., New York City. *Plumbing Contractor:* Jaehnig & Peoples, Inc., Newark, N. J.

"Every commercial convenience and luxury that modern architecture can provide" is incorporated in the new National Newark Building. Fronting on three streets at the heart of Newark and rising to a height of thirty-four stories, the building assures to its tenants permanent advantages of sunlight and ventilation.

Every effort has been made to embody the best and the most practical in planning, in style, and in building construction and equipment, conforming with the ambition and pride of the growing, progressive, and successful city that Newark is.

The makers of NATIONAL Pipe record with satisfaction the name of the National Newark Building to be added to the long list of distinguished buildings in which, for the major uses of pipe, NATIONAL has been installed. Every such choice reconfirms NATIONAL as—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY, Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL PIPE

of the value of all new church buildings.

From these facts it is clear that church construction in our smaller urban centers and suburban areas was relatively more active than in our largest cities. This is not surprising, since these largest cities showed a population growth between 1920 and 1930 of only 23.8 per cent as against a total growth in urban population between the two census years of 26.9 per cent.

To be sure, conditions varied rather widely for each of the thirteen centers. In New York City, where new residential building over the decade approximated $4,500,000,000, church construction amounted to $89,000,000; for each new housing unit only $99 of new church building was undertaken. In other words, New York City, which accounted for 19 per cent of all new residential building, produced only 8 per cent of the total value of new churches. How can we account for such a small relative amount of church building in the face of a population gain in this city of upwards of 23 per cent from 1920 through 1930?

In Buffalo a sharp contrast is found; here new church buildings during the decade showed $441 for each new housing unit. For Philadelphia, Baltimore, Pittsburgh, Buffalo, Cleveland, Milwaukee, St. Louis and San Francisco the ratio of new church work to residential building was higher than the average of $142 shown for the thirteen cities combined, while for Boston, New York, Chicago, Detroit and Los Angeles the ratio was lower than average. It is probably more than a coincidence that four of these latter centers were among the five largest American cities. Whatever the causes, it appears certain that over the next few years our largest cities will show a smaller ratio of church construction to residential building than obtained during the decade which ended in 1930, unless a new church building economy is conceived.

The experience in church construction over the ten years, 1921-1930, inclusive, in five cities in the 100,000 group selected at random, is here of interest: Des Moines, Lowell, Bridgeport, Reading, Richmond. In each of these cities the ratio of new church construction was in excess of $350 per new housing unit. For Reading the ratio was $566; for Des Moines, $443; for Lowell, which reported a decline in population between 1920 and 1930, the ratio was $410; for Bridgeport the ratio was $374; and in Richmond $364 was expended for new churches for each new housing unit. On the experience in these cities it is likely that over the next few years the relationship between new church building and residential work in our smaller centers may hold at approximately the levels which existed during the decade that ended in 1930.

It is probable in the light of the results during 1931 and thus far in 1932 that the annual total dollar volume of new church building throughout the country for some time to come will be on a lower level than has existed since the war. It is probable, also, that an increasing economic consciousness, now that our population growth-rate is being substantially altered, will produce a more material attitude towards church architecture, especially in our largest cities.

Out of these rather imperceptible processes a new structural conception will likely arise which will give greater economic utilization of land. New York City has already produced combination structures such as church-office and church-apartment buildings. Now that our population is growing older and that in a few years 40 per cent or more of our people will be in middle life or above, it is not unreasonable to suppose that economic pressure will force our churches to turn to revenue-producing buildings for a new means of support. Pretentiousness of exterior design will give way to functionalism and a typically American church architecture will arise.

In our smaller cities and suburban areas where free land abounds, church architecture over the next few years may still be patterned after existing modes. Whatever the course, it is probable that the present tendency of population growth and population shifts, the increasing competition for the charity dollar, the ascendancy of economics, to say nothing of the other manifold social changes which lie ahead, will leave large impress upon the future of American church architecture.

PUBLIC FINANCE STRONGLY INFLUENCES BUILDING OUTLOOK

Recent developments in public finance have overshadowed all domestic happenings of importance to business and industry. Taxes, budgets, economies—these are a few of the outward evidences that have assumed imposing proportions. It is hard to see how improvement in business may occur until the uncertainty which surrounds the whole question of public finance—local, state and national—is dissipated.

That the problem is being isolated gives rise to the hope that this factor may soon be removed. The chaotic state of public treasuries is not the only influence limiting the return of more normal construction volume, but if private capital could be certain that governmental agencies intend to live within their means, then our dollars would become more intrepid and we should ultimately find a reflection in larger construction undertakings.

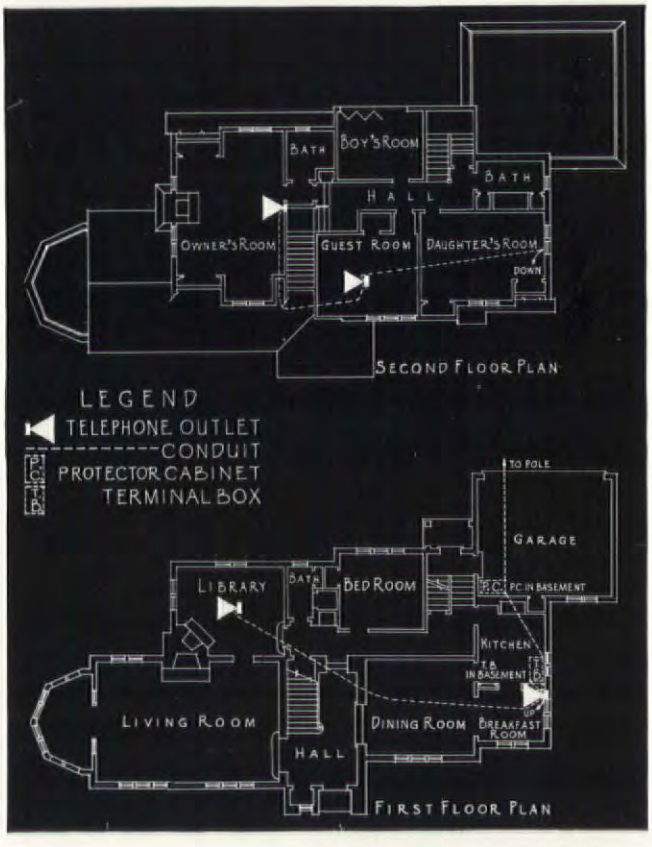
Prosperity still depends upon the production of wealth, on the output of wealth-producing facilities, such as buildings, and not so much upon the production of the necessities or comforts of life which are quickly consumable.

In the meantime corporate and municipal bond issues continue to trend downward with no indication of any nearby important turn for the better.

Little improvement in the trend of construction may be expected until the continued decline in corporate and municipal issues has been arrested.

HOMES PLANNED FOR FULL CONVENIENCE HAVE TELEPHONES THROUGHOUT...

Telephone convenience is provided for in the residence of Mr. S. J. Simonson, Stanley Park, Yakima, Washington, by built-in conduit connecting five outlets, including one in the basement. E. G. THERNELL, Architect, *Yakima.*



CLIENTS are pleased when time proves their homes livable, comfortable. And no one factor contributes more to living comfort than adequate telephone arrangements.

You can easily provide for full telephone convenience by planning in advance—by including telephone conduit in the original specifications. Built into walls and floors, the conduit permits time-saving, step-saving telephones to be located wherever they're wanted, throughout the house. In addition, it conceals all wiring, protects against most types of service interruptions, and allows for future expansion to meet changing needs.

When you're planning a new or remodeled residence, consult your local telephone company. They'll be glad to work with you and advise you on the best telephone arrangements for your particular project. There is no charge. Just call the Business Office.

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WASHROOM SERVICE IN LOWRY MEDICAL ARTS BUILDING

● The decorative and serviceable Onliwon Chromium Finish Toilet Tissue Cabinets and the Onliwon White Enamel Towel Cabinets were specified and installed in the imposing new Lowry Medical Arts Building, St. Paul, Minn. Furthermore, the complete A. P. W. Onliwon Washroom Service consisting of Onliwon Paper Towels and Toilet Tissue is now in use in all of the building's lavatories.

Pioneers for Cleanliness since 1877

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TRADE-MARK REGISTERED IN U. S. PATENT OFFICE

A. P. W. PAPER CO., Albany, N. Y.

Please send, free, the new and complete catalogue of A. P. W. Cabinets and Fixtures. AR-4-32

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MANUFACTURERS ANNOUNCEMENTS

GARAGE DOOR OPERATORS

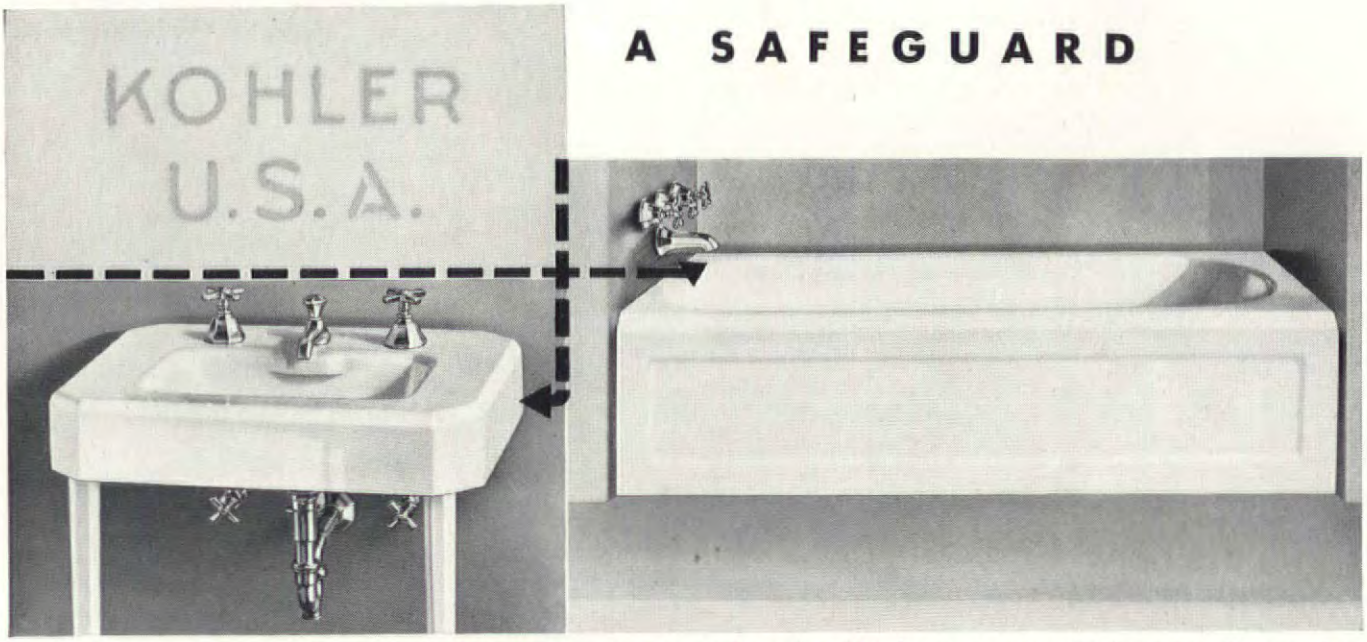
Garage door operators with remote control is a new feature that is being experimented with for residential buildings. Several such operators have been used with some success, including the use of the automatic type operated by the photo-electric cell. One of the most popular type of remote controls for this purpose is the switch-controlled operator manufactured by the Barber-Coleman Company of Rockford, Ill.

This operator is controlled by turning a key in a switch, located on a post which has been set at some convenient point in the driveway so that the driver may, by merely leaning out of the car, insert the key to the switch which automatically sets the operator in motion, opening the garage door.

The driveway post consists of a metal box 5 inches square by 5¾ inches high, mounted upon a metal post to the bottom of which is attached a special plate. A lock switch in the post head permits only those with the proper key to open the garage door from the outside. This switch is a special switch which makes contact only when the key is inserted and turned. A self-restoring toggle switch, not locked, is provided in the post head. This allows the door to be closed but not opened. Thus it is not necessary to use a key in the driveway post when leaving the garage. The switch cover plate is held by screws but cannot be removed unless the key is inserted and the lock turned. Each driveway post is arranged for individual control of either of two garage doors.

The driveway post may be used wherever such a regulating device is desirable. Its height, which is 4½ inches, makes operation through the window of a car very simple and eliminates the necessity of leaving the car at any time. In cases where walls or entrances are not wide enough for the driveway post, a special wall fixture which is identical with the switch portion of the post may be fixed directly to any wall or surface. The driveway post is metal throughout.

THIS MARK IS MORE THAN A SAFEGUARD

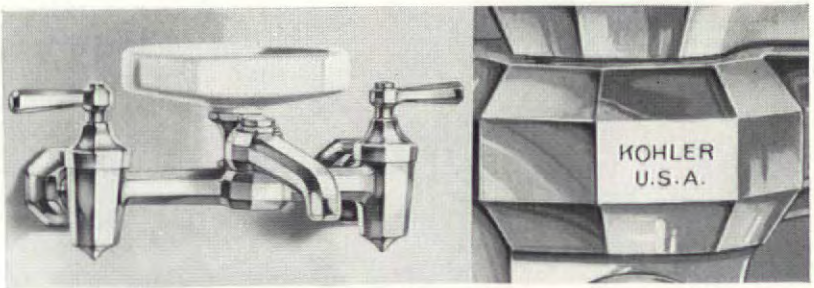


All Kohler enameled and vitreous china fixtures bear a permanent trade-mark in blue letters, permanently fused into the enamel or glaze; inconspicuous, yet readily found

WITH times as they are, the season is open on shoddy goods. Like every one else, the architect has to keep his weather-eye open. What you have to avoid are fixtures and fittings that look right now, but mean trouble later. You've got to stick to the sound doctrine that *half-right plumbing, at any price, is never good enough.*

And the best standby in a time like this is quality. Every Kohler fixture and fitting carries the word of the maker that the buyer gets full measure of what he asks for. That trade-mark stands for grace and strength in the large pieces. It points out the fine finish in each detail. It reminds customers that the real red brass fittings are simpler, heavier, longer lasting. It proves the craftsman principles back of each piece. *These* are the facts that keep both your client and you satisfied! It pays to specify reliable products. You can count on the Kohler trade-mark to back up your fight for quality. Point out to your clients that Kohler fixtures cost no more to install—and pay for themselves time after time by reducing running expenses, raising property values, and making for convenience and peace of mind.

Kohler Co. *Founded* 1873. Kohler, Wis.—*Shipping Point*, Sheboygan, Wis.—*Branches in principal cities.* . . . Makers of Kohler Electric Plants. Look for the trade-mark on each fixture and fitting.



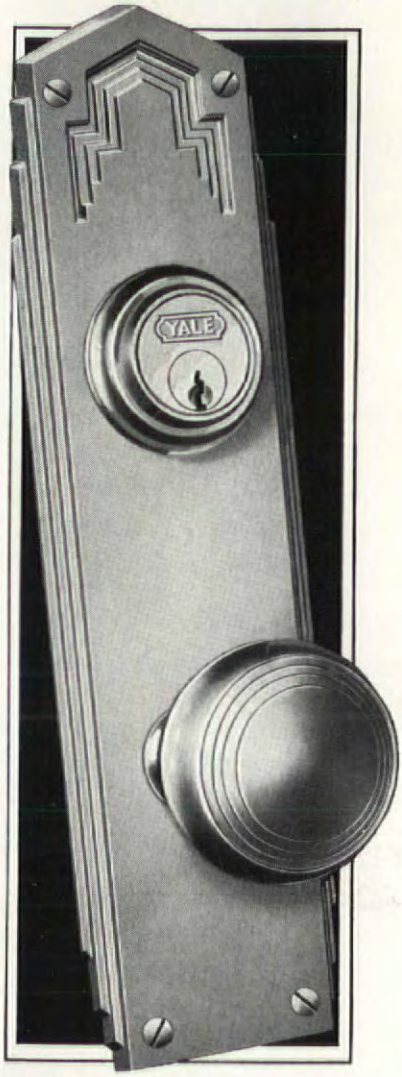
All Kohler brass fittings have the name Kohler in raised or depressed letters

KOHLER OF KOHLER

PLUMBING FIXTURES AND FITTINGS

TRADE YALE MARK

Fine Builders' Hardware

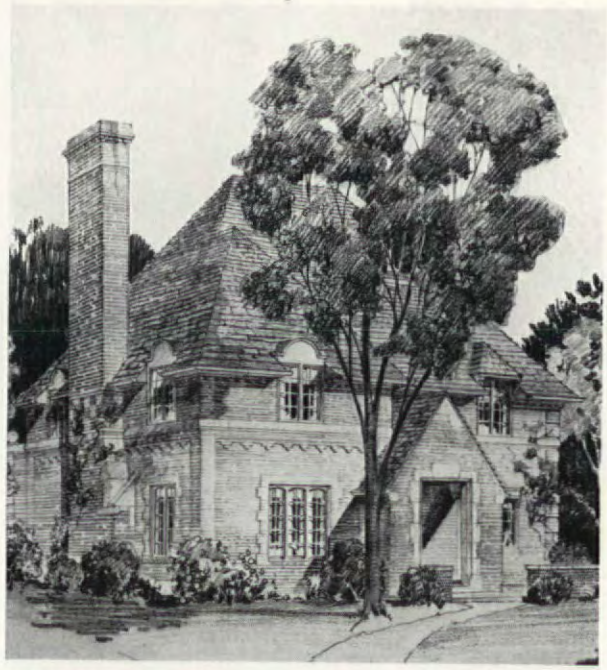


THE SPIRIT of friendship and co-operation which exists between architects and Yale Builders' Hardware contract dealers is the result, not only of long-established Yale quality and dependability, but also of a definite service.

Yale dealers realize that their most important function is to work closely with architects—to assist in determining proper builders' hardware allowances on various jobs—and to provide whatever other service architects may find helpful.

Your correspondence invited.

THE YALE & TOWNE MFG. CO.
STAMFORD, CONN., U.S.A.



DETAIL OF STEEL FRAMING

ARC-WELDED STEEL FRAME HOUSING

This house in Oberlin, Ohio, illustrates the use of structural shapes cut to size, welded into wall panels and assembled on the site with little scaffolding. Panels and bearing partitions averaged 14 to 18 feet wide, one story high, and 500 to 700 pounds in weight. The frame was erected on the foundation in approximately two days. Fleetweld electrodes and a "Stable-Arc" welder, manufactured by The Lincoln Electric Company, Cleveland, were used. Nine tons of steel were used. The erection cost ran $90 a ton as against $120 a ton by other methods.

"OR EQUAL"

WHAT IT REALLY MEANS

Columns are one thing about a building which must be made authentically correct and structurally right, if they are to give satisfaction.

They are the first thing to attract the eye—therefore they must be right in design and detail. They are practically always placed in an exposed position and for that reason they must be built to withstand the weather without checking, warping or opening up at the joints.

In our thirty years experience in building columns, we have developed certain standards of manufacture which have proven to give permanent satisfaction.

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Naturally it is not easy for the average manufacturer to equal Hartmann-Sanders specifications. However, should you specify columns "Hartmann-Sanders, or equal," be sure any columns you consider are built to these standards. To accept anything inferior is to invite dissatisfaction and heavy replacement costs in a few years.

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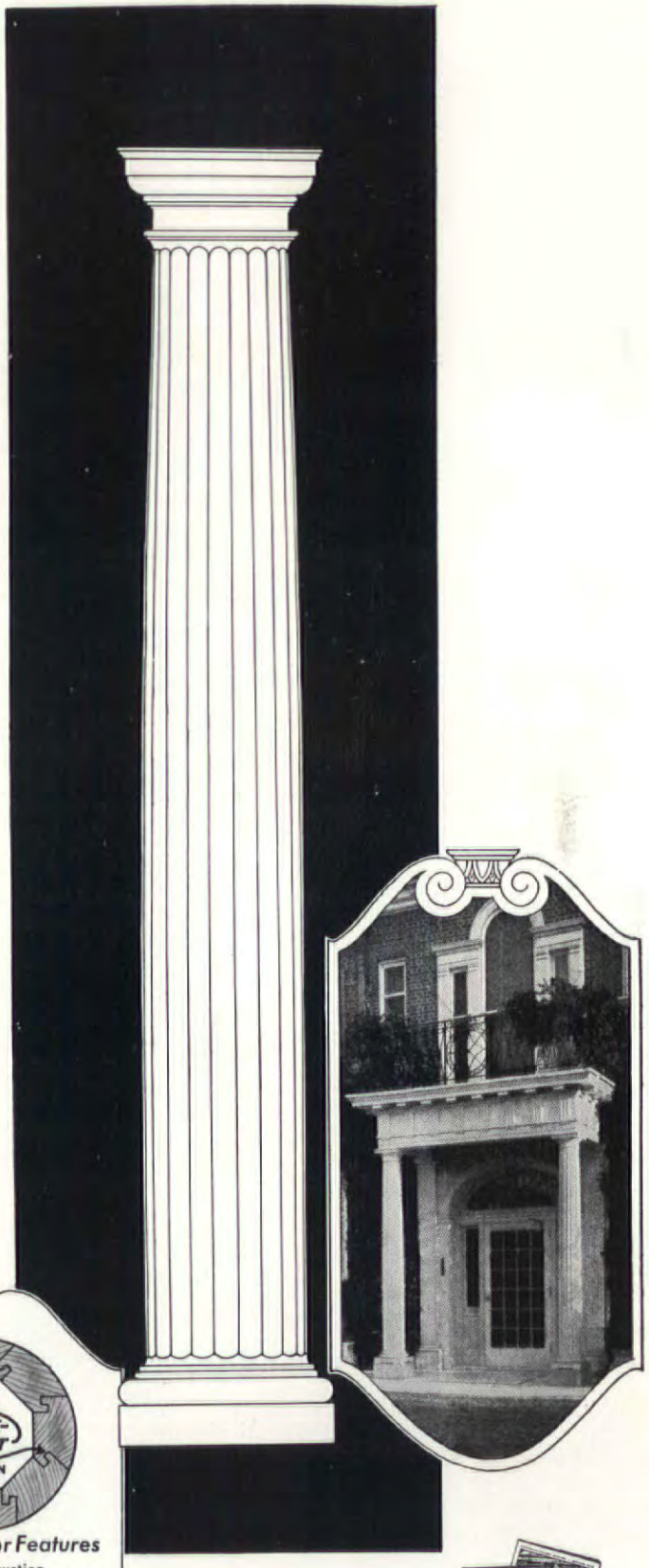

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"DE-ION" CIRCUIT BREAKER

The Westinghouse Electric & Manufacturing Company announces a new group of circuit breakers based on the "De-ion" principle of arc extinction for the replacement of open knife switches. These breakers are safe, being entirely inclosed and live parts shielded. Because of the compactness of this new breaker it will be possible often to reduce by one half the size of switchboards over those using heavy duty air circuit breakers of equal capacity. This feature of compactness is important in buildings where conservation of rentable space is desirable. A high interrupting capacity is offered: the breakers rupture 10,000 amperes a-c. at rated voltage and 50% power factor within the first cycle.

The trip units have two separate tripping functions. The time delay is obtained through a bimetal, and an instantaneous tripw hich can be calibrated so as to require an inrush from 8 to 10 times breaker rating before tripping occurs. All breakers are mechanically-trip-free from the handle, which is the position indicator. An "on" and "off" marking indicates the position of the breaker in manual operation. When tripped automatically by the trip unit the handle stops halfway between the "on" and "off" positions.

NEW PAINT FINISH

The Paint and Varnish Division of E. I. du Pont de Nemours and Company announces Dulux White, a new finish for exterior painting. The new product is put on the market after five years of tests. The Dulux vehicle, which gives to Dulux White additional surface protection, is a synthetic oil product.

GLASS BLACKBOARDS

This product is offered by the New York Silicate Book Slate Company, New York City, as a synthetic substitute for slate. The surface of plate glass does not take a chalk mark, and until recently no treatment had been devised to give glass a writing surface comparable to that of slate in both smoothness and durability. The method which has been adopted is an incorporation of a fine abrasive in the glass mix. The roughness of the writing surface depends then on the coarseness of the abrasive, and being uniformly distributed, it insures a permanent surface since no matter how far the glass may be worn the surface is always the same. A very deep black glass can be obtained.

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Here they are—26 of New York's foremost skyscrapers—all equipped with Spencer Central Cleaning!

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Chrysler	77
Woolworth	55
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1 Wall Street	51
New York Life	41
Waldorf-Astoria Hotel	47
Municipal	33
Sherry Netherland	38
Equitable Trust Company	42
Bankers Trust	39
Downtown Athletic Club	31
Bank of New York Trust	32
Hotel Pierre	41
Chase National Bank	38
New York Telephone	31
444 Madison Avenue	43
19 Rector Street	36
Hotel New Yorker	43
News	36
National City Company	33
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Hotel Shelton	34
Hotel Governor Clinton	31
Hotel Lexington	30
Hotel Lincoln	30

• This list does not include the many Spencer equipped buildings under 30 stories high.

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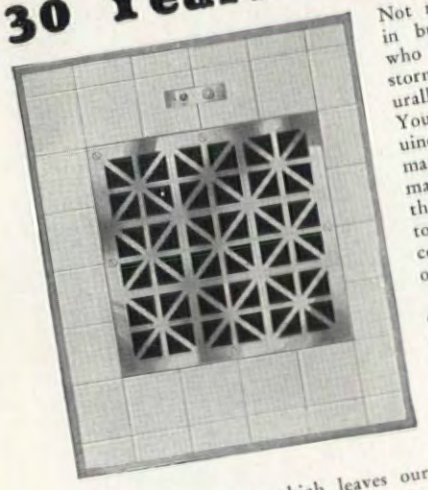

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PHELPS DODGE COPPER PRODUCTS CORP.

A new unit in the form of a vertical combination, the Phelps Dodge Copper Products Corporation, has been launched as the backbone of a new complete "mine to market" organization.

The name of the present fabricating subsidiary, National Electric Products Corporation, will hereafter be the corporate title of the National Metal Molding Division of the Company. National Electric Products Corporation will have its headquarters at Pittsburgh. Its plant is at Ambridge, Pa. Among the many products of national distribution, which it manufactures are rigid and flexible steel conduits, metal molding, armored cable, non-metallic conduit, thin walled tubing and oval-duct, steel outlet boxes and switch boxes, rubber covered wires and steel protected cables.

A new corporation, named Phelps Dodge Copper Products Corporation, will take over and operate the other fabricating divisions. These include the American Copper Producers Division with mills at Bayway, N. J., manufacturers of copper rods, wire and strip, bus bars and special shapes, stranded cables, trolley wire, bronze wire, bronze and brass wire, and weatherproof wire; the British American Tube Division with mills at Bayway, N. J., manufacturers of brass, bronze and copper pipe and condenser tubes; the Inca Manufacturing Division at Fort Wayne, Ind., manufacturers of enameled copper wire, coils, magnet wire; and the P-M-G Metal Division, manufacturers of copper and copper alloys in fabricated shapes which have special corrosion resisting qualities.

Habirshaw Cable & Wire Corporation will operate as a subsidiary of Phelps Dodge Copper Products Corporation. Habirshaw has plants at Yonkers and Nepperhan, New York and Bridgeport, Conn., and manufactures a complete line of rubber and lead covered wires, paper insulated power cables, telephone and telegraph wires, signal wires, Parkway cables, and miscellaneous cables of all kinds.

Both Phelps Dodge Copper Products Corporation and Habirshaw Cable & Wire Corporation have moved their present offices to 40 Wall Street, adjacent to the offices of Phelps Dodge Corporation. National Electric Products Corporation, in addition to its Pittsburgh offices, will have a sales office in New York City.

Through acquisition of the Calumet and Arizona Mining Company and prior acquisition of the Nichols Copper Company and the National Electric Products Corporation, Phelps Dodge Corporation is one of the three large units in the copper industry in the United States.

SARCO COMPANY

Sarco Company, Inc., of New York City, has incorporated a new company, the Spirax Manufacturing Co., Ltd., in London, for the manufacture of Sarco Steam Traps and other specialties for the British market.

THE ARCHITECTURAL RECORD

VOL. 71 NO. 5 MAY, 1932

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Roland E. Coate, Architect
Photograph by Haight

Frontispiece: VETERANS MEMORIAL BRIDGE AT ROCHESTER, NEW YORK
Gehron and Ross, Architects

291-293 . . . WHAT HAS HAPPENED TO ARCHITECTS?
By Thomas S. Holden, Vice-President in Charge of Statistics and Research, F. W. Dodge Corporation

294-297 . . . ILLUSTRATED NEWS

298 . . . . HOUSING RESEARCH CAN BE ADVANCED THROUGH ARCHITECTS' EMERGENCY RELIEF WORK

299-324 . . . PORTFOLIO OF CURRENT ARCHITECTURE
Dean's Residence at Wells College, Aurora, New York—Dwight James Baum, Architect; Ault Park Recreation Building, Cincinnati, Ohio—Fechheimer and Ihorst, Architects; House of Mrs. D. D. Cotton, Santa Barbara, California—Roland E. Coate, Architect; House of William B. Hart, Los Angeles, California—Roland E. Coate, Architect; House of Mr. and Mrs. H. C. Lippiatt and Mrs. F. M. P. Taylor at Bel Air, California—Roland E. Coate, Architect; Healy Chapel, Aurora, Illinois—George G. Elmslie, Architect; Reed Memorial Library, Lake Forest, Illinois—Edwin H. Clark, Architect; Seamen's House—Y. M. C. A., New York City—Shreve, Lamb and Harmon, Architects.

325-332 . . . DRAFTING AND DESIGN PROBLEMS — NEIGHBORHOOD SHOPPING CENTERS

333-335 . . . CHAPTER NEWS AND CORRESPONDENCE FROM ARCHITECTS

336-340 . . . VETERANS MEMORIAL BRIDGE AT ROCHESTER
Gehron and Ross, Architects
By Ernest Born, Architect

341-342 . . . ENTRANCE GRILLE STUDIES
By Frederic C. Hirons

343-364 . . . TECHNICAL NEWS AND RESEARCH: REMODELING AND MODERNIZING BUILDINGS

36, 38 (adv.) . . . THE ARCHITECT'S LIBRARY

40, 42 (adv.) . . . ARCHITECTS' ANNOUNCEMENTS AND CALENDAR — THE JUNE ISSUE

48, 50, 52, 54 (adv.) . MODERNIZATION: ITS IMPORTANCE TO THE ARCHITECT
By L. Seth Schnitman

56, 58, 60, 62 (adv.) . QUESTIONS AND ANSWERS

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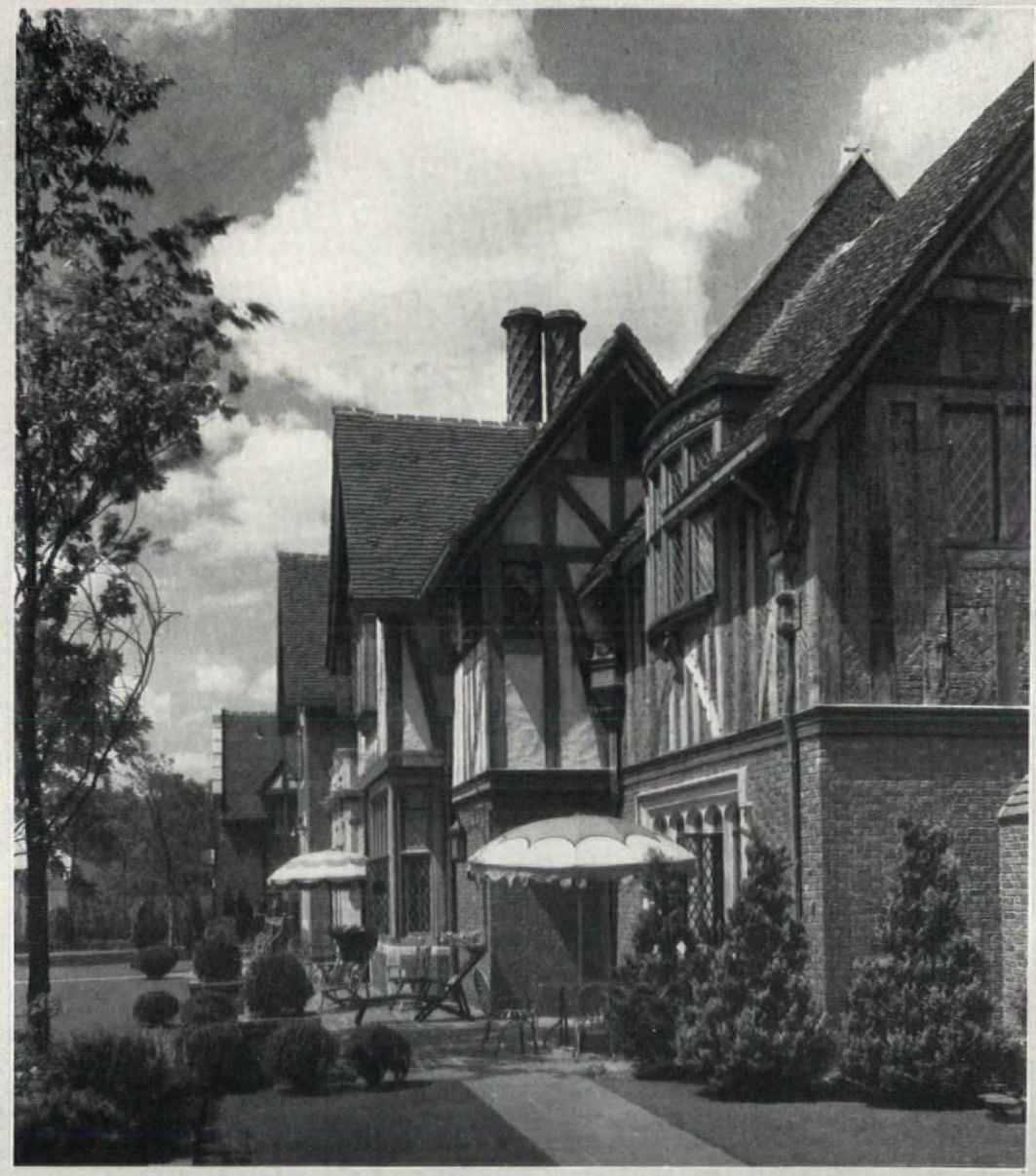

RESIDENCE, MT. HEALTHY, OHIO — Dwight James Baum, *Architect*

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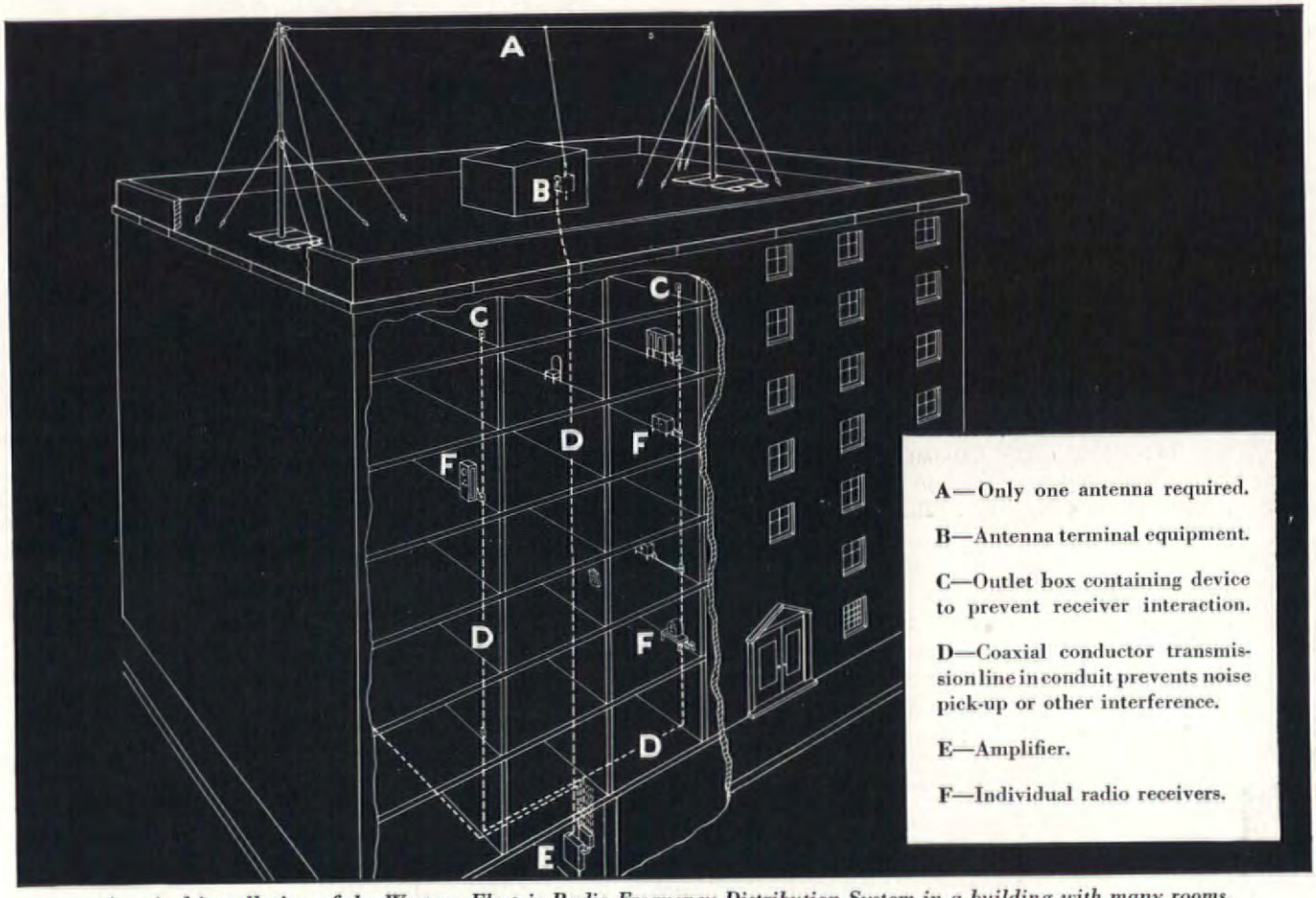

A typical installation of the Western Electric Radio Frequency Distribution System in a building with many rooms.

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THE ARCHITECT'S LIBRARY

SOUTHERN ARCHITECTURE ILLUSTRATED. Foreword by Lewis E. Crook, Jr. Introduction by Dwight James Baum. Published by Harman Publishing Co., Atlanta, Ga. 272 pages of plates. Price $5.

A large number of houses erected in the southern states during the past few years are illustrated in this volume. The plates are large, well selected and generally well reproduced. Plans are included. The introduction by Mr. Baum criticises appreciatively the houses illustrated.

THE PROMOTION OF COMMERCIAL BUILDINGS. By Charles H. Lench. Published by Architectural Economics Press, New York. 253 pages. Introductory price $6.50.

In the spring of 1931 the department of architecture of Columbia University announced a new lecture course entitled "The Architect's Relation to the Promoting and Financing of Income-Producing Buildings." Lectures were given by Mr. Lench, a practicing architect, to a class consisting of architects, engineers, draftsmen, builders, brokers and investors in real estate. These lectures have now been gathered together in a single volume which makes a promising entry into a heretofore neglected field of publication.

The book has two parts. The first considers the various personalities—promoters, bankers, builders, real estate operators, realtors, attorneys, renting agents, building managers, mortgage brokers, appraisers, land surveyors, surety companies, and owners—with whom an architect must cooperate in the promotion of commercial buildings.

Part two comprises analyses of financial statements, or set-ups, for various types of commercial building operations. Case studies, drawn from Mr. Lench's own professional experience, are used to illustrate prcedure on such building types as apartment houses, cooperatives, apartment hotels, club and commercial hotels, office buildings, lofts, garages, warehouses and suburban housing developments.

MEN AND BUILDINGS. By John Gloag. Published by Country Life, Ltd., and Charles Scribner's Sons. 246 pages. Price 8s. 6d.

This book can be classed as a descriptive narrative of the art of architecture rather than a technical book or a textbook on architectural development. It attempts to give the layman an unbiased account of the growth of the art of building. The author discusses present-day problems and achievements, and predicts possible trends. He supplements his story with a list of books by other authors who treat this subject in a more formal or technical manner.

From "Southern Architecture"

HOUSE OF M. P. BURROUGHS, ST. LOUIS
TRUEBLOOD AND GRAF, ARCHITECTS

ENGLISH WROUGHT IRONWORK, MEDIEVAL AND EARLY RENAISSANCE, ENGLISH BRICKWORK DETAILS, 1450-1750. By Tunstall Small and Christopher Woodbridge. Published by William Helburn, Inc., New York. Price $4 each.

These are the fifth and sixth volumes in the series of portfolios of loose plates showing full-size drawings of architecural details chosen from authentic examples of their respective periods in England. The series covers moldings, turned woodwork, wrought ironwork and brickwork, and the periods range from the middle of the fifteenth to the early nineteenth centuries. Each volume contains twenty plates, 12½ by 10 inches, printed on stiff board paper, and the details shown full size are given in their relative positions and applications in the accompanying small-scale key drawings.

Samples of wrought ironwork taken from all parts of England include hinges, railings, screens and grilles, handles and latches, escutcheons, knockers and casement fasteners.

Details of molded brickwork include sections of cornices, frieze molds, architraves, archivolts, imposts, plinth and label molds, caps and bases, mullions and other brickwork contours.

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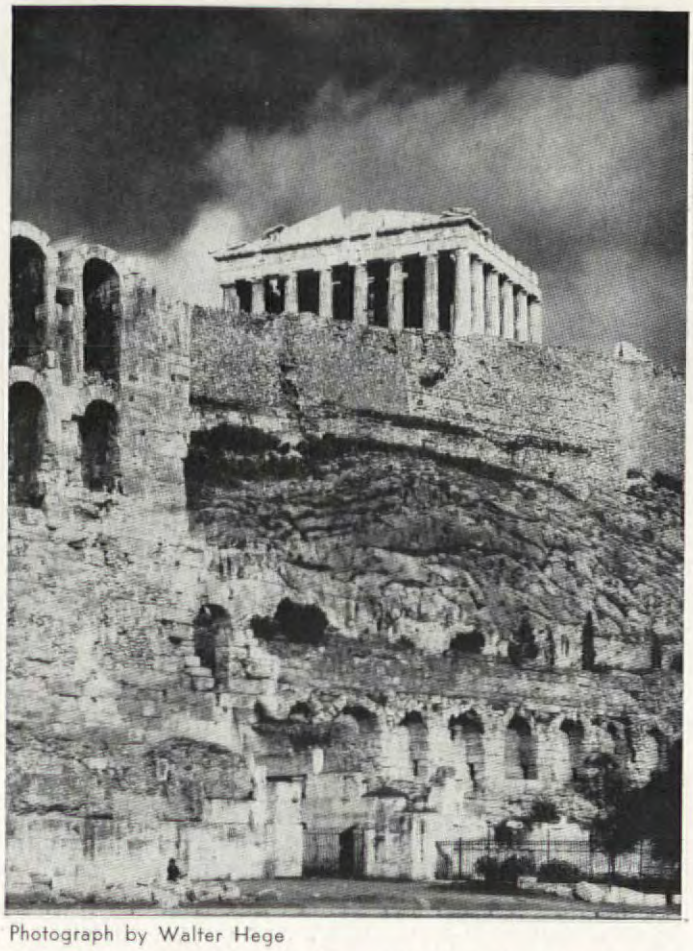

Photograph by Walter Hege

VIEW OF THE ACROPOLIS, SHOWING THE PARTHENON (ABOVE) AND THE ODEUM (BELOW)

THE ACROPOLIS. Photographed by Walter Hege. Described by Gerhart Rodenwaldt. Published by E. Weyhe, New York. 61 pages of text, 104 plates. Price $9.

This book presents a collection of photographs of the buildings on the Acropolis. The excellent quality of the prints bear evidence of the artistic technique of the photographer. The book jacket explains that Mr. Hege was given the task of presenting the Acropolis in about 100 photographs. For the completion of this work he was allowed a year, during which a thousand photographs were prepared with painstaking detail as to proper exposure and time. The engraver's and printer's reproductions do full justice to the quality of the hundred prints finally selected. Many detailed views of the sculpture in the Panathenaic frieze are included.

RECENT TRENDS IN AMERICAN HOUSING. By Edith Elmer Wood, Ph.D. Published by the Macmillan Company, New York. 317 pages. 13 photographic plates. Price $3.

This is a reference book of considerable usefulness on the now important subject of housing. Its concern is sociological. Dr. Wood investigates the status, in the present and the immediate past, of home ownership, the effect on housing of the operation of commercial "supply and demand," the relation between rent or purchase price and family income (with corrections of a good many current false assumptions in calculating what the family income actually is), and the possibility of more adequate housing in the future. She tells the story of war housing in the United States, which set standards never since equalled here, the effort having succumbed during the boom. There are chapters devoted to devices such as rent restriction, tax exemption, tenement and housing codes, zoning, regional planning. There is a brief account of garden cities in England, and such enterprises here as Mariemont and Radburn. In conjunction with one another are placed the various housing enterprises that have sought to provide living quarters at a level of income too low to be reached commercially: cooperatives consisting mainly of trade unions groups such as the Amalgamated Clothing Workers in New York; then operations bringing limited returns, such as the work of the Model Homes Company of Cincinnati and the City Housing Corporation, or such as the Metropolitan Apartments in Chicago, the Rockefeller houses, and the current New Jersey enterprise of the Prudential Life. Then there are the projects of the public authorities. A chapter deals with slum clearance.

With two-thirds of the population provided for with housing only at second, third, or fifth hand, the author is confident that major social evils can be traced to the lack of decent living accommodations. New York slums are the worst in the civilized world.

The pessimistic tone is that of a humanitarian who sees no measurable relief to be obtained without extensive government aid. Since the book was written, the possibility of industrial participation in a field hitherto occupied by philanthropy has seemed considerably to increase. A good deal is to be expected, for example, rom technological advances that the book completely ignores. Nevertheless, as a survey of the present situation, the volume is unequalled. DOUGLAS HASKELL.

AMERICAN LIFE IN ARCHITECTURE. By Philip N. Youtz. Published by American Library Association, Chicago. 47 pages. Prices: cloth, 50¢; paper, 35¢.

This book, which is a reading course and study outline on American architecture, is No. 55 in the "Reading with a Purpose" series. It is sponsored by the Committee on Education of the American Institute of Architects.

Architecture is considered as an expression of society and the social functions of buildings are stressed. Brief summaries of the various architectural periods are given together with a chart of American history in architecture. A recommended bibliography is included.

Pennvernon Windows
MIRROR NATURE *in its* TRUE COLORS

HALF the charm of a room consists in the views which can be seen from its windows. But if these views are to be charming, they must be brought into the home clearly, in fine detail, in all their natural colors.

Pennvernon Window Glass will transmit the beauties of Nature in just that way. None of Nature's own bright coloring is lost, or changed, or dimmed—because Pennvernon is so free from color itself that it mirrors Nature's hues as they really are.

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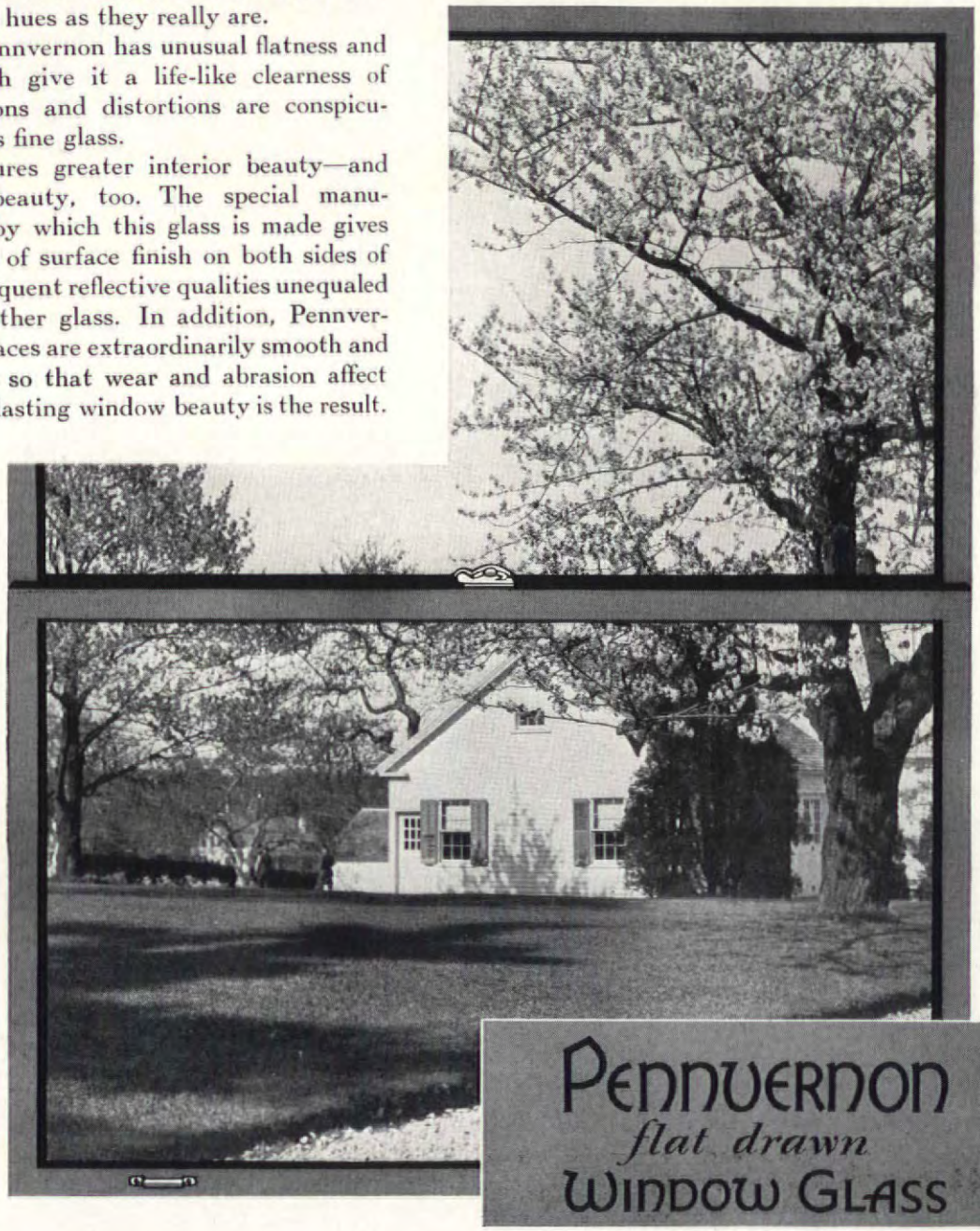
You will find it worth your while to investigate Pennvernon Window Glass. It is available in single or double strength, and in thicknesses of $\frac{3}{16}$" and $\frac{7}{32}$", at the warehouses of the Pittsburgh Plate Glass Company in principal cities, and through progressive glass jobbers. Write to us for samples and for our booklet on the manufacture of Pennvernon. Pittsburgh Plate Glass Company, Grant Building, Pittsburgh, Penna.



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FEATURES IN THE JUNE ISSUE

Trowbridge

AUDITORIUM IN THE CINEMA ART THEATER, CHICAGO
ARMSTRONG, FURST AND TILTON, ARCHITECTS

THEATRES — The Technical News and Research article will take up problems involved in the design, construction and equipment of small theatres. Lighting and acoustical requirements of motion picture theatres will be analyzed; likewise seating arrangements as determined by the screen location.

HOUSES — The Portfolio will feature inexpensive designs suitable for suburban communities. Houses illustrated include recent work by Thomas and Baker, Delano and Aldrich, Dwight James Baum, Roland E. Coate, and other architects.

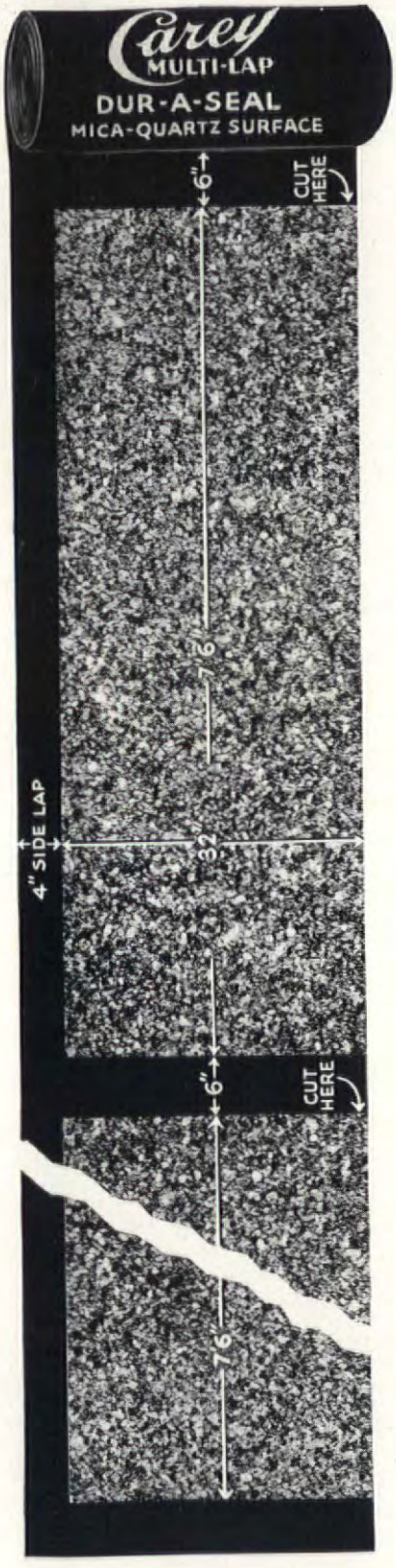
COURT HOUSE — The Delaware County Court House at Media, Pennsylvania, by Clarence W. Brazer, architect, is exemplary of a successful handling of Colonial detail.

MUSIC SCHOOL — The plan of the new Juilliard School, by Shreve, Lamb and Harmon, architects, is the result of a long investigation to determine the requisite elements for the ideal metropolitan music center housed in a single structure.

Fischer

JUILLIARD SCHOOL OF MUSIC, NEW YORK CITY
SHREVE LAMB AND HARMON, ARCHITECTS

The New Superior Surface for Built-Up Roofs



At the left is a photographic reproduction of Carey Dur-a-Seal—the new surface for built-up roofs. When applied, it is cut as indicated, forming sheets 8 ft. long by 3 ft. wide. Each sheet has one uncoated 6″ end lap and one uncoated 4″ side lap. These selvage laps are joined to adjacent sheets with moppings of hot asphalt, and when thus united they form a jointless, weather-resisting surface.

The Mica Quartz surface of Carey Dur-a-Seal is not affected by acids, alkalies or exposure. It is equally as durable as slag or gravel surfaced roofs when applied on decks with an incline ranging from ¾″ to 3″ in 12. It possesses all the advantages of a smooth top roof plus the safeguarding value of the Mica Quartz surfacing which protects the water-proofing elements in the roof from the searing action of the sunlight. In comparison to slag or gravel, Mica Quartz surfacing is much more dense, weighs far less and does not separate from the surface and clog roof drains.

Upon request, we will be glad to supply any architectural office with complete specifications covering built-up roofs surfaced with Carey Dur-a-Seal.

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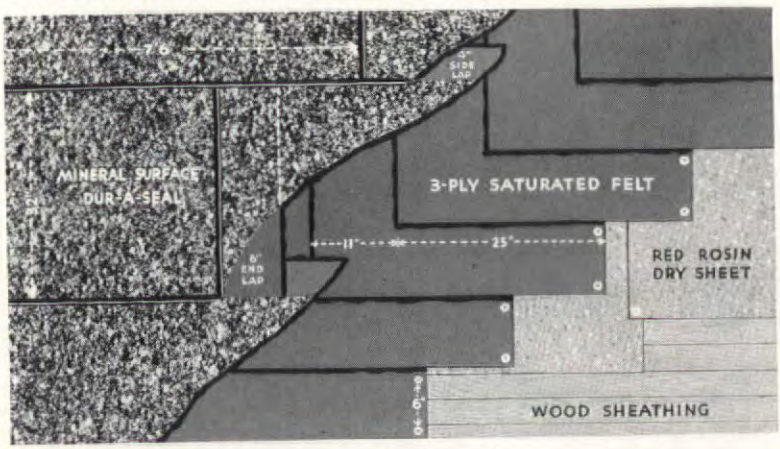
Branches in Principal Cities

See Carey Section—Sweet's 1932 *Architectural Catalogs*

The drawing below shows the application of Carey Dur-a-Seal. Detail indicates the construction of Carey Master Built-Up Roof Specification No. 5.



BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey PRODUCTS EST. 1873

HEAT INSULATIONS
ASBESTOS MATERIALS
CORRUGATED ASBESTOS SIDING
ASFALTSLATE SHINGLES
ROLL ROOFINGS

EXHIBITIONS AND EVENTS

May 24-25	Symposium on modern trend in residence construction. Conference sponsored by American Institute of Steel Construction; to be held in auditorium of Engineering Societies Building, 29 West 39th Street, New York City.
May 26	Second annual meeting of the Porcelain Enamel Institute in Cleveland. Talks on architecture are scheduled. A new porcelain enamel on metal house will be open for inspection.
Until June 1	Exhibition of advertising art at the Art Center, New York City.
June 20-24	Annual meeting, in Atlantic City, of the American Society for Testing Materials.
June 25-August 19	Modern architecture tour of Europe, conducted by Prof. Talbot F. Hamlin of Columbia University. Address The American Institute of Educational Travel, 587 Fifth Avenue, New York City.
July 30-August 14	Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City.
October	International Congress for Modern Architecture at Moscow, U. S. S. R. Program: "The Functional City."

COMPETITIONS

May 7	Closing date for applications for architectural fellowship competition, University of Pennsylvania.
June 15	Closing date for entries for Douglas Fir Plywood Manufacturers design competition. Address C. H. Alden, professional advisor, Skinner Building, Seattle, Wash.

FORUM ON BUILDING CONSTRUCTION

The American Institute of Steel Construction is planning a symposium or forum on the modern trend in residence construction.

The building public at large is invited to a conference in New York City on May 24 and 25 for the purpose of exchanging the latest data and theories on residence construction. This conference will be held in the auditorium of the Engineering Societies Building, 29 West 39th Street.

NEW YORK BUILDING CONGRESS OFFICERS

The New York Building Congress held its eleventh annual meeting and election of officers April 22. Harris H. Murdock was re-elected to the presidency. Additional officers for the next year are: Vice-presidents: William Arthur Payne, John J. Collins, Glover Beardsley, Thomas S. Holden, Daniel T. Webster; treasurer, Benjamin D. Traitel; secretary, E. L. Strickland.

ARCHITECTURAL TRIP TO RUSSIA

Dr. C. Aronovici, town planner, and Isadore Rosenfield, architect, will lead a limited group of architects on a study trip to Russia this summer. The time of sailing will be either the end of June or the middle of August. Those interested will please communicate with Mr. Rosenfield at 56 W. 45th Street, New York

ANNOUNCEMENTS

Christopher J. King, Harry E. Turk and Albert Criz announce their association for the practice of architecture and interior decoration at 25 East Jackson Boulevard, Chicago.

Charles T. Aubin, for many years with the firm of Atlee B. and Robert M. Ayres, has opened an office for the practice of architecture in San Antonio, Texas.

Ernest R. Richards, architect, announces the opening of a studio office for the practice of architecture, at 2123 Summerdale Avenue, Chicago.

T. Walker Gaggin, First Trust and Deposit Building, Syracuse, New York, is continuing the practice of architecture under his own name, the firm of Gaggin and Gaggin, architects, having dissolved.

George D. Riddle, architect, has moved from 201 Pacific-Southwest Building to 2826 Cedar Avenue, Long Beach, California.

Howard D. Fiedler, architect, has withdrawn from the firm of William H. Brainerd Associates, architects, and has opened his own office at 89 Franklin Street, Boston.

Alexander B. Trowbridge, architect, has moved his office from the Shoreham Building to the Edmonds Building, 917 Fifteenth Street, N.W., Washington, D. C. The telephone number has not been changed.

Charles Howard Lloyd, architect, has moved his offices from the Telegraph Building to the second floor, 1011 N. Front Street, Harrisburg, Pennsylvania.

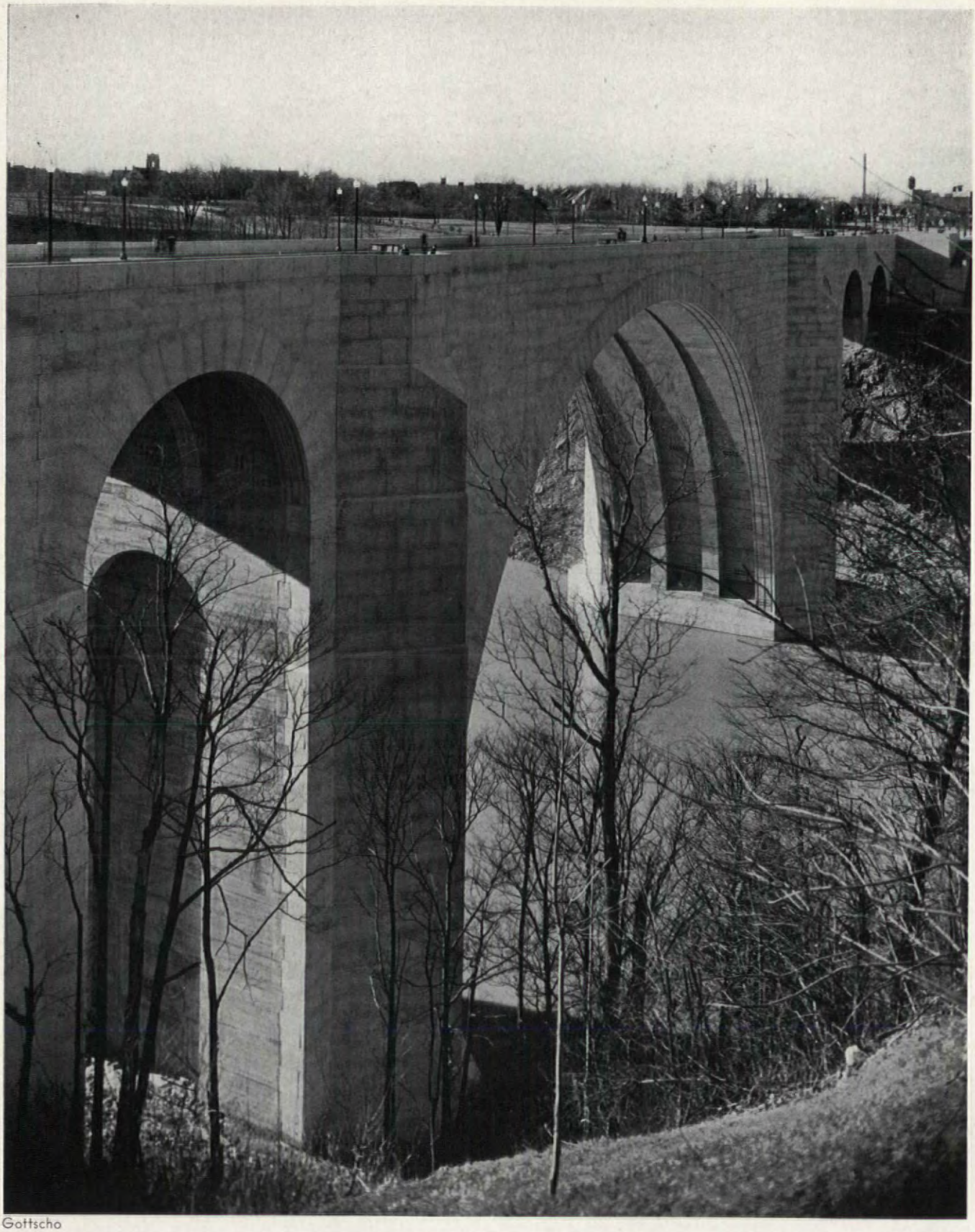
For his design of a monumental concert hall in a city park, William H. Scheick, instructor in the School of Architecture, University of Illinois, has been awarded the Le Brun Traveling Scholarship of $1,400 for 1932.

First prize of $100 in the filling station design competition, conducted by the Architects' Emergency Relief Committee of the New York Architectural League, was awarded to Arthur Martini. John J. Burton won second prize of $75. Third prize of $50 went to W. J. Ward, Jr. Thirty prizes of $25 each were also awarded.

The Architectural League of New York has exhibited a group of designs recently submitted by six American architects in the competition for a building and exhibit to be erected by Chrysler Corporation at the "Century of Progress" World's Fair in Chicago in 1933. This competition was won by Holabird and Root.

CERTIFIED BUILDING REGISTRY

Further progress in the direction of securing authoritative structural rating of buildings is being made by Certified Building Registry. This organization, incorporated in Illinois but with affiliations in many parts of the country, is a pioneer in the effort to do for buildings what Lloyd's Register of Shipping and the American Bureau of Shipping have done for shipping business, namely, to rate vessels upon their physical merits. Clyde A. Mann is director. N. Max Dunning, chairman of the Structural Service Department of the American Institute of Architects, represents the architectural profession on the board of governors of Certified Building Registry.



Gottscho

VETERANS MEMORIAL BRIDGE AT ROCHESTER, NEW YORK
GEHRON AND ROSS, ARCHITECTS

THE ARCHITECTURAL RECORD MAY, 1932 VOL. 71—NO. 5

WHAT HAS HAPPENED TO ARCHITECTS?

By THOMAS S. HOLDEN, Vice President, In Charge of Statistics and Research, F. W. Dodge Corporation

Despite continuous and unprecedented contraction in building activity since 1928, the number of active architects has decreased only slightly. The number of firms dropping out of the active list has been very nearly offset by more than 2,000 new firms appearing in the field in each of the past three years. A thousand new architectural firms have appeared since January 1, 1932.

Many of these new firms have continued actively in business. Some of them have actually increased their volume of work in face of declining business in general.

With the shrinkage in building volume that has been witnessed in this country since the peak year 1928 the question naturally arises whether this has been accompanied by anything like a proportionate shrinkage in the number of architects in active practice. To answer this question an exhaustive analysis has been made of the cumulative daily records of architects' work kept by F. W. Dodge Corporation. The answer has been found to be in the negative. While the volume of building actually constructed from architects' plans in the 37 states east of the Rocky Mountains decreased 62 per cent between 1928 and 1931, the number of architectural firms and individuals who participated in this work decreased less than 11 per cent.

The accompanying table No. I shows a number of interesting and important facts about the history of architects and their business volume during the period of shrinkage of building volume. Certain other facts regarding the turnover in the profession during these years of readjustment will be brought out in other charts.

It will be seen from the first two columns of Table I that architects as a group have slightly more than held their own in the percentage of total dollar volume of building work they handle, their percentage decrease (62%) being two points less than the percentage drop of total building volume. The extreme shrinkage of building volume, coupled with the slight decrease in numbers of participating firms, results in the sizable decrease in average volume per firm, from $400,000 to $170,000, shown in the fourth column of the table.

Thus far the story of the change that has taken place is a fairly simple one. But as is frequently the case with simple statistical summaries, many important facts can be brought out by further analysis of the records. The figures in Table I show the net results of changes in personnel of the profession, but conceal the full extent of changes that have taken place. In the architectural profession, as in other professions and businesses, there is always a sizable annual turnover, old firms going out of business and new ones starting. It is of very considerable interest to examine the records of these past four years of, perhaps, the most drastic change that has taken place in the building industry for a generation or more, to see the total extent of change that has taken place in architectural personnel.

In checking architects' activity for the purposes of this analysis a firm credited with one or more projects on the Dodge records in a given year was checked as active that year, and those without any projects credited were checked as inactive that particular year.

It was found that, although the largest number of firms credited with active building projects in a given year was 9,087, there was a total of 15,964 firms credited with jobs at some time during the four years. There were just 3,863 firms active continuously through the four years, in the sense that projects were credited to them in the record in each of the years. The results of this check-up of the turnover in the profession may be summarized about as follows:

TABLE I

HOW THE SHRINKAGE OF BUILDING VOLUME HAS AFFECTED ARCHITECTS

(Contract statistics for 37 Eastern States—F. W. Dodge Corporation)

Year	Total Building*	Total Planned by Architects	Number of Active Firms	Average Business Volume per Office
1928	$5,217,942,800	$3,639,018,800	9,087	$400,000
1929	4,336,025,100	2,917,148,700	8,255	353,000
1930	2,907,303,700	2,108,804,900	8,240	256,000
1931	1,986,837,000	1,391,356,000	8,129	170,000
Per Cent drop 1928-1931	64%	62%	11%	57%

*Does not include public works and utilities, except the occasional jobs of this class which are planned by architects.

8,428 was the average number of offices active each year.

5,498, or 65 per cent of the total, was the average number active in a given year which continued active in the following year.

3,030, or 36 per cent of total active firms, represents the average number that dropped out each year.

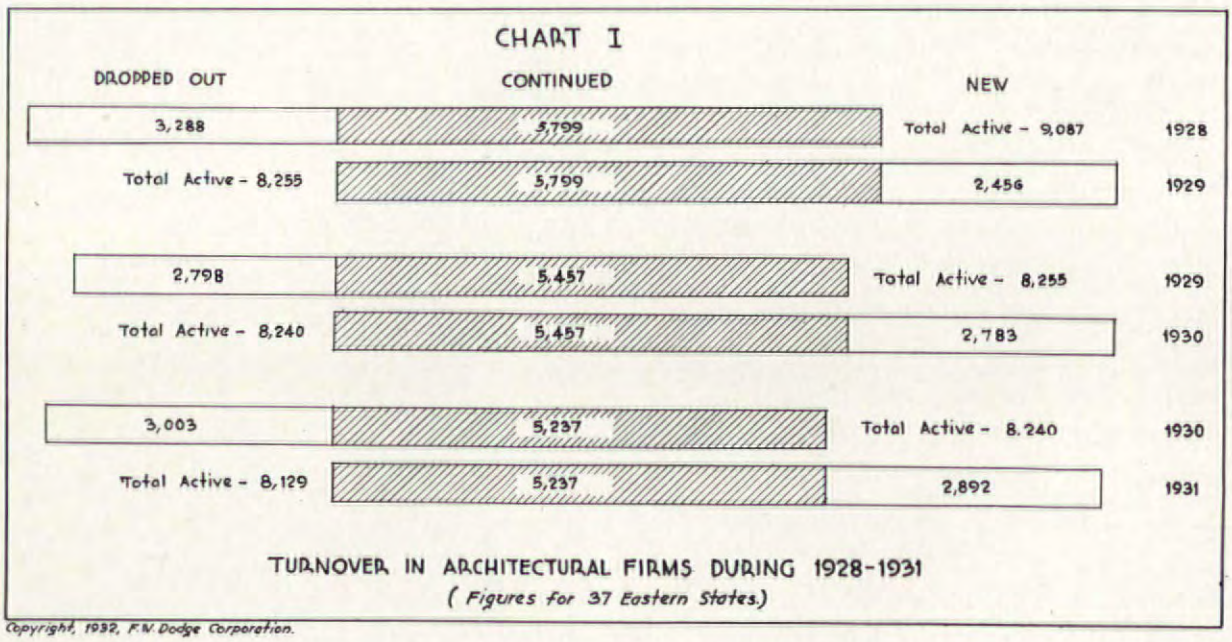
2,710, or 32 per cent of total active firms, represents the average number of new firms active each year.

3,863, or 46 per cent of total active firms, represents the number of firms continuously active through the four years.

The changes from year to year, as shown in Chart No. I, varied a little from the average figures quoted above. The chart compares the years, two at a time, showing the numbers of firms continuously active from one year to the next, the numbers which dropped out of the records, and the numbers of new ones appearing.

It should be explained that the firms counted as new for the purposes of this chart included some firms which, although inactive in the year immediately preceding the given year, had been active at some time previous.

Since the record was started in the year 1928 it is impossible to state how many of the 2,456 counted as new firms in 1929 had been active previous to 1928. But we can say, from checking the records, that of the 2,783 firms listed as new in 1930, 2,238 were names that had not appeared in either of the two previous years (and hence may be fairly rated as entirely new) while 545 firms had appeard in the records of the year 1928, though not in 1929. In other words, 545 of the firms active in 1928 and inactive in 1929, came back with active jobs in 1930. Again, among the 2,892 firms indicated on the chart as new in 1931, 2,162 had not appeared in the record before that year, while 730 firms had been active in 1928 or 1929 or both.



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The important point to note is that, in this period of drastic decline there have been more than 2,000 entirely new firms each year with actual work to their credit.

Even in spite of the extreme building depression experienced in the first quarter of 1932, 1,007 entirely new names of architects and firms have appeared in the records, credited with new projects or new plans.

It is entirely probable that many of these new architects represent individuals previously employed in large offices who have been forced to start practice on their own account by reason of slackened activity of their previous employers. But the interesting fact is that they have started in practice and have found architectural work to do.

The next question of interest is: How have the new firms fared in this period of shrinking opportunity?

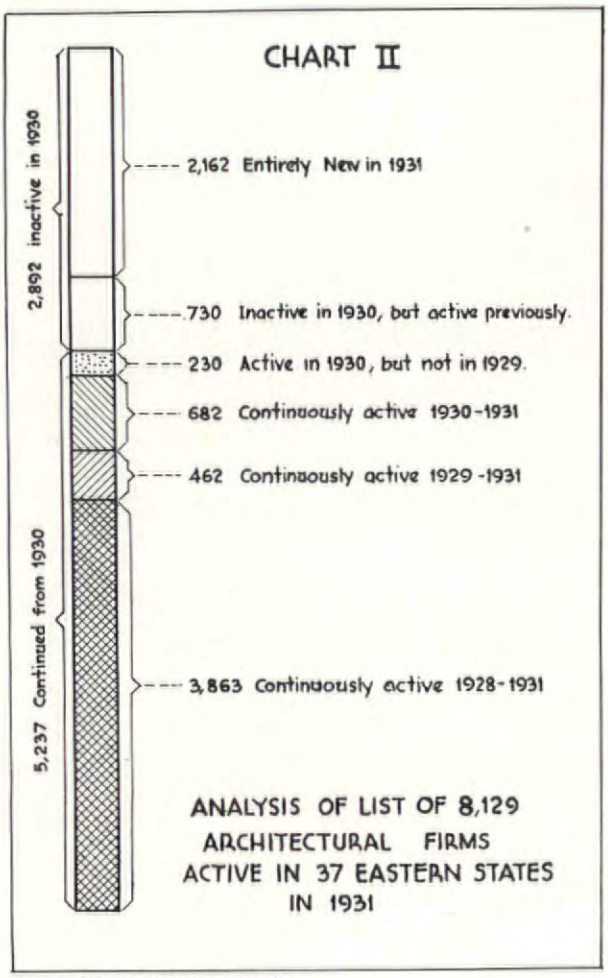
Out of 2,456 firms rated as new in 1929, there were 462 which had actual jobs to their credit in both of the succeeding years. Out of a total of 2,783 new firms in 1930, of whom there were 2,238 entirely new ones, there were 682 which had actual jobs to their credit in 1931. There have been casualties among the new firms, but respectable percentages among them have persisted and have found adequate opportunities to stay in the running among the active firms.

The analysis of the list of 8,129 firms active in 1931 (those credited with actual projects) shown in Chart II, indicates the history of those active firms through the depression years and shows the relative numerical importance of the new firms who entered the field in 1931.

One of the obviously important lessons of this depression has been the vital necessity for recognition of large-scale change. Certainly this is true of the building field. It is highly significant that these fundamental changes, the results of which will be seen in future building programs, have been making for considerable turnover among practicing architects and in the midst of depression, opening up opportunities to new firms.

Naturally, the new firms do not usually get a volume of work comparable with that of the firms which have been continuously in business for an extended period. As an illustration of what may have been typical generally, certain figures for work done by architects active during 1931 in the state of Ohio are of interest. Firms continuously active from 1928 handled, in 1931, 77 per cent of that year's total volume of architects' business while the remaining 23 per cent was handled either by firms new in the field after 1928 or by firms who were not continuously active through the four-year period. Nine per cent of the total was credited to architects entirely new in the 1931 records, compared with only 6 per cent credited to entirely new firms in 1929 and again in 1930.

Some of the new firms have made appreciable



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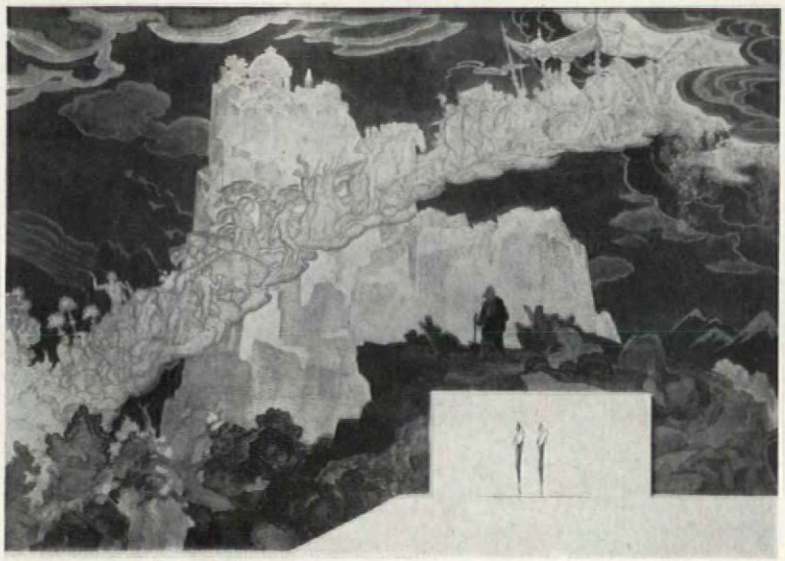
progress against the tide of business contraction. Out of 42 new firms in Ohio which started in 1929 and were continuously active through 1931, there were 21 who handled more business in 1930 than in 1929 and 17 who handled more in 1931 than in 1929. Out of 59 which were new in 1930 and were also active in 1931, 25 handled more business in 1931 than in 1930.

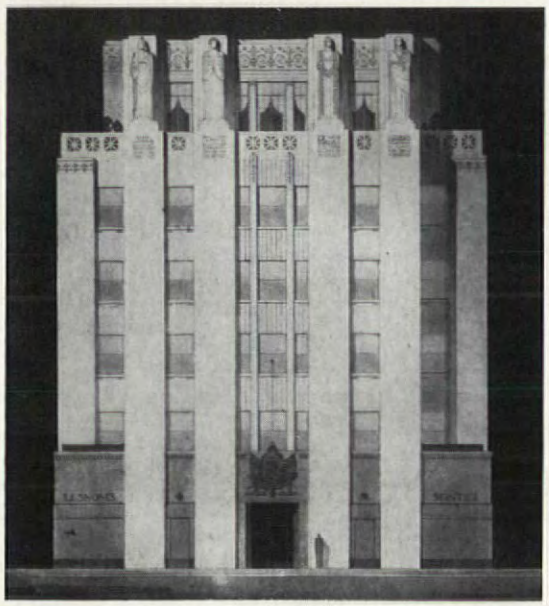
The conclusion of this study is that the contraction of building activity that has been in progress during the past four years has reduced the personnel of the active architectural profession only slightly in total numbers, but has at the same time brought about many changes. While we have no definite figures on the turnover in the profession previous to 1928, we may safely assume that the depression has made it more rapid and far-reaching than before. While a large degree of continuity is being maintained the fact that new firms are appearing at the rate of more than 2,000 a year is highly significant.

In closing, it should be emphasized that all figures given in this article cover the 37 states east of the Rocky Mountains and not the entire country. Judging from the annual distribution lists of Sweet's Architectural Catalogues the number of firms to be added for the 11 western states is about 16 per cent.

ILLUSTRATED NEWS



LARGEST MURAL IN THE WORLD for Rockefeller Center. The artist of this mural, measuring 40 by 60 feet, is Ezra Winter. The painting, which represents the Quest for the Fountain of Youth will decorate the Grand Foyer of the International Music Hall, Rockefeller Center.

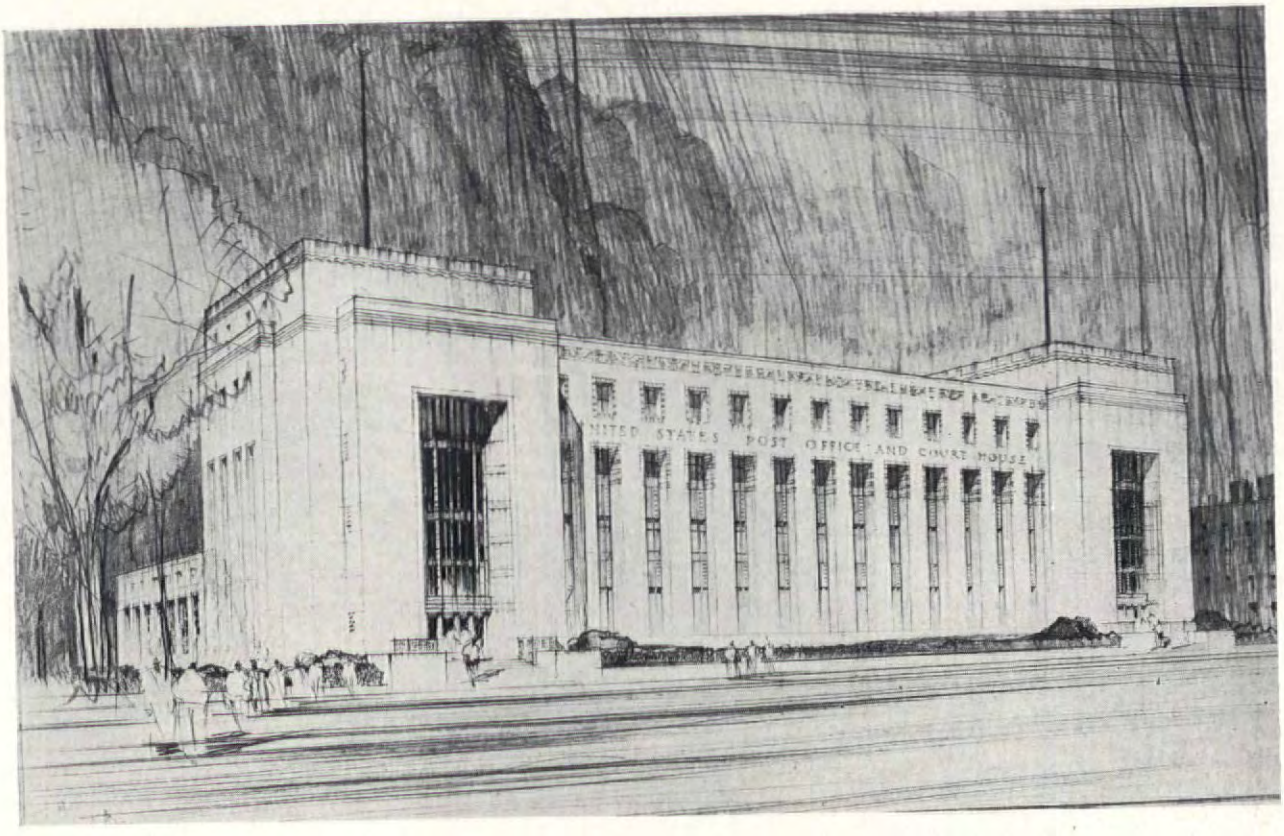


FRENCH BUILDING to be erected on the Fifth Avenue site of Rockefeller Center, New York City.

Keystone-Underwood

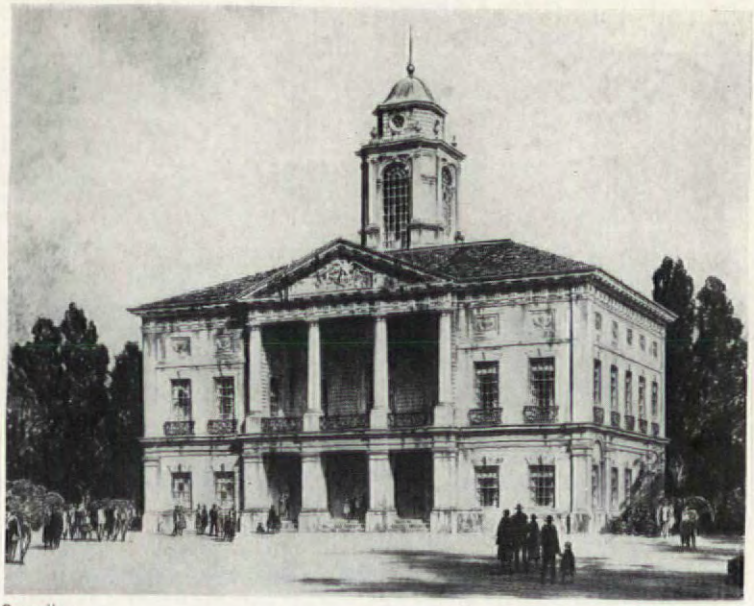
OLYMPIC VILLAGE AT LOS ANGELES. Athletes of various countries competing in the Olympics will be housed in this temporary village. When completed, there will be five miles of streets, lined on either side by small houses, each with two bedrooms, closets and shower bath.

COPLEY HOSPITAL AT AURORA, ILLINOIS, by Schmidt, Garden and Erikson, architects. This building, an addition to an existing hospital, is now nearing completion. It is faced with variegated dark red brick trimmed with Bedford stone.

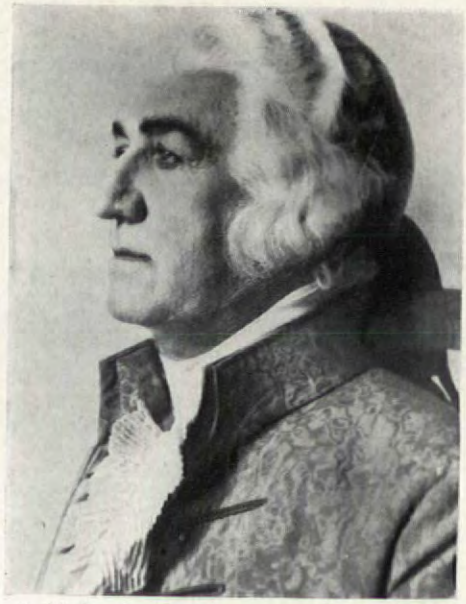


POST OFFICE AND COURT HOUSE AT CHATTANOOGA, TENNESSEE. R. H. Hunt Company of Chattanooga are the architects, with Shreve, Lamb and Harmon as consultants. The rendering is by Ernest Born.

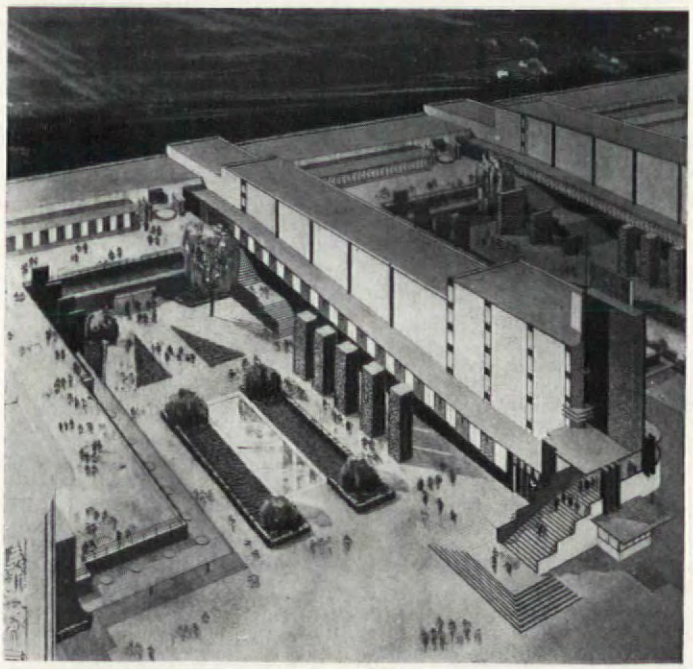
NEW FEDERAL BUILDING AT NEWARK, NEW JERSEY. William E. Lehman and George Oakley Totten, Jr. are the associated architects of this federal building housing post office, court house, customs, internal revenue and other departments.



Smedley



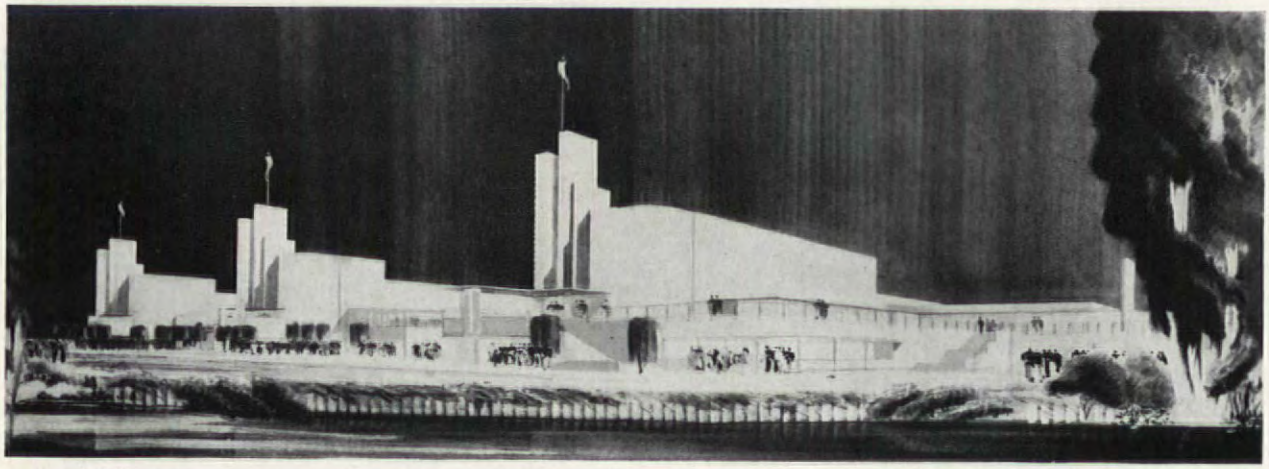
N. Y. Evening Post

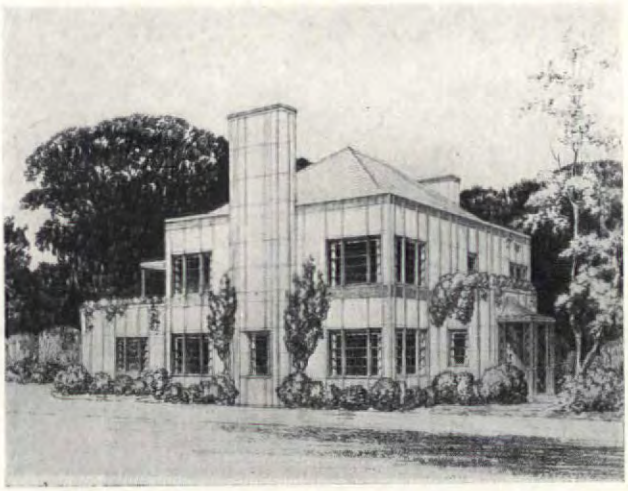


WASHINGTON IMPERSONATED BY KENNETH M. MURCHISON, ARCHITECT. The Washington bicentennial pageant celebrated April 30 in New York City was directed by Mr. Murchison. The building at the left is a replica of the old Federal Hall in New York; it has been erected in Bryant Park, Manhattan, for the Bicentennial Commission by Joseph H. Freedlander, architect.

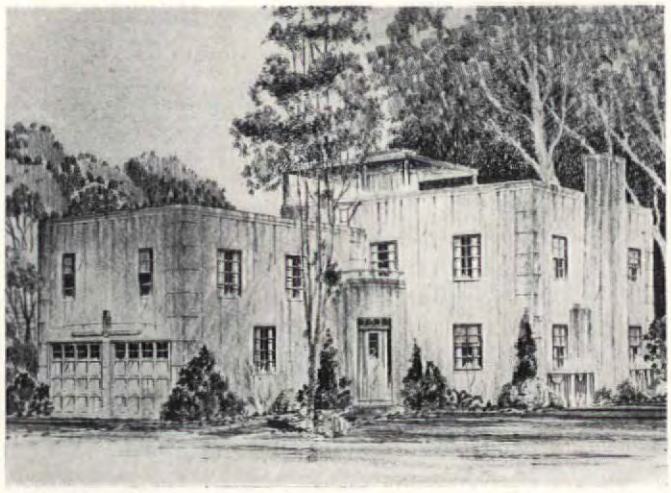
GENERAL EXHIBITS GROUP designed by Harvey Wiley Corbett for a Century of Progress, the 1933 World's Fair in Chicago. Each pavilion in this group will house a separate branch of industry.

Below, another view of the series of pavilions, as seen from the shores of the lagoon. At night, floodlights will illuminate the buildings with constantly changing colors.

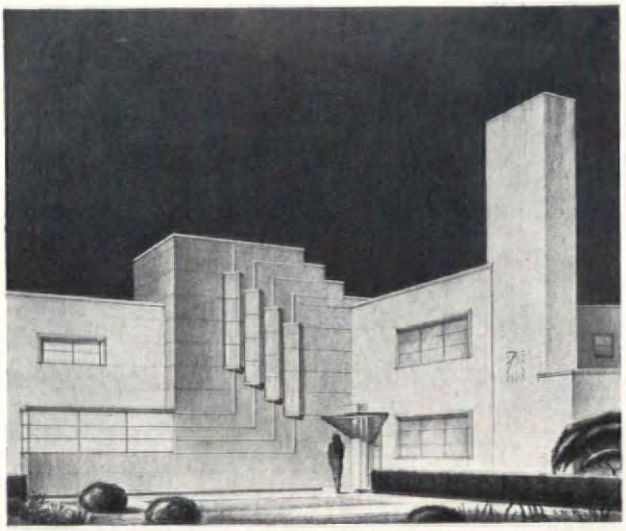




FIRST PORCELAIN-ENAMEL HOUSE, sponsored by the Ferro Enamel Corporation is under construction in Cleveland. Exterior porcelain-enamel sheets are 1/2" deep, panels varying in size up to about 30" square and "sandwiching" a fiber insulating board held by a waterproof glue. Special steel studs are fabricated. Horizontal joints have a slight ship-lap. The total wall thickness is about 4 inches. Charles Bacon Rowley and Associates are the architects and engineers, with Meade Ashley Spencer as associate.



EXPERIMENTAL FRAMELESS STEEL HOUSE erected in a Cleveland suburb by the Insulated Steel Floor and Wall Company. Stamped steel sheets are used for the construction of floors and walls. Overlapping joints are welded and a filling of mineral wool is used for insulation between the steel sheets. This system of construction is said to have unusual heat and sound insulating qualities, and a flexibility which makes it adaptable to almost any type of building. The experimental work is under the direction of Mills G. Clark of the American Rolling Mill Company.



GARDEN FACADE OF REID HOUSE at Rome, N. Y., by Pierre Blouke, Chicago architect. This house uses the Dovell system of steel framing, for the floors are supported continuously on steel-plate spandrels; cantilevers, which are units with the columns, allow shorter spans. Curtain walls used in conjunction with the steel frame consist of copper-covered hollow gypsum blocks in large units.

Shannon

MODEL OF FARMHOUSE OF LOW COST with use of available materials produced by industry. Light steel tubes support a stamped steel floor system. Exterior walls and partitions are of 1" insulating board faced with enameled sheet steel. The house was designed by A. Lawrence Kocher and Albert Frey for the President's Conference on Home Building and Home Ownership, 1931.

HOUSING RESEARCH ADVANCED THROUGH ARCHITECTS' EMERGENCY RELIEF WORK

To replace obsolete structures in many of our cities with new buildings which will not in themselves soon become slums demands a correlated knowledge of advancing standards of living and advancing achievements in science and industry. Coordinated information is needed by the architectural profession. Present efforts by the New York Emergency Relief Committee indicate this need.

Manufacturers are now marketing many new materials and products which increase the technical efficiency of structures. Other products, in increasing volume, are being developed. The Structural Service Committee of the American Institute of Architects and other agencies have been instrumental in bringing such information to the attention of designers. Continued progress in this direction can be facilitated by an intelligent direction.

Architectural groups should also accomplish much in the study of living requirements. Information acquired in this field can be related directly to industry as recommendations for new products. Communication and transportation facilities should be considered in relation to new housing forms. The mobility of the structure, its expected life span, and its degree of proof against nerve shock, fatigue and repression, as well as such external forces as earthquakes, floods, storms, fire, insects and disease are other points of study. Such is the program of the Structural Study Associates, a voluntary nonprofit-making organization, consisting of architects, engineers and builders, recently formed in New York City.

Research in this latter direction promises much for rising standards of living. The architectural profession, with relief funds and with unemployed but well-trained designers now available for such undertakings, has an unusual opportunity for accomplishment. The American Institute of Architects, by reason of its experience and wide membership, should sponsor this research direction.

WHAT IS NOW BEING DONE IN EMERGENCY RELIEF MEASURES

In New York

A total of 2,132 men have registered with the Architects' Emergency Relief Committee, headed by Julian Clarence Levi as chairman; approximately 700 of these applicants have been given employment. Funds have been raised through voluntary donations by the architectural profession and through activities by the women's committee under the direction of Mrs. Joseph Urban. A campaign to raise $100,000 is now under way.

The money has been expended in direct relief and lodging, and in cash prizes for best designs submitted in two architectural competitions. In addition to those men engaged in emergency relief work for the Gibson and Prosser committees, and others given independent employment in business and architectural offices, a hundred men have been selected for investigational work under the direction of publications and research agencies.

In Boston

To relieve unemployment, the Boston Society of Architects and engineering societies of Boston have organized the Emergency Planning and Research Bureau, Inc. The program of this organization involves contributions made by practicing architects in weekly amounts according to their ability to pay, and by draftsmen according to a percentage of their weekly salaries. The policy of this Bureau, according to William Stanley Parker who together with Hubert G. Ripley and James F. Clapp are representing the Boston Society of Architects in this relief work, is to provide useful employment adapted to the technical training of the men given employment. The general rate of wages is $15 for a five-day week.

In Philadelphia

Unemployed draftsmen have been engaged by the Chapter of the American Institute of Architects, to measure and record historical buildings in "old Philadelphia," according to Sydney Martin, Chairman of the committee in charge of this work:

"About sixty in all have received help from our Committee and at the present writing forty-one are receiving a weekly wage. Due to the shortage of funds we have found it necessary to drop the men to whom we had been giving one and two day's work and to put the remainder on a $15 basis for a five day week.

"We have now made complete measured drawings of 56 projects and have a number of others on the boards. We have gone far beyond the confines of 'Old Philadelphia,' and have developed sufficient material for at least two other volumes were funds available.

"In addition to an original $5,000, we have raised from the Chapter and their employees $8,300 and from friends of the profession about $4,700 making $18,000 in all."

PORTFOLIO OF CURRENT ARCHITECTURE

Gottscho

DEAN'S RESIDENCE AT WELLS COLLEGE, AURORA, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

OTHER BUILDINGS ILLUSTRATED IN THIS PORTFOLIO:

AULT PARK RECREATION BUILDING, CINCINNATI — Fechheimer and Ihorst, Architects

HOUSE OF MRS. D. D. COTTON, SANTA BARBARA, CALIFORNIA — Roland E. Coate, Architect

HOUSE OF WILLIAM E. HART, LOS ANGELES — R. E. Coate, Architect

HOUSE OF MR. AND MRS. H. C. LIPPIATT AND MRS. F. M. P. TAYLOR AT BEL AIR, CALIFORNIA — Roland E. Coate, Architect

HEALY CHAPEL, AURORA, ILLINOIS — George G. Elmslie, Architect

REED MEMORIAL LIBRARY, LAKE FOREST, ILLINOIS — Edwin A. Clark, Architect

SEAMEN'S HOUSE, Y.M.C.A., NEW YORK CITY — Shreve, Lamb and Harmon, Architects

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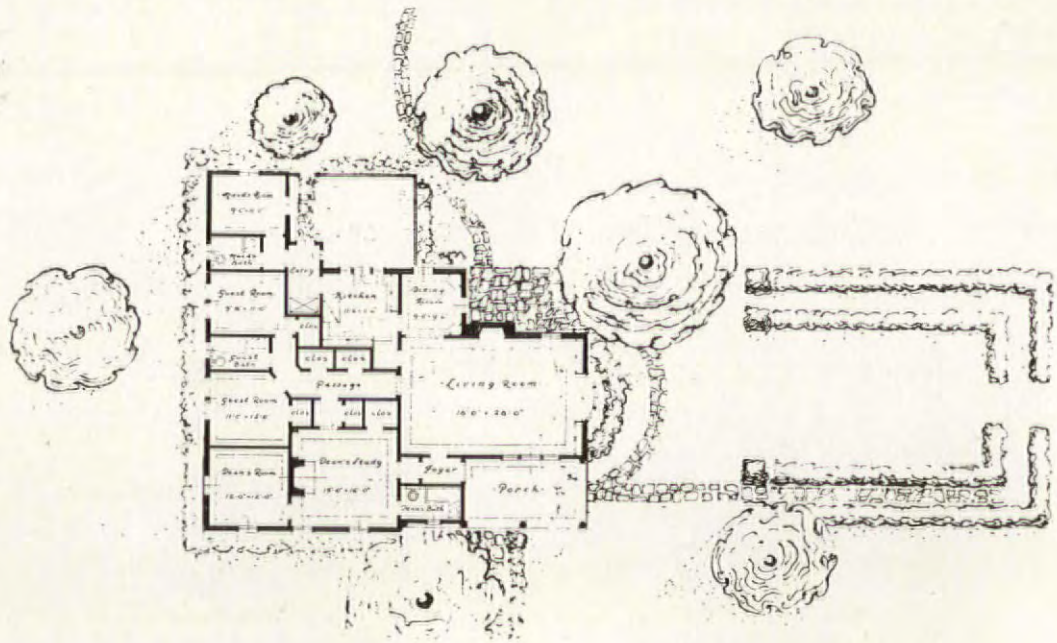
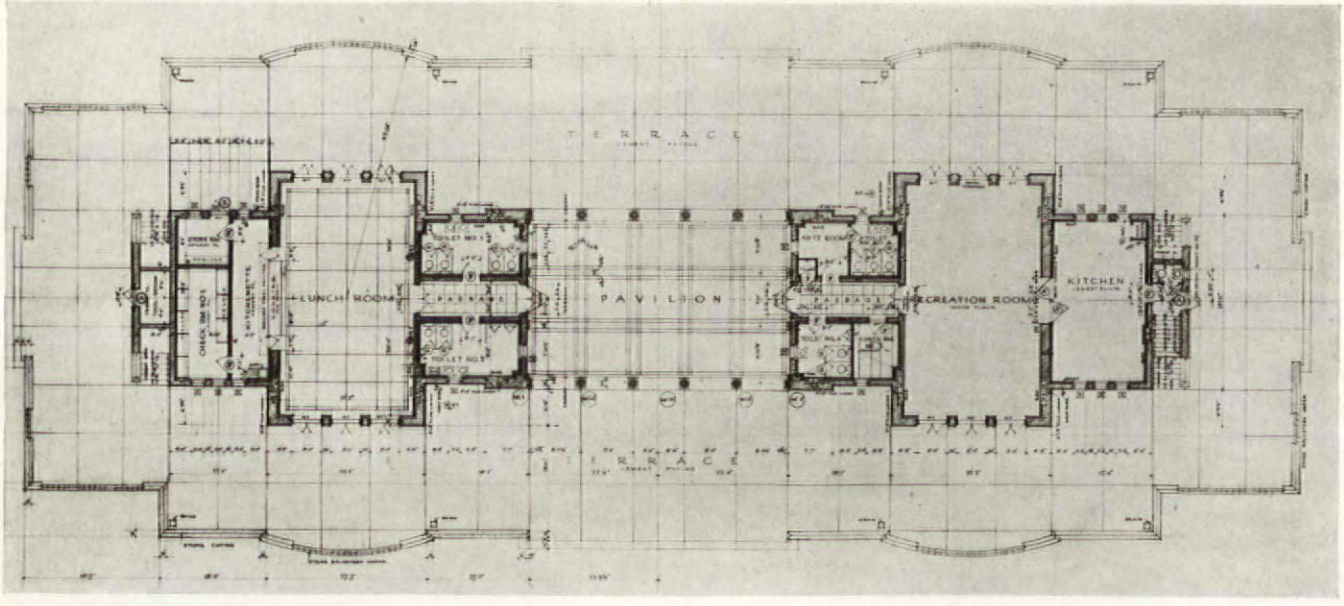


DEAN'S COTTAGE AT WELLS COLLEGE
AURORA, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

Gottscho

DEAN'S COTTAGE AT WELLS COLLEGE
AURORA, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

Longley



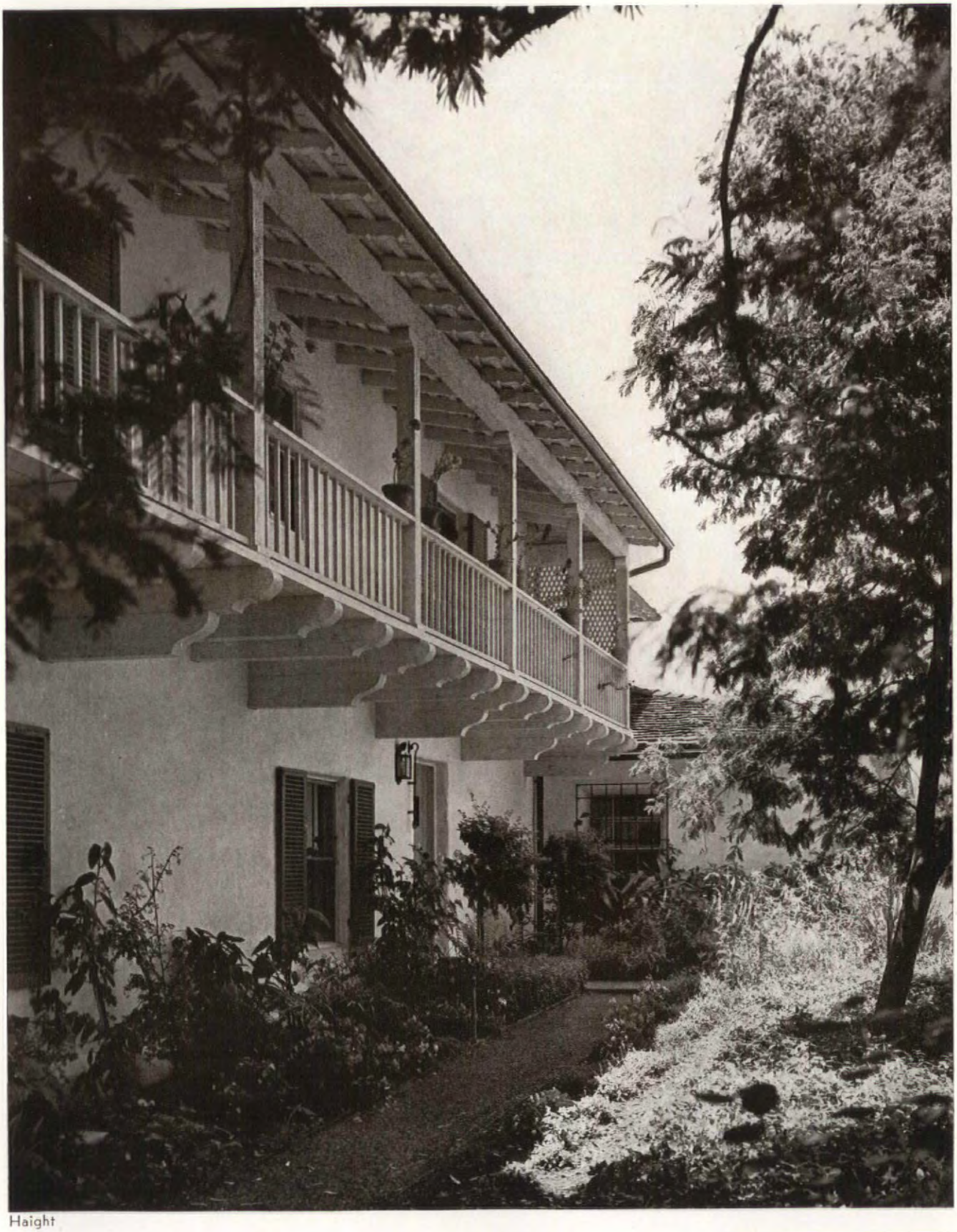
AULT PARK RECREATION BUILDING
CINCINNATI
FECHHEIMER AND IHORST, ARCHITECTS

Haight

HOUSE OF MRS. D. D. COTTON
SANTA BARBARA, CALIFORNIA
ROLAND E. COATE, ARCHITECT

Haight

HOUSE OF MRS. D. D. COTTON
SANTA BARBARA, CALIFORNIA
ROLAND E. COATE, ARCHITECT



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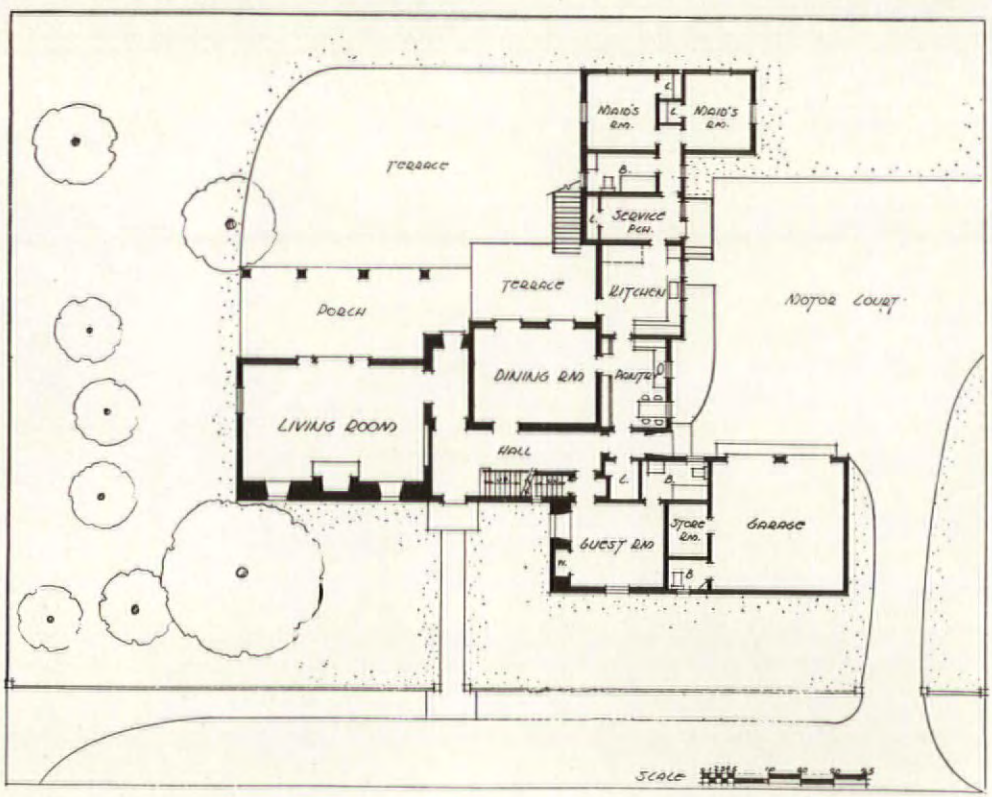

HOUSE OF MRS. D. D. COTTON
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HOUSE OF WILLIAM B. HART
LOS ANGELES
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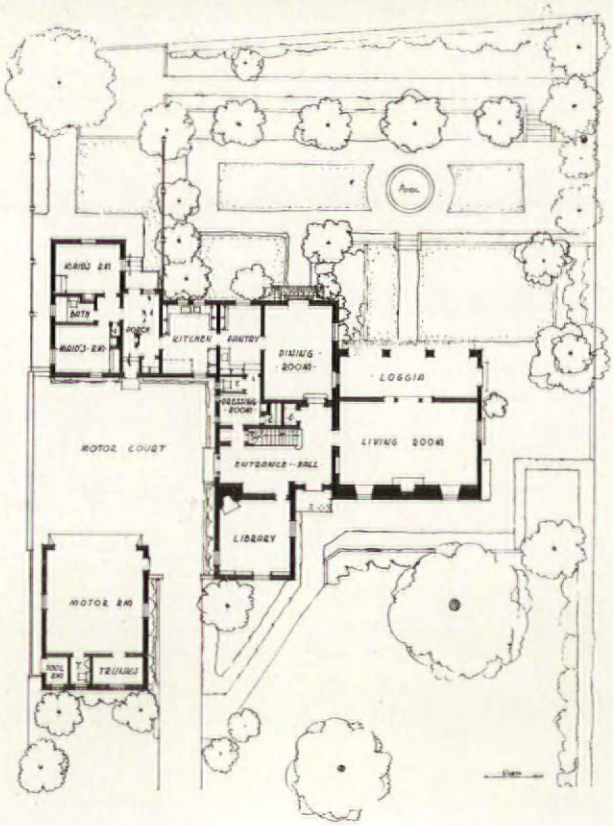

HOUSE OF WILLIAM B. HART
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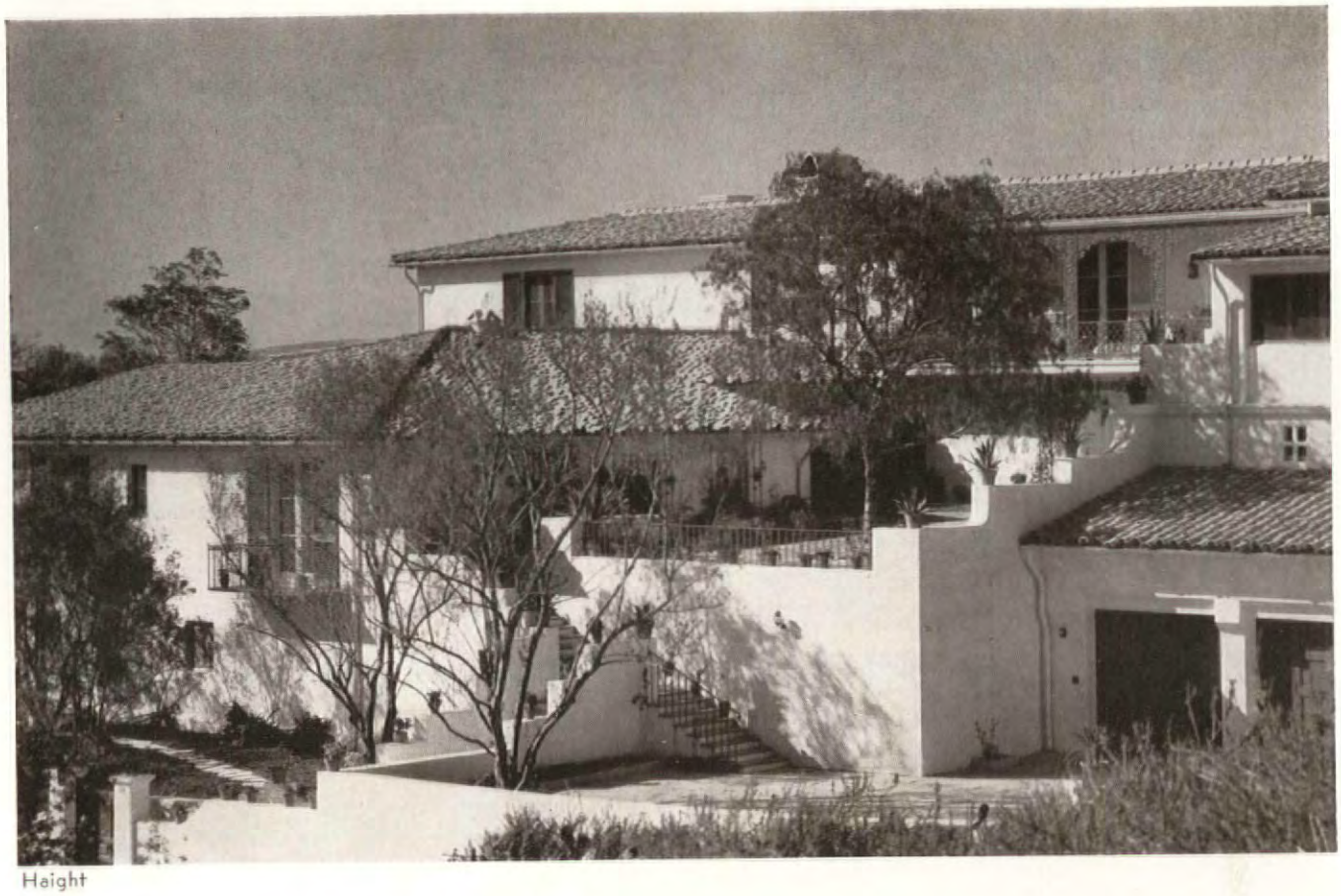

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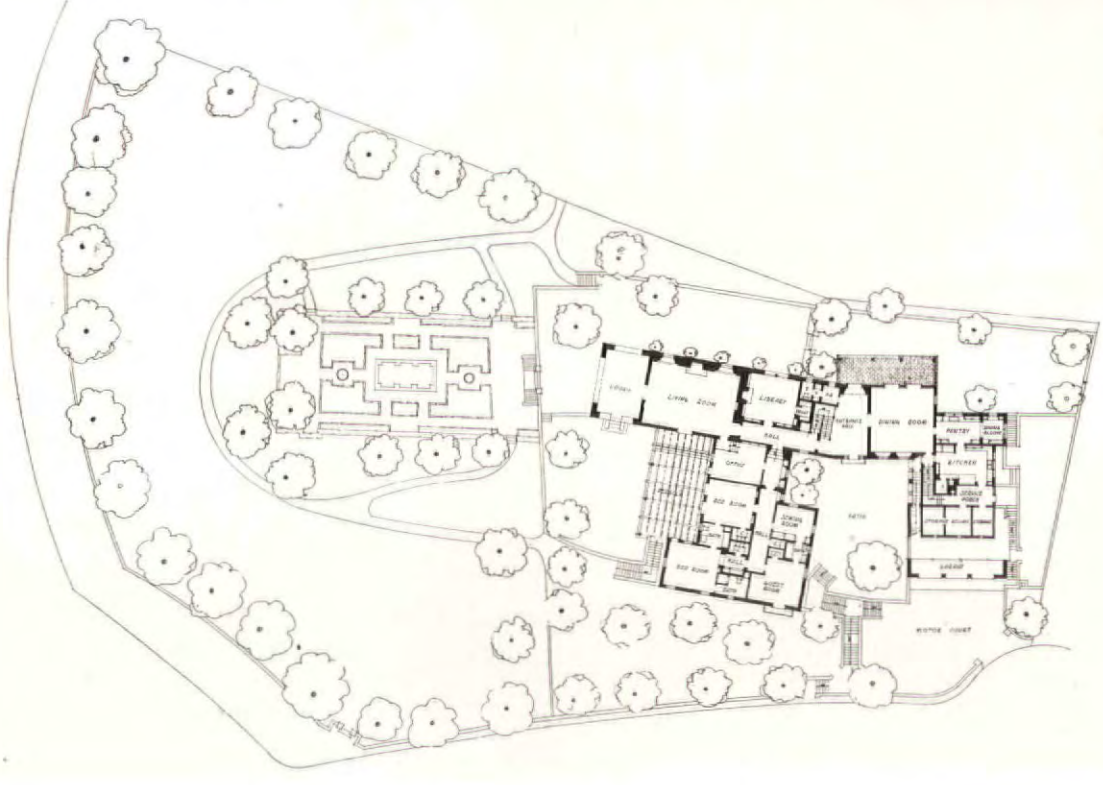

HOUSE OF MR. AND MRS. H. C. LIPPIATT AND MRS. F. M. P. TAYLOR AT BEL AIR, CALIF. ROLAND E. COATE, ARCHITECT

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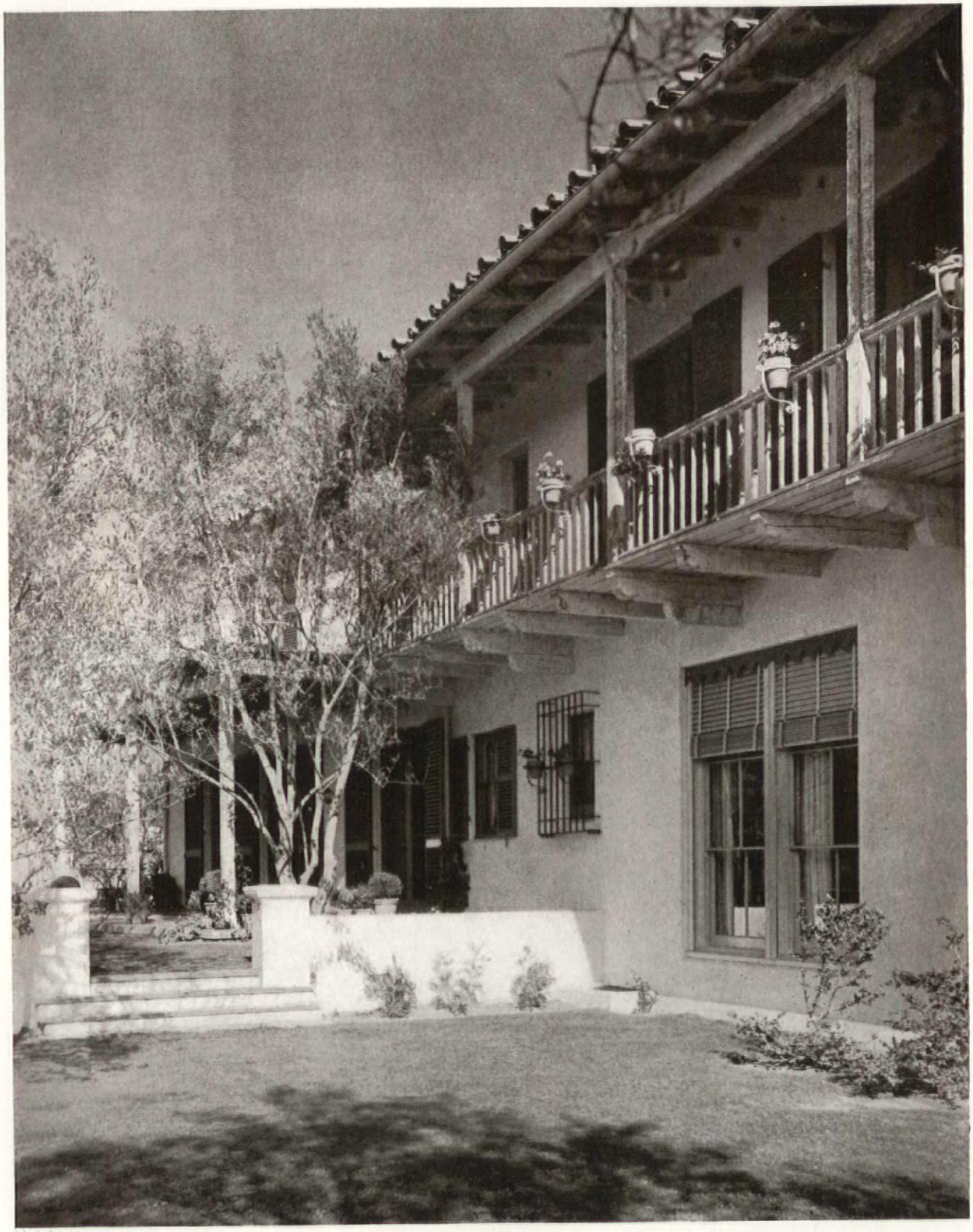
HOUSE OF MR. AND MRS. H. C. LIPPIATT AND MRS. F. M. P. TAYLOR AT BEL AIR, CALIF. ROLAND E. COATE, ARCHITECT



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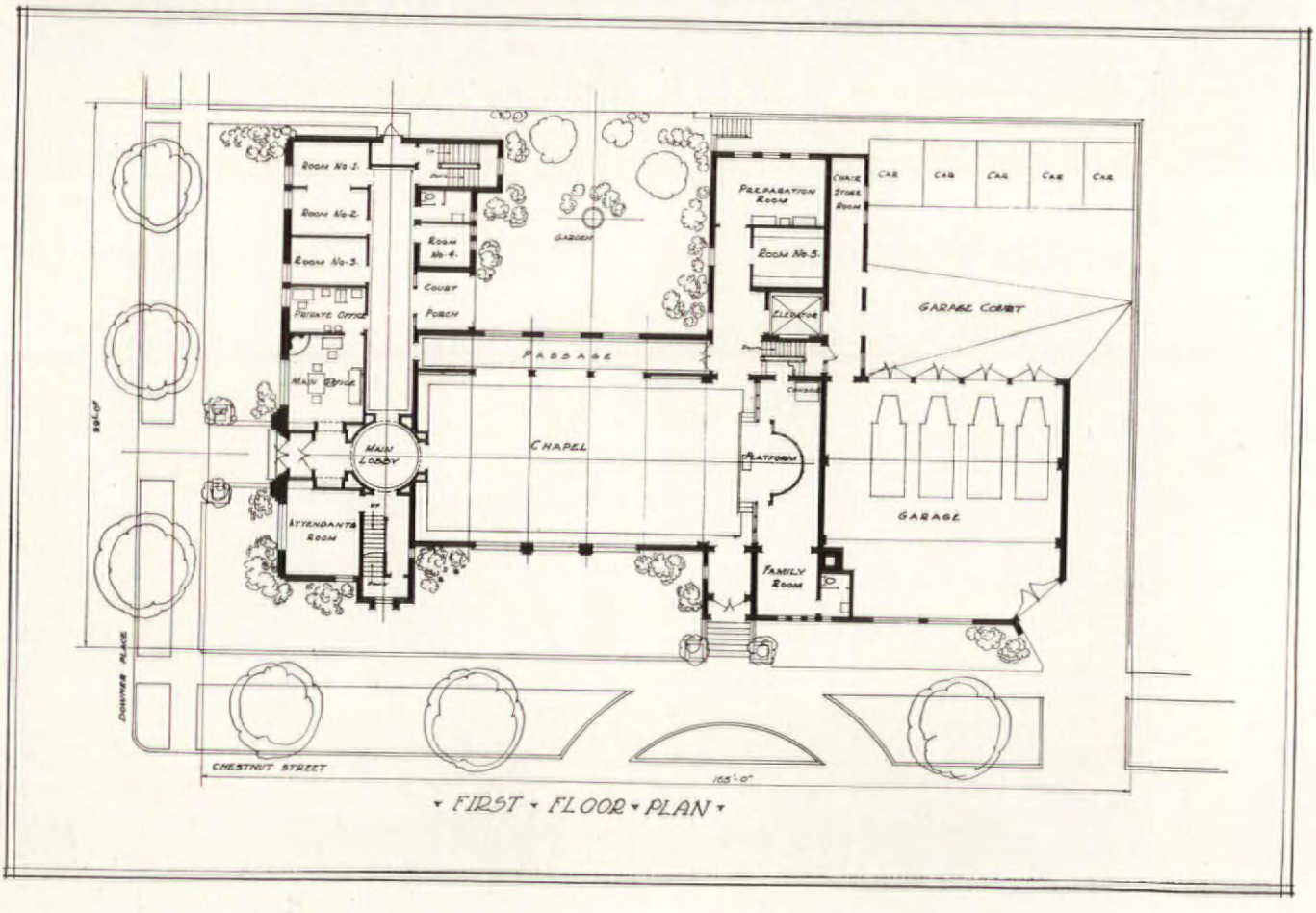
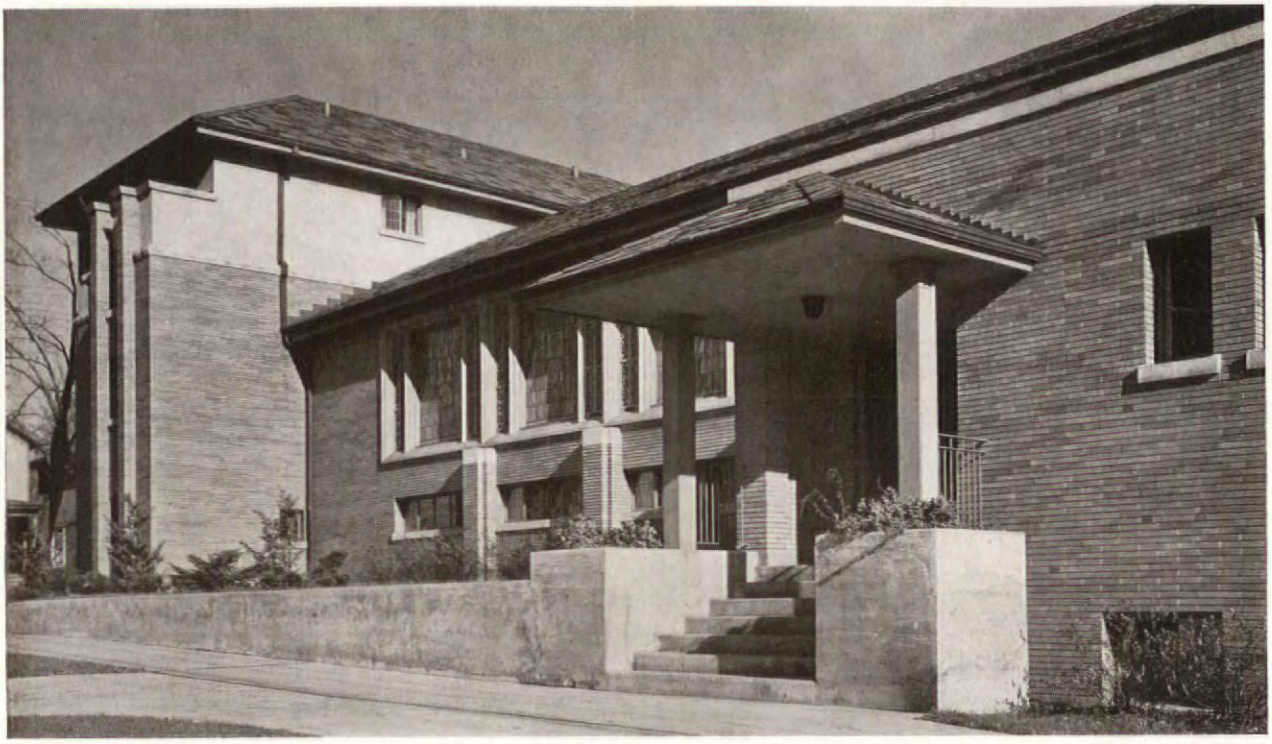
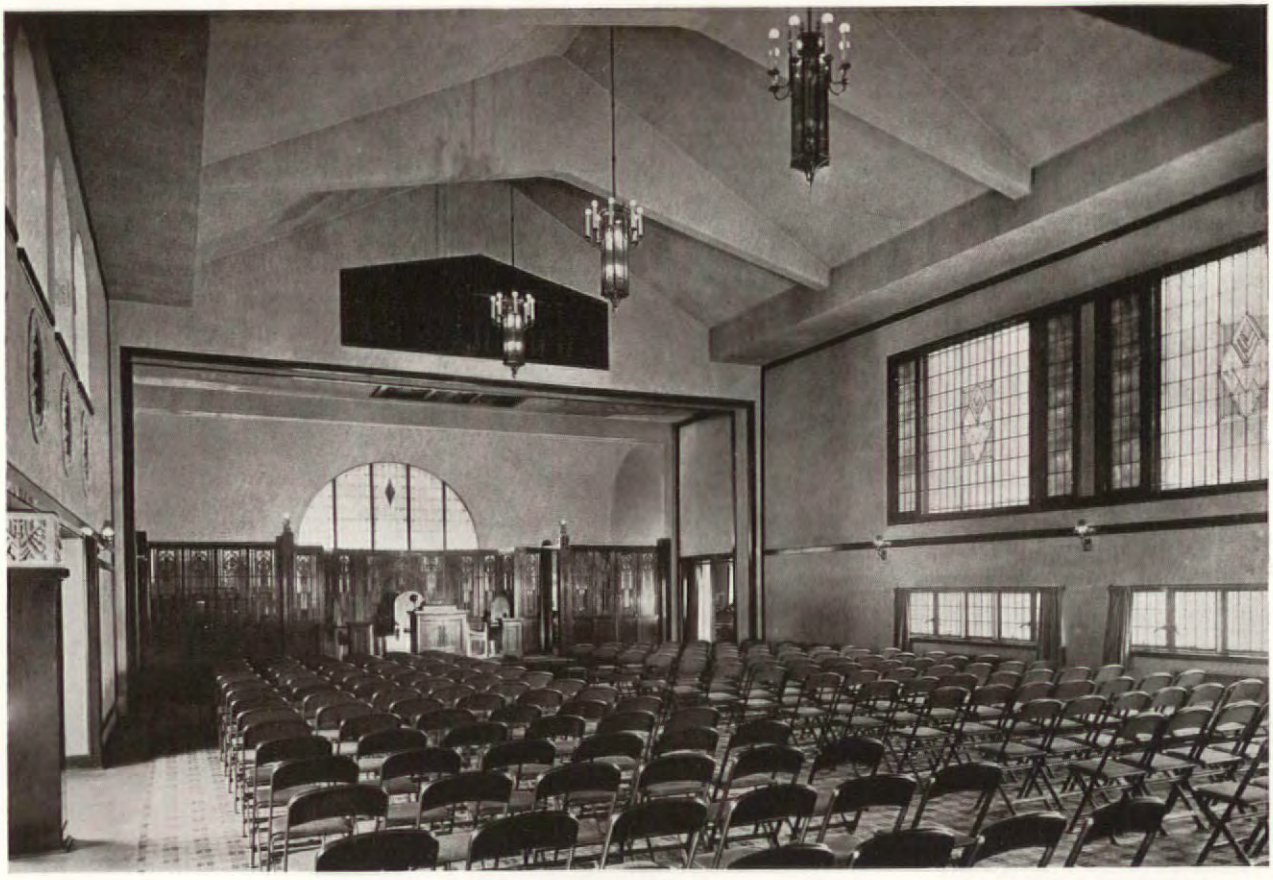
ROLAND E. COATE, ARCHITECT



HEALY CHAPEL
AURORA, ILLINOIS
GEORGE G. ELMSLIE, ARCHITECT

The Roman brick of the exterior is golden in color. Horizontal joints are raked, vertical joints flush. The roof is slate.





The second floor is given to institutional functions, the third to living quarters of employers. The building, completely decorated, cost 43 cents a cubic foot.

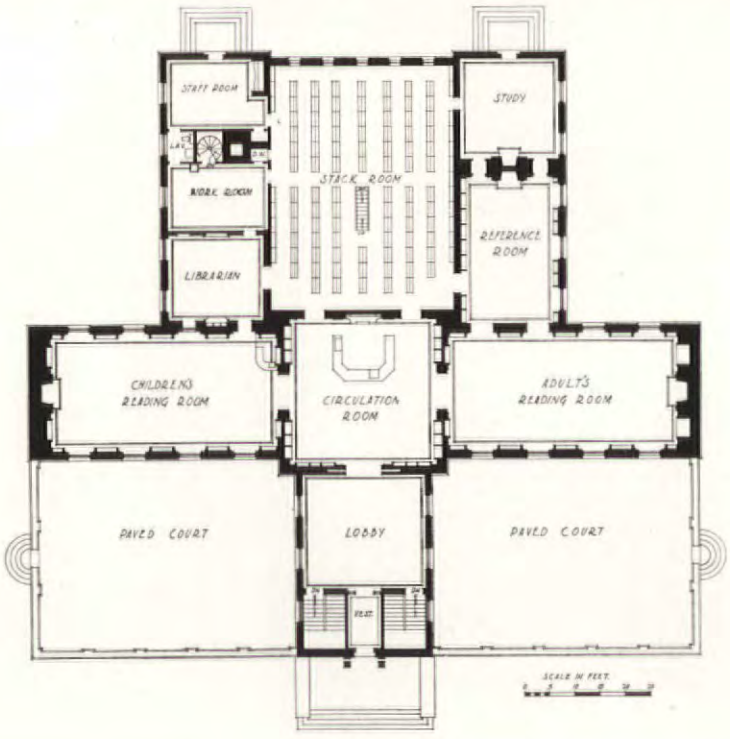
HEALY CHAPEL
AURORA, ILLINOIS
GEORGE G. ELMSLIE, ARCHITECT

Trowbridge

Outside reading court. Terrace of slate flagging.

REED MEMORIAL LIBRARY
LAKE FOREST, ILLINOIS
EDWIN H. CLARK, ARCHITECT

Trowbridge



FIRST FLOOR PLAN

Main entrance and approaches.

REED MEMORIAL LIBRARY
LAKE FOREST, ILLINOIS
EDWIN H. CLARK, ARCHITECT

Trowbridge

Adults' reading room.

REED MEMORIAL LIBRARY
LAKE FOREST, ILLINOIS
EDWIN H. CLARK, ARCHITECT

Trowbridge

View of reading room from circulation room.

REED MEMORIAL LIBRARY
LAKE FOREST, ILLINOIS
EDWIN H. CLARK, ARCHITECT

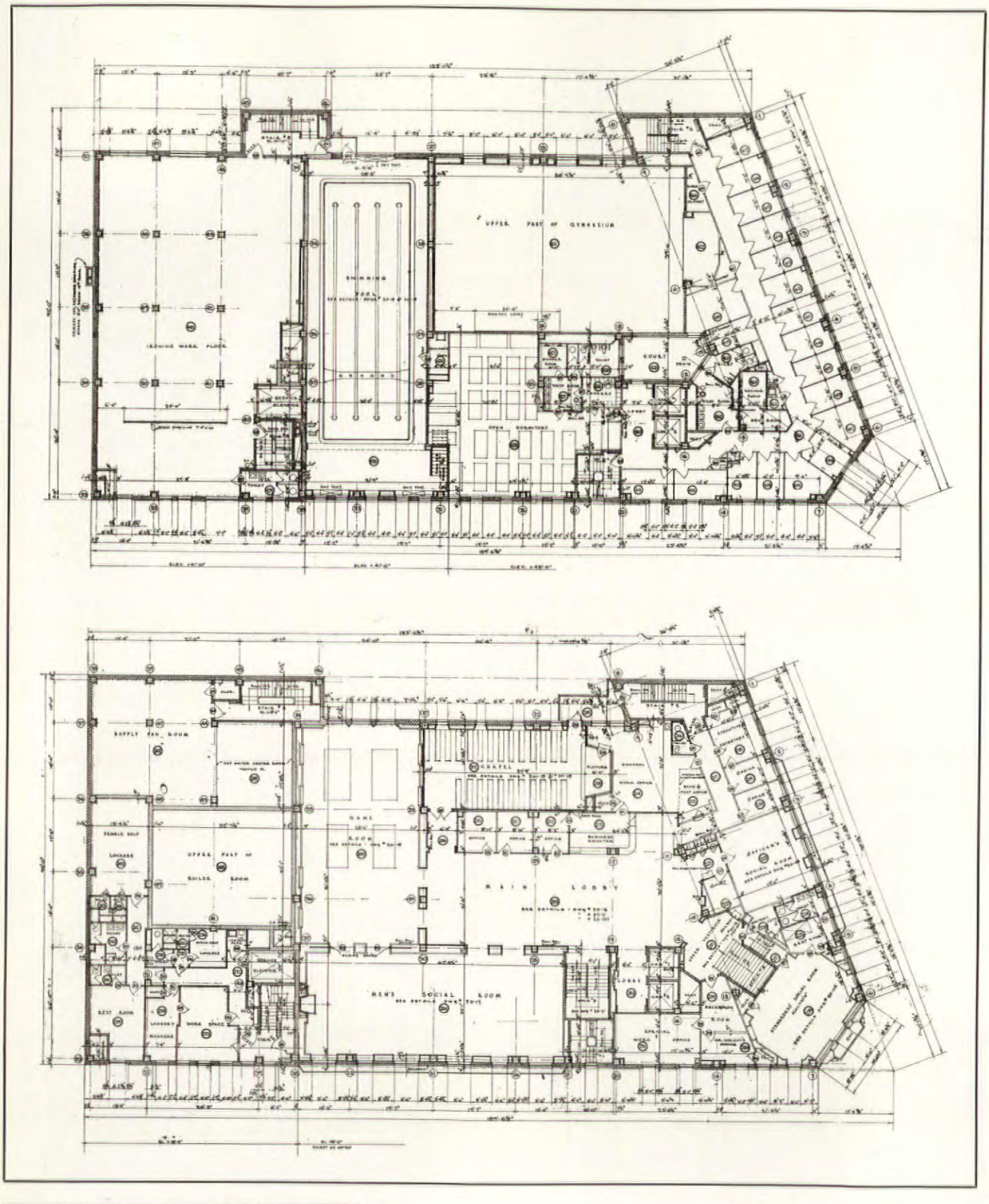
Trowbridge

Charging desk. White oak paneling, cork floor and marble base.

REED MEMORIAL LIBRARY
LAKE FOREST, ILLINOIS
EDWIN H. CLARK, ARCHITECT

Van Anda

SEAMEN'S HOUSE—Y. M. C. A.
NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS



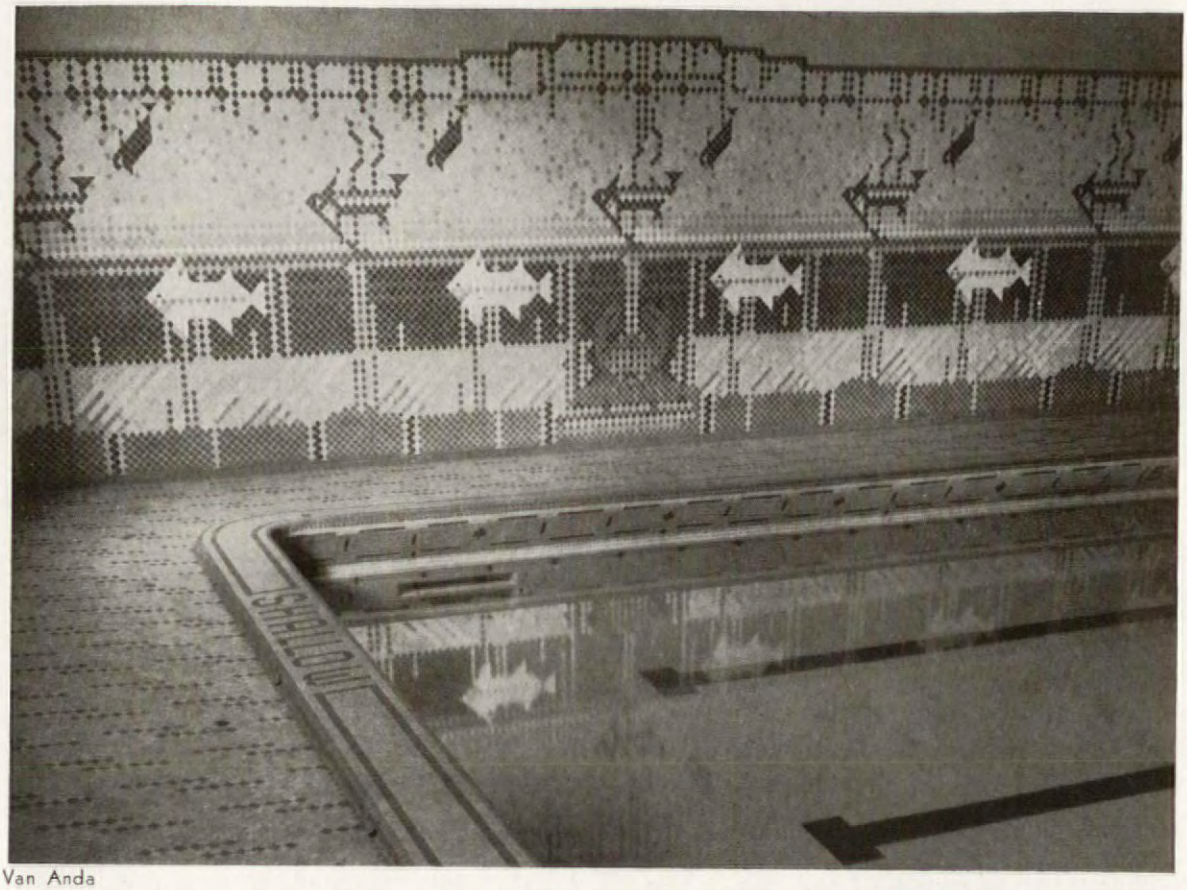
Second and fourth floor plans.

SEAMEN'S HOUSE—Y. M. C. A.
NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

Van Anda

Gymnasium.

SEAMEN'S HOUSE — Y. M. C. A.
NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS



Van Anda

Detail of swimming pool.

Van Anda

Lunch counter.

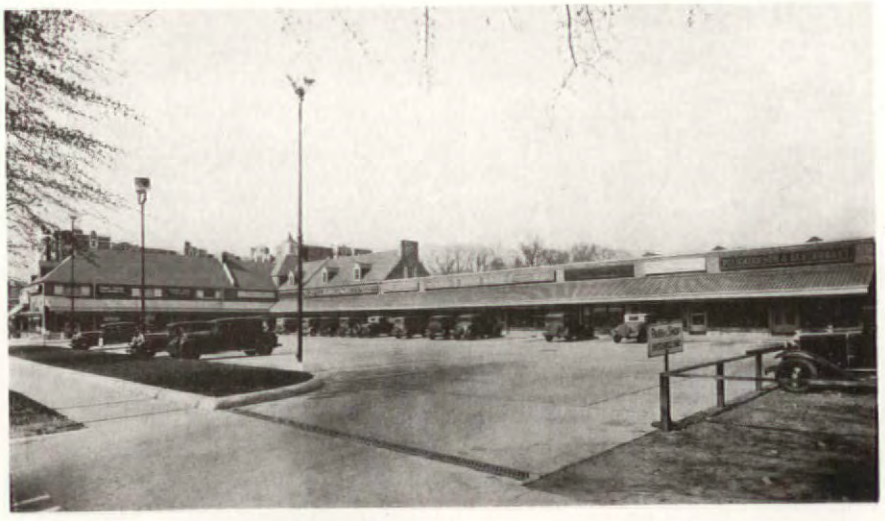
SEAMEN'S HOUSE — Y. M. C. A.
NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

DRAFTING AND DESIGN PROBLEMS

NEIGHBORHOOD SHOPPING CENTERS

Keystone View

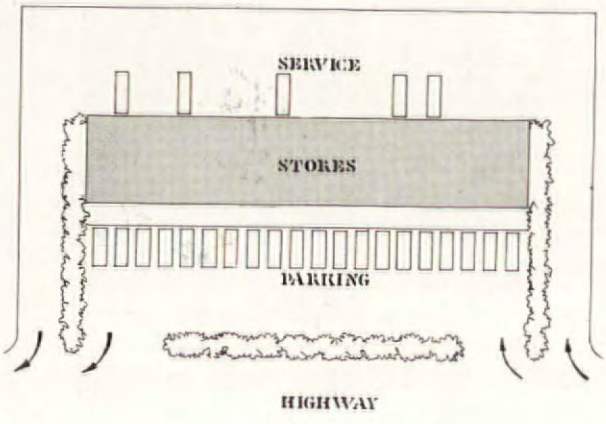
SHOPPING DISTRICT OF MAIN STREET CHARACTER. This unrelated "Coney Island Architecture" suggests the need for cooperative and unified planning by architects.



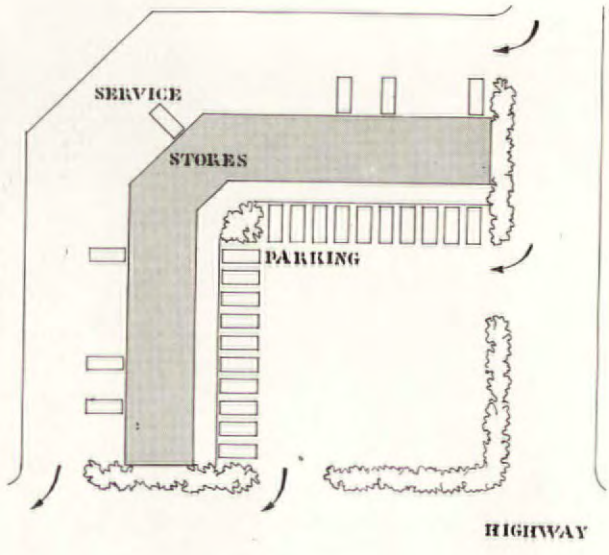
Underwood

A PLANNED GROUPING OF SHOPS with parking space that does not interfere with traffic of main thoroughfare. The design by one architect of buildings for a variety of uses results in uniformity.

PARKING AT CURB along important streets interferes with traffic.

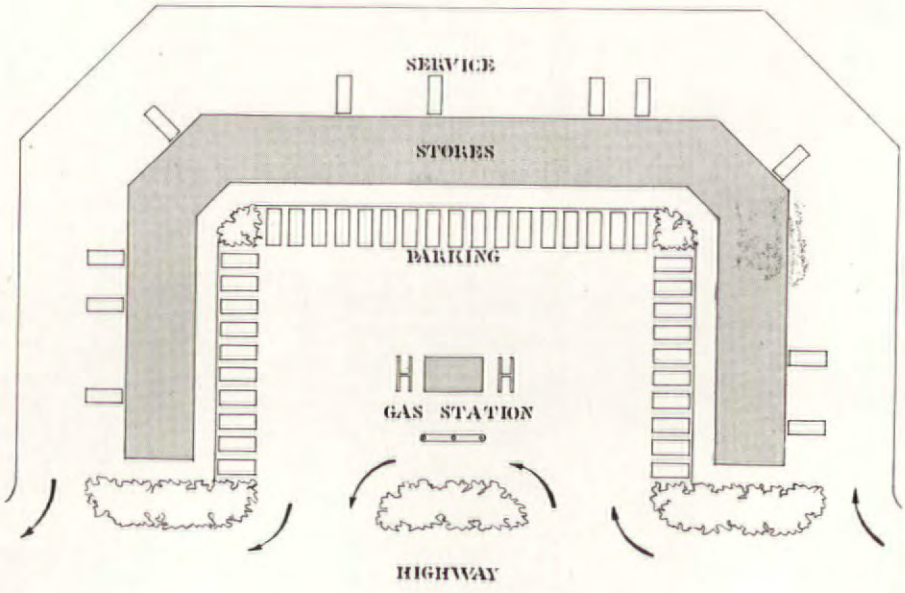


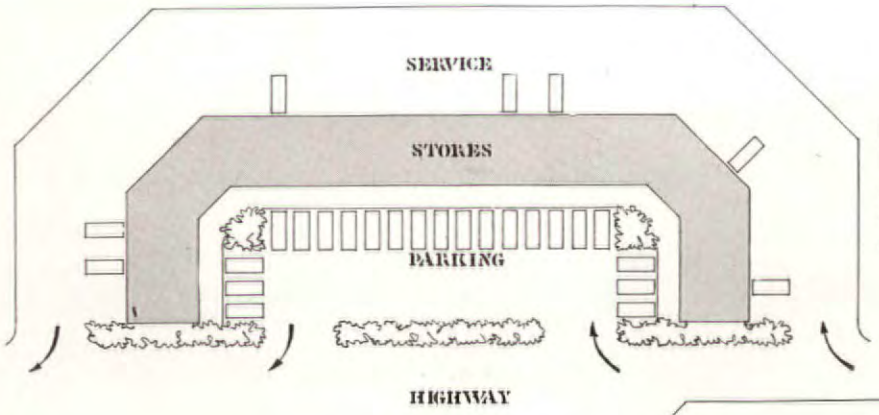
A MID-BLOCK SHOPPING CENTER with stores and parking space set back from highway. The service delivery is by separate driveway to rear. This does not interfere with customer entrance and parking.



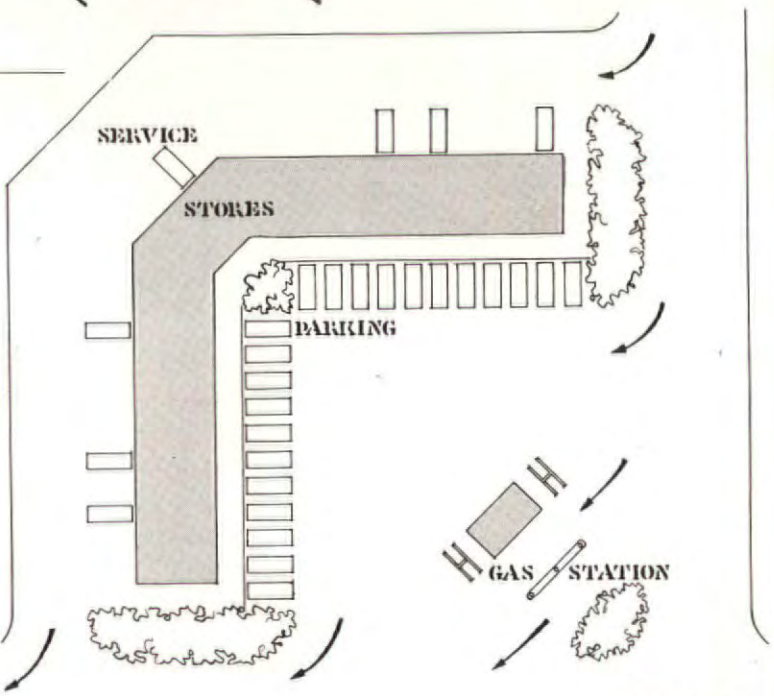
AN ARRANGEMENT OF STORES AND CAR PARKING at intersection of two streets. The main shopping traffic is from side street to main highway. This scheme is suited to a location adjoining a housing subdivision.

GROUPING OF STORES AROUND GAS STATIONS results from the control of strategic sites by gas station operators. Architects can undertake unified and attractive planning and design of roadside buildings, including required approaches and planting.

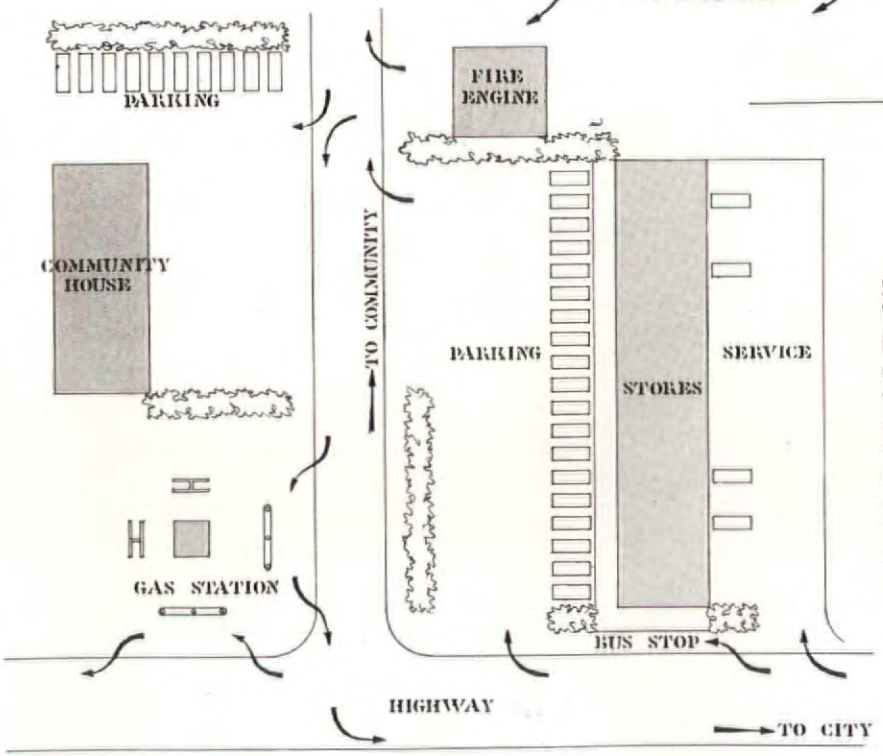




DRIVE-IN MARKET ON SITE OF RESTRICTED DEPTH. The "court" arrangement is more attractive to auto shoppers than straight rows of stores adjoining street.



COMBINATION OF STORES AND GAS STATION. Shopping traffic is from side street to main highway.



SHOPPING CENTER AT ENTRANCE TO SUBURBAN COMMUNITY. The gas station at right side of road serves outgoing traffic from community to city or to country and also traffic of highway. The stores serve the community and suburbanites who return from city by bus or auto. The community houses and firehouse are placed so as to eliminate cross traffic.

Heinrichs

Shopping group should be located in line of travel taken by residents going to and coming from work.

OFFICE BUILDING AND SHOPPING CENTER AT RADBURN, NEW JERSEY

FREDERICK A. ACKERMAN, ARCHITECT

The central motif of this shopping group is the post-office building, a place of popular activity, since a large percentage of the village inhabitants call personally for their mail.

SHOPPING CENTER FOR THE VILLAGE IMPROVEMENT COMPANY AT NEW CANAAN, CONNECTICUT

ALFRED MAUSOLFF, ARCHITECT

NOTES ON THE DESIGN OF NEIGHBORHOOD SHOPPING CENTERS*

In laying out new subdivisions—rural, suburban or metropolitan—as well as in designing new business structures in already built-up sections, the architect is confronted with the question of determining with some degree of accuracy the amount of store space which can be actually used or which is sufficient to provide for a reasonable future demand. Little definite data exists as yet, although various city planning authorities are now making detailed studies in this field. A few general points however, can be borne in mind.

Location

A shopping center for pedestrians cannot conveniently and effectively serve a residential radius of more than one-half mile. A smaller radius is desirable, but except in extremely crowded urban districts, shopping districts should not be nearer than one half mile from each other. That is, a quarter-mile radius is the minimum.

Store groups should be located on the periphery rather than in the center of a residential district. This discourages the invasion of the district by wholesalers' trucks and by transient customers. The shopping group should be located in the line of travel taken by residents going to and coming from work. It should be located where one or more square blocks, rather than a single street frontage, is available under a retail business zoning, since a concentrated business shopping center surrounding several short streets for parking is more desirable than one which is strung out along a heavily traveled highway. The former has the additional advantage of having a smaller perimeter facing residences.

Space Required

The amount of store space measured in frontage which should be provided for has been variously computed. The Regional Plan of New York suggests from 36 to 60 front feet per 100 population, giving the lower figure as a minimum and increasing in proportion as a daytime working population is added to the regular resident population of the neighborhood. Coleman Woodbury, writing in the Journal of Public Utilities and Land Economics, sets 50 front feet per 100 population as an absolute maximum, with the observation that when this is exceeded there are always vacancies. Stein and Wright, in making their studies for Radburn, computed that 69 stores, aggregating 2640 front feet, would adequately serve a neighborhood of 10,000 population.

All these figures are based on the assumption that the shopper in the neighborhood has access to a larger "downtown" business center for more specialized shopping requirements.

Number of Stores of a Given Type

"Retail Distribution Surveys" have been made by Chambers of Commerce in a number of cities and tables have been prepared showing the number of people supporting each shop of any given type. Table I gives one average of the results obtained by a set of such surveys.

Design and Layout

Combinations of stores and apartments are undesirable (unless absolutely necessary, owing to high cost of land).

One-story stores are best unless demand for local office space justifies a second story.

Widening of street in front of store to provide for parking is highly desirable, except in crowded metropolitan sections where the majority of shoppers are pedestrians. Parking space behind shops is less convenient than in front; parking, however, should be *free of through traffic.*

In rural and suburban sections widen sidewalks in front of shops and omit all planting except shade trees.

Provide separate access for trucking and delivery purposes away from main frontage of shops, either in an interior court, or a separate alley. "Park and shop" markets, forming an interior court off a main highway, would have the highway as their delivery entrance.

A single feature, such as a clock tower, flagpole, or well-designed electric sign-tower, identifying the entire group of shops, is more effective than the usual attempts at giving individual shops separate "architectural" treatment.

TABLE I

The average population per business concern in Chicago, Brooklyn and Queens (N. Y.), Cincinnati, New Haven, Hartford, Bridgeport, and Waterbury has been computed as follows:*

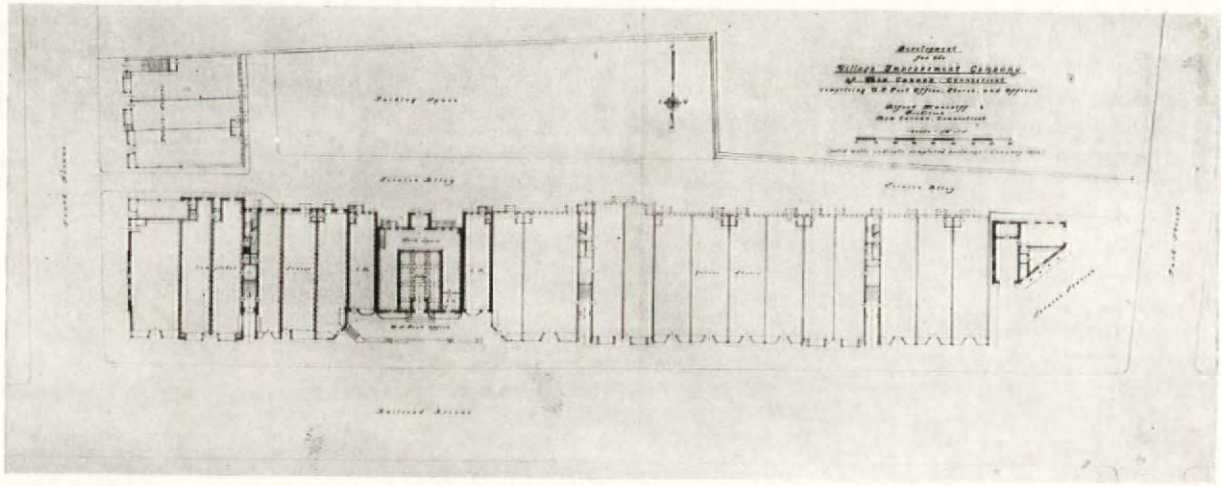
Grocery	641	Shoes	5,619
Meat market	1,023	Clothier	5,656
Restaurant	1,406	Florist	6,117
Druggist	1,681	Jewelry	6,416
Garage	2,185	Millinery	6,531
Merchant tailor	2,204	Hardware	6,647
Plumber	2,259	Cleaner and dyer	6,928
Confectionery	2,714	Delicatessen	7,568
Bakery	2,749	Laundry **	7,772
Fruits and vegetables	3,728	Musical instruments	9,785
Hotel	4,494	Bank	10,836
Furniture	4,522	Furrier	20,467
Dry goods	4,552	Typewriter	34,421
Cigars and tobacco	4,957	Sporting goods	32,241
Undertaking	5,590	Department store	45,914
Coal	5,599		

* The Neighborhood Unit, a Pattern for Planning Residential Developments. Clarence Arthur Perry.

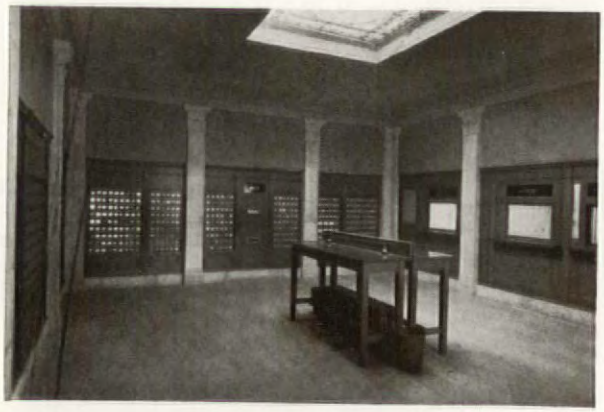
** The concerns up to and including laundries, refer to neighborhood centers; those following would be located in a general "downtown" center.

*Data supplied by Robert C. Weinberg.

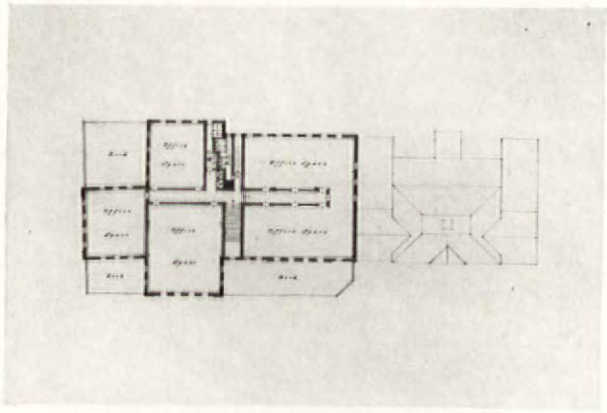
A block of seven stores with office space on upper floor.



Plan of entire development, showing central location of post-office.

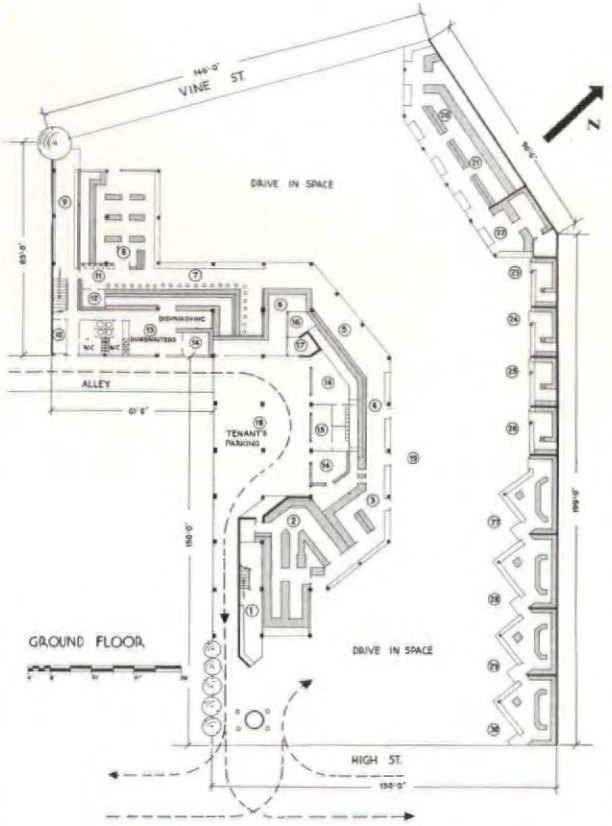


Interior of post-office.



Second floor plan, showing office layouts.

SHOPPING CENTER FOR THE VILLAGE IMPROVEMENT COMPANY AT NEW CANAAN, CONNECTICUT
ALFRED MAUSOLFF, ARCHITECT



TOTAL RENTABLE AREA:	13,610 sq. ft.
TOTAL OUTSIDE TRAFFIC AREA:	21,200 sq. ft.
STAIRWAYS, HALLS, PIERS, ETC.:	1,200 sq. ft.

KEY TO PLAN

		SQ. FT.
1.	High Street entrance and display arcade, wide stairway to upstairs shopping center	400
2.	Piggly-Wiggly grocery store	1,300
3.	Delicatessen	900
4.	Fish	600
5.	Meats	1,150
6.	Bakery	800
7.	Lunch-counter	1,200
8.	Drug store	1,200
9.	Vine Street entrance and display arcade	400
10.	Janitor, controlling incoming deliveries, main comfort room	500
11.	Public telephone booth	
12.	Office	80
13.	Lunch and café kitchen, serving upstairs pantry by means of 3 dumbwaiters	700
14.	Refrigerated storage, central refrigeration plant in rear and in control of meat concession	100
15.	Storage, lockers, washroom	280
16.	Display workroom	
17.	Baking oven	
18.	Trucking and delivery court, alley exit, tenants' parking space	2,400
19.	Customers' drive-in space—traffic and parking	18,800
20.	Fruits	600
21.	Vegetables	900
22.	Florist	500
23.	Variety house, garden hardware	200
24.	Toys	200
25.	Laundry agency	200
26.	Dry-cleaning, dry goods, or cobbler, shoeshine	200
27-30.	Specialty stores with impressive displays	1,800

DIXIE DRIVE-IN MARKET and SHOPPING CENTER, LEXINGTON, KENTUCKY

RICHARD J. NEUTRA, Architect

Site

Shortest distance from the town's business center in the direction of the main residential sections. The selected property has frontages of 130 and 146 feet or two main thoroughfares, traffic on which will furnish the majority of customers to the market. Advantageous use was made of the existing alley on the northwest side of the property.

Central Group

The layout provides for future development. It is not strictly limited to a drive-in market.

The nucleus of this market—with exception of the fruit[20] and vegetable[21] concession, which is given greatest visibility from both street entrances—is centered around a delivery court[18] with in and out alley connections to High Street. For proper segregation of freight delivery and customers it is desirable to provide such service accessibility from the rear for the main units, in particular the bakery, the meat shop and the grocery concession. This alley system is also utilized for the kitchen[13]. This kitchen, which serves both the extended lunch-counter and the roof-garden cafe, together with the grocery and the delicatessen concessions, is connected with the central refrigeration plant in the rear of the meat unit.

The sequence of units starts from High Street with the Piggly-Wiggly store[2], then runs through the delicatessen[3], the fish[4], the meat[5],

and the pastry-bakery[6] concessions and terminates at the lunch-counter[7] and the drugstore[8] at Vine Street. The convex frontline allows a maximum display frontage, long distance visibility for passing cars and a customers' approach for each store.

The comfort rooms are situated near the janitor's office at (10) which also controls incoming deliveries. Display arcades both from Vine and High Streets lead to stairways and elevators, which serve the upper office stories.

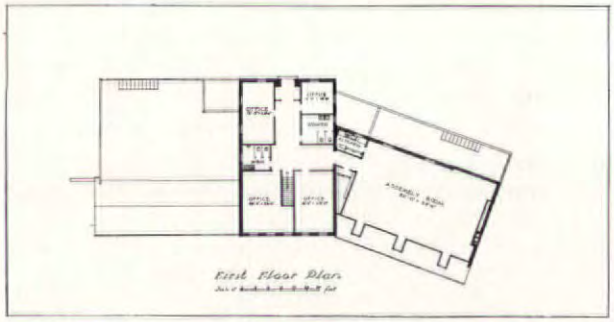
Peripheral Group

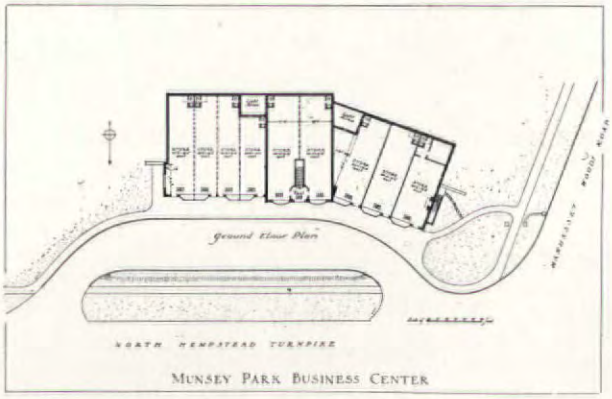
The central building is surrounded by a chain of smaller stores which, beginning with the fruit[20] and vegetable[21] concessions, follows the property line and ends with a group of shops near High Street, in such a position as to give the displays high advertising visibility from all directions. The stores near High Street should form points of interest and attraction for the entire market group. It is proposed to devote these stores to specialty business.

Tenants

Parallel concessions within the same market to strictly competing firms, or firms carrying the same merchandise in different grades, have been tried in several Los Angeles markets. The latter case does not give much satisfaction, as the merchant paying the higher rent frequently watches the crowds turn in to the cheaper competitor. In some cases, however, such a scheme might be worked out successfully.

A very important element in promoting a successful drive-in market is the proper selection of tenants to assure a harmonious ensemble. One or two failures among the tenants to conduct their business adequately is likely to do harm to the other units. It is highly desirable that the customers become accustomed to shop in all units with confidence in a uniform quality of service.





Munsey Park Business Center adjoins a housing development and is also accessible from a main thoroughfare. The community rooms are on the upper floor with entrance at rear toward the development. The shops face the highway.

MUNSEY PARK BUSINESS CENTER, LONG ISLAND
CITY HOUSING CORPORATION
FREDERICK L. ACKERMAN, ARCHITECT

ACTIVITIES OF THE A. I. A. CHAPTERS AND ARCHITECTURAL CLUBS

Englerth

MEMBERS OF THE TENNESSEE CHAPTER OF THE A. I. A. ON TOP OF UMBRELLA ROCK, LOOKOUT MOUNTAIN, CHATTANOOGA, TENN.

Top row: Gordon L. Smith, Clarence T. Jones, Mr. Graff, W. C. Colley, A. B. Baumann, Jr., William Crutchfield, Louis H. Bull. Middle row: Charles I. Barber, Henry C. Hibbs, William J. Sayward, R. H. Hunt, W. H. Sears, Bayard S. Cairns, William Stone. Bottom row: B. F. McMurry, Walk C. Jones, B. F. Hunt, Donald W. Southgate.

Tennessee Chapter — Louis H. Bull, Chapter Secretary:

There are four relatively important cities in the Tennessee Chapter: Memphis, Knoxville, Nashville and Chattanooga. Four vice-presidents are selected yearly from the four mentioned cities and they in turn become the presiding officers in their individual city groups. Thus the Chapter keeps in touch with the activities of each city group. The annual meeting of the Chapter is usually held in the fall of the year and the place of meeting is rotated between the four cities by agreement.

Alabama Chapter — Jesse W. Green, Chapter Secretary:

Presents prizes each year for excellence in design at Alabama Polytechnic Institute.

Sponsored competition for the design and modeling of a Chapter medal.

Active in support of the proposed legislation relative to modification of the work of the Supervising Architects.

Conducted open meeting inviting all architects of locality to attend discussion by Mr. Robert D. Kohn.

Southern California Chapter — Palmer Sabin, Chapter Secretary:

Of twelve meetings held during the past year, three have been joint meetings with the State Association of Architects. Five have had outside speakers. The remainder have been devoted entirely to professional discussions.

Bill No. 6187, requiring the Treasury Department to employ private architects on all Federal government building projects costing more than $50,000, was indorsed.

Assistance has been rendered to the California State Board of Architectural Examiners in judging state examinations for licenses. A Chapter committee has prepared and submitted to the State Board of syllabus outlining for the information of applicants the subjects which these examinations shall cover.

It is of interest to note that architects of the State of California are cooperating actively as an aid to the State board of Examiners.

Resolution adopted urging the Los Angeles County Supervisors to make a settlement at this time with San Gabriel Canyon mining claim owners, in order that the flood control dam construction program may be carried to completion.

Kansas Chapter — George M. Beal, Chapter Secretary:

Conducted an annual awards of merit competition among architects of Kansas for 1931 which covered residential buildings. Certificate of awards were given to architects of premiated buildings.

Central Illinois Chapter — E. L. Stouffer, Chapter Secretary:

Passed resolutions: "That it is the sentiment of the Central Illinois Chapter of the American Institute of Architects that indorsement of the Architects' Small House Service Bureau by the American Institute of Architects should be withdrawn until the Architects' Small House Service Bureau exhibits further evidence of its desirability."

Appointed a committee to consider preparation

of a leaflet to be sent to school boards on the general subject of "How to Select an Architect."

Denounced violations of the architectural practice laws, particularly by lumber companies.

Detroit Chapter — Herbert G. Wenzell, Chapter Secretary:

Conducted Honor Awards Competition for most successful architecture of year in building type classes which received thirty-five pages of publicity in local newspapers.

Articles on domestic architecture were prepared by members of the Chapter and appeared as a series of eight interviews in "The Detroit News."

Lectures were given with lantern slides illustrating and discussing the Detroit River Front Development.

A Building Congress has been organized and is functioning with a member of the Detroit Chapter as president.

Sponsored the Greene Bill now in Congress for returning Federal building design to private architects.

Architects' weekly luncheon with discussion of immediate problems of concern to Chapter architects or Michigan Society of Architects' affairs.

Hawaii Chapter (Honolulu, T. H.) — Herbert Cayton, Chapter Secretary:

Holds regular monthly meetings usually as a luncheon meeting.

Has undertaken a program intended to educate the public to an appreciation of good architecture.

Recently undertook the group design of the new Municipal Building for the City and County of Honolulu.

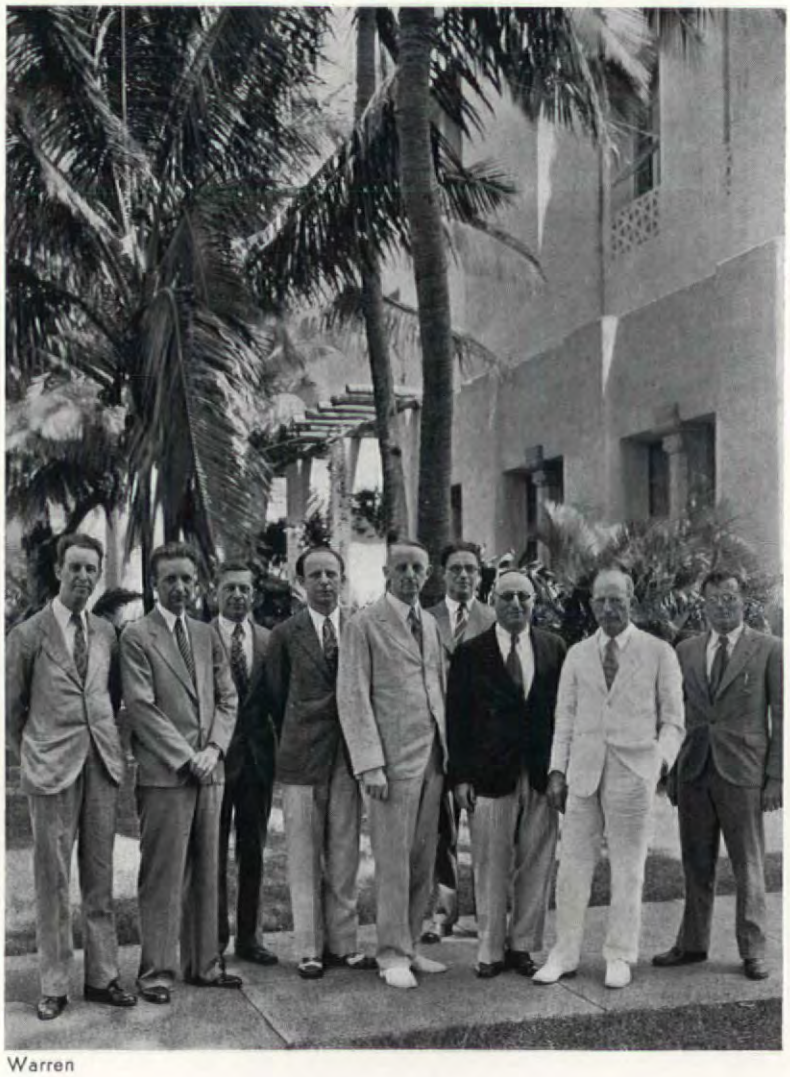
Indiana Society of Architects — Carroll O. Beeson, Secretary:

Adopted a resolution at their meeting on April 25, 1932, as follows: "The Architects' Small House Service Bureau as now constituted and functioning works a distinct hardship on the small architect's office, and we feel that a revision of the policies of this Bureau is necessary before it can hope to have the aproval and indorsement of the Indiana Society of Architects."

Westchester County Society of Architects — Laurence M. Loeb, Secretary:

Holds meetings once a month for discussion of items of local and general architectural interest.

Consideration given to a uniform Building Code for Westchester County. Since standards vary greatly, the practice of architecture is hampered. It is proposed that a special committee be named to initiate and develop the idea of a uniform building code and a method of sharing the expense of making the code by the towns that use it. This code would be definite and complete as far as new



Warren

GROUP OF HONOLULU ARCHITECTS

Reading from left to right: Ralph A. Fishbourne, Raymond L. Morris, William C. Furer, W. Mark Potter, Hart Wood, Marcus C. Lester, Herbert C. Cayton, C. W. Dickey and Guy N. Rothwell. In the rear is the new Municipal Building for the city and county of Honolulu.

materials and processes are concerned and should be kept up to date by care of a permanent committee.

The Gargoyle Club of Saint Paul — William J. Witherspoon, Secretary:

The Gargoyle Club of Saint Paul was founded in 1910 by a group of Saint Paul architects and draftsmen. In 1913 the organization was incorporated and since that time has included in its membership most of the practicing architects and draftsmen of the city. The Club purchased a chapel designed by Cass Gilbert and occupied the building as a clubhouse for several years. The building is entirely free from encumbrances and is now rented. The income from this property makes the club self-supporting and makes possible activities such as the annual exhibition.

Wright Studios

EXHIBITION ROOM OF THE GARGOYLE CLUB
ST. PAUL, MINNESOTA

THE EARLY HISTORY OF BLUEPRINTING

A visit to a modern blueprinting establishment in which elaborate machines continuously print the tracings which are fed into them, delivering a blueprint a few moments after the tracing is received, does not indicate the humble origin of blueprinting.

In 1879 Silliman and Farnsworth of New York City were engaged as architects for the Chemical Laboratory Building of Vassar College. This building had been donated to the college by the sons of Matthew Vassar, founder of Vassar College. Silliman and Farnsworth had been selected for this work because Mr. Silliman was also a chemist and familiar with the laboratory requirements.

Mr. Silliman brought from New York City three blueprints of the proposed laboratory building. They were a sensation in Poughkeepsie, N. Y., and well they might, as they were the first blueprints ever produced.

Prior to 1879 copies of original plans had been made by tracing laboriously each set on tracing cloth. A fellow member of a chemical society in which Mr. Silliman was active discovered the formula for the blueprinting chemicals. No patents were obtained. Silliman and Farnsworth tried out the new formula at their first opportunity and brought the blueprints to Poughkeepsie.

Blueprinting in those early days could hardly be called a fine art. The instructions which accompanied the formula stated that the chemical solution should be spread on the paper evenly with a sponge in a dark room. In applying this solution the blueprinter's hands were dyed as blue as Sis Hopkin's hair ribbon. In the winter time his troubles were worse. In making a blueprint the tracing and the prepared paper were placed in a frame exposed to the sunlight. After exposure the blueprint was washed in water and hung up to dry. The alternate washing and printing in cold water chapped the hands of the blueprinter so that great cracks appeared in his skin. To the aspirant for architectural fame and fortune hands which were blue and cracked were merely an incident in one's career.

J. Norman Jensen

A FRENCH VIEW OF MODERN ARCHITECTURE

To the Editor:

It would be absurd to say that modern architecture was born through the whims and tastes of a few original-minded architects. Not at all—it comes strictly from the new necessities of our civilization of today, and these modern architects took up the problems each one in his own way.

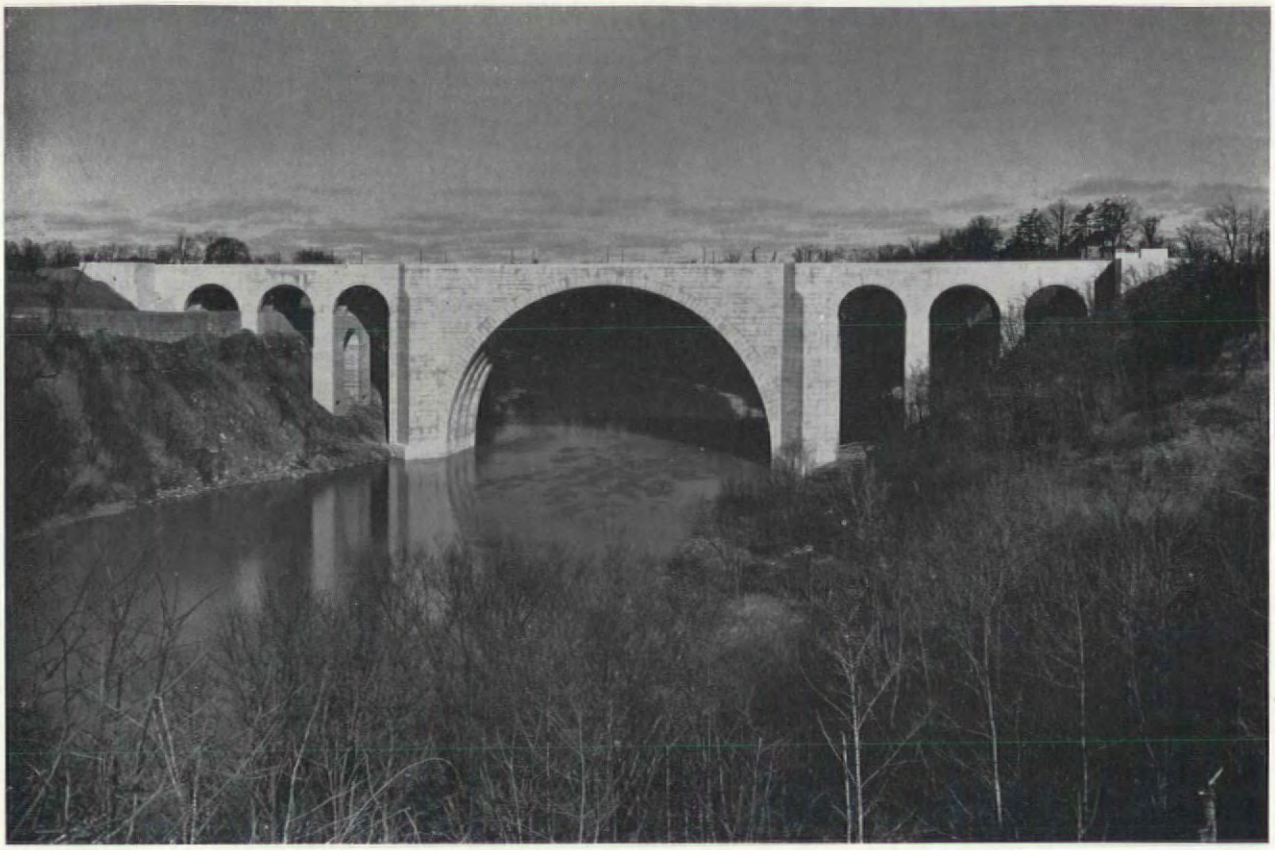
Today, in the century of the automobile and airplane, by which distance is practically eliminated, new conceptions of political and social problems are created, resulting in a total evolution in the art of building by the rational use of new materials. Could architecture remain in the old classical forms and keep on incorrectly copying ancient monuments? But, considering the general crisis through which we are passing in every branch of life, architecture has not yet taken up its definite form.

This new architecture has brought about the formation of several schools, such as LeCorbusier, Perret, Tony Garnier, and others.

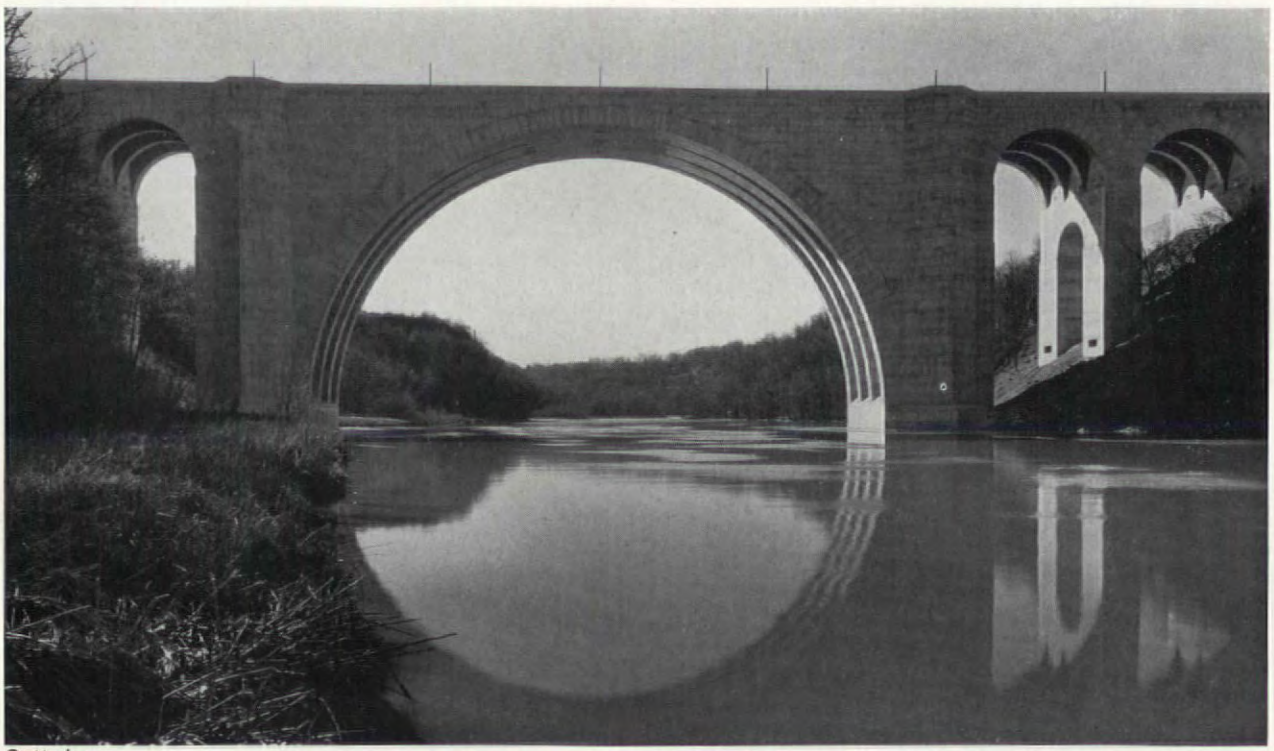
To what extent the principles that have been established (and which are followed by most of our young architects) may be right or wrong can only be judged by time.

Referring to the Ecole des Beaux-Arts, our ideas on *moderne architecture* are absolutely contrary to those taught in that school; it has not taken the least initiative to change its old-fashioned academic principles, and if its teaching continues as it is now I believe it is destined to perish.

Ch. Bougatsos, Architect—Paris



South Side



Gottscho

North Side in Full Reflection

VETERANS MEMORIAL BRIDGE AT ROCHESTER, NEW YORK
GEHRON AND ROSS, ARCHITECTS

VETERANS MEMORIAL BRIDGE AT ROCHESTER

GEHRON AND ROSS, ARCHITECTS

By ERNEST BORN, Architect

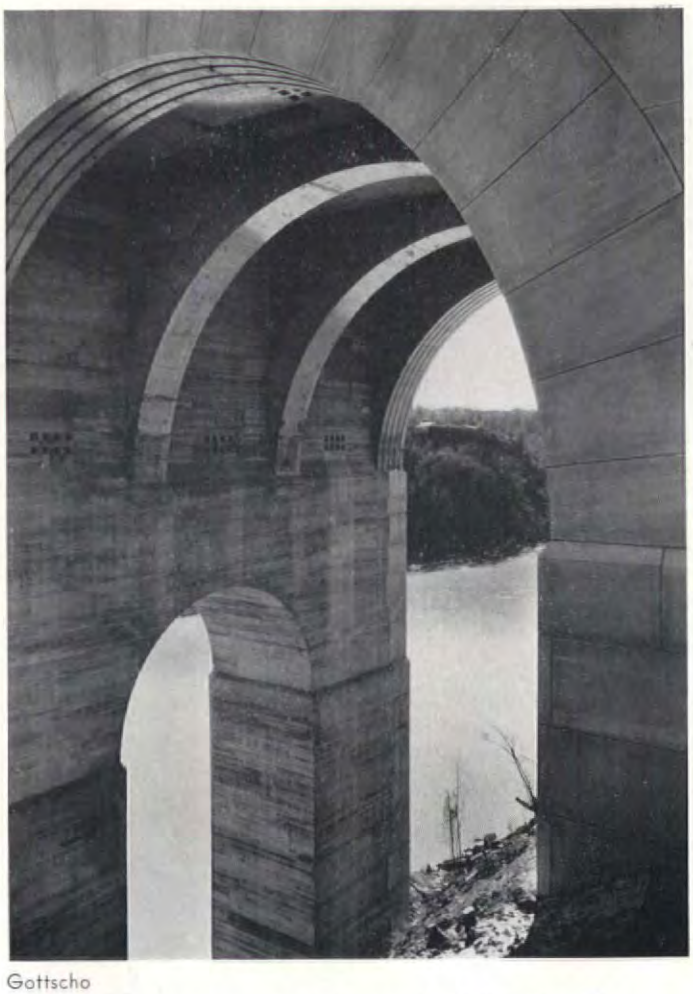
Modern architecture is dependent on modern materials. Economy, not merely in initial cost but also in upkeep and operation, is the criterion. Glass, steel, new metals, compositions, all have come to play an indispensable part in our present method of construction. Granite, in the form of thin slabs or plates, also is taking its place as a modern material.

The new Rochester Bridge is a concrete span across the 1,000-foot chasm of the Genessee River. The great arch measures 300 feet in diameter, the roadway 175 feet from the water. It was designed to be incased in stone against the action of snow and ice and scorching sun. Granite was selected.

The problem was to produce a bridge of monumental character, compatible with moderate expense and low maintenance. Rochester is a city of rigorous winters, where exposed concrete has not yet been proved utterly free from the disintegrating effect of extreme changes in temperature. A stone casing was determined upon, and the utmost simplicity in design and treatment was sought. The architects scrapped all traditional ideas of scale with respect to stonework and set out to detail the granite casing in the most straightforward way in which it could be produced from the quarry and the machines. All moldings and other costly architectural features were eliminated from the design, thus leaving little except the pure form of the bridge.

A study of quarry conditions showed the economy of using slabs of the largest dimensions, and as thin as possible, which could be readily produced. A thickness of four inches was found to be a practical minimum for a stone twelve feet long and five or six feet high. Since the run from the quarry varies in size of blocks, it was found desirable to use slabs of different sizes, grading from large at the bottom of the piers to small at the parapet. Some of the largest stones were used for the ringstones of the main arch. To have used slabs or plates of uniform height or length would have been wasteful.

All slabs were doweled into each other on four sides. These dowels in turn were anchored back into the main reinforcing steel of the arch ring or wall. To obtain a perfect bond with the concrete structure, the slabs were alternated from four to eight inches in thickness, both horizontally and vertically. Concrete was poured as each tier of granite was erected. The slabs thus acted as one side of the form and were completely integrated into the structure by this method of construction. On the returns of the arches and the piers the slabs were twelve inches thick.

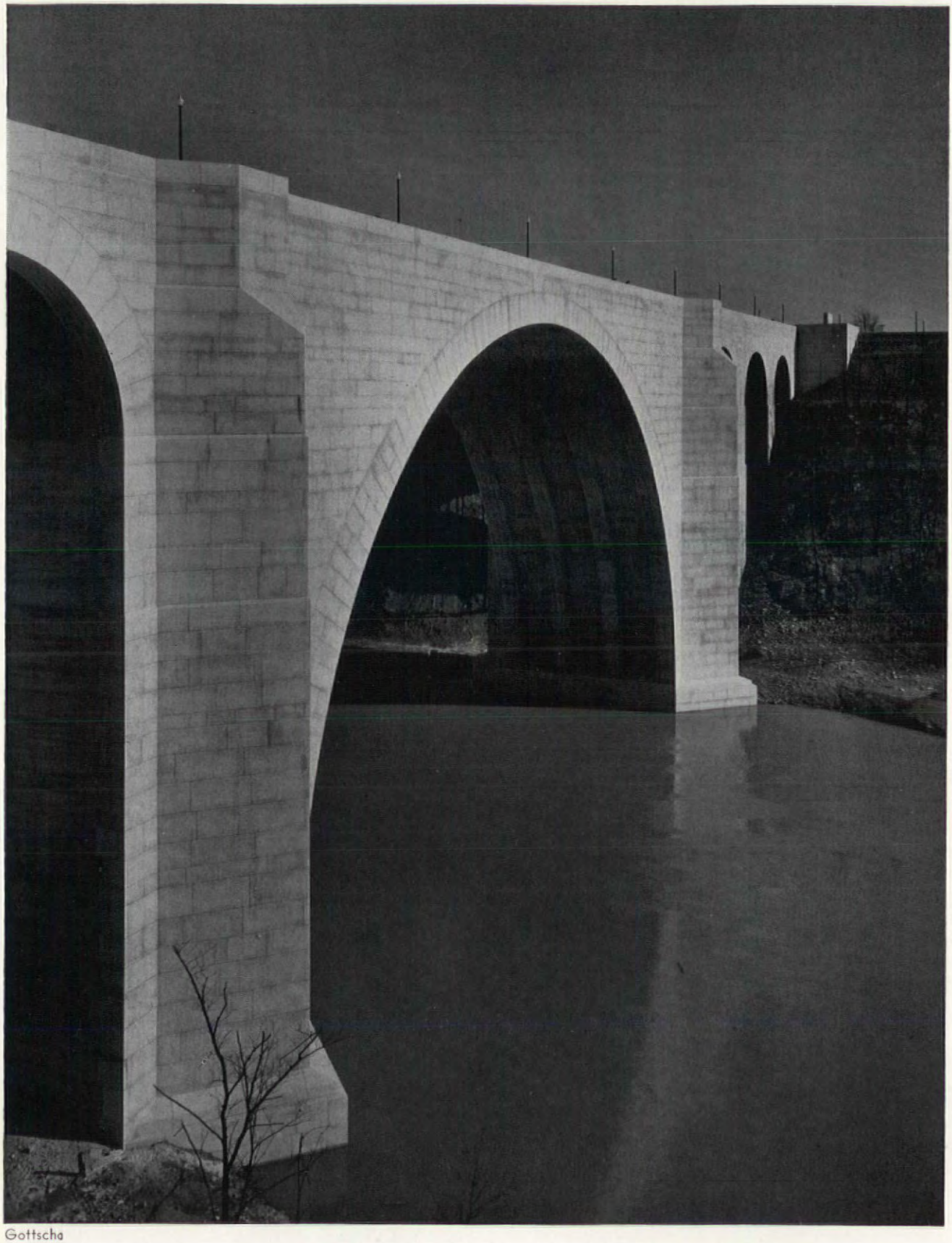


Gottscho

Detail of Pier and Arch, North Side of Bridge

An interesting problem came up in connection with the expansion joints, of which there were six in the main arch wall. Each slab was permitted to extend but eight inches beyond the expansion-joint line of the concrete, and this short projecting section was left undoweled and unbonded, free to move. As the arch ring rises or falls with changes in temperature the expansion joint widens or contracts with a shifting of the stones adjacent to each other on either side of the joint. This shift is comprised not only of a horizontal displacement but also of a vertical angular tilt. The ⅝" joint used throughout was found to be sufficient to take care of this relative shifting.

Practically all industries depend on modern methods of production. Modern granite production depends on three mechanical improvements of very recent date: the super-hardened high-speed steel drill, the automatic feed straight cutting gang-saw, the carborundum coping and molding wheel, together with greatly improved abrasives for polishing and honing and reasonably priced flexible electric power.



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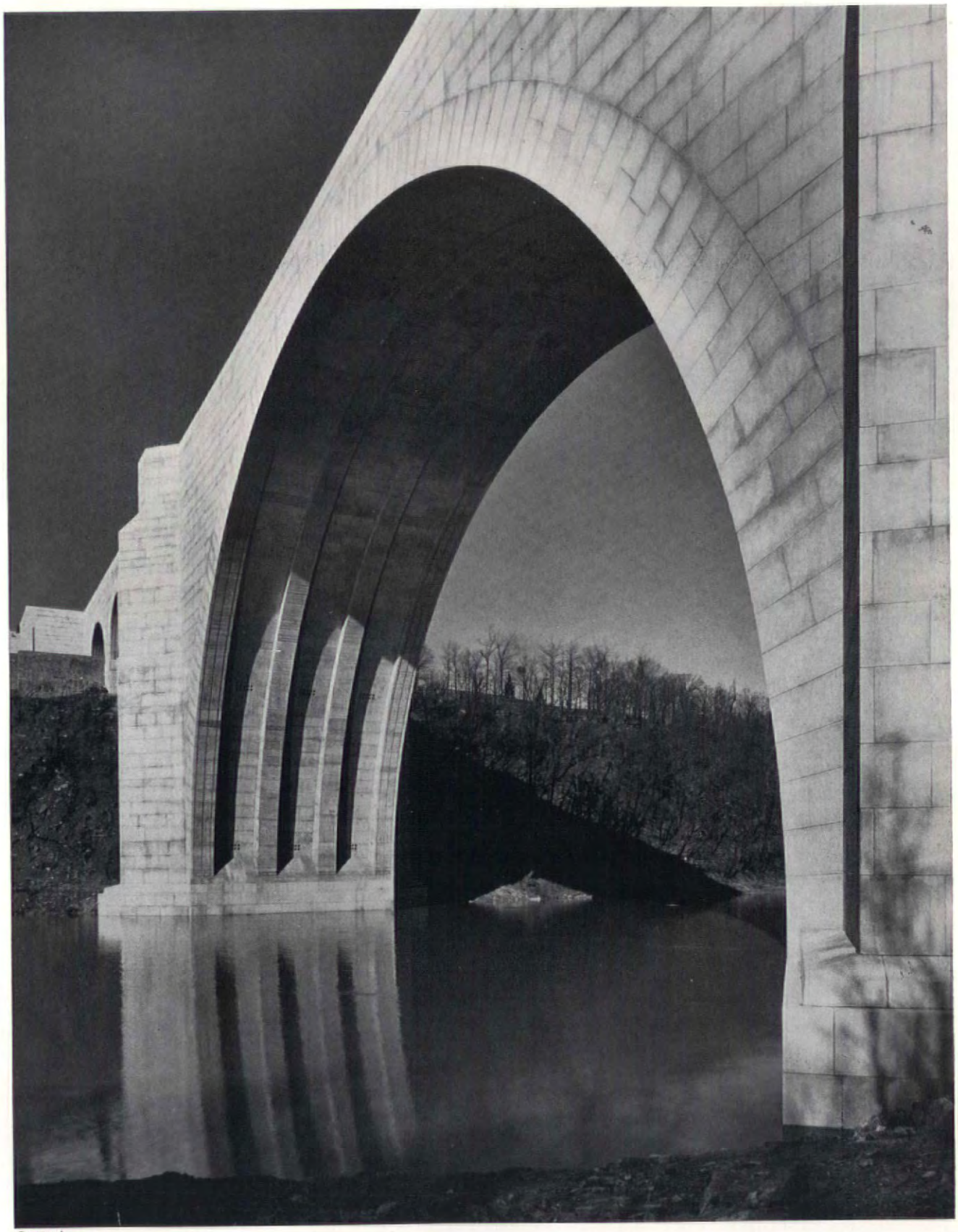
South Side from West Bank

VETERANS MEMORIAL BRIDGE AT ROCHESTER, NEW YORK
GEHRON AND ROSS, ARCHITECTS



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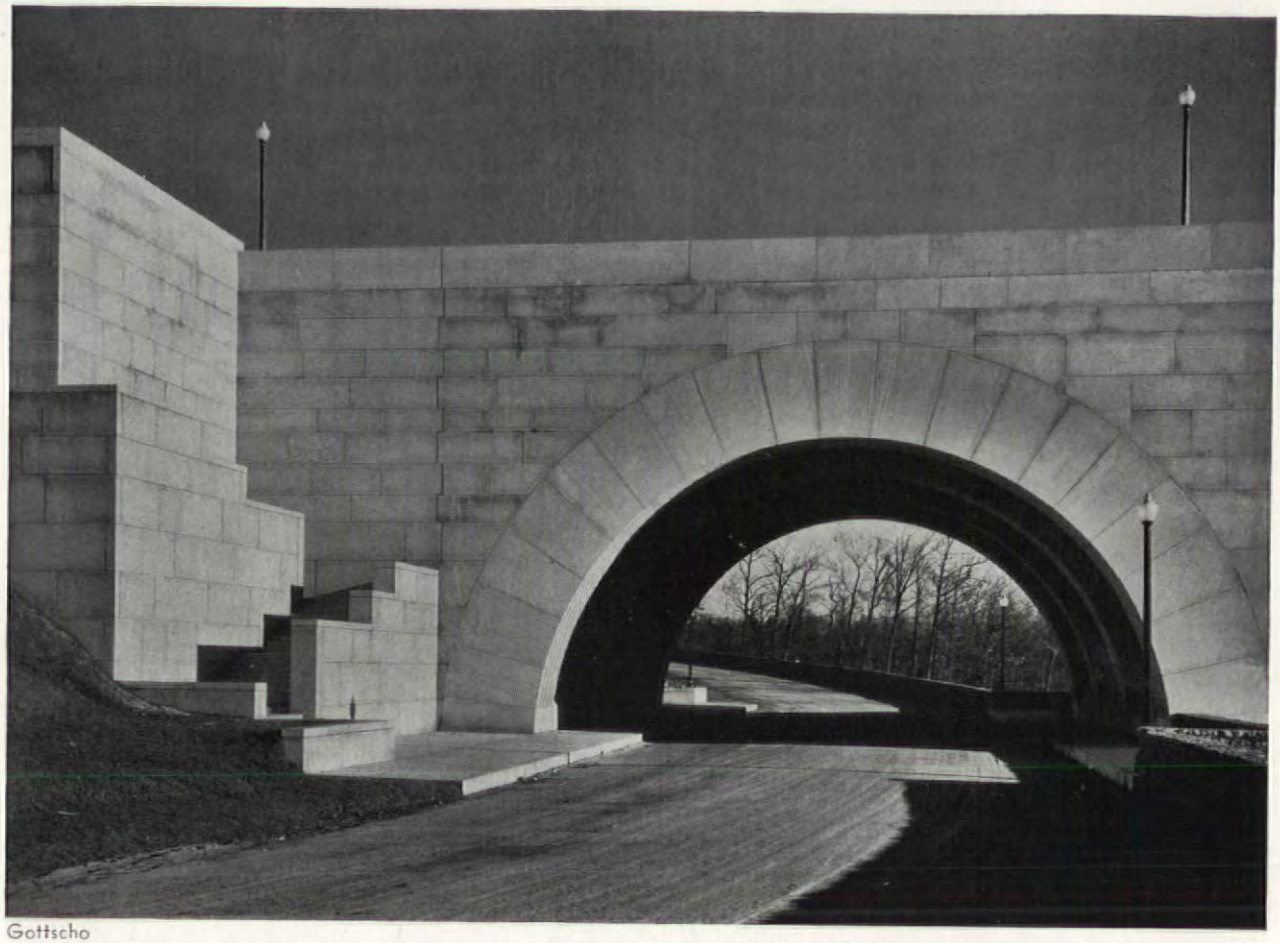
Detail of Center Arch from South Side

VETERANS MEMORIAL BRIDGE AT ROCHESTER, NEW YORK
GEHRON AND ROSS, ARCHITECTS



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West Arch over Roadway

VETERANS MEMORIAL BRIDGE AT ROCHESTER, NEW YORK
GEHRON AND ROSS, ARCHITECTS

Until a few years ago dynamite was used to detach the granite from the great natural beds in the quarry. This practice was extremely wasteful, and resulted in developing weaknesses in even "sound" stone. The super-hardened steel drill has replaced all that. Hundreds of holes are drilled into the stone within an inch or so of each other, so placed that the internal pressure of the granite comes to the aid of the quarryman and crushes the block free on the line of the drilled holes. Blocks as large as can be handled by a crane are thus actually bored out of the earth with scarcely the loss of a cubic foot of stone.

Once out, the blocks are loaded on a flat car and conveyed to the gang-saw. One of these huge machines can reduce a block of granite twelve feet long and six or seven feet high and as many feet wide into slabs three or four inches thick in a few hours. The sawing is done by erosion—small steel balls are urged back and forth under the saw blades—with no cutting in the ordinary sense. Owing to the high development of the saw blades, each slab comes out an almost true plane surface. The surface produced by the gang-saw was considered so satisfactory in itself that it was used at Rochester.

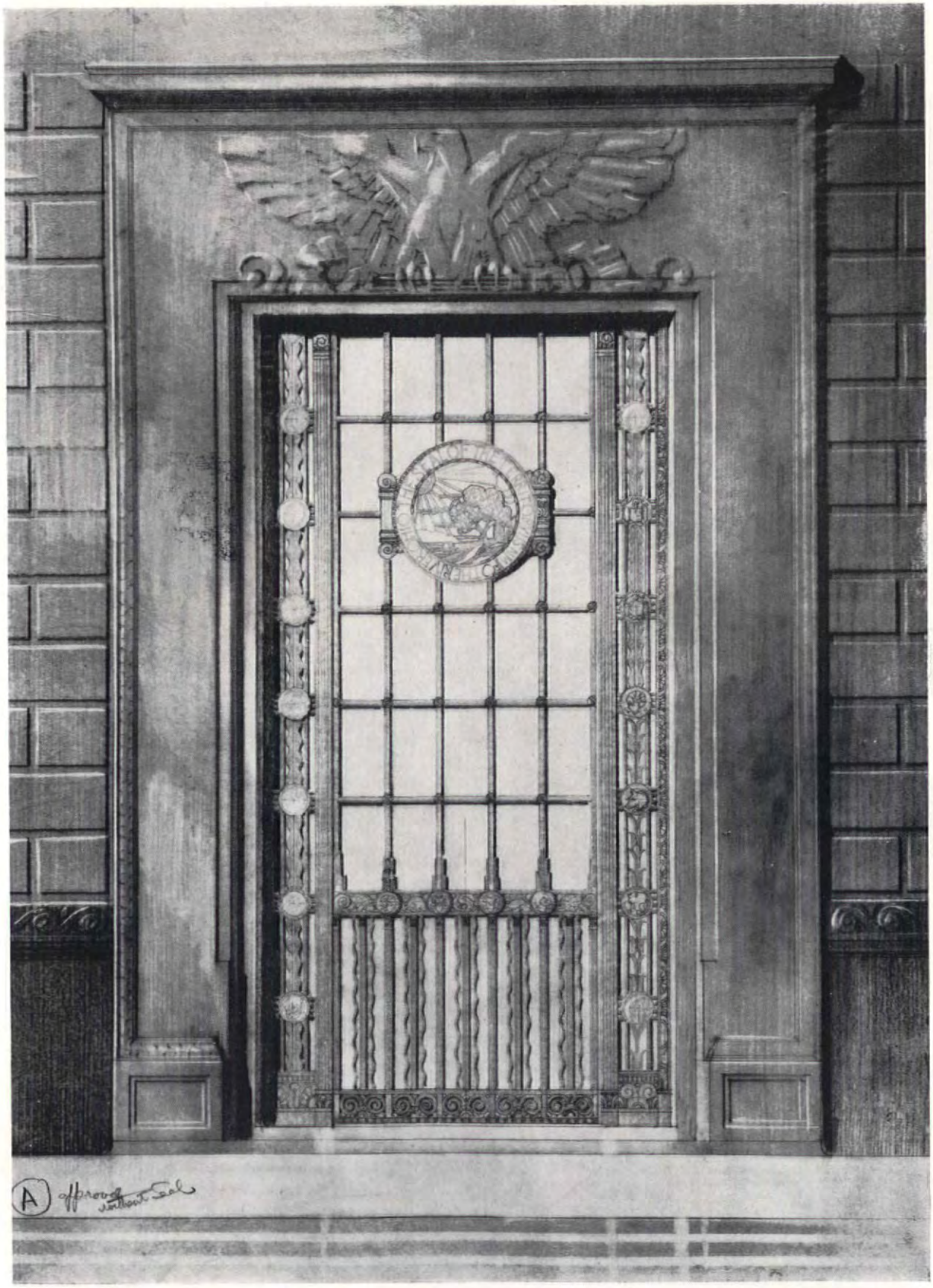
Granite costs on the Rochester Bridge were:

Per cubic foot:	
F. O. B. Rochester	$4.55
In place	5.18
Per superficial foot:	
F. O. B. Rochester	$3.12
In place	3.55
Total cubic feet	126,104
Total superficial feet	183,944

The relation between the cubic foot costs, which are typical, and the superficial foot costs is most interesting. The average thickness of granite throughout the structure is approximately 8 inches, the 4-inch stones offsetting the 12-inch stones.

Granite, obviously, can no longer be relegated to the class of luxury materials. The thinner the slab, for a given cube of stone, the greater the superficial area obtainable therefrom. A stone four inches thick involves but one third the transportation costs of a stone twelve inches thick. In many cases transportation costs are found to be more important than quarry costs. The large size of slabs available means minimum jointing, and maximum waterproof surface.

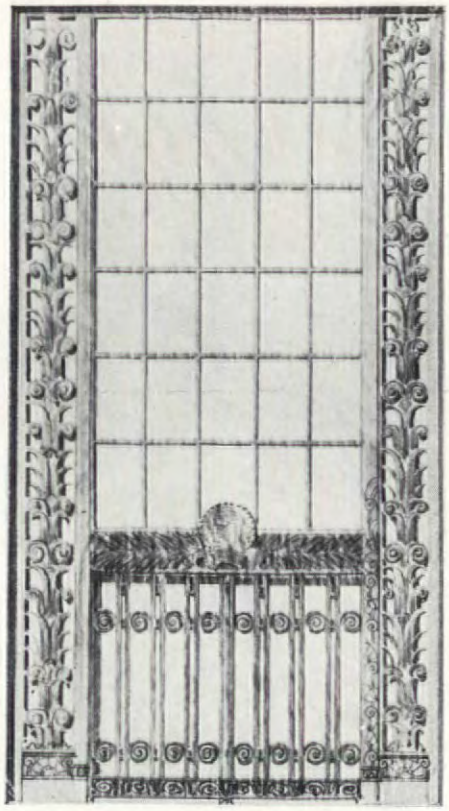
The Rochester Bridge should be recognized as a distinguished achievement in the beginning of a new technique in the use of a fundamental material.

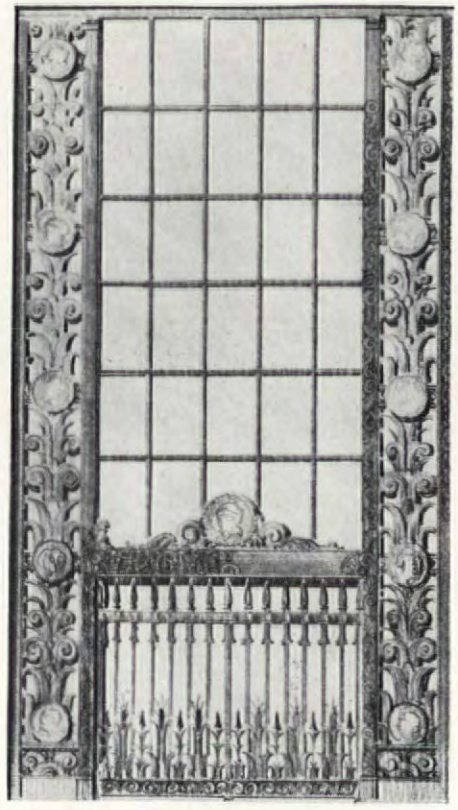


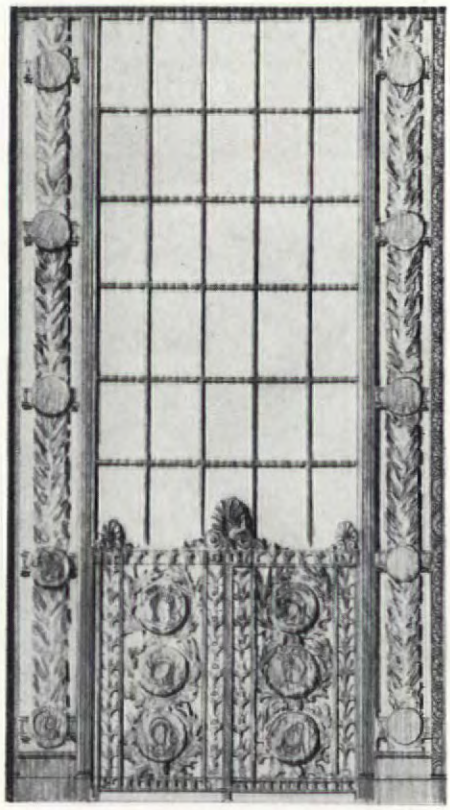
On the following page are other renderings which were made as preliminary studies, leading to the final design shown here.

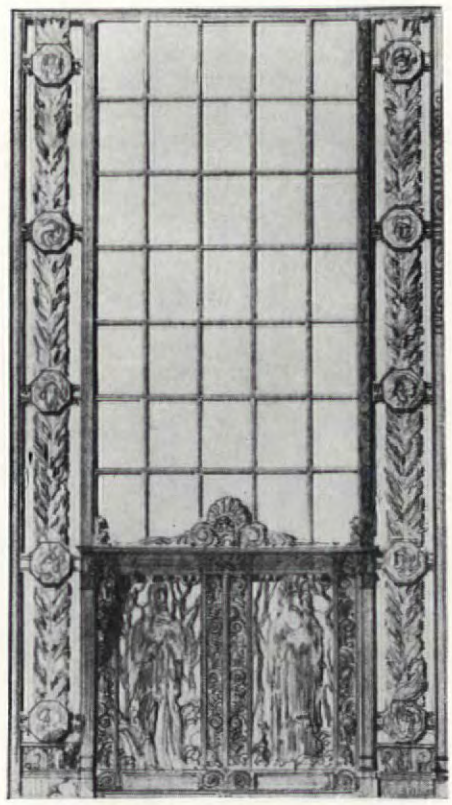
STUDIES FOR MONUMENTAL ENTRANCE GRILLE

DESIGNED BY FREDERIC C. HIRONS, ARCHITECT









STUDIES FOR MONUMENTAL ENTRANCE GRILLE
DESIGNED BY FREDERIC C. HIRONS, ARCHITECT

TECHNICAL NEWS AND RESEARCH

Worsinger

ABRAHAM AND STRAUS STORE, BROOKLYN — STARRETT AND VAN VLECK, ARCHITECTS

REMODELING AND MODERNIZING BUILDINGS

This article includes an analysis of remodeling procedure, together with detailed information and checklists applicable to restaurants, apartments, art museums, city and country houses, schools, hotels, shops, and stores.

REMODELING PROCEDURE

By THEODORE N. CRANE

The desirability of undertaking modernization at the present time naturally depends on the sales value or earning capacity of the remodeled structures. Although it is only too apparent that in many localities we have at present an over-supply of rentable space in almost all types of commercial buildings, there is a distinct need for remodeling work which will increase the earning capacity of the investment either through modernization, without changing the type of occupancy, or by complete revamping of the structure to bring the property into a more favored class of occupancy.

Broadly speaking, most alterations that are now under way or contemplated in the near future fall into one of two categories. On the one hand, we have the possibility of improving the appearance and conveniences of hotels and apartments or the modernization of stores and restaurants. On the other hand, there is a broad field of work involving the more or less complete reconstruction of antiquated residences and occasionally of commercial buildings for the purpose of transforming the property into attractive, modern multi-family dwellings.

Many organizations throughout the country are directing very serious effort to an analysis of alteration problems. There is a general feeling that it will be many years before material prices are as low or the efficiency of the building trades as high as at the present time. This is a very important factor in the cost of present-day construction. But if an architect is to induce his prospect to undertake alteration work, these general facts must be reduced to specific estimates of cost against which the increased earning capacity of the property must be checked.

In the case of alteration work, the architect cannot use square-foot or cubic-foot prices for the purpose of making preliminary estimates of cost. Fairly complete drawings must be prepared before definite estimates can be obtained, but experience in the remodeling of old buildings, supplemented by careful procedure in the analysis of the problem, will greatly assist in determining approximate figures which will insure that the eventual expenditures will be within the owner's budget.

From the experience of various firms specializing in this work, it appears that an economic study of the client's business or the potential earning capacity of the property in question is the first step. The object of this preliminary investigation is to determine the client's needs, to set up an ideal as it were, which it would be desirable to attain from the viewpoint of improving the investment.

FIRST FLOOR SALES SPACE
ABRAHAM AND STRAUS STORE, BROOKLYN, N. Y.
STARRETT AND VAN VLECK, ARCHITECTS

The next step is generally concerned with the physical character of the property: the stability of walls, the carrying capacity of the structural floors, the condition of the present mechanical installations and the practical limitations of alteration as controlled by the factor of unwarranted expense. A structural survey of this nature should be made, with considerable detail, to provide the designer with a thorough description of existing conditions in order that he may be able to decide what portions of the building must be condemned and what elements may be incorporated in the new plans.

Both of these studies are preliminary to the actual work of design. With this information at hand the architect can proceed with the preparation of his drawings and specifications illustrating the new arrangement. The problem will then be to accomplish, within the limits set by the old structure and the owner's budget, as many as possible of the changes and improvements outlined in the economic survey.

Architects who have had the most experience in work of this nature, although fully realizing the difficulty of arriving at accurate costs prior to receiving final bids, find that valuable results may be obtained by viewing a large alteration job as comprising a number of individual changes or additions, often more or less unrelated to each other, which can be estimated approximately when viewed as separate operations. Having broken down the work into its component parts and arrived at an approximate cost for each related group of alterations, it is then a simple matter to choose those which the owner will be able to carry out within the limits of his appropriation.

By following a procedure such as outlined above, it will be possible to present the owner with a specific plan of operation with which he can coordinate his present occupancy of the property and estimate with a fair degree of accuracy the additional return to be expected for a definite increase upon his present investment.

ECONOMIC FACTORS IN MODERNIZING RESTAURANTS

By LOUIS O. ROHLAND: F. P. Platt and Brother, Architects

The recent downward trend of the business cycle has brought to all phases of building activity an aspect quite different from that existing when everything was upgrade. The effect on the restaurant, as on other specialized activities, has been felt in an ever-widening circle. Bankruptcies have brought new faces into the picture—banks, mortgage companies, receivers, building owners find themselves owning restaurants, and facing the necessity of analyzing reasons for failures and putting into effect the best remedies to save their investment. Competition is keener. New buildings and restaurants change the neighborhood tone, and the older establishments are becoming more keenly aware of the need of meeting the situation. Considering the basic nature of the field, restaurant patronage has probably been reduced less than in many other businesses. It is changing, however, and many low-priced restaurants are drawing patronage from the higher-priced establishments. The customer is buying more selectively, and consequently the management is scrutinizing more closely every expenditure.

Remodeling vs. New Buildings

The alternative between remodeling and erecting a new building is a matter of economics, and the architect should be a vital factor in assisting the client to arrive at a decision. Generally speaking, a restaurant must be planned to occupy all or a major part of the space to justify erecting a new building, or the owners will find themselves in the real estate business (for which few are qualified). Hence, a small restaurant should contemplate a new building only on low-priced ground or in such a neighborhood as a new suburban development. The larger restaurant, with more ample resources and with space requirements less easily found in rentable space, must analyze thoroughly the location from every angle. The quality, quantity and continuity of the desired patronage must be available and reasonably assured for a sufficient time to warrant the investment. Even when the set-up shows a new building is feasible, it is necessary to make sure that an existing building in the neighborhood is not available at a cheaper outlay; such a site always carries the threat of a competitor operating on more favorable terms.

Scope of Remodeling

For restaurant occupancy the remodeling may be divided roughly into four classifications:

First, when space is rented in a building under construction. Here, the architect's job, although in a building still largely on paper, is none the less difficult, since it is fraught with negotiations involving all parties to the building operation and their varied interests. It is essential that the architect assist his client in the negotiations preparatory to closing the lease. Adjustments of credits and extras can be made then with a larger degree of mutual satisfaction. The architect can avoid the economic waste of scrapping unsuitable material, assure adequate provision in all services, avoid structural limitations which could not later be remedied, and speed up the date of installation by correlating his activities wtih the building operation.

Second, where the space leased is in an existing building. Here again the architect's study and advice is required before the contract is closed. Study may uncover insurmountable obstacles and avoid unfortunate commitments, or uncover facts that would obtain concessions in the lease terms. An accurate analysis should be made of the effect of obstacles to be removed, depreciation to be repaired, and salvagable material to be reused on the proposed installation cost. Frequently a fair proportion of the finish and building equipment of premises previously occupied by a business of a different nature can be reused; for example, a recent restaurant installation is in quarters previously occupied by a bank.

Third, where the space was occupied previously by another restaurant. This is specially stressed since it is a dangerous pitfall for the less experienced restaurant operator. Incorrect assumptions as to the salvage value of the first installation have frequently increased appreciably the installation cost budgetted by the owner. The large restaurants, particularly those operating a chain of units, seldom find conditions exactly suitable, since a feature of their business is individualized uniformity of operation and character. The reason for the failure of the earlier occupant must be analyzed, as sometimes the fault lies in the equipment or arrangement. Small restaurants, such as tea rooms, can more frequently use former installations, as many such failures are due to poor management, bad catering, or insufficient scrutiny of food costs. There have been many instances of a new management making a success of a previous failure with little physical change beyond a new name.

Lastly, where the existing restaurant has been gradually losing patronage because of being out of date. A restaurant like any building starts its obsolescence the day it is opened. Science, human tastes and building experiences are constantly developing new ideas. New competition seizes every opportunity for more efficient operation. There is an intermediate stage in the life of every restaurant when in order to hold its own it must be rejuvenated. A new note, not necessarily a complete change, introduced periodically will guard against the appearance of staleness. The architect can do a great deal as an adviser to his client in this

respect. It must be impressed on the owner that this does not necessarily mean a large expenditure. The fear that remodeling will disrupt business routine frequently holds an owner from making needed changes. The architect must show how remodeling can be planned and executed with minimum disturbance.

Principles of Remodeling

The principles governing the extent and nature of restaurant remodeling are identical with those governing a new installation. The criterion of a successful restaurant will always be *good* food, offered at *proper* prices in *suitable* surroundings—all three factors gauged to meet the real requirements of the desired patronage. Too high a level can be as disastrous as one too low. Obviously, the first two principles are of primary importance, since, no matter how inviting the surroundings, patrons will not accept inferior food or too high prices. Given the proper scale in these items, in face of competition, the patrons' comfort will swing the balance.

The architect's work can materially affect food prices. Reduction of overhead costs can be accomplished by eliminating waste space, and by increasing accommodations through proper seating.

Operating costs can be cut by proper food handling studies, and by the adoption of improvements in equipment. Maintenance costs can be cut by proper selection and use of materials. The service the architect can and should render in solving these problems is sometimes lost sight of in the effort to attain the maximum drawing power through eye and comfort appeal.

In the application of these principles a renovation differs from a new building. In the latter case the many elements are all within the architect's control and conception, and subject to reciprocal rearrangement, but in remodeling there is no such flexibility and everything must be adjusted to the fixed conditions. It is well, however, to study from all angles every condition presumed to be fixed, as frequently troublesome conditions have been tolerated for years on the mistaken assumption that they were insurmountable.

Remodeling Suggestions

In advising the restaurant owner regarding possible remodeling, the architect should guard against too high an aim, particularly in medium- or low-priced restaurants. The owner requires more than ever a wise expenditure of his money. An over-expensive or unduly luxurious appearance has frequently kept some desired patronage away. Discuss fully the pros and cons of every debatable point with the owner, and understand fully his aims before making recommendations. In designing a new building, available unit cost data have simplified the making of preliminary estimates, and reasonable accuracy is commonly expected. The inherent difficulty in similarly estimating remodeling costs should not be an obstacle toward making a sound preliminary estimate. The importance of this step cannot be over-emphasized, and the smaller the job, the more vital it becomes, as the small owner's resources are usually limited. Contingencies should not be overlooked, and allowances made. The time consumed in this step will always be compensated by the avoidance of later changes.

Restaurant features susceptible to remodeling are too numerous to list, but a few major points of attack may be mentioned. First, the main function of the exterior is drawing power by eye appeal. In remodeling a building or space previously used for different occupancy, the exterior treatment holds probably the greatest opportunity for visible change, and probably the greatest difficulty, if the cost appropriation is limited. Certainly it is the part of the restaurant seen by most people. A change of the exterior, if properly handled, is a wise investment. Primarily the façade must tell the prospective patron the restaurant's story. Except for the more exclusive restaurants, a show window is essential, to permit the passer-by to glance in and quickly determine the type of service offered. If, for example, counter service and table service are provided, both should be visible from the street. The entrances should be commodious; vestibules are preferred. For certain types, particularly where space is in the basement, show cases are desirable. Signs and illumination should be carefully studied as to location and design, since they can destroy an otherwise effective exterior.

In the interior the eye appeal rests with the decorative treatment and furnishings. There is scarcely an antiquated interior that is not susceptible to modernization within economic limits. But the proper appeal depends on the analysis of the class of patrons and an understanding of preferences. In selecting materials, consider the amount and quality of the maintenance resources that will be available.

Of the comfort factors the item of lighting is probably the one most uniformly desired in all types of restaurants. Ventilation and air conditioning are open in degree to a great variety depending on the class of the restaurant, but even the cheapest should insure freedom from odors. Freedom from noise and unobtrusiveness of service have the largest variation in the demands of the various types, but great reduction in noise can be accomplished at small expense in even the cheapest types. In the public areas the greatest source of increased revenue lies in the seating arrangement and food dispensing. Frequently combinations of two types of service will attract the maximum patronage. Often removal of building obstructions or rearrangement of space will eliminate wastage and increase seating.

Patrons' toilets in old buildings are usually in need of radical renovation.

In the work areas wastes of material, labor and time are points to attack. Rearrangement of work

areas in old restaurants has often eliminated inefficiency. The mechanical work and equipment are fertile fields for economical improvements.

Building Surveys

In remodeling work a proper survey to assemble accurate and comprehensive data regarding the building is essential, if economy of cost and time is to be effected. In other words, the equivalent of a set of working drawings and specifications of the work to be altered must be created before remodeling drawings can be started. The survey represents a considerable part of the architect's expense and must be made efficiently if the job is to be successful. It is inopportune to treat fully of the lessons learned from experiences in making surveys, but a few recommendations may not be amiss:

(1) Maintain a manual or checking list to record conclusions from past experience for the future guidance of less experienced men.

(2) Investigate every possible source to obtain plans and specifications of the original building and subsequent alterations. Where data must be copied, consider photostating whenever job is large. Such data must not be used without full verification at the building.

(3) Always make an advance preliminary survey. Skill in observation will enable the surveyor to register major features in minimum time.

(4) The surveyor must consider carefully the program and studies developed from the preliminary survey, and determine the scope of the final survey and the amount of detailed information required in each part of the building. No variation in degree of accuracy should be contemplated. An efficient survey should present all the necessary data, and as little else as possible. When in doubt as to the need for certain data, record the facts, as it is cheaper to do so than to make a return trip.

(5) After analyzing the program the surveyor can decide what assistance he needs. One assistant is always essential for economy; on large surveys two or three may be advisable. Before starting out, explain clearly to assistants the methods to be followed throughout, and avoid the need of subsequent instructions and the possibility of misunderstandings.

(6) Have a checking list of all paraphernalia used on surveys, such as duplicate tapes and rules, plumb bob, flashlights, extension cords, hammer, chisel and awl, cross-section paper, etc. Check over this list before starting, and take along everything the circumstances warrant.

(7) When the survey extends over several days, it should be interrupted at intervals to plot the data to date in the office, or at the building when conditions permit. This will check on mistakes and avoid later return visits.

(8) Adopt a uniform method of recording data and dimensions which should be understood throughout the office. Record data clearly so as to be usable by any one. A series of contiguous measurements should be made from a single point with a continuous tape in order to avoid cumulative errors.

(9) Supplement the survey with ample photographs of both interior and exterior.

(10) Survey according to a logical approach planned in advance. Finish each room, floor, etc., before starting the next.

(11) Whenever in slightest doubt verify angles

Underwood and Underwood

Rothschild

F. P. PLATT AND BROTHER, ARCHITECTS

At the time the Hotel Lorraine, New York City, was remodeled into an office building, the old dining room, shown above, seemed easily adaptable to restaurant occupancy. Preliminary investigation showed not only the salvage value to be nil, but that floors, walls, and ceilings would have to be stripped to the bare structure, that the plumbing, heating, and electric systems were inadequate and would have to be replaced entirely, and that hotel piping concealed behind furred ceilings and in service rooms would have to be removed and rerouted at considerable expense, before the restaurant shown here could become a reality.

and straightness of walls by triangulating from two points or by offset measurements. Watch out for change in exterior wall thickness, hidden by abutting partitions or at floor levels. These can frequently be noted at stair wells.

(12) When cutting is required, be sure the building owner's permission has been obtained. If using outside labor, fix definitely the location of cutting. Always expose conditions rather than guess at important items.

(13) Interview the superintendent of the building being surveyed, and adjacent buildings if necessary, for useful information, particularly as to the performance of the mechanical systems.

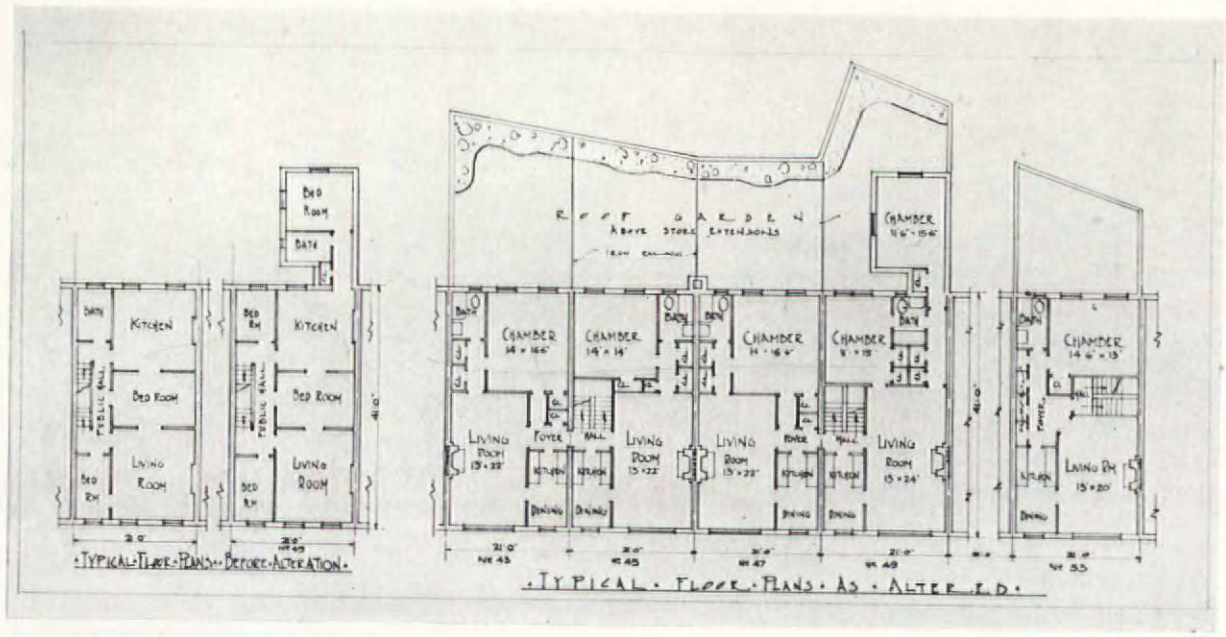
(14) Schedule sheets, with ample space for comments, are an aid in recording materials and finish.

(15) Investigate thoroughly all evidences of depreciation. Check all windows, doors, and other moving parts or points of weather exposure. Watch top-floor ceiling for evidence of roof leaks.

(16) Check for obsolescence in such items as the mechanical installations, hardware, etc.

(17) Maintain a checking list, subdivided to record all the items usually met in cellars, ground floors, typical floors, top floors, penthouses, roof, exteriors, typical rooms, special rooms. Have a copy of the checking list at the building and use it before you leave each roof or floor.

(18) Finally remember that surveying a building is not always a clean job. The office force will appreciate the thoughtfulness of an advance notice of a job of surveying which will permit them to have old clothes or overalls at hand.



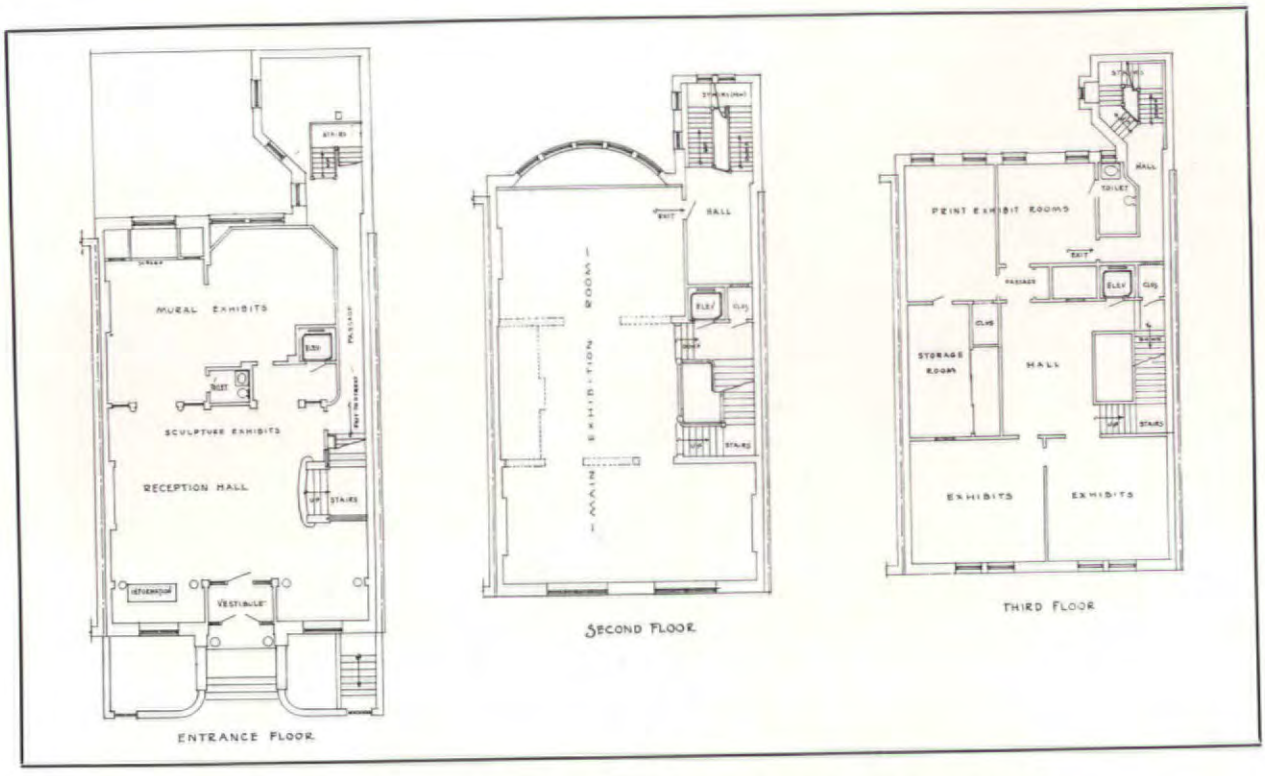
Rothschild

A REMODELED APARTMENT

GREENWICH AVENUE, NEW YORK CITY
MANOUG EXERJIAN, ARCHITECT

COST OF ALTERATION:

Shoring, bridging	$ 1,100
Rubbish removal and demolishing	2,900
Masonry	7,500
Ironwork	4,200
Carpentry	10,750
Lathing and plastering	4,350
Tile work	3,450
Electrical work, fixtures and 'phones	2,870
Plumbing and gas fitting	7,850
Heating	3,850
Roofing and sheet metal work	1,450
Kitchen equipment	5,850
Miscellaneous items	1,750
	$57,870



CHANGING A RESIDENCE INTO AN ART MUSEUM

By WILLIAM RICE PEARSALL, Consulting Architect

This large residence at 11 West 53rd Street, New York City, has been remodeled to form a permanent home for the Museum of Modern Art. The building has a frontage of 43 feet and a depth of 65 feet. It was originally well planned and is of fire-resistant construction. A building of this type can be adapted easily to exhibition purposes. As large private residences can be purchased in many cities at a fraction of their original cost, there are probably many other instances where similar changes could be made advantageously.

The spaciousness of the first-floor apartments, entered through large bronze doors, is well suited to the exhibits of sculpture placed in the reception hall. Murals are on the wide wall surfaces extending into the large rear room which was formerly used as a dining room. The mantels have been removed and a screen added in front of the rear-yard windows to give additional wall space. The screen is arranged with openings at the top and bottom for ventilation and with grilles for heat transmission from radiators concealed in the rear.

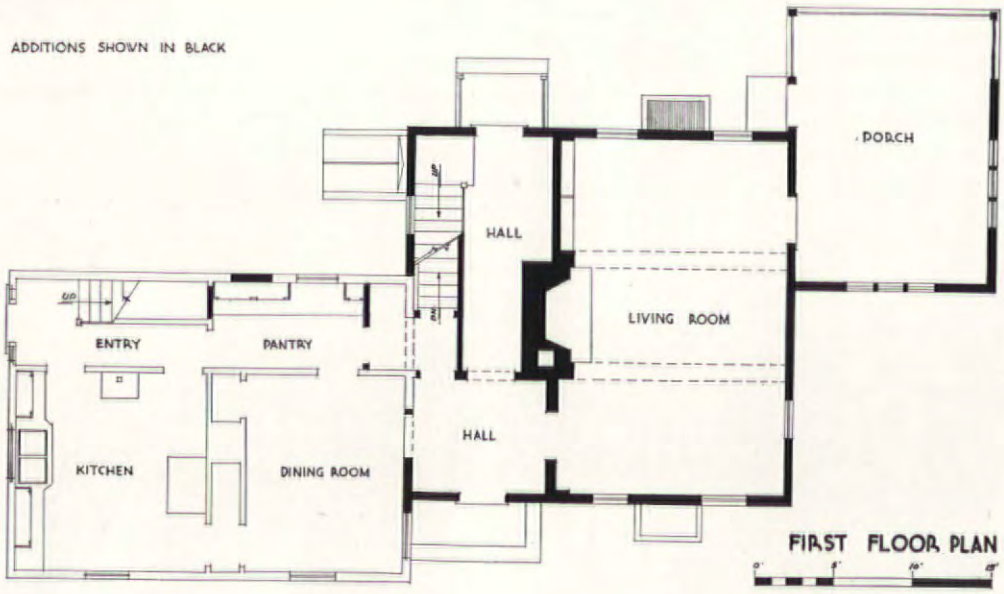
An automatic elevator is conveniently located in a lobby adjacent to the reception hall and gives access to the main stair landings on each of the floors above. The information desk is located in an alcove on the first floor. The second story has been made into one large room by removing the partitions and an organ which the former owner had installed. The original decoration on the ceilings has been either eliminated or painted to form a background for the exhibits. This large room is particularly suited to special exhibits and group meetings. The mantels here have also been removed and a screen constructed across the bay window similar to the one on the first floor.

On the third and fourth stories very few changes have been made. Where closet space was not needed, the door openings were closed and concealed doors were installed to give access to former bathroom spaces which are now used for storage. The removal of all mantels changed considerably the character of the rooms which now provide ample space for the more intimate exhibits.

The fifth-story arrangement was left practically unchanged, the rooms being utilized for museum management offices. An information and telephone desk is located in the angle of the hall adjoining the elevator. The penthouse on the floor above, which was formerly a sun room, provides a quiet place for board meetings or for study and reading. It is conveniently reached by a wide staircase leading directly from the office floor hall. Toilets have been left on the various floors for the use of the public and employees.

The original wide, open-well monumental stairway has been retained to provide convenient access to exhibits on the various floors and to maintain the airy spaciousness of the exhibit rooms. This was made possible by building a new rear stairway of fireproof construction with exit doors on each floor and a separate passage leading under the reception hall to a street entrance, which provides a safe means of exit as required by law.

Haskell



REMODELED HOUSE OF H. RUSSELL CORT
FRAMINGHAM CENTER, MASSACHUSETTS
GEORGE F. MARLOWE, ARCHITECT

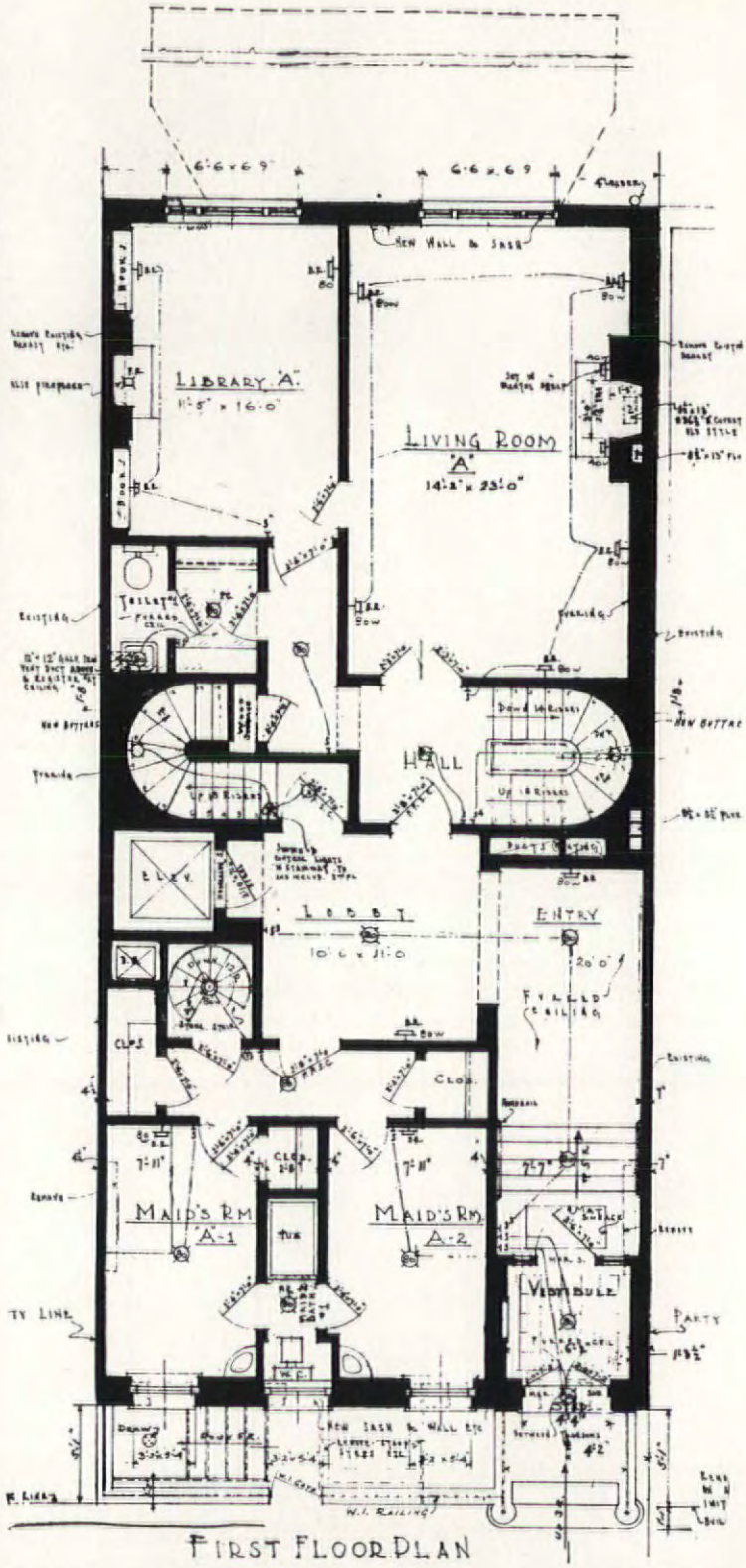
FIRST FLOOR PLAN

SECOND FLOOR PLAN

REMODELED HOUSE OF F. E. BARRETT
FRAMINGHAM CENTER, MASSACHUSETTS
GEORGE F. MARLOWE, ARCHITECT

View before alteration.

View after alteration.



The upper three floors are the owner's apartment suite. The lower three floors are rented, the revenue from which is sufficient to defray all carrying charges.

REMODELED HOUSE IN NEW YORK CITY
L. BANCEL LA FARGE, ARCHITECT—RODGERS AND POOR, ASSOCIATED ARCHITECTS

A TENEMENT MODERNIZED AS A 2-FAMILY CITY HOUSE

By L. BANCEL LA FARGE, Architect

RODGERS AND POOR, Associated Architects

The almost complete reconstruction of an old tenement house at 216 East 70th Street, New York City, illustrates a type of remodeling work which has been found satisfactory both in New York and in other large cities. This building, originally designed for eight families, has been renovated to serve as a 2-family city residence. The property was obtained by the owner of a country estate who desired a city dwelling for the winter months, but disliked the idea of having either a complete house of a suite in an apartment hotel. After considerable search, this site was acquired in a somewhat run down but steadily improving neighborhood.

Façade

Specifications called for chipping off all trim, ignoring the joints on the old brownstone front and applying a new facing of imitation brownstone stucco. Brownstone stucco was selected because it required no finish coat of paint and the natural color, not showing the city dirt and grime, would involve no maintenance costs or repainting.

All vertical joints were omitted in the new stucco surface. Horizontal joints were specified in order to permit, over small areas, the replacing of defective stucco if such became necessary due to lack of watertightness or other deficiencies in the original structure. A saving in cost was effected by replacing the conventional window trim with a ⅜"countersinkage, 3" wide, around each window opening. The sills are also of stucco, projecting ¾". Another saving was found by substituting for the cornice a 14" band with ornamental stars cast in brownstone stucco.

The building was then altered sufficiently to obtain private residential quarters for the owner as well as a second suite of rooms intended for rental and as a mainstay for the carrying charges of the investment. The upper three floors are reserved for the owner and the lower three floors for the lessee. The rental is relatively low but is sufficient to carry taxes and maintenance charges and to yield a slight profit.

Structural Changes

The original structure, erected in the 70's, was reconditioned almost entirely. The dilapidated state of the interior necessitated releveling the floor beams, removing almost all partitions and chimney stacks, and refacing the masonry on the street façade. A 4-story projection in the rear of the building was eliminated entirely in order to obtain increased light and airiness for the remaining rooms. Despite the number of changes a saving of 15-20 per cent. was effected by retaining the structural shell rather than building anew.

Interior Changes

On the first floor is a lobby for the use of both tenant and owner. One stair well runs the full height of the building and serves the owner; the other stair well serves the tenant of the lower three floors, thus giving each apartment complete privacy. A self-operating elevator is used by both the owner and the tenant.

The living quarters of the lower apartment are on the first floor. On the ground floor are the kitchen and service facilities and a dining room opening on a garden terrace in the rear of the building. Bedrooms are on the second floor. In the upper apartment, reserved for the owner, the prime planning consideration was to have sunlight in the living quarters. Consequently, bedrooms are on the third floor, entertainment and living quarters on the fourth floor, and the sun room and roof terraces on the fifth floor.

All rooms were specified for plain trim and white gypsum plaster finish. The walls are painted or papered. The floors are of strip oak except in the basement where asphalt tile is used to overcome dampness. The bathrooms are finished in gypsum plaster with a dado of Keene's cement. A 1" x ¼" fillet of Keene's cement separates the dado from the white plaster above. Floors are surfaced with linoleum. In the kitchens the plaster walls are finished with enamel paint.

The building originally had four chimney stacks. These were ripped out and only one rebuilt in addition to a new boiler chimney. A single vertical stack now serves a wood-burning fireplace in the basement dining room and others in the first-floor living room, the second- and third-floor master bedrooms and the fourth-floor living room. The flue from the fireplace in the sun room on the fifth floor is contained in the boiler stack.

Throughout these extensive interior changes, one of the main purposes was the reduction of maintenance cost. Changes in room arrangement and the selection of materials were largely determined by this objective. Although each apartment provides space for servants, the building itself requires only the part-time services of one charman for cleaning the front sidewalks, the entrance lobby and the basement service rooms.

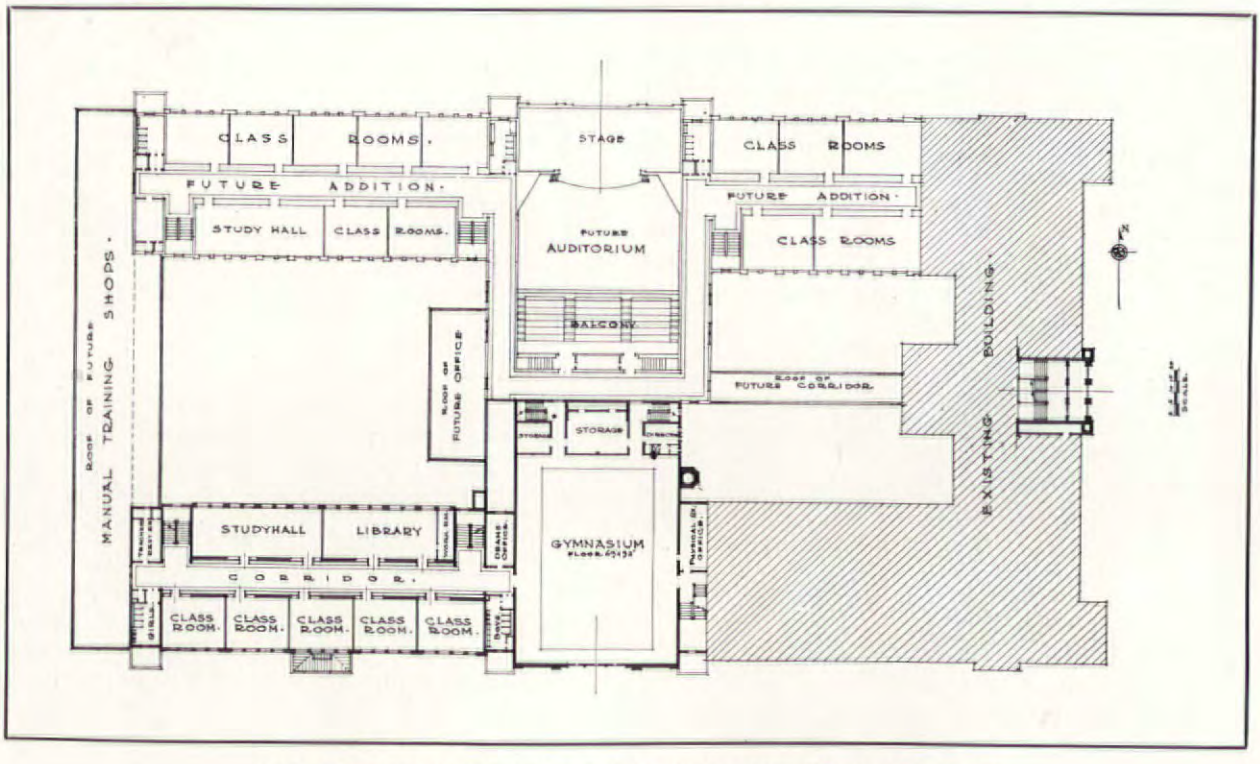
REMODELED SCHOOL

ALBERT LEA, MINN., HIGH SCHOOL
HAMILTON, FELLOWS AND NEDVED,
ARCHITECTS
LEROY GAARDER, ASSOCIATED

The new buildings were designed to provide for 1600 pupils. They are of brick and concrete construction. The entire ceiling of the gymnasium is treated with an acoustical material.

The new senior high school unit and the new stair hall at the west end of the old building cost 24.5 cents per cubic foot.

The gymnasium unit cost 29.8 cents per cubic foot, which includes the cost of the new boiler plant contained in this gymnasium wing and the new 120-foot brick stack. The heating plant in the old building was abandoned and the new heating plant supplies both the old and the new buildings.



MAIN FLOOR PLAN SHOWING ALTERATIONS AND FUTURE ADDITIONS

Fuller

View Before Reconstruction

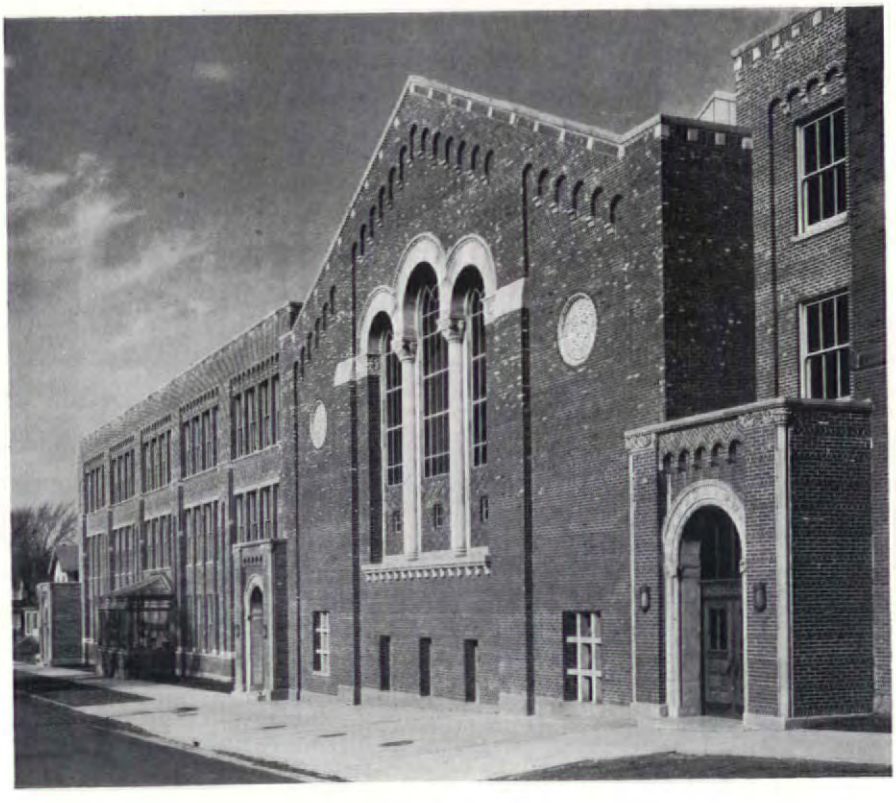
View After Alteration

The cost of the alterations to the old building was $37,652. This includes changes in plumbing, and in heating and wiring to connect to the new heating plant. The old building was erected in 1910, enveloping a still older structure. The roof covering was wood shingles, which were replaced with slate, with the necessary structural changes to carry this material. In the architects' opinion it would have cost approximately $250.000 to replace this old building.

ALBERT LEA, MINN., HIGH SCHOOL

HAMILTON, FELLOWS AND NEDVED, ARCHITECTS

LEROY GAARDER, ASSOCIATED



A REMODELED HOUSE IN DUTCHESS COUNTY, NEW YORK

By G. FREDERIC PELHAM, Architect

The owner's original intention was to build a small summer cottage on a plot of one hundred and fifty acres on a mountain top and extending for some distance down the southern slope. The high cost of constructing necessary roads made this impossible. Then the tottering structure on the side hill was considered for alteration.

Here is the problem as it was finally submitted to the architect: To provide a comfortable, modern, small country house, consisting of living room, dining space, kitchen, four bedrooms, two baths, and a two-car garage, so arranged as to accommodate a middle-aged couple and two or three week-end guests. The total cost was not to exceed approximately $5,000, this sum to include water and electric supply, disposal works, drives, walks, and the like. This small sum made it essential that as much of the old building be used as possible, with a minimum of labor and new materials.

Available Materials

A dilapidated, decaying, box-like structure, with sagging floor beams, rotting shingles, crumbling masonry, and devoid of piping or wiring. An old well and a small brooklet in the gulley in the rear. A collapsed barn across the road and several old stone walls.

Procedure

A rough sketch and outline specification was submitted to a local contractor. After a survey of the premises this contractor turned in an estimate of $10,000, not including the two-car garage, the grading, walks, or drives. His explanation for this figure was that only the main framework could be utilized, and even this would have to be jacked into position and reinforced. The new second-story windows, and the installation of the plumbing pipes, would necessitate considerable cutting, and the studding and wide plank flooring, when removed to allow for the leveling of the floor beams, could not be utilized again. They were warped and sprung and, as far as could be determined, badly decayed. To all appearances he seemed right.

The architect insisted that some stripping be done and the hidden facts arrived at before giving up hope. An old carpenter, armed with a handjack, an ax and a crowbar, was hired. After a few hours' work things looked decidedly brighter. By applying the jack to the sagging main girder the floors were soon raised to their original level. The old doors now opened and closed for the first time in years. Under the decayed shingles a layer of insulating paper and perfectly preserved sheathing was encountered. The floor beams and roof rafters were for the most part still serviceable. The old lath and plaster, brought down, disclosed rows of sound studding, set plumb and true enough to receive new metal lath immediately. An eighth of an inch scraped off the wide plank flooring brought to light beautifully grained and colored wood. The door and window trim, once rid of the many layers of cracking paint, would suffice with but little renovating.

The well, opened up and cleaned of its rubbish, proved to be deep and wide, with a fine depth of excellent drinking water, and a sizable drainage overflow. An auxiliary concrete catch basin, and a small electric pump would solve the water problem if electricity could be supplied. Investigation disclosed that the electric company would string the wires provided the owner would erect proper poles.

The Solution

It was decided to proceed step by step. Twice a week the architect inspected the operation and laid out the work for the old carpenter and his assistants for the next few days. No rigid rules or laws were insisted on.

In six weeks the entire house, walls and roof had been reshingled. New stock frames and sash had been installed and two new brick porches added. New, inexpensive stock columns had been erected, and the entire interior relathed and plastered. The plumbing had been completed, the baths finished, the masonry pointed up, and the house wired for electricity. In the valley a blacksmith was hammering out hardware to match the old thumb latches and H-L hinges, and the hundred-year-old beams from the barn across the road had been used on the living-room ceiling.

A low picket farm fence was erected across the front of the property and down to the brook in the back. A stone dam and a little excavating

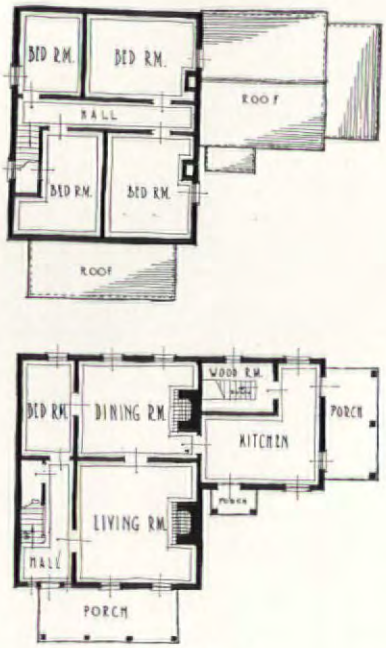
Original House

Construction Progress

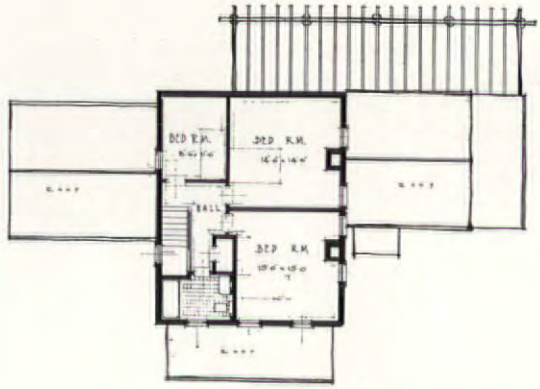
Completed House After Remodeling

A REMODELED HOUSE IN DUTCHESS COUNTY, NEW YORK

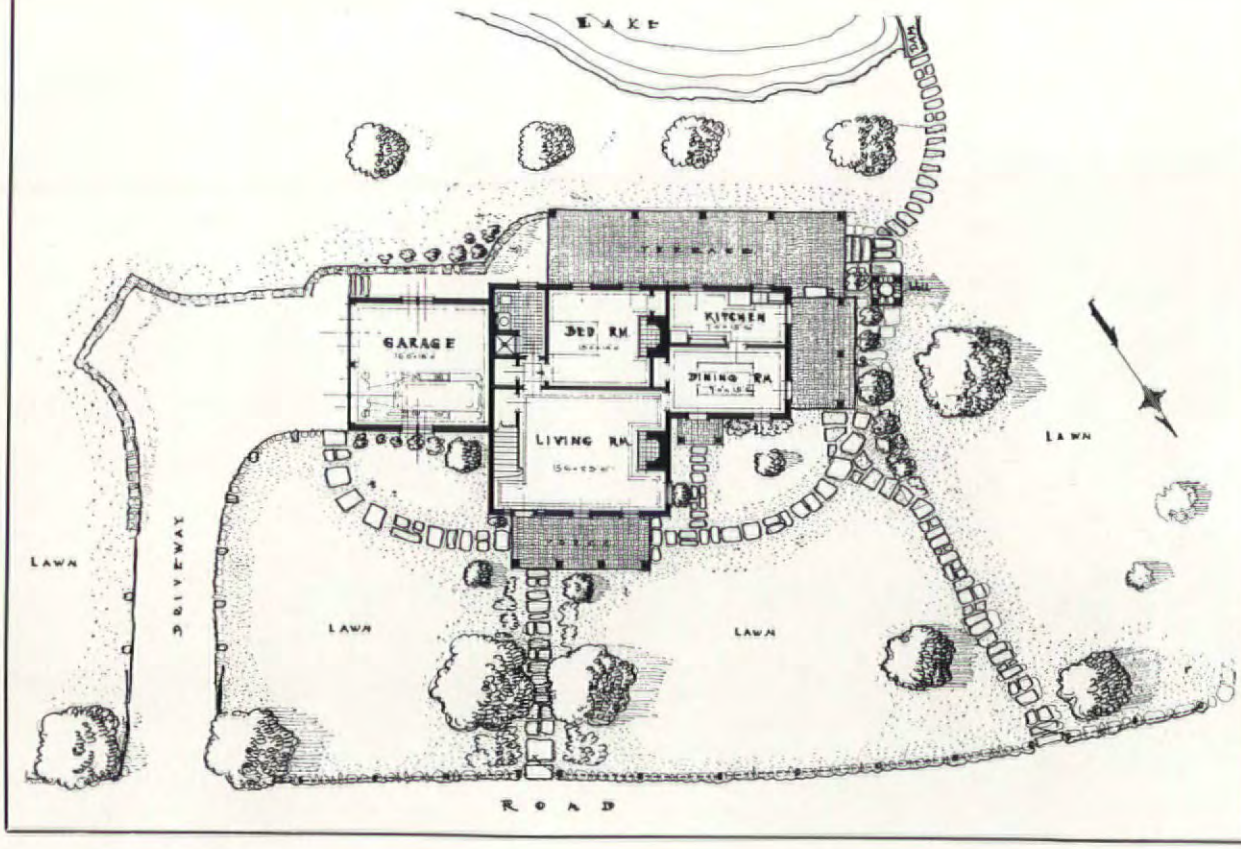
G. FREDERIC PELHAM, ARCHITECT



Floor Plans
Before Remodeling



Second Floor Plan
After Remodeling



A REMODELED HOUSE IN DUTCHESS COUNTY, NEW YORK
G. FREDERIC PELHAM, ARCHITECT

created a charming lake now spotted with water lilies and well stocked with trout. In the rear, overlooking the lake, a rafter-covered brick terrace was provided. The stones from the old walls went into making a rustic well inclosure, and a retaining wall to support the driveway. Ten weeks and the transformation was complete.

The Result

A seven-room house, with two porches, an open brick terrace, and a two-car garage. The house equipped with modern fixtures, including an electric stove and refrigerator, brass plumbing, standing shower, and automatic water heater.

The Cost

Carpentry and materials	$31.00
Masonry and materials	500
Plumbing and materials	800
Painting and decorating	550
Electric wiring and fixtures	300
Total cost	$5,250

SHOW WINDOWS IN ALTERATION WORK

By JOHN F. COMAN, Architect

As the architectural design largely controls the convenience and consequent cost of handling the merchandise, as well as the important subject of proper display, the architect must have complete knowledge of the sales problem and the psychology of the prospective buyer. For example, it is very important at the present time to reduce, as far as possible, the amount of stock kept on hand since styles change rapidly and all firms are doing everything possible to reduce carrying charges.

A department store requires large, fairly deep windows, ranging from 10 to 12 feet in width and from 7 to 8 feet in height; the depth generally varies from 6 to 8 feet, the greater depth being necessary for those in which furniture sets will be displayed. Smaller windows should also be included for individual display or for showing small wares.

In both large and small windows the lighting and backgrounds are of great importance. Large windows should have a top bank of reflectors along the line immediately behind the plate glass, and may have footlights immediately below. In no case should the lights of the window be visible to the spectator and they should be so arranged that a uniform foot candle unit plays over the entire area inside the window but does not leak out through the glass. Several firms have made reflectors with curves especially designed to accomplish this purpose. The architect may now make use of a new type lined with chromium plate, or those in which chromium strips supplant the old corrugated mirror strips. These have been found to be as efficient and much more durable than glass.

The modern tendency is to use the larger windows for ensemble pictures in which the products for sale in several departments are displayed together in their natural arrangement. In studying the problem of alteration as applied to old store fronts, the architect should bear this in mind and plot roughly the various possible arrangements of merchandise, indicating the secondary lighting, spot lights, etc., to emphasize the various points of interest in somewhat the same manner as is customary for stage lighting.

The background should also be carefully studied and developed in such a design and tone as to give the greatest value to the merchandise, not to the background itself.

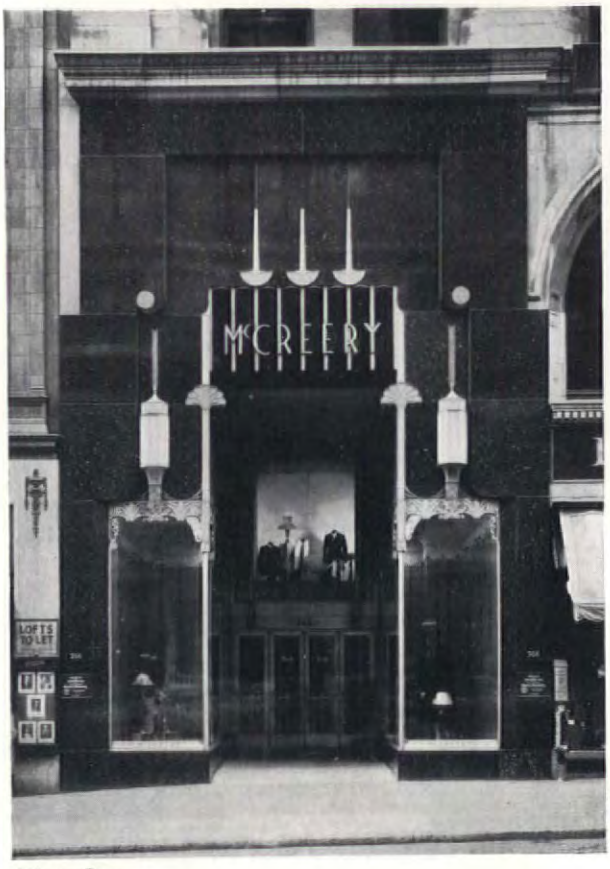
In the past, there has been a tendency to overcrowd both the show windows and show cases. One of the most important features of alteration work today is the elimination of this condition. Prospective buyers become so confused in looking over a large variety of merchandise that it is impossible for them to make a definite decision and they are only too likely to postpone their purchases until some future time. It is a good plan to show only the newer and more interesting models. Five or six pairs of shoes, for example, may be much more effectively displayed than two or three times that number and the individual articles can be shown much more attractively than when exposed in large numbers. It is the custom now to exhibit objects for evening wear with a constant night light effect. Spotlights from an elevated platform may also be used to advantage in featuring dresses and coats in order to bring out a special model from the rest of the goods displayed.

A CHECK-LIST OF SUGGESTED HOTEL MODERNIZATION PROCEDURE

By A. E. PRICE, Manager, Alteration Department, F. P. Platt and Brother, Architects

HOTEL DIVISION	ITEM	ITEM
Exterior	Modify out-of-date architectural features New entrance Resurface façade or clean or sand-blast façades	Install modern and attractive store fronts New marquee New awnings of better design and color
Entrance Vestibule	Change in size or shape New doors New floor	Redecorate and modernize walls and ceiling Modern lighting fixtures
Public Lobby and Corridors to Rentable Areas	New floor of modern material, design and color, or refinish existing or new floor covering Redecorate and modernize walls and ceiling	Modern type of illumination New furnishings and hangings
Office	Revise plan New fittings and equipment	Refinish floor, walls and ceiling
Elevator Lobby	Elevators: Increase number Relocate New cabs, control, motors, signal New doors	New floor of modern material, design and color or refinish existing or new floor covering, redecorate and modernize walls and ceiling Modern type of illumination
Lounge, Reception Room, Ladies' Room, Writing Room	New decorative treatment of floors, walls and ceilings	New furnishings and hangings Modern lighting fixtures
Main Dining Room, Coffee Shop, Banquet Room, Etc.	New floor of modern material, design and color, or refinish existing, or new floor covering Redecorate and modernize walls and ceiling Install modern system of illumination	Install modern ventilation and heating system New furnishings and hangings Replace obsolete furniture and equipment
Shops	Refinish floors, walls and ceilings	Modern lighting fixtures
Public Toilets	Install new modern fixtures New toilet partitions Modern, attractive sanitary floor and wall	Redecorate ceiling Install modern ventilation system
Guest Rooms, Guest Corridors and Elevator Landings	Refinish floors or new floor covering Redecorate walls and ceiling, wall paper, paint, etc., in lighter and gayer tones New-type entrance doors; mirror doors Modern hardware Install more base plugs and outlets Rearrange lighting for more convenience	Conceal radiators or change for modern type Modern furnishings Change heavy dark draperies to lighter, modern colors Provision for radio reception Replace screens and shades
Bathrooms	Increase number by plan rearrangement Install modern fixtures and accessories Replace floor and walls with modern tile in colors	Install shower compartments in addition to tubs Install built-in bathroom scales Provide proper heating for cold weather
Kitchens and Service	Re-plan divisions for added efficiency Refinish existing floors or install new or more modern materials Repaint walls and ceilings Replace obsolete equipment	Install modern conveying devices Rearrange lighting Install modern ventilation system Add shelving, storerooms, etc.
General	Added space by (1) added stories; (2) extensions Redivision of street frontage and floor area allotted to stores, etc. Possible increase of rentable store space by a careful study of levels, arcades, etc. Heating: New heating plant, new control, stoker Plumbing: New and additional lines, stacks, etc.—brass pipe Sprinkler system Circulating ice water Lighting: Increase capacity of wiring Electric roof sign Install laundry chute	Install mail chutes Soundproofing Replace obsolete refrigeration plant Replace obsolete laundry machinery Repair roofing, flashings, etc. Replace obsolete barber- and beauty-shop equipment New window, door and other trim Replace obsolete valet-shop equipment Install weatherstripping Provide garage facilities Replace windows with modern type or repair existing

Reprinted from HOTEL MANAGEMENT



Wurts Bros.

Shop Entrance Before and After Alteration

McCREERY AND COMPANY STORE, NEW YORK CITY

STARRETT AND VAN VLECK, ARCHITECTS

MODERNIZATION OF STORES

By F. GAERTNER; Starrett and Van Vleck, Architects

In approaching the problem of store modernization the architect may well emphasize those matters which will best awaken the merchant to a realization of what can be done to increase his business. Briefly, such fall under the following headings: transit facilities, air conditioning, sales handling, delivery handling, decoration, customers' convenience, new fixtures, better flooring and the modernization of show windows.

There are, of course, limitations as to how far one may go with all of these improvements. Not every old store can be adapted to thorough modernization without an almost complete reconstruction. In many instances stores have developed with the growth of the city and forced the merchant to take over one building after another regardless of the purposes for which they were originally designed. The result is that in many cases the buildings present serious fire hazards and are often of insufficient structural strength to sustain the necessary live loads.

In the past, changes in style trends, methods of selling, merchandising and the like were to a great extent responsible for the changes made within stores. The same thing is, of course, true today except that the developments of the last twenty years have placed the average store on a more scientific basis so that other factors have come into the picture.

Business Must Go On During Remodeling

Most stores of an established character in a settled community cannot afford to give up the space they are now occupying in order to rebuild their premises. This would mean moving to another site outside the mercantile section, away from transportation facilities and from the trend of traffic. The result is that unless the store spaces are unusually large, the building must be modernized while the business goes on.

In the case of Abraham and Straus, each floor area was so large that it was possible, by condensing the departments in the building left standing, to take care of those that had to be removed from that portion of the structure which was to be rebuilt. Such procedure entails a program of more

Interior of Old Entrance

Worsinger

Interior of New Entrance

intensive selling in order that the same volume of business may be done in the reduced area during construction as would normally take place over the entire area. In most cases it must be expected that a building operation would involve a slight loss of business but proper planning can reduce this to a minimum.

Structural Changes Often Necessary

The alteration of a building for adaptation to store uses often involves major structural changes. This is true not only in the case of former office buildings but also where the structure must be adapted to a heavier type of merchandise. An illustration is the Frederick Loeser and Company's building in Brooklyn. Although the premises had been used for many years as a department store, analysis of the safe carrying capacity of the floors revealed that they were capable of supporting only 25 lbs. per sq. ft. In view of the fact that this firm, as well as the average department store, handles mechanical refrigerators, rugs, linoleums, pianos and other heavy stock, and that the various departments are constantly being shifted, it was considered necessary to redesign the floors for a minimum of 100 lb. per sq. ft. In this particular instance, the store was of wood-frame construction with cast-iron columns. The latter were reinforced with additional channel members, and superimposed steel beams were placed beneath the floor joists.

This operation was handled one bay at a time and so arranged that the customers never realized that the building was being practically rebuilt. The new members were all incased with composition building board, making the columns octagonal in shape. The surfaces were decorated with a material similar to Craftex. The ceilings were

Worsinger

Old First-Floor Sales Space

Peyser and Patzig

Remodeled Interior of First Floor

In this building the floors were given additional reinforcing to meet variable loads. The work was done one bay at a time, so that customers never realized that the building was being practically rebuilt.

FREDERICK LOESER AND COMPANY STORE, BROOKLYN

STARRETT AND VAN VLECK, ARCHITECTS

furred down to the underside of the new floor beams, thereby concealing all sprinkler pipes and exposed electric wiring.

Traffic Increased by Elevators and Escalators

In many old buildings elevators have been installed without due consideration to the trend of traffic, with the result that some are overburdened while others lie practically idle. Often 65 to 70 per cent of the patrons would remain on the ground floor, about 10 per cent would go to the basement and the remaining 25 per cent to the upper floors. Realizing that there was no good reason why the upper floors should not be as fully occupied as the lower, serious study was devoted to the various methods for grouping elevators so as to pick up individuals from the ground floor and transport them to the stories above. In each specific instance where a study was made, the trend of traffic was increased. The most recent analysis of this problem shows that a combination of "up" and "down" escalators and elevators properly arranged can increase the traffic to the upper floors by over 100 per cent and the traffic to the basement by over 300 per cent.

In Macy's department store, New York City, the density of population has been followed for years. In 1913 the density on the first floor was 80 sq. ft. per person; in 1921, 40 sq. ft., and in 1929, almost 15 sq. ft. per person. In the basement the population in 1913 was in the neighborhood of 50 sq. ft. per person; in 1921, 30 sq. ft., and in 1929, 10 sq. ft., indicating that the potential patronage was available provided the facilities were adequate to take care of it. This naturally implies expansion in some direction.

If the means of expansion are not available, either laterally or in height, a rearrangement must be made within the present floor area to provide for this increased traffic. This demands an improvement of transportation facilities, coupled with a rearrangement of departments and fixtures in order to increase the aisle space. Supplementing these changes, methods must be devised for maintaining the morale of the employees, for creating better working conditions and for providing an atmosphere in which the customer does not feel oppressed. These latter considerations have resulted in the installation of air-conditioning systems which require considerable remodeling to provide for the various raceways for ducts to carry the supply and discharge of air.

Service Facilities

As the success of a retail business depends very largely upon the service rendered to the customer, it naturally follows that the delivery of the merchandise should be given important consideration. This means the installation of gravity chutes and belt conveyors for the handling of merchandise. As stores today are carrying a smaller inventory than in previous years and depending upon a greater turnover, organization of the stock room is essential. Incoming merchandise often requires the installation of freight elevators and mechanical spiral conveyors to conserve space.

Worsinger

Since business must go on during remodeling, it is usually necessary, as in the case of this building, to rebuild in parts, condensing the various departments in the building left standing to take care of those which must be removed.

ABRAHAM AND STRAUS STORE, BROOKLYN
STARRETT AND VAN VLECK, ARCHITECTS

Another very important matter is provision for customers' conveniences, retiring rooms and dining facilities. Proper lighting conditions are also most essential; likewise the surfacing of floors so as to make them comfortable for walking.

Exterior Changes

Expenditures should be primarily devoted to those features which will have the greatest appeal to the customer. This principle often implies alterations of the exterior which, of course, influences the prospective customer's first impression. Show windows must often be redesigned, new backgrounds installed, new entrances constructed and other changes made to attract the buying public.

It is not necessary that exterior changes should extend the full height of the building, since the customer is only interested in what is normally seen when approaching the entrance. Therefore it is often suggested that alterations be carried only to the second-floor level. Above this point it is principally a question of good housekeeping. The remaining portions of the exterior may often be

improved sufficiently by merely a coat of paint or a thorough washing.

Provision for Future Additions

It is always good practice when designing new store buildings to provide sufficient strength in the structural frame to carry additional floors. This has been proven desirable by the experience of the foremost architectural firm engaged in this work, for whenever stores have been altered or new buildings have been erected, an increase in the store business has followed, resulting in lack of space. Quite recently the firm of LaSalle and Koch in Toledo added three floors to a building 120′ x 240′ which was built in 1916. This addition was supplemented by a remodeling of practically the entire elevator installation.

Costs

The cost of alteration work naturally depends very largely on the character of the old building as well as the extent of the new construction. The Loeser store illustrates a comparatively large enterprise in which slightly over a million dollars was spent in modernizing the fronts and the entire first floor interior and redecorating all the upper stories. In this instance some ventilation work was performed, the electric wiring was completely revamped and a new set of escalators erected. No new elevators were added and the nature of the alterations was such that the decoration was all done on beaver board.

From the viewpoint of rental expense the remodeling of a store today is generally more economical than the construction of a new building, largely because the latter carries a greater item of interest, depreciation, taxes and other fixed expenses. It is doubtful if any store can successfully operate where rentals are over $1.50 per sq. ft. of floor area.

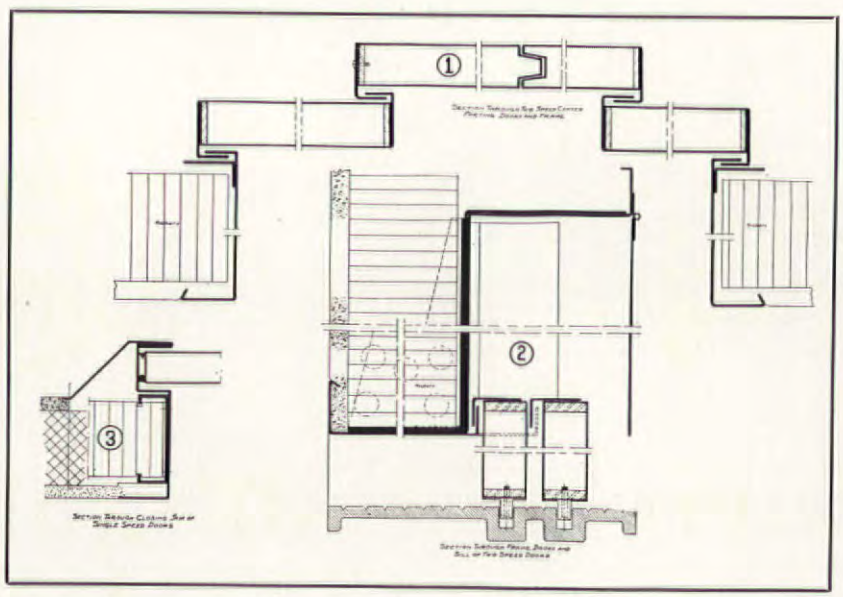
ELEVATOR DOORS FIRE TESTED

Underwriters' Laboratories are now testing, listing and labeling sliding hollow-metal elevator door assemblies of the one-, two- and three-speed types. Complete labeled assemblies for the most modern installations can now be had with the addition of a few minor changes from the ordinary to make them safe from the standpoint of fire protection.

The doors are given the standard fire test in which the temperature reaches 1,700° F. at the end of one hour. They are then immediately withdrawn from the furnace and subjected to a stream of water on the exposed or heated side. The pressure at the hose nozzle is 30 pounds and the distance to the sample is 20 feet. The Laboratories' label is evidence that the assembly has creditably passed this drastic test. Separate labels are placed on the door assembly, including the frame, on the hangers and on the closer, as these three items are often made by different manufacturers.

In the figure, (1) shows a two-speed center-parting door assembly with the angle interlocks between door sections, door sections and frame, and joint at center. The vertical section through the head frame, doors and sill is shown at (2), while (3) gives a characteristic groove between closing jamb of single-speed, two-speed and three-speed doors. The inter-locking angles prevent the doors from separating when exposed to fire.

The inclosing walls of elevator shafts should be constructed as specified by the Building Code recommended by the National Board of Fire Underwriters. Center parting, chain-operated doors are provided with a center lock either on hangers or closers which keep the door closed in case of a failure of the chain. Reference to the List of Inspected Fire Protection Appliances issued by Underwriters' Laboratories shows that under the various listed manufacturers of hollow-metal doors certain ones are authorized to apply labels to sliding hollow-metal doors; also under the heading of Door and Shutter Accessories will be found lists of those manufacturers authorized to apply labels to hangers and closers applicable to these types of doors.



Its amazing "*slip*"

brings more speed and economy to every flat finish job . . .

A QUICK painting job, of course, saves money. But there's a limit to the speed which a painter can attain. That limit lies largely in the paint itself. How easy is it to apply?

Painters cannot help working faster . . . better . . . when they use the new Barreled Sunlight Flat Wall Finish. It has an ease of flow that can only be defined as an amazing "slip."

This "slip" speeds up the paint job without "hurry". . . frees the painter's brushes from the hindering drag of ordinary flat paints. Result: More rooms finished in a day with distinct savings in time and labor—by far your greatest painting expenses.

Then, too, there's a great saving in paint. Impartial tests prove the new Barreled Sunlight Flat Wall Finish has a spreading power of from *16% to 50% greater than that of any other high-quality flat finish.* You buy from 16% to 50% less paint! . . .

Surfaces painted with the new Barreled Sunlight Flat Wall Finish are distinctly handsome. It dries smooth, flawless, absolutely free from brush marks and laps. Its faint sheen, visible on close inspection, means a dirt- and dust-resistant surface that's easy to wash.

You can effect material initial and maintenance savings for your clients by specifying this new flat wall finish for the interiors of your projects. Write for further details.

U. S. Gutta Percha Paint Company, 22E Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

Easy to Tint — for any color scheme

Made in white — the new Barreled Sunlight Flat Wall Finish is easily tinted any shade with pure oil colors. Quantities of 5 gallons or more tinted without extra charge at the factory.

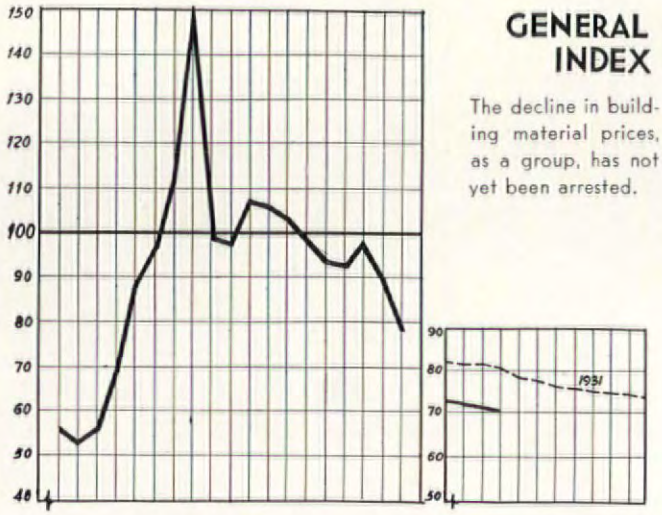
THE NEW Barreled Sunlight

REG. U. S. PAT. OFF.

FLAT WALL FINISH

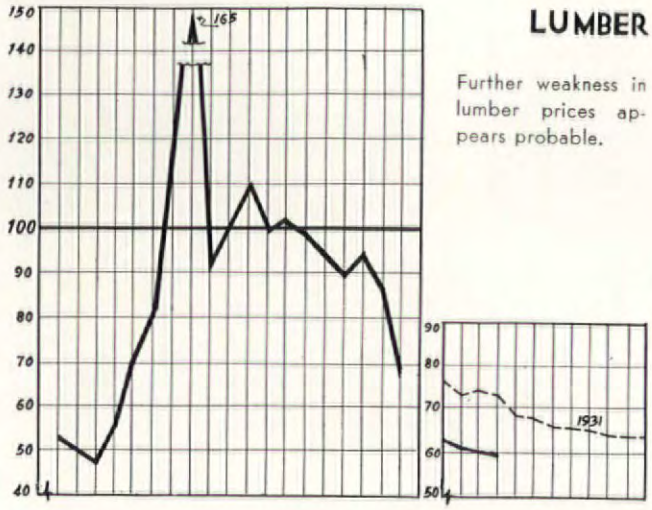
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average — 100



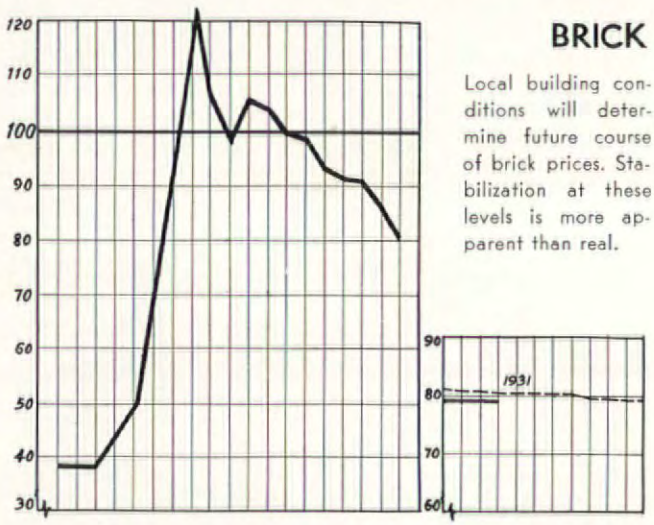
GENERAL INDEX

The decline in building material prices, as a group, has not yet been arrested.



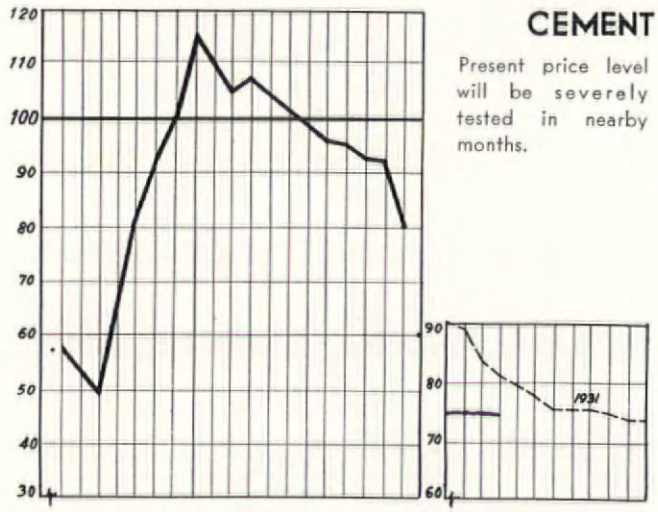
LUMBER

Further weakness in lumber prices appears probable.



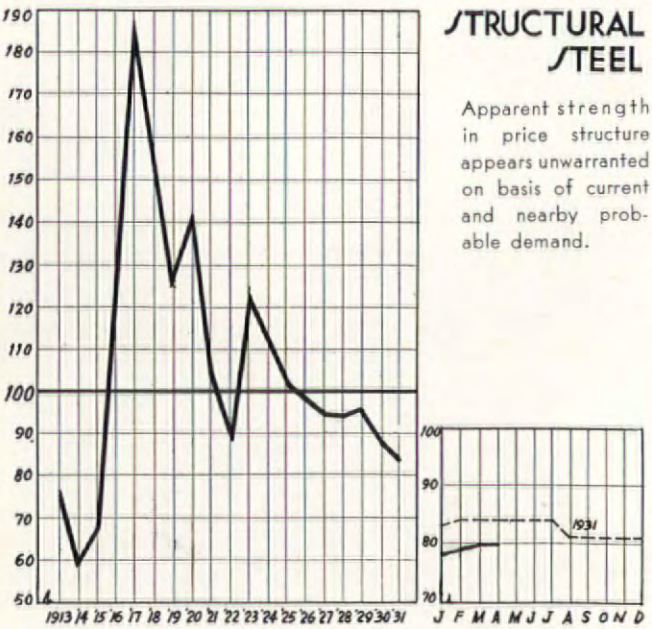
BRICK

Local building conditions will determine future course of brick prices. Stabilization at these levels is more apparent than real.



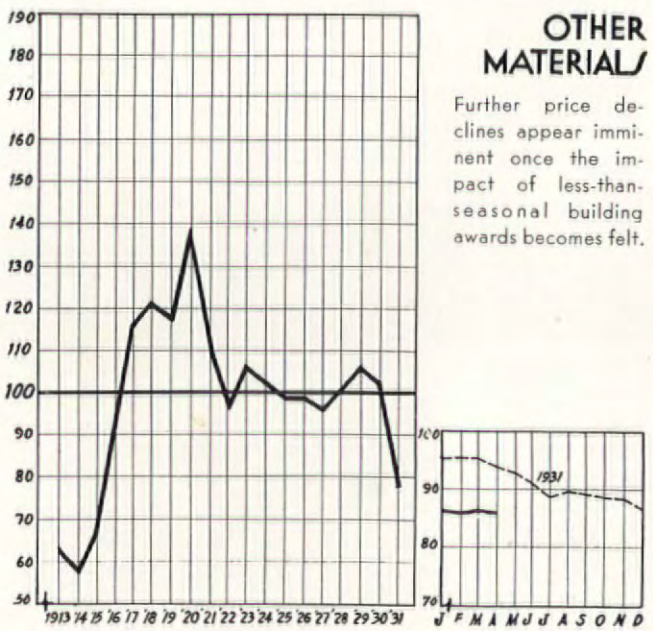
CEMENT

Present price level will be severely tested in nearby months.



STRUCTURAL STEEL

Apparent strength in price structure appears unwarranted on basis of current and nearby probable demand.



OTHER MATERIALS

Further price declines appear imminent once the impact of less-than-seasonal building awards becomes felt.

HERE is the big point

Black plate glass—with a *suspended abrasive* uniformly dispersed throughout the glass *while molten.* Not just a top surface treatment that wears smooth and slippery, but a blackboard that is perfect surface *all the way through from back to front.* Experimental tests equivalent to *one hundred years wear* have left *Seloc* glass blackboards as good as new.

A NEW COMPOSITION BLACKBOARD KNOWN AS "SELOC SLATE"

Composed of long length wood fibres, impregnated in oil, and formed under pressure of eight thousand lbs. to the square inch. Is waterproof, and will not warp or bulge. Guaranteed for ten years. Where price is a factor, here is best obtainable material.

No!

GLASS BLACKBOARDS ARE *NOT* NEW . . . . .

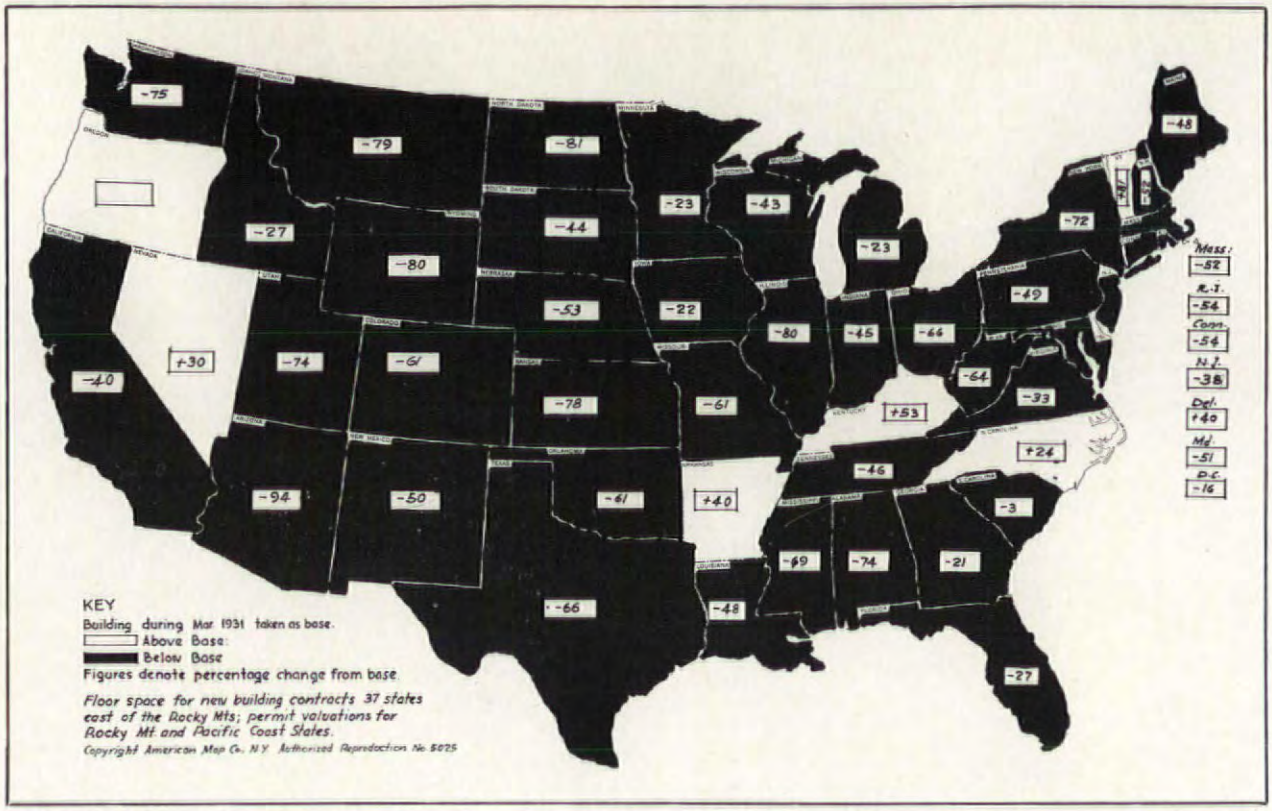
—but here is a NEW *and* VERY SUPERIOR *kind of glass blackboard*

SELOC Glass is the name of this new blackboard. It differs from any blackboard hitherto made because its composition is *uniform throughout.* Think what that means! A *Seloc* glass blackboard can never wear smooth or never wear out, for the suspended abrasive, uniformly dispersed throughout the black plate glass, provides a surface that can *never* change, *never* get "slick," *never* lose the velvety yet effective "tooth" that takes and holds the lightest touch of the chalk.

We need not explain the advantages of *black plate glass* itself as a substance for blackboards. Everyone knows it does not fade, does not deteriorate, is wearproof, is easily installed and comes in long lengths. When to black plate glass as a substance is added this new and most important feature of *uniform abrasive texture throughout,* you have a blackboard that science may never be able to improve. On your next job—investigate *Seloc* Glass—there has never been anything like it before.

NEW YORK SILICATE BOOK SLATE COMPANY

20 VESEY STREET · · · NEW YORK CITY



The March building map showed only five states east of the Rocky Mountains where floor-space totals of new building contracts were higher than in March, 1931: Vermont, Delaware, Kentucky, North Carolina, and Arkansas. In February the map showed seven states where awards were higher than in the corresponding month of last year, while the January map showed six states on a higher basis than a year earlier. Of the states to show gains in March over a year ago, Vermont and Delaware reported increases for the fourth consecutive month.

MODERNIZATION: ITS IMPORTANCE TO THE ARCHITECT

By L. SETH SCHNITMAN

So long as construction activity was on a level that assured more or less full employment, little attention was given to alterations as affecting the general welfare of the industry. Now that the 1932 volume of new construction of all descriptions promises to be less than 20 per cent of the peak total registered in 1928, interest in the whole question of alteration and modernization has shown a noticeable increase.

Since the beginning of 1930 much effort and considerable capital have been expended to promote modernization. This movement has naturally resolved itself into two distinct categories: (1) maintenance and (2) structural change.

Modernization is sound when it is largely a matter of maintenance; such maintenance might involve the installation of movable fixtures or equipment, more up-to-date elevators and fire doors or heating improvements. But modernization that entails large basic structural changes to an existing skeleton or shell is likely to be economically unsound. Alterations of this latter type connote a condition of advanced obsolescence. The most economic way to meet the ravages of this type of obsolescence is to destroy the causes—to wreck and build anew. In this manner one can more positively insure a fuller economic utilization of land.

Competition between new and old buildings forces continuous modernization. When the handicap is largely inherent in the structure itself, this competition can usually be met better by rebuilding than by altering. Quite naturally there are important exceptions to this general rule. Each contemplated alteration project involving major structural changes must necessarily be considered separately. Any major alteration which is designed to correct obsolescence and to improve or restore revenue will fail, however, if population and business shifts, rising or falling land values, traffic conditions, population densities, and sundry other social and economic factors are ignored.

Commercial buildings, principally offices and stores, and factory buildings have a faster rate of obsolescence than most other structural types, and

Important New Book . . . FREE

"Resilient Floors" is its title—the most complete book on this subject ever published for architects. It is a real encyclopaedia—120 pages of useful information—on modern linoleum floors.

One interesting feature of this book is its 61 actual photographs of resilient floor installations in all types of buildings—schools, hospitals, churches, residences, stores, offices, banks, etc.

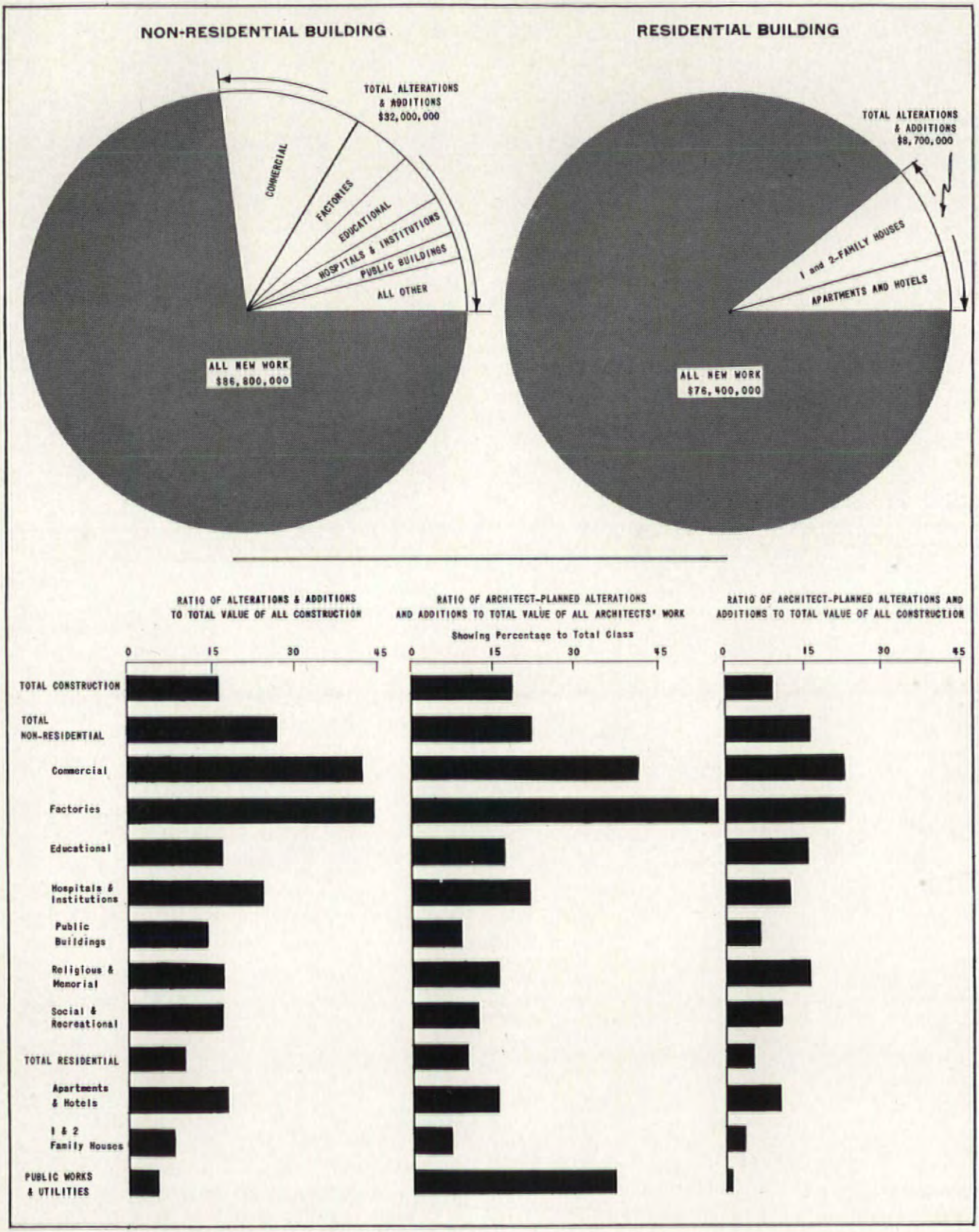
Of particular value are the ten technical sections of the book. One describes in full the requirements of the U. S. Government specification for linoleum, with illustrations of the tests. Others contain structural detail drawings, complete and abridged installation specifications, maintenance information, design reproductions in color, etc.

This book belongs in your files. Write our Architectural Service Department for your free copy. Also—ask about our Bonded Floors installation service, in which Sealex materials are backed by a Guaranty Bond.

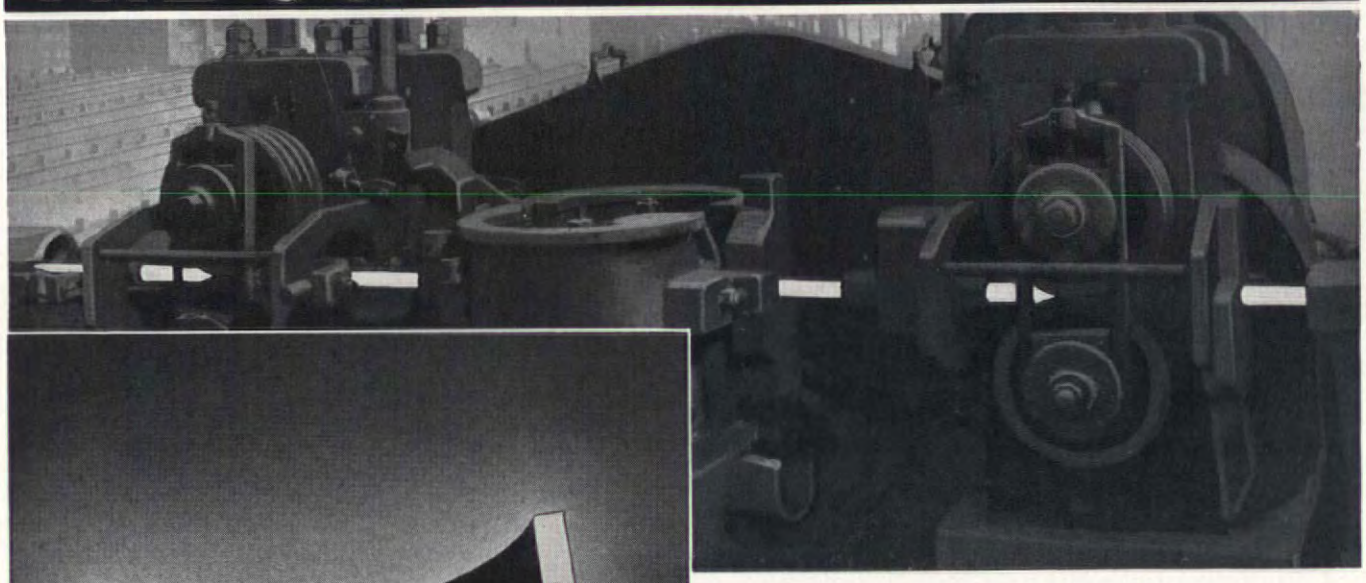
CONGOLEUM-NAIRN INC. . . . KEARNY, NEW JERSEY

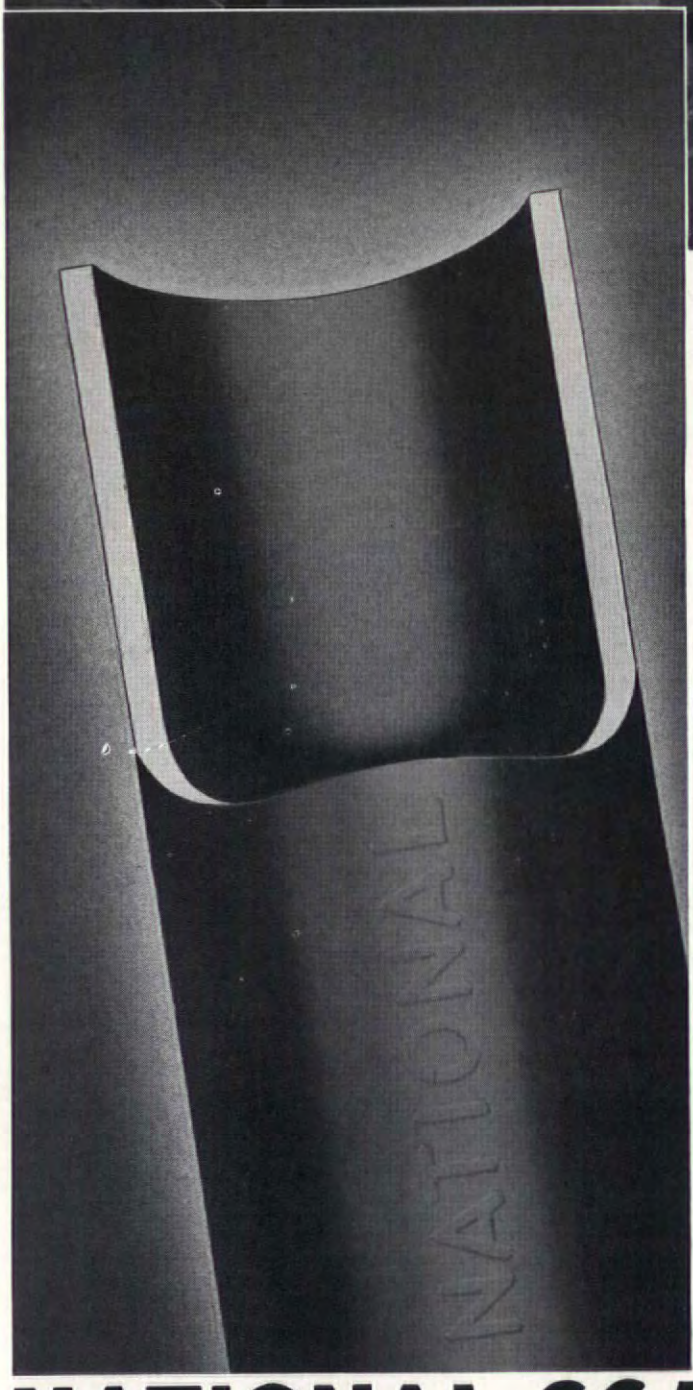
SEALEX
REG. U.S. PAT. OFF.
LINOLEUM FLOORS

CONSTRUCTION CONTRACTS AWARDED IN 37 EASTERN STATES DURING FIRST QUARTER OF 1932, WITH PARTICULAR REFERENCE TO ALTERATIONS IN CONNECTION WITH EXISTING RESIDENTIAL AND NONRESIDENTIAL BUILDINGS



THE SCALE IS TAKEN OUT··





AND THE PIPE LEFT SMOOTH AND CLEAN

A uniformly dense, homogeneous structure, with a smooth, clean surface means a metal of greater resistance to corrosion. "That stands to reason", as the practical user would say. Service records bear out the reasoning. And science makes clear that the experience is not accidental.

The NATIONAL Scale Free Process (applied to butt-weld pipe, sizes ½ to 3-inch), plus Spellerizing, are two definite, specific mill operations that produce this homogeneous structure and smooth, clean surface. Therefore, NATIONAL Scale Free Pipe is highly resistant to initial attacks of corrosion and quite specially to pitting. The treatment by which mill-scale is removed and the pipe wall made smooth and clean gives the user a more durable piping system for various kinds of service. The clean interior takes a more adherent galvanizing coat, while the smooth exterior gives a more satisfactory appearance, especially where enamels, bronzing, plating, or other finishes are added, or for railings and grill work.

When you buy or specify this cleaner, better-looking pipe, you do more than give preference to a visible refinement. You provide for inherent practical advantages of considerable value.

The Scale Free Process is a patented method developed by National Tube Company and applied only to NATIONAL Pipe—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY · Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

NATIONAL SCALE FREE PIPE

hence require more continuous modernization. The accompanying chart discloses, among other things, the importance of alteration work in respect to these specific classes of building. In the case of factory buildings which are usually planned for specific industrial uses large alterations may and often are necessary when such space is to be converted to other industrial uses than those for which the buildings were originally designed.

A check-up of the construction results of the first quarter of 1932 discloses that of the 16,513 construction contracts for which awards were let throughout the 37 states east of the Rockies, 527 or approximately 30 per cent were for alterations and additions to existing structures of all descriptions.

On a valuation basis, alterations and additions during the quarter accounted for only 16 per cent of the total value of all construction awards; while on a floor-space basis somewhat less than 8 per cent of the new floor space involved in all contracts was for additions. A detailed examination of the first quarter's contract record shows that nonresidential building benefitted most from alterations and additions whether measured from the standpoint of number of projects, floor space or contract values.

On a project basis alterations and additions accounted for almost 56 per cent of the total number of construction contracts let for nonresidential building as a whole during the period; on a floor-space basis the ratio was 13 per cent, while on contract values the relationship between alterations and additions and total nonresidential awards was 27 per cent.

Alterations and additions accounted for 20 per cent of the total number of residential construction contracts awarded during the first quarter; the floor space involved in additions represented only about 2 per cent of the total floor space of all residential contracts; while the value of contracts for residential alterations and additions represented slightly more than 10 per cent of the total value of residential awards during the quarter. The relationships between new and alteration projects would be higher if consideration were given to the fact that only alteration projects valued at $1500 or more have been counted.

For public works and utilities combined, alterations and additions were slightly less than 10 per cent of the total number of contracts for these structural types; floor space added accounted for approximately 12 per cent of the total new floor space involved; and the value of awards for additions and alterations in connection with existing public works and utilities represented 5.6 per cent of the total value of all contracts for public works and utilities.

Conditions quite naturally vary over the country. Thus, for all classes of construction the first quarter contract record discloses that in the Southeast almost 25 per cent of the value of all construction awards was for alterations and additions. In the Central West alterations and additions accounted for only 9 per cent of the total value of all construction awards. The results of the remaining eleven geographic areas into which the entire territory east of the Rockies has been divided range between these two extremes.

For nonresidential building alone the St. Louis district showed 41 per cent of the value of all nonresidential building awards during the first quarter to have been for alterations and additions while in Texas only 11 per cent of nonresidential work was for alterations and additions.

Southern Michigan showed almost 16 per cent of the value of all residential awards to have been for alterations and additions while in the Central West this ratio was only 7.

Of the value of all contracts awarded for commercial structures throughout the 37 Eastern States during the first quarter of 1932, 43 per cent was for alterations and additions. Factory alterations and additions accounted for 44 per cent of all contracts for this structural type. Hospitals and institutions showed 25 per cent for alterations and additions; educational, religious and memorial, social and recreational buildings each accounted for 17 per cent of their respective total contract values during the first quarter. Alterations to public buildings represented 14 per cent of the value of all contracts for public buildings.

In the case of apartments and hotels, alterations and additions represented about 18 per cent of the total awards while in the case of 1- and 2-family houses the ratio was less than 8 but this would be larger if consideration were given to alterations below the value of $1500, which have not been counted.

No strictly comparable figures on the importance of alterations and additions are available prior to 1932, but since the ratio indicated by the building permit figures of the U. S. Department of Labor covering the first quarter of the year approximates that shown in the contract records, there is the suggestion that annual percentages on alterations and additions indicated by the permit records for the years beginning with 1928 can be used for an historical background. Thus in 1928 only 9.5 per cent of the value of all new buildings, as apart from engineering, was for alterations and additions; in 1929 this percentage advanced to 12.1; in 1930 it stood at 14.7; in 1931 it reached 15.3 per cent. For the first quarter of 1932 the permit record showed 21 per cent as against 20 per cent for the contract record.

The continuous rise in this ratio does not reflect an absolute gain in the value of alterations and additions; as a matter of fact each succeeding period has shown an actual decline but the rate of decline in the value of alterations and additions has been less steep than the rate of loss in total work. Specifically, the loss in alterations between 1928 and 1931 was 38 per cent but the decline in total work was 62 per cent, as based upon building permits.

AT ONE A.M.

What happens in your office? What kind of a night "gang" comes in? How much of the dirt and dust goes out? How much does it cost?

The powerful vacuum of the Spencer Central Cleaning System has answered all of these questions satisfactorily in most of the newest, biggest and best buildings in the country. Before you build again, investigate first hand. A list of Spencer installations will be furnished on request.

THE SPENCER TURBINE CO., HARTFORD, CONN.

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They Chose

ROME CONVECTORS

Rome Convectors were selected for installation in the following buildings:

Kresge Administration Building, Detroit
Folger Shakespearean Library, Washington
Federal Reserve Bank, Pittsburg
Bahai Temple, Wilmette, Ill.
Atwater Kent residence, Philadelphia
Frank Goodyear residence, Aurora, N.Y.

This very abbreviated list indicates the high type of building for which architects are selecting Rome Convectors. The reason for this preference is: Rome Convectors are

BUILT UP TO A STANDARD
NOT DOWN TO A PRICE

Rome throws the whole weight of its resources and manufacturing facilities into quality. Not only has Rome consistently refused to sacrifice quality for price . . . but is actually raising the quality of its Convectors to an even higher standard.

Standard Types and Sizes of Rome Convectors

Rome has standardized its ROCOP Convectors as to types, sizes (of which there are 21) and methods of installation. This standardization simplifies estimating and installation, eliminates errors and delays, and is sufficiently flexible to meet everyday requirements.

ROBRAS Convectors are available in a wider variety of types and sizes, including those for out-of-the-ordinary requirements. Rome Convectors are assurance of quality. They also effect economy . . . a direct result of standardization. For further information send for ROCOP and ROBRAS Bulletins.

Rome

Radiation Company

DIVISION OF

Revere Copper *and* Brass Incorporated

ROME, N. Y.

It is of interest to examine the part which the architect plays in alterations and additions. During the first quarter of 1932 architects designed $123,000,000 worth of construction in the 37 Eastern States as based upon contract records. Of this amount almost 19 per cent was for alterations and additions. Of all architect-planned commercial projects undertaken during the period 42 per cent of the value was in alterations and additions; 56 per cent of the value of all architect-planned factory projects involved alterations; while architect-planned alterations to hospitals represented 21 per cent of all architect work on this type of building. In the case of apartments and hotels 16 per cent of all architect-planned work was for alterations while for 1- and 2-family houses this ratio was 7.5.

Bringing these facts together one finds that out of a nonresidential building contract total for the 37 eastern states during the initial quarter of 1932 amounting to $119,000,000, $18,000,000 or about 15 per cent represented architect-planned alterations and additions. Out of a total of about $85,000,000 for residential building awards $4,000,000 or about 5 per cent represented architect-planned alterations and additions. For building as a whole exclusive of engineering, the total contract volume of the first quarter was $204,000,000; of this amount $22,000,000 or almost 11 per cent was architect-planned alterations and additions.

With real estate conditions still perturbed and with foreclosures continuing in heavy volume, especially in office buildings and apartments, architects may expect to find need for their services in the planning of alterations and additions. Competition for tenants and a revaluation of rental properties through the processes of deflation will force sizable changes in many of our less up-to-date structures. The planning of these changes must be considered in respect to the important social and economic factors involved.

"DUSTOP"—AIR FILTER

The Owens-Illinois Glass Company, Toledo, announces a new product—an air filter of glass wool. This product will bear the trade name of "Dustop."

The container is of paper, which adds to the lightness of the unit and renders it readily disposable. Weighing only two pounds, it will absorb dust in excess of its own weight. The "flexibility" of the paper container establishes a tight seal between the filter and the metal frame into which it fits, thus preventing the passage of any unfiltered air around the unit. It has been designed 2 inches in thickness, so that when a standard 4 inch pack is established by using two units in tandem, or two units placed face to face, it is only necessary to change one-half the thickness of the total pack at one time.

H&H Presents

AMY, ACEVES & KING INC.
New York

MULTICOUPLER ANTENNA

System of RADIO WAVE DISTRIBUTION

1 Aerial for plurality of radio sets

in Apartments and Institutions

THIS permanently wired-in antenna system provides for as many as 25 radio sets served by one aerial. It brings each tenant complete "freedom of the air" in getting any broadcast desired, regardless of what other programs may be on in other apartments at the same time. Reception is as good *or better* than in sets individually served by separate antennae! MULTICOUPLER assures tenant-satisfaction with the conditions of radio reception provided by the landlord, and figures as a timely RENTAL FEATURE.

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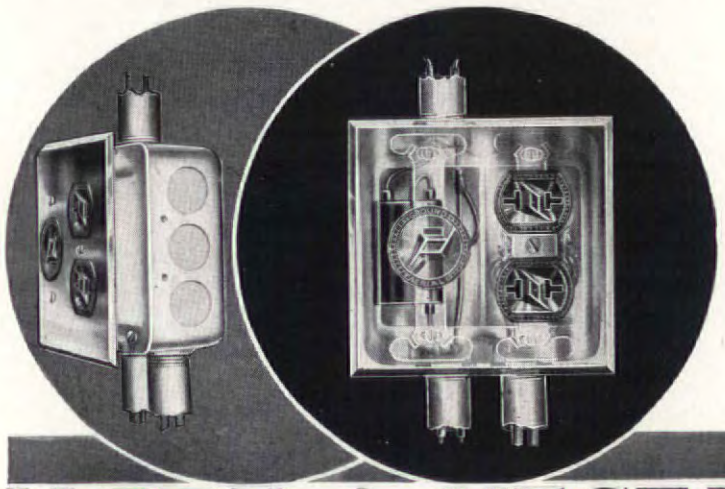

At left: Phantom view of No. 3060 Multicoupler Unit complete, and side view. User plugs into Aerial, Ground, Power same as he'd plug in a lamp or appliance in an ordinary Convenience Outlet. *At right:* the Multicoupler. « « « «

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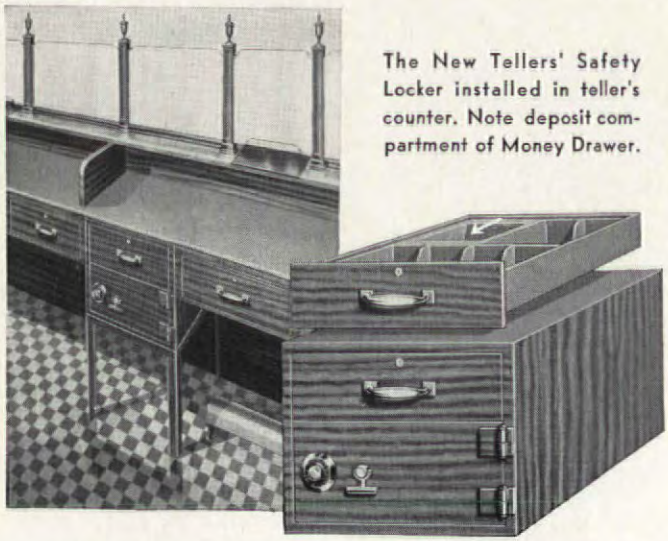

The New Tellers' Safety Locker installed in teller's counter. Note deposit compartment of Money Drawer.

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The following bibliography on air conditioning for residences is recommended by the American Society of Heating and Ventilating Engineers:

Air Conditioning and Summer Heat (Gas Age Record, August 29, 1931, page 303).

Air Conditioning Engineer Builds a Home, An, by Esten Bolling (Heating, Piping and Air Conditioning, June, 1930).

Air Conditioning for Domestic Usage (A.G.A. Monthly, July, 1930, page 312).

Air Conditioning for Homes—Cooling, by S. M. Anderson (Heating, Piping and Air Conditioning, May 1931).

Air Conditioning for Homes—Humidification, by S. M. Anderson (Heating, Piping and Air Conditioning, April, 1931).

Air Conditioning in a Hot-Water Heated Home, by E. J. McCourt (Aerologist, Vol. VIII, No. 1, January, 1932).

Air Conditioning Need, by J. E. Bullard (Aerologist, August, 1931).

Air Conditioning the Healthful Home, by O. W. Armspach (Aerologist, September, 1927).

Air-Tight Dwellings, by E. V. Hill (Aerologist, August, 1930).

Application of Electric Refrigeration to the Heating and Cooling of Houses, by F. H. Faust, E. W. Roessler and A. R. Stevenson, Jr. (American Society of Refrigerating Engineers).

Architect Studies Air Conditioning in the Home, by S. P. Moore (Aerologist, September, 1931).

Control Humidity for Dwelling House, by S. P. Moore (Aerologist, July, 1931).

Control Methods for Ice Melting (Domestic Engineering, January 23, 1932).

Cooling Our Homes, by J. E. Bullard (Aerologist, June, 1931).

Desk Fans in Winter, by J. H. D. Blanke (Aerologist, November, 1930).

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Effects of Too Dry Air, by Marvin C. Barnum (Heating and Ventilating, June, 1930, page 82).

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Fundamentals of Air Conditioning, by F. B. Rowley (Domestic Engineering, January 23, 1932).

Gas Cooling, by E. D. Milener (Domestic Engineering, September 19, 1931).

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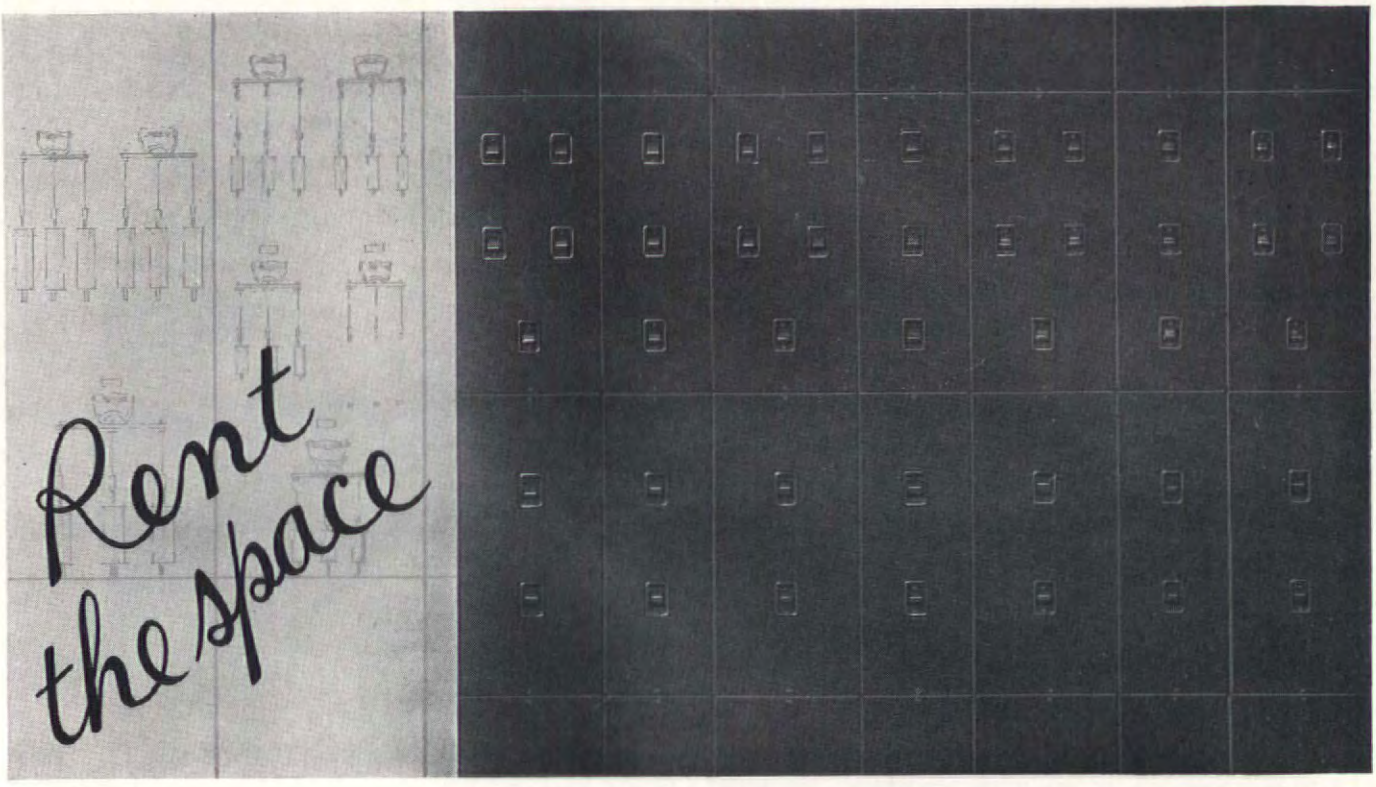

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Glass Houses, by E. V. Hill (Aerologist, October, 1931).

Home Air Conditioning—Its Problems and Possibilities, by H. R. Sewell (Domestic Engineering, January 23, 1932).

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How Homes Are Cooled, by W. W. Stevens, (Domestic Engineering, September 5, 1931).

How Ice Is Used for Space Cooling, by Terry Mitchell (Domestic Engineering, January 23, 1932).

How Much Water Will Air Drink, by A. M. Daniels (Domestic Engineering, January 24 1931).

How Much Water Will Air Drink? by A. M. Daniels (Domestic Engineering, April 18, 1931).

How To Figure Cooling Capacities, by H. L. Alt (Domestic Engineering, January 23, 1932).

Humidification, by C. A. Hall (Aerologist, November, 1931).

Humidification for Residences, by Prof. A. P. Kratz (University of Illinois, Engineering Experiment Station, Bulletin No. 230).

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Ice Used for Cooling, by G. J. Grieshaber (Domestic Engineering, October 17, 1931).

Importance of Humidity, by M. L. Fox (Aerologist, January, 1931).

Is the Furnace Manufacturer Asleep? by E. V. Hill (Aerologist, September, 1928).

It Isn't the Heat—It's the Stupidity, by Leo, the Tinker (Aerologist, December, 1931).

It's Not the Heat, It's the Humidity (A.G.A. Monthly, December, 1930, page 556).

Machine-Made Weather, by M. Ingels (Aerologist, February, 1931).

Moisture Conditions in Homes Using Warm Air Furnaces (Gas Age Record, February 7, 1931, page 207).

New Use for Gas Emerging from A.G.A. Research (A.G.A. Monthly, September, 1931, page 352).

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Streaked Walls vs. Heat Grilles, by V. W. Cherven (Aerologist, October, 1930).

Summer Comfort, by E. V. Hill (Aerologist, September, 1927).

That Black Streak on the Wall, by E. V. Hill (Aerologist, September, 1930).

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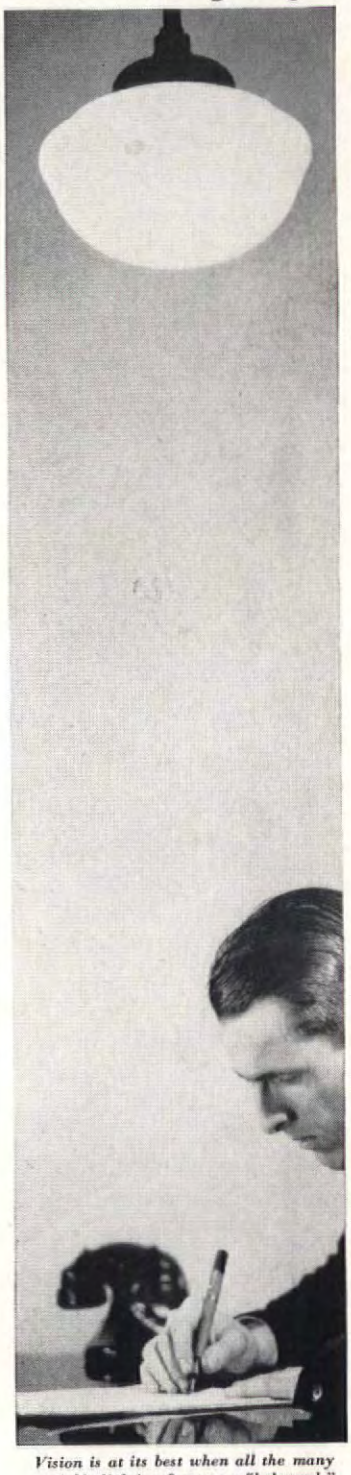

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Three Houses To Be Cooled with Gas (Gas Age Record, April 4, 1931).

Ventilating the Home, by E. V. Hill (Aerologist, March, 1928).

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Wanted: An Air-Conditioning Flivver, by E. V. Hill (Aerologist, August, 1931).

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What Is Ahead in House Heating? (Gas Age Record, December 5, 1931, page 807).

Why Humidify? by P. J. Marschall (Aerologist, November, 1929).

The Carrier Engineering Company recommends the following:

Changes in Ionic Content of Air in Occupied Rooms Ventilated by Natural and by Mechanical Methods. (Heating, Piping and Air Conditioning Vol 3. No. 10).

The Influence of Atmospheric Conditions on Health and Growth Yagloo. (Heating, Piping and Air Conditioning Vol. 3, No. 11).

Report of the White House Conference on Child Health and Protection (Heating, Piping and Air Conditioning Vol. 3, No. 12).

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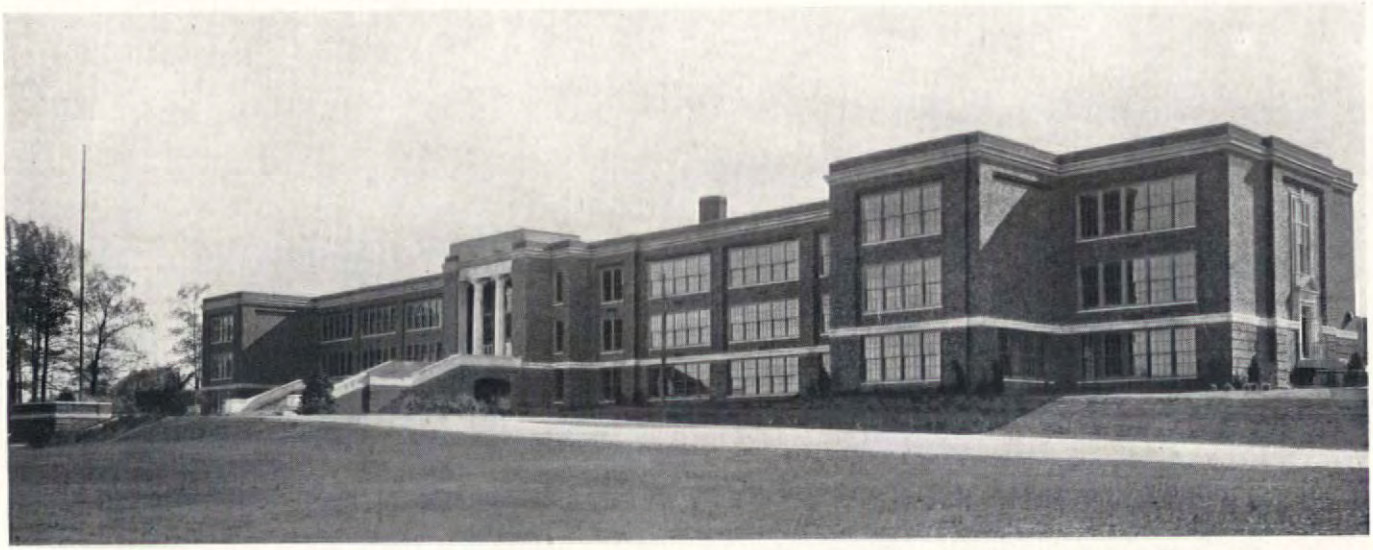

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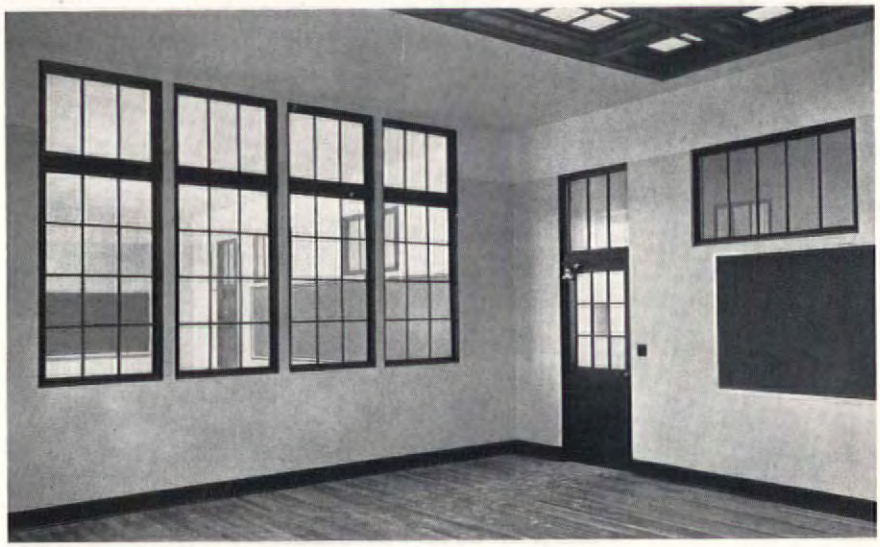
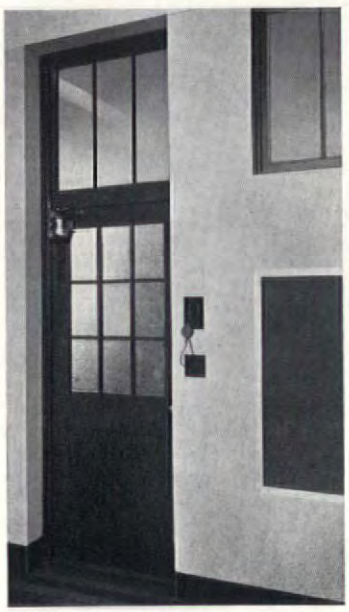


Interior of typical classroom, showing use of Kalman Steel Door Frames, Borrowed Lights, and Metal Blackboard Frames. Note the neat, attractive appearance.



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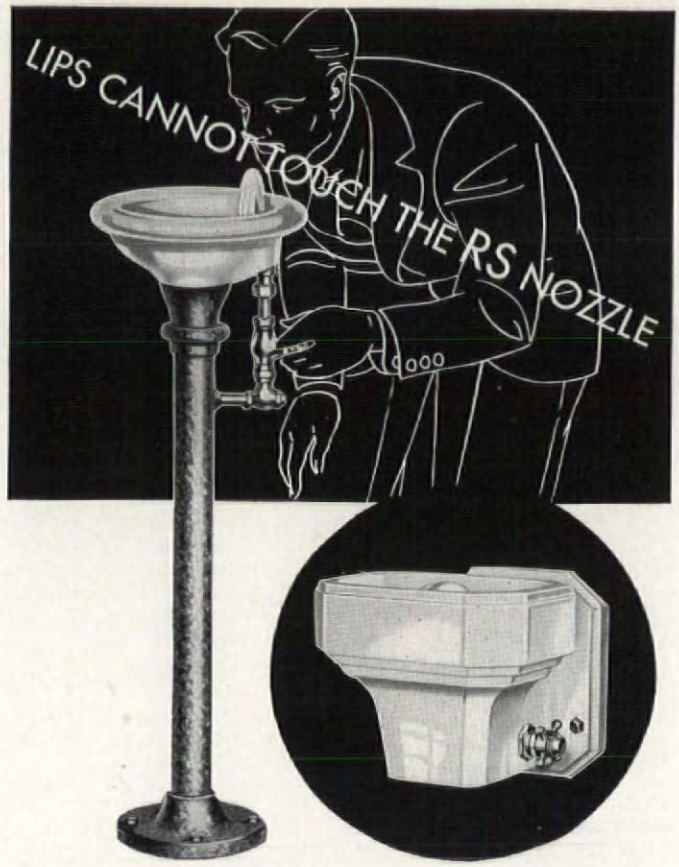

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Cover:	JUILLIARD SCHOOL OF MUSIC, NEW YORK CITY Shreve, Lamb and Harmon, Architects Photograph by Sigurd Fischer
Frontispiece:	HOTEL DE VILLE AT LOCHES, FRANCE Drawing by Samuel Chamberlain
367, 368 . . .	THE 65TH CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS, WASHINGTON, D. C.—APRIL, 1932
369-375 . . .	REPORT OF THE COMMITTEE ON ECONOMICS OF SITE-PLANNING AND HOUSING, A. I. A. CONVENTION
376-378 . . .	ILLUSTRATED NEWS
379, 380 . . .	BUILDER AND POET—FRANK LLOYD WRIGHT Reviewed by Fiske Kimball
381-384 . . .	NIGHT VIEWS OF NEW YORK CITY Photographed by Samuel H. Gottscho
385-387 . . .	THE JUILLIARD SCHOOL OF MUSIC, NEW YORK CITY Shreve, Lamb and Harmon, Architects
388	FIRM SPECIFICATIONS By Daniel Higgins, Architect, Office of John Russell Pope
389-412 . . .	PORTFOLIO OF CURRENT ARCHITECTURE Juilliard School of Music, New York City—Shreve, Lamb and Harmon, Architects; Midland Country Club, Midland, Michigan—Frantz and Spence, Architects Alden B. Dow, Associate Designer; House of H. D. Hynds, Scarsdale, New York—Dwight James Baum, Architect; Sculptured Figure in Foyer, Cinema Art Theater, Chicago, Illinois—Armstrong, Furst and Tilton, Architects; Delaware County Court House, Media, Pennsylvania—Clarence W. Brazer, Architect.
413-417 . . .	AN INNOVATION IN STEEL FLOORING By J. H. Young
418-420 . . .	THEATER DESIGNS FOR ROCKEFELLER CENTER Reinhard and Hofmeister; Corbitt, Harrison and MacMurray; Hood and Fouilhoux, Architects.
421-428 . . .	PORTFOLIO OF THEATERS Fox Theater, Hackensack, New Jersey—Thomas W. Lamb, Architect; New Southtown Theater, Chicago, Illinois—C. W. and George L. Rapp, Architects; Paramount Theater, Oakland, California—J. R. Miller and T. L. Pflueger, Architects; Cinema Art Theater, Chicago, Illinois—Armstrong, Furst and Tilton, Architects; Fox Arlington Theater, Santa Barbara, California—Edwards and Plunkett, Architects.
429-438 . . .	TECHNICAL NEWS AND RESEARCH:
38, 40 (adv.) . .	DESIGN OF SMALL MOTION PICTURE THEATERS By Frederic Arden Pawley
42, 45, 46, 48, 50 (adv.)	BUILDING TRENDS INDICATED BY THE FEDERAL CENSUS: PART 8—THE OUTLOOK FOR RECREATIONAL BUILDINGS By L. Seth Schnitman
26, 28 (adv.) . .	CORRESPONDENCE FROM ARCHITECTS
30, 32 (adv.) . .	ARCHITECTS' ANNOUNCEMENTS—THE JULY ISSUE
52, 54, 56 (adv.) .	CRITICAL BEAM CONNECTIONS — MANUFACTURERS' ANNOUNCEMENTS

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One of the younger members of the A. I. A. recently said to me, "I have almost come to the conclusion that the Institute isn't doing anything for me. Why should I do anything for it?" Often one hears the questions, "What has the Institute done for the profession?" and the reply, "Everything that has been done for the profession." No one, of course, seriously thinks that everything that has been done for the profession has been done by the Institute. Much important work has been done by local societies. Individual architects have signally advanced our cause, but the standing of the profession today is in the main due to the self-sacrificing work which has been accomplished by the members of the Institute through their technical society during the past seventy-five years.

Without doubt the Institute has not done all that could be done. Without doubt it has not always made the wisest decision. Often it has had to grope its way in solving vexatious problems, but for all those years it has labored to "promote the aesthetic, scientific and practical efficiency of the profession and to make the profession of ever-increasing service to society."

Sometimes it is said that the Institute is not a democratic body. Perhaps it is not, but it is certainly democratic to the extent that any architect who possesses reasonable competence and is willing to practice along ethical lines is eligible to join. One may say that the British House of Lords is not a democratic body and say it with some justice because it is hard to become a Lord: but any honest to goodness architect can join the Institute and if the point of view of the Institute does not always reflect the attitude of the little fellow that is no reason for the little fellow to stay out. It is a compelling reason for him to come in and democratize the Institute.

During the twenty years of my membership there have been various occasions on which I was out of sympathy with Institute policy but I never felt that my logical course was to resign. I felt that the thing to do was to stick and fight for what I believed to be right and always I have received a courteous and friendly hearing. To cite a case: For years I have opposed the Institute's contact with the Small House Service Bureau without getting very far, but the members listen to me just as patiently as ever and some day I am going to make the Institute let go of that baby if I can.

You who wonder what the Institute has done for you, think of the standard documents. Whether you use them or not, you know their value as a guide. Architects and laymen alike recognize the schedule of minimum charges and lean on it in time of trouble. That schedule backed as it is by the prestige of the Institute has served us all well. Shouldn't you join and do your bit to help?

Taking the 1931 Annuary as our guide, we find George Keller of Hartford listed after sixty-two years of service. Aside from the service consider the cash contribution which Mr. Keller has made to the profession. For the past twenty years in my chapter national and local dues have averaged $35. What they have been in his chapter I can only conject, but it is safe to say that his contributions compounded annually would reach the sum of $7,500, a sizable fortune in the architectural profession.

Then there are James W. Reid of San Francisco, Henry Hoppin of Providence and W. R. Briggs of Stratford who have given more than fifty years of loyal help, and a group of other men who have been with us since the early eighties, including Glenn Brown and that inveterate traveler, W. L. Plack, who joined in 1884 and looked spryer than ever at the San Antonio convention last spring.

A hardy race of men were the westerners who merged their own society with ours in the eighties. A score of them are going strong today, including John M. Donaldson, Charles S. Frost, George D. Mason and other well-known men.*

Still in the eighties, we find A. F. Gauger, C. P. H. Gilbert, W. Carbys Zimmerman and others.

Coming down to "the gay nineties" we find a host of what one might call household names in architecture: Ittner, Sturgis, Mullgardt, Ditmars, Hewlett and Grylls.

In 1900 the Institute had a stroke of luck, the New Jersey Chapter being formed. Bob Dixon and Wilson C. Ely, charter members, are still on the job. Pilcher, Ranken, Van Pelt, Tilton, Granger and Chambers also came in that year. The class of 1901 must have been a big one, for some seventy members are still with us, including Klauder, Cram, Bragdon, Kelsey and Atterbury.

President Kohn joined in 1903 and how he has worked! The list of distinguished names belonging to the first decade of the century also includes Pope, Magonigle, Litchfield, Delano and Aldrich, Hunt, Cret, Corbett, Swartwout and others with notable records.

The Institute had another stroke of luck in 1911 as any one may see who cares to gather statistics concerning the writer of this letter. Herrick Hammond also joined that year and he has been president. Many good men have joined since that time and we would like to name them all. We note that those distinguished writers, Ripley and La Beaume and Flagg, Dunning, Upjohn and Paul A. Davis III, came in during the second decade.

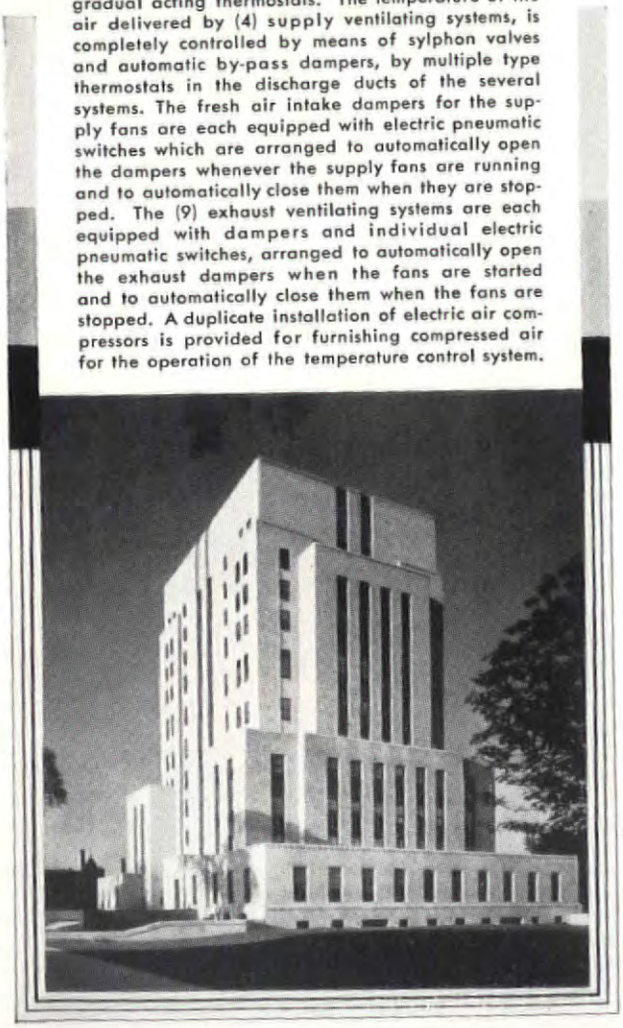
*Note: I should like the secretary of the A. I. A. to know that it was a tedious job digging these vital statistics out of the Annuary in its present arrangement. Probably a lot of mistakes have been made. I hope that next year he will list the members by their date of admission.

Permanence « « « «

makes the Johnson System the one correct

HEAT AND HUMIDITY CONTROL « « « « «

THE RACINE COUNTY COURT HOUSE, Racine, Wisconsin. Holabird & Root, Architects, equipped with Johnson Control. All of the direct radiation, both of the concealed and cast iron type, consisting of (346) radiators, is controlled by means of (181) room type gradual acting thermostats. The temperature of the air delivered by (4) supply ventilating systems, is completely controlled by means of sylphon valves and automatic by-pass dampers, by multiple type thermostats in the discharge ducts of the several systems. The fresh air intake dampers for the supply fans are each equipped with electric pneumatic switches which are arranged to automatically open the dampers whenever the supply fans are running and to automatically close them when they are stopped. The (9) exhaust ventilating systems are each equipped with dampers and individual electric pneumatic switches, arranged to automatically open the exhaust dampers when the fans are started and to automatically close them when the fans are stopped. A duplicate installation of electric air compressors is provided for furnishing compressed air for the operation of the temperature control system.



When installed, the Johnson System assures permanence . . . in its operation and service. This is because the Johnson System is fundamentally correct . . . in principle, design, construction and application. It is also because the Johnson System is installed specifically to each building's requirements . . . and specifically to every form, plan and system of heating and ventilating. And it is finally because this company, established in 1885 and covering the continent with thirty-one branches, assures resources to remain permanently responsible for each Johnson installation made.

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Mr. Davis joined in 1918 and he has been president of his chapter and director of the Middle Atlantic Division and is now chairman of the Jury of Fellows. Which shows that one can gain rapid promotion in the Institute if one has ability, works hard and belongs to the Philadelphia Chapter.

There was a rush to the colors in 1921. We don't know how many men joined that year but about five hundred of them are still with us, and there are some very good names in the list. Ely Kahn and Howard Greenley for instance. From then until the present our ranks have been swelled by men like Gmelin, Rebori, Edgell, Hood, Price, Van Alen, Guptil and Saarinen, men who are eminently fitted to carry on the traditions of the past.

Among the women who are serving with distinction, the Mmes. Almy, Budd, Butterfield, Coit, Manning, Mead, Morgan, Nedved, Raymond and Yeatman may be mentioned and of course Miss Lois Lilley Howe.

To the younger members and to those who are going to join, we say hail! Hail and reign.

CLEMENT W. FAIRWEATHER, A. I. A.
New Jersey.

ARCHITECTURAL CRITICISM . SMALL HOUSES

To the Editor:

There is a wonderful opportunity in the architectural profession for constructive criticism; particularly by a man whose criticisms will be a guidance and an inspiration to the many architects such as ourselves scattered throughout the United States.

You are, no doubt, familiar with the fact that there are many men in the architectural profession who have not had the broadening experience of university education, a reasonable amount of travel, and above all, they have had little or no association with outstanding men in the profession. After all is said and done, it is these men who really do the bulk of the architectural service of our country. They look to the recognized professional journals and the material contained therein for guidance and a possible solution to their own problems. No doubt many published examples of poor architecture have been the seeming inspiration for many others scattered here and there. Possibly this comes from the psychological fact that anything seen in print is so, or expresses a truth, and that published in the professional journals must accordingly be of the best.

We look forward to your finding some one who will at least in part fulfill some of your requirements and will separate the wheat from the tares. Such a critic would be of vast importance to you if he could get the viewpoint of the small office, if he could write, talk and discuss these things in the language or vernacular that the small men could understand. Most of the criticisms are from men whose associations have been in the big cities. Their viewpoint, their attitude and their language is of such character that the rest of the country seems provincial and to some even semi-barbaric. As a consequence the small offices are not reached, their sense of proportion is not appealed to and the real purpose of the criticisms is largely lost.

. . .

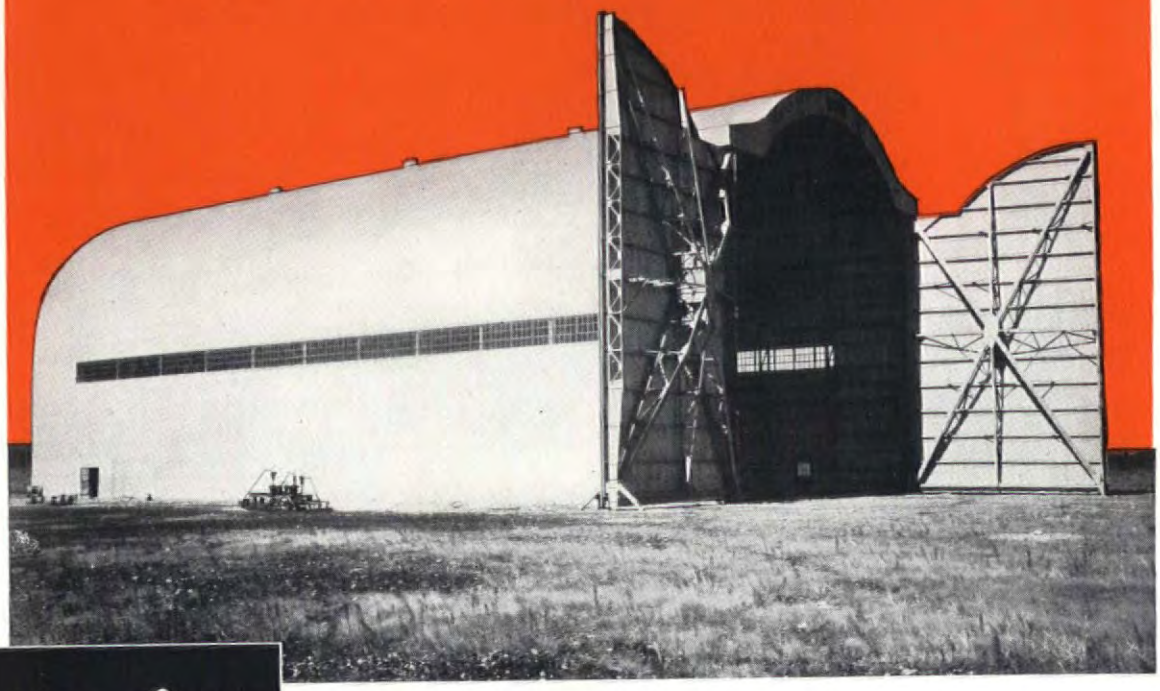
Our section of the country is no different from other sections as to the problem of reasonably priced small houses. We can not but feel that the speculative builder, the unrestrained real estate developers, have been largely responsible for small house conditions in general. The public as you know is very gullible and has been easily led. The house under $10,000 has not been a profitable field for architectural service. As a consequence the architects are largely to blame in permitting the small housing to get beyond their reach or control and into the hands of unscrupulous builders and operators. There are thousands of purchasers of small houses throughout our section who are awakening to the realization that they have white elephants on their hands. The homes which they purchased a short time ago now are not worth the first mortgages placed upon them. The second mortgages, the cash payments and the payments which have been made against the original principals have gone for tremendous discounts, excess profits and other numerous charges that never did represent any real worth on their investments.

This problem of financing along reasonable or equitable lines is the greatest problem facing our small housing today. Possibly it can be solved. Surely it calls for a great deal of consideration. We feel the architectural profession as a whole is most vitally interested, also our better banking and financial institutions. These working together must somehow educate our small house owners and through a process of liberal education show them the advantages of better built and reasonably financed small construction. We are afraid that if something along these lines is not carried forward in the near future thousands of home owners that have been badly burned will never again enter into the problem of home building or home purchasing but will be content to paste rent receipts in their scrap books for the remainder of their lives.

Small houses can be built of good material, good design and substantial workmanship for reasonable prices in our section of the country, composed of building supplies now upon the American market without the necessity of having weird and fantastic abortions or painstaking research for new, unused, untried materials. The average architectural firm located throughout our section is capable of rendering this service to the small home builder. Our banks, under a more liberalized banking law, could provide the proper finances without tremendous discounts and they could free this vast majority of the home building public from the clutches of the unscrupulous operator and financial companies that have handled his papers at enormous charges.

FRED W. CLARKE, A. I. A.
Owen & Clarke, Architects,
Mobile, Alabama.

TONCAN IRON CUTS BUILDING COSTS:



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EXHIBITIONS AND EVENTS

June 20-24	Annual meeting, in Atlantic City, of the American Society for Testing Materials.
June 20-October 1	"The Designer and Industry"—exhibition of The National Alliance of Art and Industry at the Art Center Building, New York City.
June 25-August 19	Modern architecture tour of Europe, conducted by Prof. Talbot F. Hamlin of Columbia University. Address The American Institute of Educational Travel, 587 Fifth Avenue, New York City.
July 30-August 14	Exhibition of art at the Los Angeles County Museum in conjunction with the American Olympiad competition of sports buildings by architects of the nations invited to the Olympic games. Address Secretary, American Olympic Committee, 233 Broadway, New York City.
October	International Congress for Modern Architecture at Moscow, U. S. S. R. Program: "The Functional City."

COMPETITIONS

June 15	Closing date for entries for Douglas Fir Plywood Manufacturers design competition. Address C. H. Alden, professional advisor, Skinner Building, Seattle, Wash.

A. I. S. C. BRIDGE AWARDS

Boris R. Leven, a student in the College of Architecture, University of Southern California, won first place in the annual bridge design competition held by the American Institute of Steel Construction. The problem was to design a highway grade separation bridge over a railroad crossing. Edward S. Okubo, from the same college, won second place in the competition, while third place went to Leslie E. McCullough, a student in the Department of Architecture, Iowa State College.

A. Lyall House, a student in the Department of Civil Engineering, Montana State College, was given honorable mention. Pierre A. Bezy and D. E. Campanella, both students in the School of Architecture, Columbia University, were also selected for honorable mention.

"THE DESIGNER AND INDUSTRY"

The National Alliance of Art and Industry announces the first national exhibition of three-dimensional objects produced by industry, to be shown from June 20 to October 1. This Exhibit, "The Designer and Industry," will be held at the Art Center Building, 65 East 65th Street, New York City.

Designers from all over the country will be represented and the merchandise to be displayed ranges from containers and packages to the newest subway turnstile.

Applications for exhibits may be sent to Alon Bement, Director of the National Alliance of Art and Industry at 65 East 56th Street, New York, on or before June 1.

ANNOUNCEMENTS

Edwin W. Byers, architect, has moved from Flint, Michigan, to 1203 Chicago Avenue, McAllen, Texas.

•

PRIX DE ROME AWARDS

George Nelson, of Hartford, Conn., and Henri E. Chabanne, of Trails End, Tompkins Corners, N. Y., have been awarded the annual Prix de Rome awards in architecture and landscape architecture, respectively.

The award in architecture is the William Rutherford Mead fellowship, while the landscape prize is endowed by the Garden Club of America.

BROWN SCHOLARSHIP AWARDS

The following awards have been made in the judgment of the A. W. Brown Traveling Scholarship competition:

Benjamin Lane Smith of Chicago won the Scholarship ($2,000 for a year of study and travel abroad).

Samuel E. Homsey of Boston, second prize, $250.

William S. Morris of Albany, N. Y., third prize, $150.

William P. Kramer of Milwaukee, fourth prize, $100.

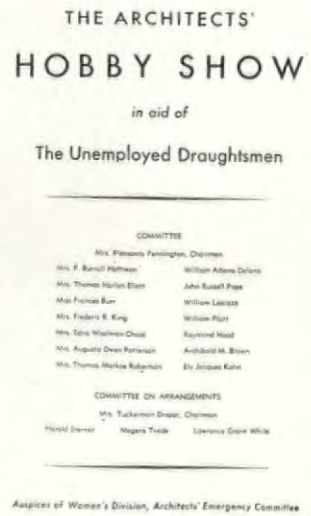
GEORGE G. BOOTH TRAVELING FELLOWSHIP

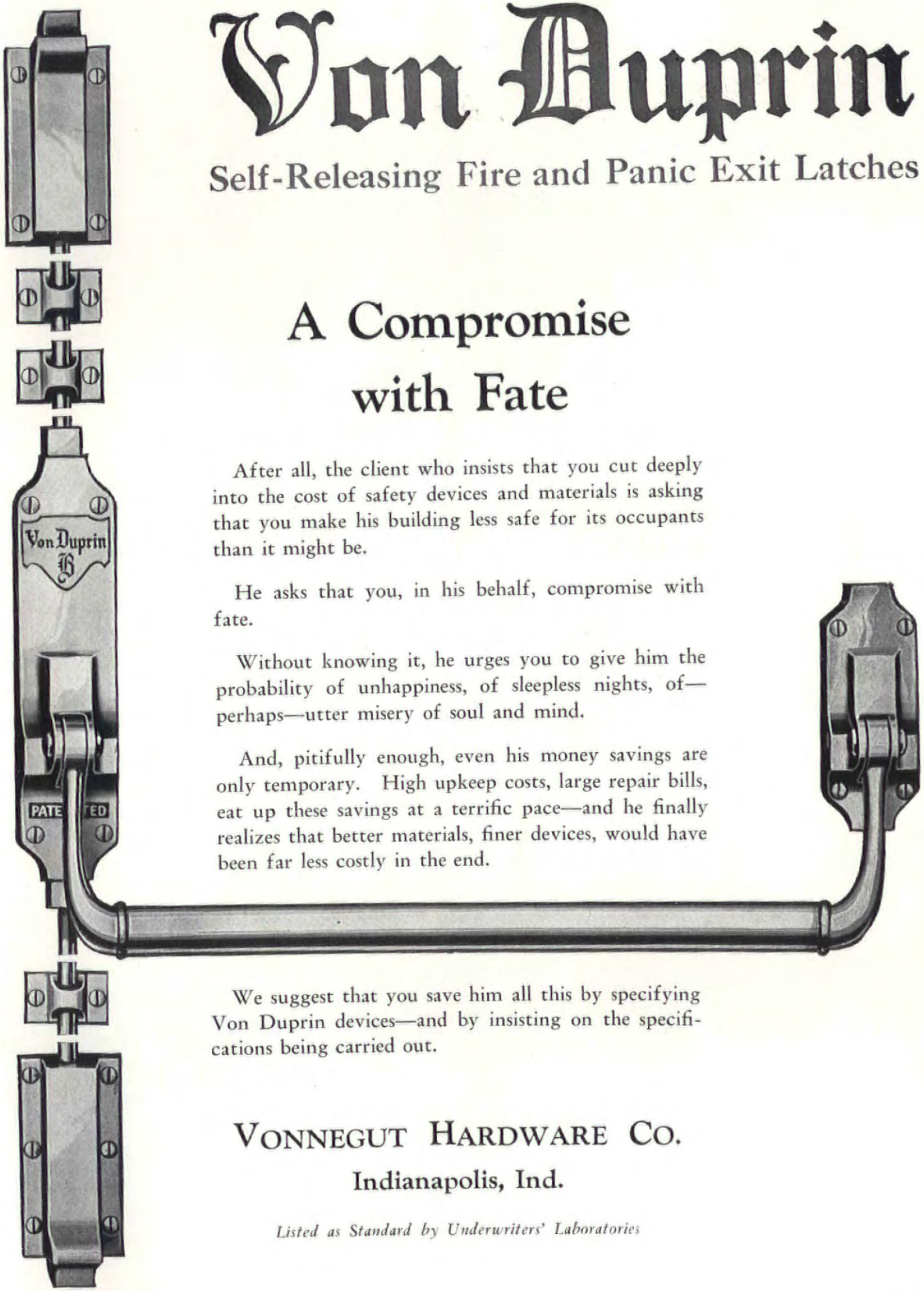
This fellowship, which carries a stipend of $1,200 and is awarded by the College of Architecture, University of Michigan, was awarded to Malcolm R. Stirton of Detroit. Earl W. Pellerin, also of Detroit, won second place, and Floyd R. Johnson, of Balboa Heights, Canal Zone, was placed third.

ARCHITECTS' HOBBY SHOW

This show was held May 25 through June 3 at Knoedler's, 14 East 57th Street, New York City, to raise funds for the Architects' Emergency Committee. From the announcement:

"The architect is America's headline contributor to the arts—a most impressive person, in terms of the world's tallest building; a gentleman of chic and distinction, when judged by the town house or the country place he has created."





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CHARLES H. UMBRECHT, ARCHITECT

Milo Alexander Guild
GREENWICH, CONN., STORE OF FRANKLIN SIMON & CO.
EDWARD NECARSULMER, ARCHITECT

THE JULY ISSUE

DESIGNING and PLANNING the SMALL LIBRARY. Surprisingly little authentic and up-to-date material exists on the small library building—how it should be planned efficiently and economically. Mr. Charles G. Loring, Boston architect, has specialized in libraries and his Technical News and Research study considers a building with a shelf capacity of not more than 18,000 volumes and a ground area of not more than 3,000 square feet.

Illustrations with plans:

Brownell Memorial Library, Little Compton, R. I.
Matthews Memorial Library, Warren, Maine.
Private Library, Long Island.
Hart Free Library, Townsend, Mass.
Charles G. Loring, architect.

Echo Park Library, Los Angeles, Calif.
W. S. and Pierpont Davis, architects.

Eagle Rock Public Library, Los Angeles, Calif.
Henry C. Newton and Robert D. Murray, architects.

FEDERAL RESERVE BANK AT PITTSBURGH: A moderate-size building for banking and office utilization, designed by Walker and Weeks, architects. It has been widely commented on because of its successful combination of masonry and aluminum as exterior facing. Not only the sprandrels but also the two top stories and decorative door and window treatment are of extruded and rolled aluminum.

FIELD HOUSE for the UNIVERSITY of CHICAGO. The plan of this building, designed by Holabird and Root, architects, was determined by a study of sport requirements developed by Alonzo Stagg, Head Athletic Coach at the University of Chicago. The accompanying article is by Mr. Stagg.

PORTFOLIO OF CURRENT ARCHITECTURE: Features include a swimming pavilion by Philip B. Maher, a skating rink by Holabird and Root, a rowing club at Lake Como by G. Mantero and a bank building by Weary and Alford, together with several small houses.

DEPARTMENT STORES MOVE TO THE SUBURBS. Department and specialty stores, long established in cities, are rapidly setting up branch buildings in suburbs. These branch shops are housed in a new merchandising type of building with new special requirements. They constitute an opportunity for the architect to develop the erection of buildings for chains or supplementary shopping facilities linked to the city store. Plans as well as photographs of a fashion store building for Best and Company at East Orange, N. J., by York and Sawyer, architects, and the Franklin Simon Store Building at Greenwich, Conn., are included.

HOTEL DE VILLE AT LOCHES, FRANCE
DRAWING BY SAMUEL CHAMBERLAIN

THE ARCHITECTURAL RECORD JUNE, 1932 VOL. 71—NO. 6

THE 65th CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS

WASHINGTON, D. C.—APRIL, 1932

Government architecture, professional unification, slum clearance and housing, the Small House Service Bureau, and new residential tendencies were the chief subjects discussed at the A. I. A. convention, held April 27, 28 and 29 in Washington, D. C.

The report of the Committee on Economics of Site-Planning and Housing presented recommendations on which the Institute has authorized a scientific inquiry into the housing problem. This report is published in full in this issue.

The major problem of the past year under the administration of the Institute president, Robert D. Kohn, has been the Unification of the Architectural Profession and the Consolidation of the Elements of the Building Industry. The studies on the Economics of Housing and the Uses of Land, directed by Mr. Kohn and Mr. Frederick Bigger, Chairman of the Committee on Economics of Site-Planning and Housing, are encouraging efforts to discover the need for the architect and to adjust housing, and in fact all other buildings, to the requirements that are discovered by thoughtful study.

It was also made evident by the Convention that better government architecture can be produced by the "employment of architects and engineers in private practice." As pointed out by Mr. Kohn, the campaign to divert awards for government building design from the Government design bureau in the Treasury Department to the architect in private practice "was based on the valid arguments, namely, that the change would make for better architecture, for better buildings and for economy in the cost of construction. On this basis," he said, "we won the support of the profession, of the construction industry, the Chambers of Commerce and the press of the entire country. It was surely legitimate to urge that such work if spread throughout the country would relieve much distress among architects and draftsmen and speed up the award of contracts. The work of the Institute in this respect was timely, too, as an adjunct to the general move for the stabilization of employment through an increased program of Public Works."

The Unification of the Profession throughout the United States has made very apparent progress. The President's report indicates that through "joint efforts of various State Societies working with our own representatives a way has been found to bring together in a democratic fashion all of those who practice architecture, to associate them in a way which will not sacrifice that independence of action of any group within its own sphere which is so essential to advancement. At the foundation of our study is the conviction that in a true democracy the entire body of those who perform a particular function must make progress together, must raise the standards and quality of performance of all who are concerned in it if the full measure of the service is to be realized."

Institute to Direct Survey of Housing

Declaring that "the traditional, inadequately controlled, purely individualistic, and competitive process of house building in America is wasteful and productive of harmful social and economic results to the community," the American Institute of Architects has authorized a scientific inquiry into the nation's housing problems.

The inquiry will be directed "to the economic processes of community development and change so that there may be discovered, first, the unsound economic causes of blighted areas and slums, and, second, what constructive economic measures can be found to rehabilitate the blighted areas and eradicate the slum areas."

The Institute acted on the recommendations of its Committee on Economics of Site-Planning and Housing, of which Frederick Bigger of Pittsburgh is chairman. This report is published in full in this issue of THE ARCHITECTURAL RECORD. A successful effort to wipe out the slums is premised upon the correction of certain uneconomic practices which make for retrogression, a report by the Committee said.

Correction, it was held, must take the form of scientifically directed change based upon accurate, reliable data. One of the first steps is to discover and identify more exactly the anti-economic pro-

cedures involved in community development and change.

The evil social results which accompany the house building process, it was pointed out, do not directly affect those who can afford to occupy and maintain high-standard housing. Excessive subdivision of land into building lots of which vast quantities remain unoccupied was called a particularly costly handicap to the community. The purely speculative land subdivider, the committee urged, should be compelled to give way to those who carry through to final completion the whole synthetic process of land subdivision and construction of utilities and dwellings.

Architects' Small House Service Bureau

There was more expressed interest in questions arising from the Architects' Small House Service Bureau than in any other subject on the program of The Institute. Should or should not the Institute continue to sponsor the Bureau and its sale of accredited house plans at small cost?

In a spirited debate Mr. Seymour Williams of the New Jersey Chapter opposed the continuance of the Bureau under Institute relation. He pointed out the encroachment of the house plan service upon the practice of the architect, chiefly in small towns. Mr. William Stanley Parker, as spokesman for the Bureau, defended the distribution of plans at cost to those homebuilders who would not, without the existence of the Bureau, employ an architect to draw up plans and specifications. It was apparent that opposition was almost unanimous among architects of small communities where plans were sold, or likely to be sold at a price of from $25 to $35 in competition with the architects' customary charges of from 4 per cent to 10 per cent of building cost with supervision.

> The discussion terminated in a resolution that:
> "It is the sense of the meeting that the indorsement of The American Institute of Architects of the Small House Service Bureau be continued, with the recommendation that the services and distribution of plans be only through architects."

The method for continuing the services of The Bureau is to be worked out by the Executive Committee of the Institute.

Residential Tendencies Revolutionized

Paul Mazur of Lehman Brothers, investment bankers of New York, delivered what was, perhaps because of its timeliness, the most important address of the Convention. He advocated the adoption of the five-day week, which he said would work a change in the living habits of the American people comparable to that resulting from the advent of the automobile. This, he said, would be a most promising means of arresting "the vicious spiral of deflation."

The awakening would first be felt in the building industry, Mr. Mazur said, because the largest single deficit in the social economy occurs in home building. This deficit, measured as a recession from proven living standards of the past, Mr. Mazur estimated at $3,000,000,000.

The two-day week-end accompanying the five-day week would, he thought, revolutionize residential tendencies throughout the country, and bring about the greatest period of building this or any other country has ever seen. It would, he pointed out, cause a wholesale exodus from the cities and make the United States a nation of suburban dwellers. The resultant demand for homes, he predicted, would give a tremendous impetus to building activity. Other lines of business would then be accelerated, and a general upturn would ensue. He advocated Government credit to help the American home builder. American money, he said, had been used to finance the building of German homes and these homes will remain though the borrowers default. Illustrating the low ebb of the building industry in the United States, he said that total building operations for February of this year aggregated $15,000,000 while the loss from fire and tornado was $50,000,000.

If the Government advanced $500,000,000 through the Federal Reserve for rediscount of mortgages on new homes, the result would be to create a volume of new business in the building industry aggregating $1,200,000,000.

Previous depressions, Mr. Mazur said, have been ended by accident, of which war is the most frequent example, the introduction of the automobile being another. In 1921, besides the stimulus afforded by the automobile, there were the additional stimuli of increased exports brought about by American financing of Europe and the advance by the Government to the railroads of hundreds of millions of dollars when the railroads were returned to private control.

New Officers

Mr. Ernest J. Russell of St. Louis was elected President of the Institute as successor to Mr. Robert D. Kohn. Other officers chosen by the Institute were: First vice-president, Charles D. Maginnis, Boston; second vice-president, Horace W. Peaslee, Washington, D. C.; secretary, Frank C. Baldwin, Washington, D. C.; treasurer, Edwin Bergstrom, Los Angeles.

Mr. Russell, long prominent in the civic affairs of St. Louis, and a leader in the advancement of the profession of architecture, has been a first vice-president and director of the Institute. He organized and was for many years chairman of the National Board of Awards for Jurisdictional Disputes in the Building Industry. During the War he was Deputy Chief of Production of the Housing Division of the United States Shipping Board.

He is chairman of the City Plan Commission of St. Louis, and a former chairman of the General Council on Civic Needs of St. Louis.

ECONOMICS of SITE-PLANNING and HOUSING

This report, presented at the Institute convention, recommends that:

1. Economic forces should be recognized.
2. Anti-economic practices should be eliminated.
3. Scientific guidance is necessary.
4. Specific research should be undertaken.
5. Housing experiments should be continued.
6. Both new developments and slum eradication are necessary.

The report was prepared by the Committee on Economics of Site-Planning and Housing, headed by Frederick Bigger, chairman. Other members of the committee: Frederick L. Ackerman, G. Frank Cordner, George H. Gray, P. John Hoener, Eugene H. Klaber, C. W. Stedman, Clarence S. Stein and Henry Wright.

CONCLUSIONS AND RECOMMENDATIONS

1. Individual site-planning and housing projects cannot be considered apart from their relationship to the economic environment and financial mechanisms obtaining in the community where they are undertaken. An accurate and complete understanding of such economic factors presupposes a familiarity with the processes of community growth and change.

2. The architect should acquaint himself with the financial and other procedures characteristic of development and change in his community:

a. because his practice is materially affected by the forces operating through them, and
b. because the building industry has a vital stake in any construction or reconstruction of the community.

3. This report has been prepared so that it may be either (a) accepted as a sufficiently valid indication of the need to improve current financial and other practices, both public and private, or (b) accepted as an introduction to a more intensive and thorough study by the individual architect.

4. When fortified with the fullest possible knowledge of the economic factors, both sound and unsound, which are involved in the field of community planning, site-planning and housing, architects should cooperate with land owners, dispensers of credit, site-planners, builders, and others, in efforts to devise and construct well-planned housing projects, so safeguarded that these projects may be (a) community assets and (b) demonstrations of technical skill in the creation of high-standard housing.

5. The traditional, inadequately controlled, purely individualistic, and competitive process of house building in America is wasteful and productive of harmful social and economic results to the community. Of course, the evil social results do not *directly* affect those who can afford to occupy and maintain high-standard housing.

Excessive subdivision of land into building lots, of which vast quantities remain unoccupied, is a particularly costly handicap to the community. The purely speculative land subdivider should be compelled to give way to those who carry through to final completion the whole synthetic process of land subdivision and construction of utilities and dwellings. Attention is called to a full discussion of this idea in "Control of Land Subdivision and Building Development"—brochure, American City Planning Institute, 1928.

6. The technique of site planning and housing has already made great advances. Projects have been completed, in this country and abroad, which are invaluable demonstrations for the guidance of the architect and others in undertakings yet to be launched. Some of the projects are examples of the use of financial methods not common in this country, and from which something is to be learned by contrast with traditional American methods. Encouragement should be given to such inventiveness and ingenuity as will permit the highest type of design and construction that is attainable under the existing financial set-up or under any modified financial procedures which may be initiated.

7. At the present time, and probably for many years to come, the methods of "large-scale operation" will produce the maximum financial economy, the most efficient planning, and the most extensive provision of amenities and social goods. (See report of Committee on Large-Scale Operations of the President's Conference on Home Building and Home Ownership, December, 1931.) The greatest protection of housing developments against physical, economic, and social deterioration will be obtained, in most cases, through some form of unified or collective ownership of housing projects.

8. However great the accomplishment of new high-standard housing in new localities through skillful site-planning, large-scale operations, or advanced technological process, the problem of slum elimination and the rehabilitation of blighted areas remains and cannot be ignored. It is a part of the whole picture. These retrograde dwellings and disintegrating neighborhoods are an economic

drag upon community improvements, particularly upon new housing ventures. Therefore, the substitution of high-standard housing for degenerating and low-standard housing must be accepted as a major objective of both social and economic importance. It is scarcely necessary to point out that the elimination of the slum will offer special opportunities to the architectural profession and the building industry.

9. A successful effort to eradicate the slum is promised upon the correction of certain un-economic practices which make for retrogression. Such correction must take the form of scientifically directed change based upon accurate, reliable data. Constructive steps can be taken immediately. One of the first steps is to discover and identify more exactly the anti-economic procedures involved in community development and change. To this end, a scientific inquiry has been proposed to an important Foundation by this Committee with the indorsement of the Board of Directors of the Institute.

It is recommended that the American Institute of Architects, in Convention assembled, indorse the proposal of the Committee on Economics of Site-Planning and Housing and the Board of Directors of the Institute: that a scientific inquiry be directed to the economic processes of community development and change so that there may be discovered, first, the unsound economic causes of blighted areas and slums and, second, what constructive economic measures can be found to rehabilitate the blighted areas and eradicate the slum areas.

SIX MAJOR PHENOMENA OF COMMUNITY DEVELOPMENT AND CHANGE

1. Impaired Financial Condition of Local Governments

Many municipalities are in a weak, if not actually precarious, financial condition. A few, perhaps, are on the verge of bankruptcy. The pyramiding of municipal debt is a well-known operation. Public attention is usually directed to this condition in the larger urban centers. Less is known of the financial condition of county units or of satellite regional units which surround the urban center, although the financial condition of these environmental localities would appear to have considerable importance because of their character as the economic hinterland of the metropolitan center.

2. Public Credit for Complete High-Standard Services Inadequate

Municipal credit is obviously inadequate to supply all residents of a city or an urban region with completely developed streets and utilities of the type considered desirable, if not actually essential, for modern American communities. Beyond these, only a few more forward-looking and fortunate communities have attempted to provide, with any adequacy, those parks, playgrounds, and other recreational areas which become increasingly necessary as buildings crowd together and occupy more and more of the once vacant private land.

3. Public and Private Credit Impotent to Prevent or Rehabilitate Sub-Standard Housing or to Substitute High-Standard Housing

Local governments lack the financial and legal capacity to cope with and to stop the depreciation and obsolescence of large areas of housing. They are now unable to rehabilitate such districts at public expense; they cannot encourage rehabilitation at private expense without an excessive expenditure of public money for so-called "public improvements" which might revitalize the blighted or slum areas. Public credit and private credit alike have been impotent to scrap the blighted areas and slums, or to substitute for them a social and economic asset in the form of less crowded and more scientifically planned modern housing developments.

4. Retarded Population Growth and Shifting of Population

The Census of 1930 reveals: (1) a marked retardation of total population growth, and (2) an increased flow of population from congested urban centers, coupled with a diminishing flow toward them. This is a startling reversal of the traditional population trends and movements to which America has become accustomed. The Census also indicates more radical shifts of population within the corporate limits of cities than was common in earlier periods, a rapid desertion of certain areas with a corresponding intensification of occupancy in others. These phenomena disclose a progressive and increasingly rapid relinquishment of older housing to the influences which make for retrogression in social and economic value.

5. Reduction and Change of Building Demand

Closely related to the foregoing item, and perhaps properly a part of it, are the appraisals already made of the probable effect of this slowing up of total national population growth and of the redistribution of population. Among these appraisals one may be especially cited—that prepared by Thomas S. Holden, Vice President in Charge of Statistics and Research, F. W. Dodge Corporation ("Effect of Reduced Population Growth on

Construction Demand"—Architectural Record, General Building Contractor, January, 1932). Mr. Holden's calculations and tables merit study. Comparison is made between construction by "existing" (stabilized or static) population and construction which can be assumed to arise out of demands of new population. One significant calculation indicates "that existing population would have to increase its expenditure 25 per cent over the last decade to equalize the anticipated decline in construction for new population. To reach such a scale of increased construction expenditures, the existing population of this decade will either have to have a much larger national income than in the past one or allocate a larger portion of the same-sized income to construction."

Quoting further from the same analysis: "The many factors that may affect the declining tendency rate of population growth may be grouped under four headings, as follows:

"1. More per capita expenditures for construction.
"2. Changing composition and distribution of population.
"3. Rapid obsolescence of buildings.
"4. Economic planning of construction activities.

" . . . It will appear that while the first three factors will tend to influence the situation, their influence is likely to wane rather than increase in the long run, and that more and more we shall have to rely upon economic planning as we develop a sound program and a sound technique."

Mr. Holden believes there will be less and less opportunity for speculative real estate and building development; he thinks "the building industry will of necessity develop a sound economic plan."

6. Architects' Participation in Building Operations

Architects have never enjoyed more than a minor quantitative participation in the designing and planning of this country's total building construction. During the past few years even that small share has been curtailed. Others may undertake, if they will, to explain why trained professional and technological skill has not been drawn upon more largely, particularly in the housing of the moderate and lower income groups of the population. Certainly one of the basic reasons, if not actually the primary one, has been the speculative builder's preoccupation with his dominant objectives of sales and quick profit. For other builders the pressure of financial procedure has made it seem impossible to include in their calculations an item for an architectural fee.

The allocations of housing expenditure among various types of dwelling and in different price ranges are interestingly recorded, with other valuable information, by Robert Whitten in the third volume of Harvard City Planning Studies, "Neighborhoods of Small Homes" (by Robert Whitten and Thomas Adams). This volume is recommended to the attention of architects.

LOOKING FURTHER FOR CLUES

If the major phenomena of community development and change are examined further with their inter-relationships in mind, more can be understood of the machinery we have used and of the manner in which it works. Although it is obvious that there have been unsound economic practices in operation, it is desirable to discover and identify them more exactly, and to learn what has caused them to persist. This is particularly true with respect to their influence upon the building industry, and with respect to the part they play in preventing the creation and maintenance of permanently safeguarded housing of a high standard.

The Committee on Economics of Site-Planning and Housing is not equipped now to undertake a scientific inquiry of the kind necessary to evaluate, in an adequate manner, the related financial and economic factors. It is not yet prepared to appraise the merit of any modifications of present practices which have been suggested, however promising they now appear. Therefore, with the indorsement of the Board of Directors of the Institute, a program of scientific economic research has been proposed to an important Foundation. (No recommendation was made concerning the agency by which the inquiry should be conducted.) Meantime, pending the approval or rejection of that proposal, the following further elaboration of the general picture is essayed.

Effect of Competitive Developments

In America the housing and re-housing of the vast majority of the population has been a competitive process. The results are apparent. Wherever superior housing becomes available to any particular economic class, the former dwellings of that class are vacated and are either (a) replaced by the superior or more modern type of housing, or (b) occupied by people of a lower income group. The first kind of change is usually not extensive. The second and prevalent kind of change affects more people, since it involves the successive moving up of each class of income group into the housing made vacant by the next higher income group. This process makes for shifting residential population. It leaves at the bottom an increasing number of obsolescent, depreciated, and actually decrepit properties which collectively become slums.

Unless our none too strict health and housing laws are so enforced as to compel demolition of substandard dwellings, the latter remain as income-producing properties. Our communities, generally, have been unable or unwilling, or both, to prevent wholesale retrogression. It is now becoming clearer that there is an economic as well as a social objective in eradicating the slum.

The normal trend from bad housing to good, and from good to something better, is broken periodically when local or general depression compels many families to surrender their dwellings for less desirable ones or to share them with others. This makes for doubling and over-crowding. It is a lowering of the standard of living with all that that implies. Many dwellings, old and new, remain vacant during the depression, and this condition gives rise to the opinion that there is an excess rather than a dearth of housing, a mischievous notion which tends to encourage neglect of existing dwellings and to discourage the erection of new ones. The actual situation, when analyzed in the light of an observable drop in living standards, reveals that there is an excess of inferior dwellings, a lack of social control to prevent over-crowding and the occupancy of undesirable structures, and a real shortage of good houses.

In the trend toward better housing—accelerated in prosperity and halted or reversed in times of depression—the dominant factor is not the well-being of the people who are housed, it is the pressure exerted by our peculiar financial procedure and its sanction—profit. This is buttressed by unwieldy and antiquated legalities which are obviously unsound from an economic point of view. The validity of the statement is not affected by the fact that there may be other causal forces—not primarily economic in character—such, for example, as the concentration of racial or social groups in particular localities, segregation or isolation induced by topographic conditions, and the like.

Pressure of Financial Factors

The pressure of financial factors affecting housing (and building generally) compels an unremitting search for economies in planning and construction. A problem is placed upon ingenuity as an aid in "beating the game" which is so inflexibly fixed by the financial set-up. Among the results of such effort are increasing skill in site-planning, in the grouping of buildings, and in the creation of more adequate and appropriately designed open spaces.

Less effort, or less successful effort, has been directed to the search for a way to escape the maladjustments which our traditional practices involve. As a matter of fact, the thing we should be looking for is better and more equitable adjustment between two things which now pull in opposite directions. They are, on the one hand, the interest and aim of the private property owner; and, on the other hand, the interest and aim of the collective group of private property owners who make up a dominant part of the community and whose collective action is exercised by their chosen public officials. Whether the private owner of property be an owner-occupant of a dwelling or a landlord, he is dominated by the profit motive, i. e., when his property is for rent or for sale he welcomes the placement of a maximum financial value upon it. His wealth is calculated with the objective in mind; his bookkeeping, if he has any, is based upon it. He objects to increased taxation, but he desires the improvements, at public expense, which promise to make his property more valuable. Acting collectively with his fellows, through public officials, he finds that he has to pay outrageous prices for the land or buildings that must be taken from John Doe or Richard Roe to make way for a public improvement. Still acting collectively, he finds it too costly to buy the private property necessary for the recreation of his children, as a substitute for the private yard play space that has been covered over by "more profitable" buildings.

The question to which we must find the answer is: What is the best balance to establish between the financial objective of the citizen as a private owner and the financial objective of the citizen as a community partner? Other questions follow: What should be the legal relationship between the detached individual and the individual as a community partner? Should a single property be utilized to gouge an excessive profit out of other properties? Are all private property owners entitled to make the same rate of profit at the expense of all the other private properties? What rate of profit should be permitted to John Doe? More than to Richard Roe? How much more? Why? What should be the relation of one man's land or building to the common land and facilities which he and his fellow citizens set aside to serve everybody? Are all these questions purely academic ones? Well, let us see.

When a costly street widening has been made, the municipal real estate assessor raises the "assessed valuation" of the abutting property. Taxes are then based on that higher valuation. Faced with these higher taxes, the private property owner raises the rentals of his building or he builds a more remunerative building. In the latter case he quickly tends to cover all his land (often unwisely, because he overlooks the economic value of permanently preserved open spaces for light and air and appearance). If all the more bulky buildings accommodate a larger number of people, if the temporarily stimulated business concerns attract more people to that street, a still more ample thoroughfare will be advocated. Improved public transportation facilities may be asked for, ostensibly to carry people away from the congested street, but just as certainly to return the profitable crowd the next day. But, meantime, the land and buildings which the municipality must acquire for any new widening of the street have become very valuable! Then comes the final plea: that the

cost of what is advocated will be repaid to the municipal treasury within a short time, because the new values that are to be created will enable the property owners to pay increased taxes.

This, then, is the sequence, and these are the expanding cycles: (A-1) a public improvement; (A-2) higher property values; (A-3) higher taxes; (A-4) more bulky buildings, more intensive use of private property; (A-5) more people and vehicles in the street; (A-6) demand for "relief from congestion"; (A-7) specific proposals for new public improvements; (B-1) new improvements at public expense; (B-2) increased property values; (B-3) still higher taxes; (B-4) still more intensive use of private property; (B-5) still more "congestion" of people and vehicles in the street; (B-6) demands for still more "relief from congestion"; (B-7) new schemes proposed to increase values; (C-1) another publicly financed improvement program; and . . . so . . . on! All through this vicious spiral the public treasury never comes out ahead, its credit becomes pledged to the limit; some property owners are more or less constantly "on the make," other owners have nothing done to help their own properties the while they contribute taxes toward this effort to increase the favored owners' property values. Is it any wonder that financial processes so inequitable and absurd should make congestion profitable to some, and to that extent desirable—or that the municipality and its neglected parts should be led into bankruptcy?

Public Maintenance of Depreciated Housing Areas

Public facilities—streets, sewers, water, lights, etc.—which serve the blighted area and the slum, have to be maintained, after a fashion at least, by public funds. They may, or may not, have been adequate when first supplied; but they are almost certain to be neglected after decline has set in, thus accelerating retrogression. If, however, standard maintenance of these facilities should be continued, either the tax contribution of depreciated properties is less than the cost of the services they enjoy, or they must be over-crowded to produce sufficient revenue to meet such a charge. Whether or not the blighted area and the slum pay for their own facilities, it is a theoretical fiction that they contribute their proper quota toward the provision of facilities for other and higher-standard localities, perhaps even for those new ones in which modern housing is set up to compete with them. It is nonsense to pretend that retrograde areas are anything but an economic and social burden to the community of which they are a part. Is there an alternative to saddling high-standard housing and nonresidential properties with the cost of maintaining even inferior public services for blighted areas and slums which cannot pay for them?

The municipality *owns* as well as operates the public facilities in moribund districts.* If it neglects them it suffers loss on capital-equipment and by inefficient operation. If it maintains them at standard, it mulcts its economically healthy districts to pay the cost, and delays the abolition of blighted areas and slums, thereby encouraging the creation of new areas to meet the demand for good housing—a procedure which entails extensive outlays for new capital-equipment—streets, water lines, sewers, police and fire protection, schools, parks, playgrounds, and the like. In effect the municipality does two ridiculously contradictory things, i.e., it preserves a dangerous and costly pathological condition and at the same time attempts to compensate for it by vast expenditures for new projects. It is as if a mad physician were to administer poison and antidote, toxin and anti-toxin, in concurrent doses.

Clearly, the continuance of sub-standard housing in the urban picture is a principal cause of new housing developments which force the community to expand over wider territory, to become physically difficult to administer, costly to repair, and extravagant to operate. In these trends, with their unsound economic basis and the dubious financial and legal procedures which they involve, is to be found the obvious explanation of the disconcerting fact that the larger the community, the greater the per capita cost of operating it.

Valuation and Taxation

Official appraisals of property are attempts to evaluate real estate as a basis for determining the share of community costs which the individual owners must bear. In this country, valuations on private property—whether fair or otherwise—are constantly challenged by owners. The appraisal technique is clumsy in its efforts to differentiate between residential and other types of real property. Ordinarily, no account is taken of the important distinction which ought to be made between housing occupied solely by the owner with saving to himself, and rented housing which exists only as a commercial, profit-making commodity. This tends to throw owner-occupied property into the speculative field, and tempts the owner to surrender the "social home values" for the lure of pecuniary profit. Moreover, since the assessed valuation is designed to represent all, or a fixed proportion, of a property's *market value*, the procedure is awkward and misleading. All properties are appraised at the same time—*as if they were for sale individually; and simultaneously;* but if the latter were actually so, there would be so great an excess in supply that valuations would have to be lowered almost to zero.

More attention should be given to the processes of evaluation and assessment, both of which are financial procedures fundamentally involved in the housing problem. Inequalities and inconsistencies in real estate evaluation and taxation have been cited by proponents of various taxation programs

*The operation of public utility companies which may render some of these services may be ignored for the purposes of the present discussion, as that fact does not destroy the validity of the general picture.

—higher income levies, taxes on machinery or manufacturing, taxes on business, the sales tax, and taxes on land values only (Single Tax), for example—as arguments for their particular creeds. It is rather curious, however, that few if any tax reform advocates have coupled with their proposals provision for (a) some principle to be applied to the differentiation of land as to its value and its most appropriate use, or (b) a specific mode of control in the manner and intent of building upon land.

Moreover, there seems to have been little concern to discover a principle of valuation which would be more rational and economically sound than the currently accepted rule of thumb criterion—"market value."

Divergent Ownership and Objectives

In any community the private properties might be classified in terms of their divergent social and economic use, thus:

A-1. Residential property occupied solely by the owner as a home;

A-2. Residential property cooperatively owned and occupied as dwellings;

A-3. Residential property whose owner rents it for pecuniary profit;

B-1. Business or industrial property occupied by the owners for the purpose of conducting profitable business or manufacturing operations;

B-2. Business (or industrial, if any) property collectively owned and occupied by the owners for the purpose of conducting profitable business or professional practice;

B-3. Business or industrial property whose owner rents it for pecuniary profit (office buildings, for example).

It is important, also, to discriminate between the holder of a single, small property and the holder of large properties. Both feel the burden of direct taxation, it is true; but the increase of these burdens tends to eliminate the small property holder as a payer of direct taxes on real estate. This is apparent in the increasing number of such small holdings which the municipality must expropriate for non-payment of taxes. There are, of course, many other financial difficulties which may force the small property owner out of the housing picture; but the point is that, in instances of tax delinquency, it is the community itself which has eliminated the home owner and made more tenuous his tax-paying participation in the public business and the communal partnership.

Housing Experiments

Out of the movement called "housing reform," purely ethical and social in its inception, there have come practical experiments in providing better housing. On an improved financial basis some progress has been made—notably in London—in the rehabilitation of slum areas. In America, thus far, attempts at radical abolition of slum areas have scarcely progressed beyond the stage of fond desire.

The most outstanding housing experiments are of two general types: (a) individual or groups of individual dwellings, outside of or in the outer parts of urban communities, and upon low-priced land; (b) multiple dwellings, especially the "garden apartment" type, where higher land and building costs coupled with less land coverage are compensated for, financially, by intensive occupancy.

Within the very definite limitations of a rigidly financial but economically unbalanced set-up, great advances have been made in the technique of site-planning and housing. The garden communities and some of the urban housing of continental Europe and Great Britain, together with outstanding experiments in this country, give ample evidence of what technological skill can accomplish. Some of them demonstrate further possibilities of accomplishment when traditional financial pressures are relaxed. The social and economic value of these experiments will not be underestimated. They will be object lessons of increasing value to real estate developers, architects, builders, and the dispensers of credit. Nevertheless it is true in this country, and largely true in Europe (outside Russia*), that these modern housing demonstrations are isolated and relatively small cases of high-standard dwellings surrounded by, and subject to the hazardous influence of, environments of inferior stability and disintegrating economic and social tendencies.

The last statement must not be misunderstood. This Committee is far from calling such experiments futile. Inventiveness and ingenuity are not to be discouraged. The Committee merely points out that these advanced experiments are only a part of the picture—and that there are more basic adjustments to be studied which have a larger significance than attempts to "beat the game."

Development of Site

Modern and efficient site-planning has demonstrated the value of skillful technique in adjusting grades, layout of surface roadways and sub-surface utilities, etc., in relation to the number, grouping, and character of the dwellings. There appears a clear divergence between the types of site-plan best suited to a centrally-owned housing development for rent, and those types which lend themselves to the separate ownership of lot-and-house property. Mr. Henry Wright's studies have clearly indicated this difference. They show that the maximum financial economy, the most efficient planning, and the greatest neighborhood protection are thus

*Germany and Holland are not included in this exception because, although outstanding in their record of accomplishments, they retain private property and much of their older housing is on the down grade.

far obtainable when large-scale operations are involved, and when the ownership is centralized or cooperative. On the other hand, the projects designed to permit individual dwelling ownership cannot be designed with the same financial and other economies. They tend to impose a greater cost of maintenance upon the local government; and they have a more limited, and often precarious, protection against undesirable change, because of the diverse economic and civic points of view of individualistic owners. Mr. Wright has warned the planning copyists against appropriating plan forms suitable for the centralized or collective ownership schemes—particularly if, prior to the sale of individual properties, all of the dwellings and all of the utilities and services are not to be completely finished.

In parts of congested urban areas, site-planning development has been principally concerned with the relation of multiple-family dwellings to the surrounding and inclosed open spaces (courts). This type of project has evolved into what we call the "garden apartment." Skillful as the planning of these actual buildings may have been, and however excellent the design of the exterior of the buildings, the first challenge to our attention might justifiably be the amount of open space that has been preserved, and how it has been possible to preserve it.

LOOKING AHEAD

Adjusting the Community to the Machine

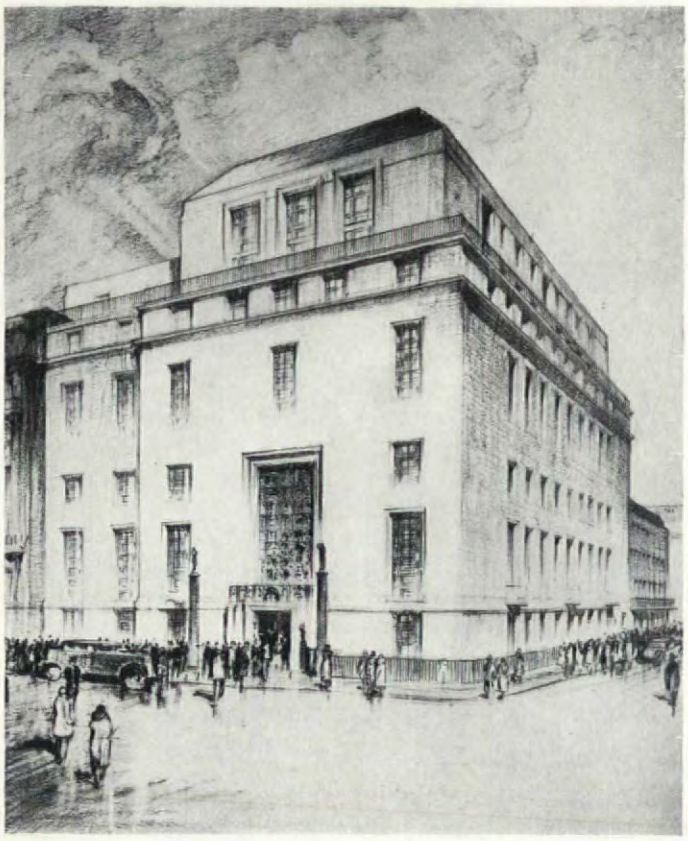
There are those who say the machine should be adjusted to the community and not the community to the machine. To this nebulous pious wish the committee subscribes—at least in part. If the present financial procedure constitutes a machine, it is submitted that the machine is not based on modern conceptions of efficiency, that it is badly in need of improvement. However, there are products of the machine age which appear desirable and have to be accommodated, notably the automobile. Hence the demand for the creation of efficient channels for the main streams of vehicular movement. If we eliminate the economically unsound financial practices now current in the community picture and thus relieve some of the undesirable pressures and influences, it is more than likely that the creation of entirely adequate traffic channels will be a much less difficult task than it now appears to be. Then it will be possible to have the community network of traffic ways more scientifically adjusted to the needs of the private properties they are supposed to serve. As long as the current irrational practices obtain, all our theoretically efficient major street plans are beyond our financial ability to pay for. All the more ideal schemes for a proper distribution and development of public recreation areas are likewise beyond our financial capacity to effect. Under the present unmodified set-up, the necessity to effect public economies will compel most communities to curtail radically the ambitious scope of the plans that have been made to guide future community development and change. We shall always need to know, and to constantly re-appraise, the community's requirements, giving attention both to the constructive contribution of motor transportation and to the vital need for scrapping the slum, for rehabilitating the blighted area, and for the production of more stabilized and higher-standard housing.

Meantime, we must not forget that there are larger ramifications of the threads of the economic fabric than those mentioned in this report. If the whole quantity-production basis of much of our modern life is radically modified, as some prophesy, we shall, of course, have to accommodate ourselves to that.

The Political Method

Political procedure is the principal too with which we shall have to work. That procedure is essentially one of compromise—compromise which is now pathetically ignorant of the significance of economic realities. Our political procedure must become saturated with sounder economic understanding; and that understanding must be acquired by the architect as well as by others. Once such understanding is acquired, those compromises which are inherent in our republican political methods need not be so hazardous to real progress as they often are now. Recognizing this, the Committee on Economics of Site-Planning and Housing does not like to contemplate attempts to correct present obvious maladjustments by purely expedient, emotionally unstable, or too rapidly revolutionary processes. The alternative, of course, is to proceed under scientific direction. Hence the effort in this report to picture the field with which the architect will have to deal.

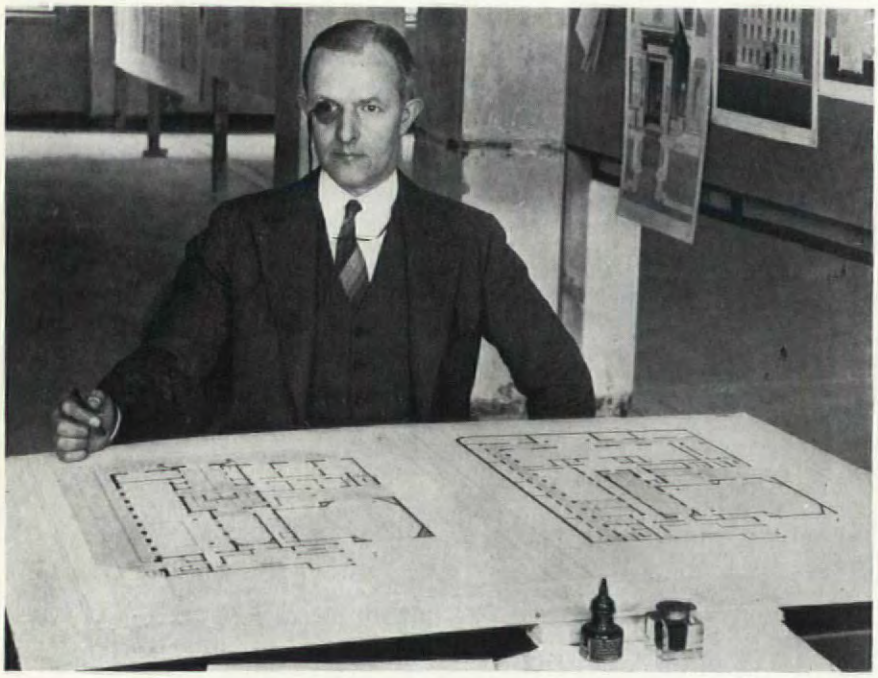
ILLUSTRATED NEWS



New Building for R. I. B. A.

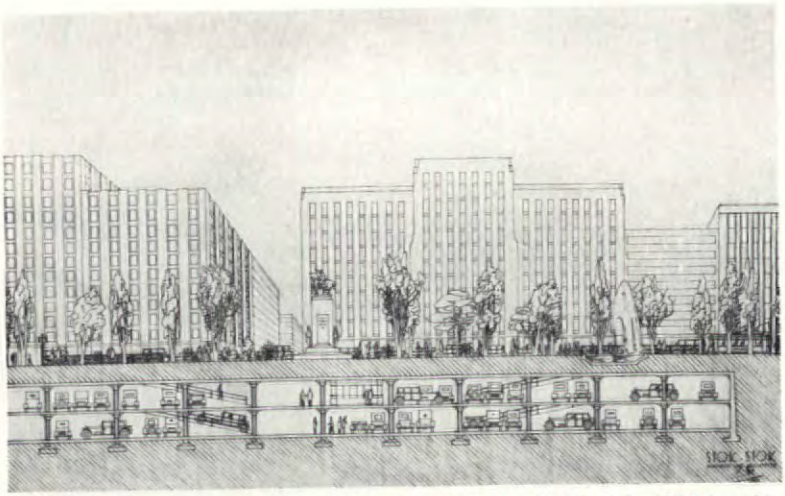
Wide World

DIANA OF MADISON SQUARE by Augustus Saint-Gaudens, now in the Pennsylvania Museum of Fine Arts. This statue topped the campanile of the old Madison Square Garden. It was preserved after the demolition of this building.



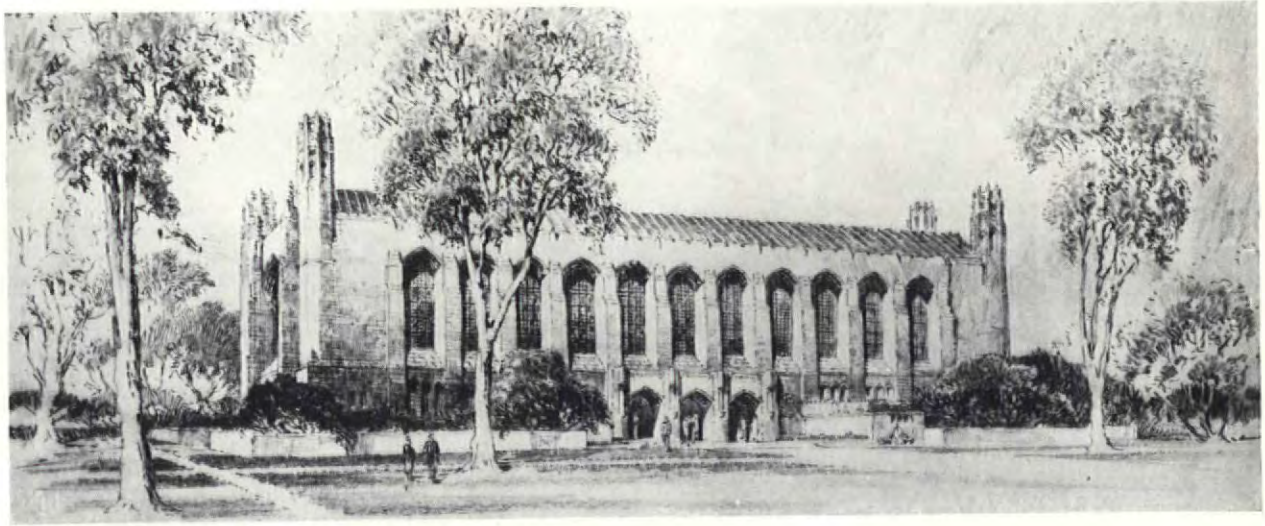
NEW BUILDING FOR THE ROYAL INSTITUTE OF BRITISH ARCHITECTS. A new headquarters building for the R. I. B. A. was the subject of a national British competition, in which the architect Grey Wornum was awarded £500 and given the commission for the building. The site is Portland Place, in the west end of London leading from Regents Park to famous thoroughfare of Regent Street. There is a meeting room for the Institute and exhibition halls that are equally accessible to the public from the main entrance. There are also offices, a banquet room, a council dining room, libraries and committee rooms.

HUTCHINSON MEMORIAL BUILDING, Tulane University, New Orleans, for the Medical Department of the University. Favrot and Livaudais, architects.

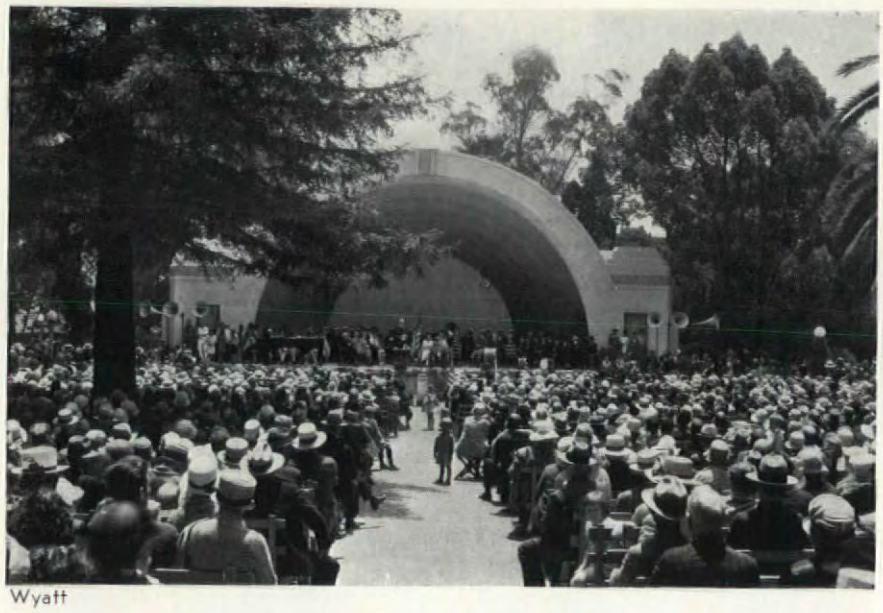


UNDERGROUND PARKING GARAGES IN BUENOS AIRES. This scheme for two-tier auto parking, by the architects Stok and Stok, is intended to solve the street congestion problem in the city of Buenos Aires. These garages are planned to be built under the six central squares of the city, forming a net which encloses the most congested area.

SHEBOYGAN HOSPITAL, Sheboygan, Michigan. Schmidt, Garden and Erikson, architects, E. A. Stubenrauch, associate architect.



CHARLES DEERING MEMORIAL LIBRARY, Evanston, Illinois. James Gamble Rogers, Inc., architects.



Wyatt

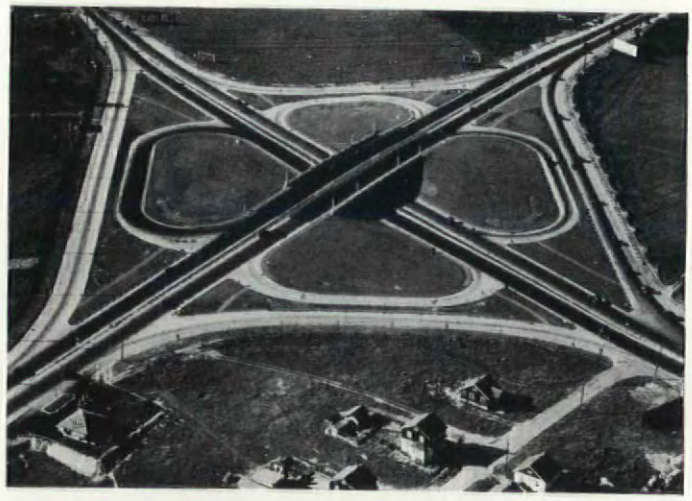
NEW MUSIC SHELL IN PASADENA recently completed from a design obtained in a competition conducted by the Pasadena Architectural Club. The auditorium in front of the shell accommodates 3,000 persons and is laid out in a manner similar to an indoor theater with sloped seating area and aisles.

Keystone-Underwood

MOVIE THEATER ON WHEELS. A portable movie theater with complete talking and projecting apparatus has just been completed in Los Angeles.

Acme

STADIUM FOR WATER SPORTS, erected for the Olympic games in Los Angeles. Ten thousand persons were accommodated in the stands at the dedication.



CLOVER LEAF HIGHWAY INTERSECTION near Woodbridge, New Jersey, by New Jersey State Highway Commission. A traffic crossing without traffic lights.

A CHICAGO HOUSE DESIGNED BY FRANK LLOYD WRIGHT IN 1908

BUILDER AND POET—FRANK LLOYD WRIGHT

By FISKE KIMBALL

To understand Frank Lloyd Wright, whose own effort at self-understanding now lies before us in his *Autobiography**, we must turn to the writers of another period of storm and stress—the great German thinkers who divined the nature of poetic or artistic creation, and who themselves so deeply influenced Wright and, before him, Louis Sullivan.

It was in the later eighteenth century that reaction against an exclusive worship of reason led Klopstock to realize that "true poetry must spring from the deeply agitated heart, in order to stir the hearts of men." Thus arose with Herder the conception of the genius, who by the totality of his faculties, by his senses, his feelings, imagination and reason, could draw upon the primal sources of nature and humanity to bring forth creative works of deep originality, akin to those of nature herself. "The poetic genius," wrote Goethe, "became fully aware of himself and, conscious of his dignity, would create the conditions of his existence independently and thus found a new epoch of intellectual life."

"To create the conditions of his existence independently," that indeed has been the striving of Frank Lloyd Wright, giving unity to his work, to his life. Personality is one; the work and life cannot be separated. "To create the conditions of his existence independently": that makes us understand the building, at twenty-one, of Wright's own first house at Oak Park, the genesis of Taliesin, at once home and workshop; its tenacious rebuilding after tragedy and calamity; the creation of the Tokio studio, of the desert camp, Ocatilla. More deeply, it makes us understand the loyalties underlying the struggle for freedom in life by "this unconventional believer in the Good, the True, the Beautiful, as work and life and love."

One condition of his existence, indeed, he could not control or escape: the heritage of pioneer independence, the heredity of the protestant, the rebel, and the preacher. But it led him to rebel against the very heritage itself in its sterner Mosaic aspects, to demand that beauty should be admitted as well as truth. Society too has been loath to permit him independent control of the conditions of personal existence, and has imposed its penalty, not only on him, but on itself by the loss of many a work.

"To arrest and typify in materials the harmonious and interblended rhythms of nature and humanity," that is how Sullivan, Wright's "beloved Master," expressed the task of architecture—which Wright himself once called "the Idea of the thing —made to sing to heaven." With what freshness of intuition Wright seized on the idea or essence

* Longmans, Green and Company, 1932. 8° 371 pp., Illus. $6.

of the thing in each work he attacked, his book, like his work, bears ample witness. The early houses, in their articulated union of the elements of use, in their harmonious outgrowth of the site, in their multiplied planes, their energized gathering of pier and opening—the Larkin Building, in its humanization of mechanized business, its richly plastic embodiment—the Unity Temple, with use and form so genially fused—the joyous exuberant phantasy of abstract geometric elements in the Midway Gardens—the elemental clarity and simplicity of the National Life Insurance Building—the infinite significant variety of so many other buildings—all these leave us astounded at the imaginative penetration of practical and ideal requirements, flowering in organic form.

"To typify *in materials,*" Sullivan had said—but here it was Wright who was to practice what Sullivan had preached. "As to relying on them for beauties of their own," says Wright, "he had no need, no patience. All materials were stuff to bear the stamp of his imagination and bear it they did—cast iron, wrought iron, marble, plaster, concrete, wood pretty much alike . . . his sensuous ornament . . . his own . . . so lovely a smile evoked by love of Beauty." To Wright the thought of materials is primary and instinctive—the design takes form only in an appropriate material, which itself suggests both structure and pattern. And what a fertility of suggestion and invention!—monolithic, form-cast concrete; concrete cast in permanent forms; the reinforced cantilevered slab-roof; poised cantilevered floors with wall-curtain of glass, copper, and insulation; the woven block-construction. No limited canon: "Stick. Stone. Steel. Pottery. Concrete. Glass. Yes, pulp, too, as well as pigment." "Inventing new construction to make itself beautiful as architecture." We cannot, to be sure, agree with Wright in believing that "there never was, there is no architecture otherwise"—in rejecting the great plastic or even sculptural styles which have no constructive basis. But that construction itself can be made to sing we have the work of Wright and of the Gothic architects to prove.

First, perhaps anywhere in the world, to welcome "The Art and Craft of the Machine" as the tool of a craftsmanship not confined to "handicraft," Wright, we see, does not allow the machine age to demand the rejection of all but machine products: "the ideal does *not* require that buildings must be of steel, concrete, or glass . . . Nor does it even imply that mass is no longer beautiful attribute of masonry materials genuinely used. We are entitled to vast variety in our buildings in our complex age." Sullivan sought "the rule so broad as to admit no exceptions," his reasonings tended to confine his imagination, wrongly, within "types" he himself had first created as individual intuitions. Wright says "For the life of me I could not help, then or now, being interested in the exception as proving any rule both useful and useless." "Consistency? It is seldom the word for the imaginative mind in action." Thus he rejects every demand for a new "style" or "unity of style," to be held in common by the architects of our day and conceived as to be valid also for the future": . . . "the sentimentality that tries to hold life by 'institution' and establishment—are they not all punishment for violation of the first simple law of Freedom: the law of organic change."

One may object that all this is merely the view of a period—a bygone period—of romanticism, individualism. Alas, for such an objection: if we know anything of philosophy it is that individualism is rooted in the very nature of art itself. What is deeply true of art—which, in the midst of our practical problems, we as architects all believe fundamentally we are practicing—is that individual creation is of its essence. What distinguishes it from science, which seeks universal laws and universal forms, is that art seeks individual forms, each differing in its synthesis from every other, each constituting a new unit in the possessions of the world.

No pre-occupation with practical problems alone, no merely mechanical expression of function, will produce this work of art. It only can be when the practical elements have been fused in the soul of the artist that the work of art—essentially, vitally new—can appear. We speak of the influence of economic forces as if merely to incorporate them were the province of art. So long as the new works remain a product of law, of machinery, of economics, they will never constitute a new art.

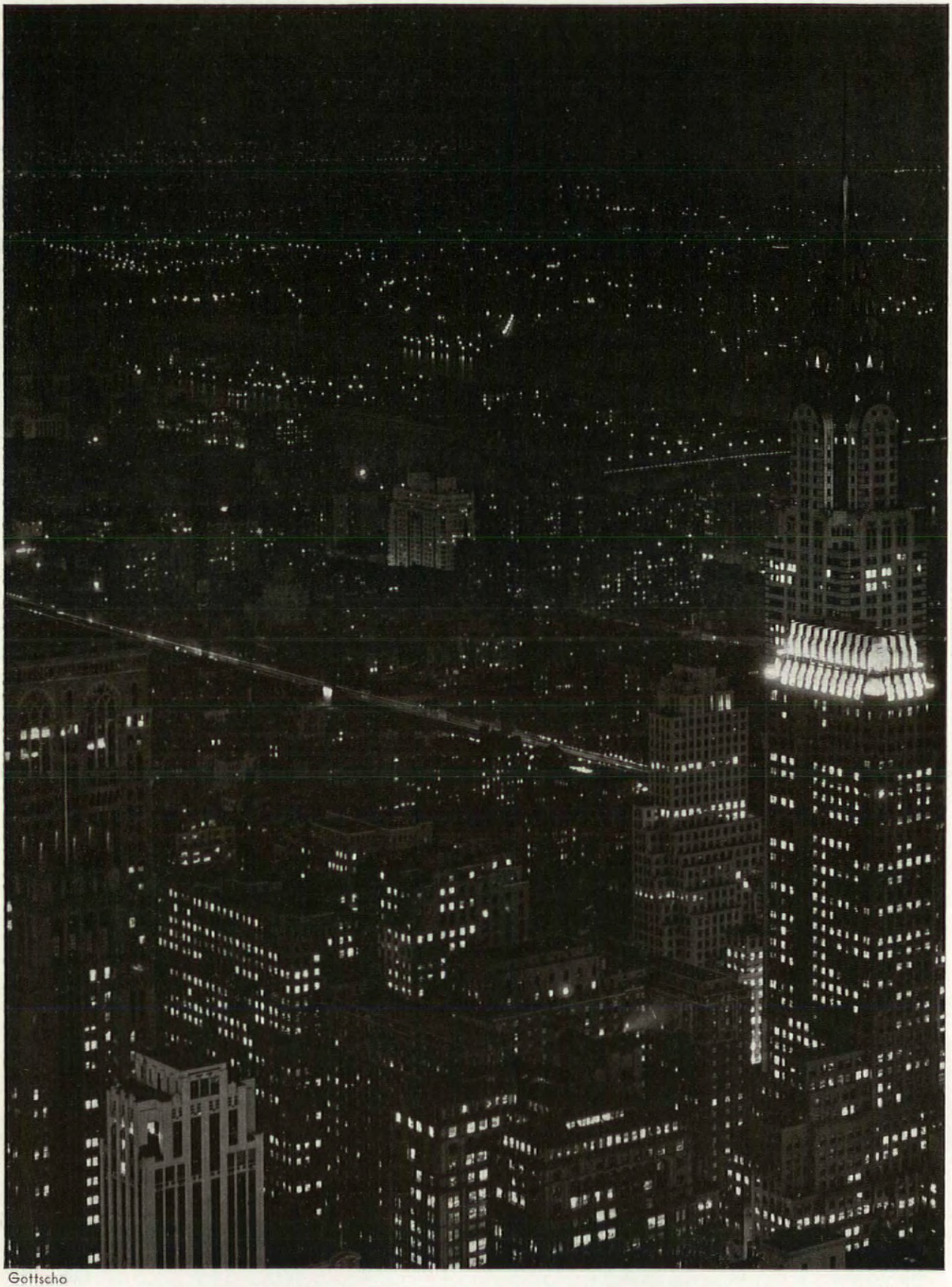
The problem of artistic merit is independent of style. We know that it rests more on the personal force and fire of the individual artist, which can transmute and rekindle old elements, just as it can with new elements create something new under the sun. We may agree, for convenience, to distinguish "types" and "styles"—we recognize, for example, striking instances in archaic Greek and Gothic art—but we know that, in art, the superior merit of any given work lies not in its exemplification of such a "type" or such a "style." Its merit lies just in its differences from any prevailing formula, differences which give it a unique character, and make it a creative "expression." Indeed the philosopher Croce has, in our day, insisted with striking emphasis on excluding from the realm of art any work in which generic formulae have not crystallized in individual entity. "In the end, of course," we must agree with Goethe, "it is only through the spirit that technique becomes alive."

It is one of such creative spirit that America has in Frank Lloyd Wright. From the depths of bitter personal experience Sullivan wrote: "To the master mind . . . imbued with the elemental significance of nature's mood, humbled before the future and the past, art and its outworkings are largely tragic." In Wright too we have a master who has not escaped inherent tragedy, but has enriched us with the only gifts which art can bring, the individual creations of the inspired artist.

NIGHT VIEWS OF NEW YORK CITY

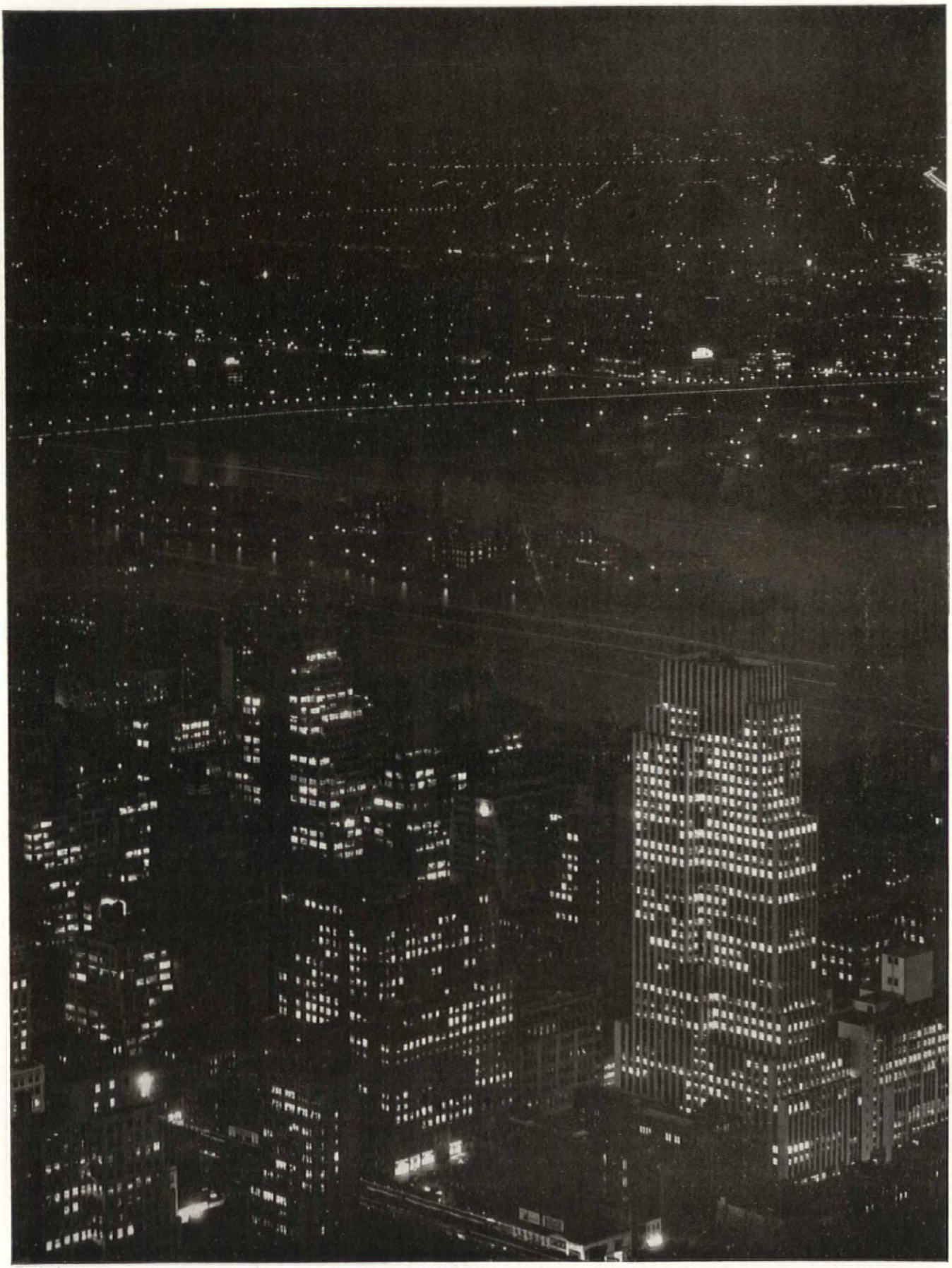
PHOTOGRAPHED BY SAMUEL H. GOTTSCHO

This Portfolio is part of a collection of photographs recently exhibited by Mr. Gottscho at the New York Architectural League. This view of the metropolis shows, at the left, the bright lights of Broadway and Times Square theaters; beyond and near the upper part of the photograph, the Hudson River with the string of small lights outlining the new Washington Bridge; in the upper middle area, Central Park; and at the right, brightly illuminated, Fifth Avenue. The skyscraper seen at the right is 500 Fifth Avenue, designed by Shreve, Lamb and Harmon, architects; it is at Forty-second Street.



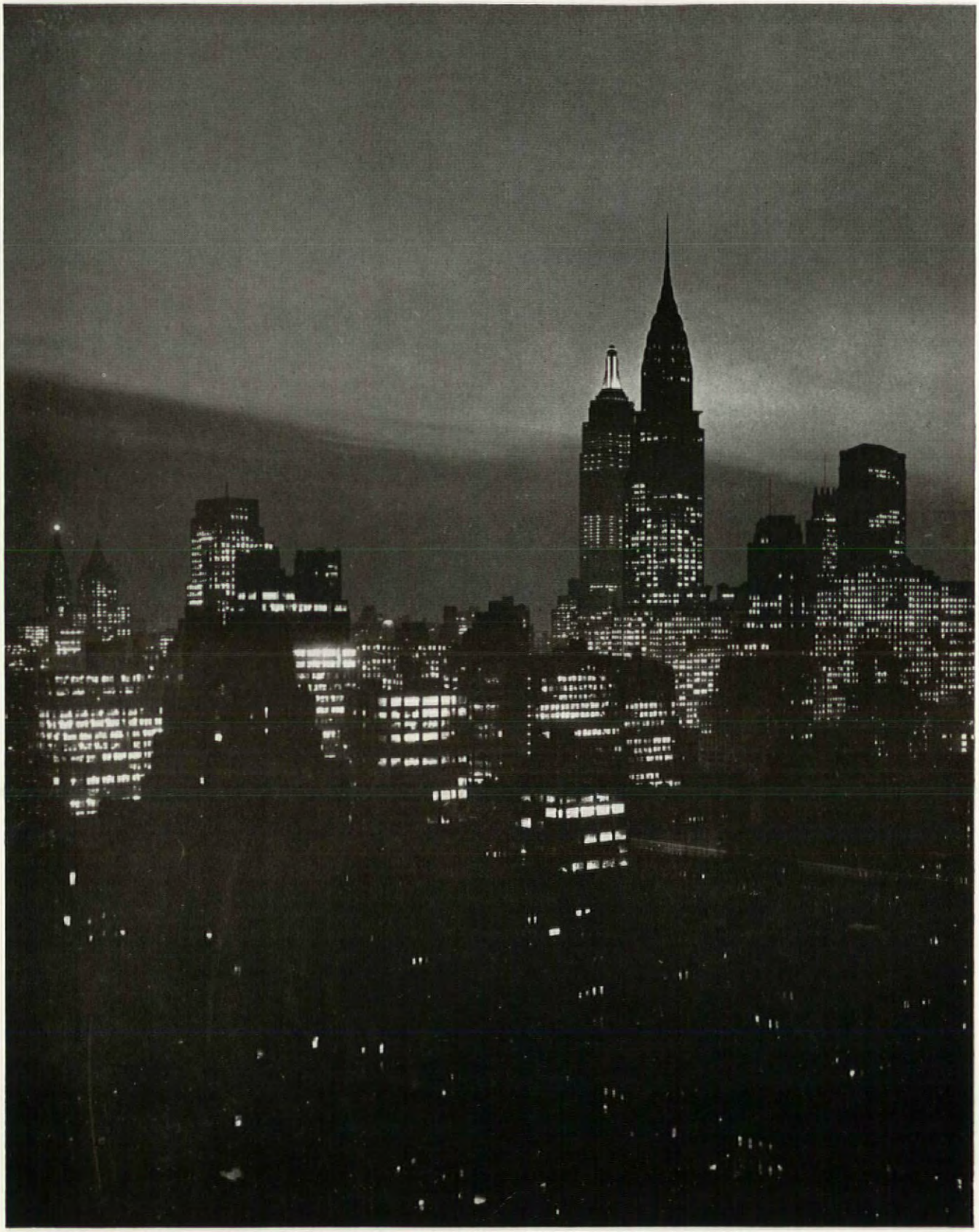
Gottscho

The Grand Central zone of Manhattan. At the extreme left, the Lincoln Building; at the right, the Chanin (tower brightly illuminated) and Chrysler Buildings.



Gottscho

The East River and (beyond) Long Island City. In the foreground (right) is the Daily News Building. Crossing Welfare Island is the Queensboro Bridge.



Gottscho

Silhouettes of Empire State Building, Chrysler Tower and other office and loft buildings of Manhattan, seen at dusk.

THE JUILLIARD SCHOOL OF MUSIC

NEW YORK CITY

SHREVE, LAMB AND HARMON ARCHITECTS

The Juilliard Musical Foundation consists of the original Juilliard School of Music and the Institute of Musical Art of the City of New York. The latter is an undergraduate school of about 1,000 members, the former a graduate school of 150 members. At present the Institute occupies the original building designed by Donn Barber, plus an addition on 122nd Street. The graduate school occupies space on floors over and around the auditorium.

General Plan

Two alternatives were possible in developing this project—to erect a monumental building with a compact logical plan in the center of this plot, which measures 200 by 300 feet, or to retain the Institute Building and build around it.

With the old building retained, the school could operate on premises during the building period. Other reasons aside from a saving in final cost made this retention desirable. One hundred feet to north have been left vacant. If the future development of operatic school should require it, this area may be occupied by a much larger hall. Conditions do not warrant sale of property. The school may want it later. At present it cannot build for profit without being subject to taxation.

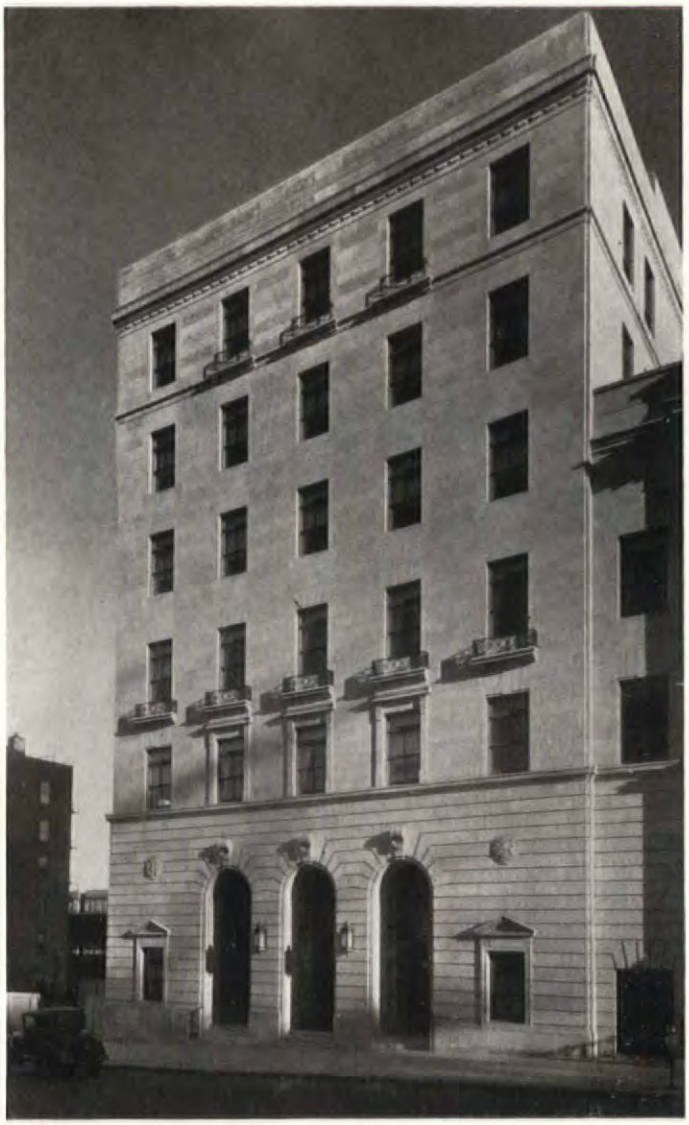
Subway comes to surface on Broadway at 122nd Street, creating a noisy condition. As more than 60 small individual practice rooms were needed, these were placed on the Broadway side and the building is set back from the street. Locker room, store, cafeteria, and other utility rooms take up remainder of Broadway façade so that no studios or classrooms appear there.

Exterior

An attempt was made to keep the new buildings in harmony with Donn Barber's original building as well as in keeping with the present trend and requirements. Carving was almost entirely omitted from new work. The mansard roof was removed from original building.

Interior

New work is modern in character. Decorative treatment of classrooms, studios, corridors and offices was under the direction of Mrs. Elsie Sloan Farley, who also designed the furniture and drapes in the auditorium lounge.



Fischer

The entrance lobby is finished in Formosa Rose, Escallette and Belgian Black marble. Color scheme: grays and rose with black. Deep blue ceiling, 3 tones.

The auditorium is not considered as a theater under the building code for theaters, since seats for performances are not sold. The building, however, does provide ample exits and complete fireproofing.

The color scheme in the auditorium:

Walls—three color spatter, pale peach with lighter tone on flutes.

Ceilings—lighter tones, ornament from light shadows.

Wainscot—hare wood, silver gray with black and walnut.

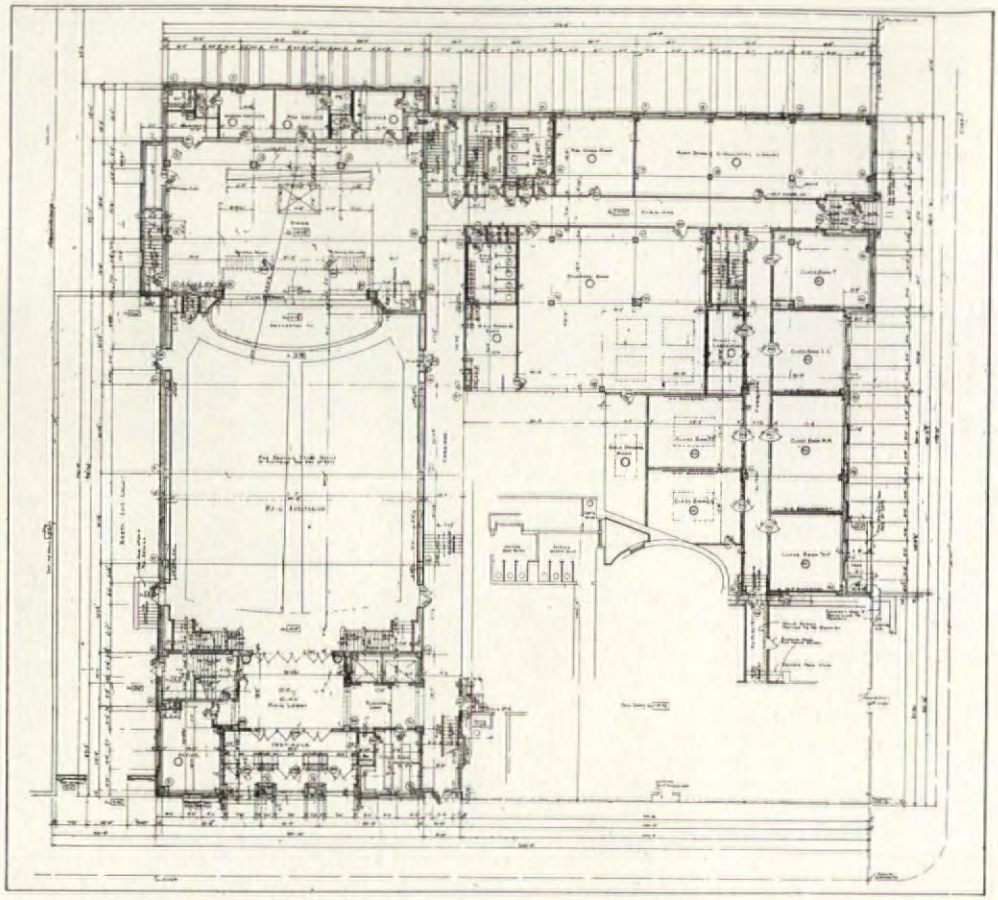
Valance and sides of stage opening—silver and b'ack figured.

Curtain—coral, plain.

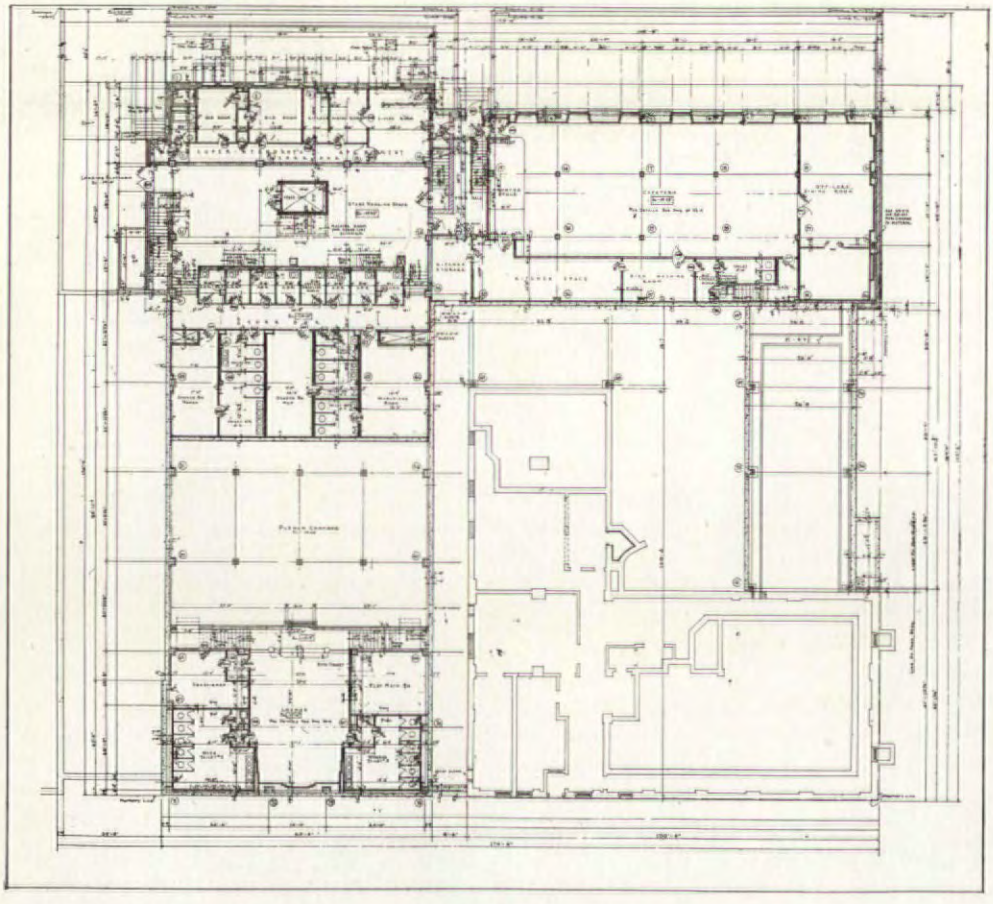
Seats—striped, 3 shades, coral to mahogany.

Carpet—fine pattern, mahogany to black.

JUILLIARD SCHOOL OF MUSIC

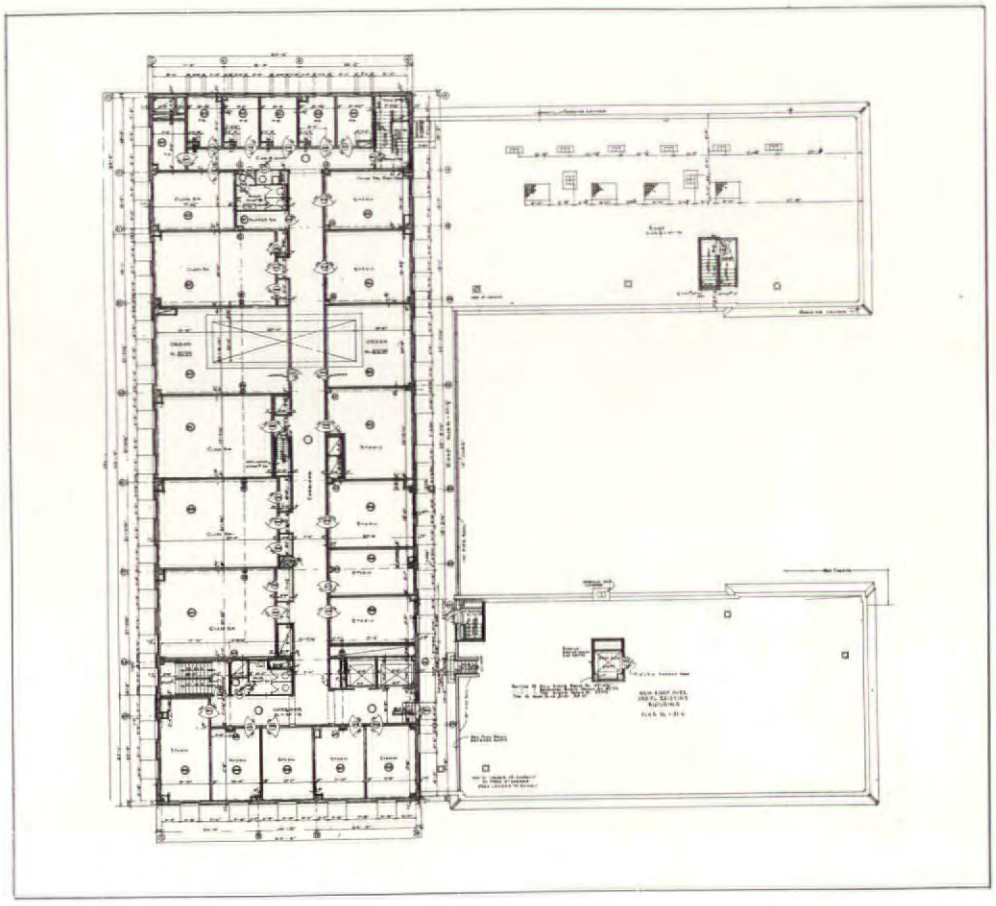


Basement Floor Plan

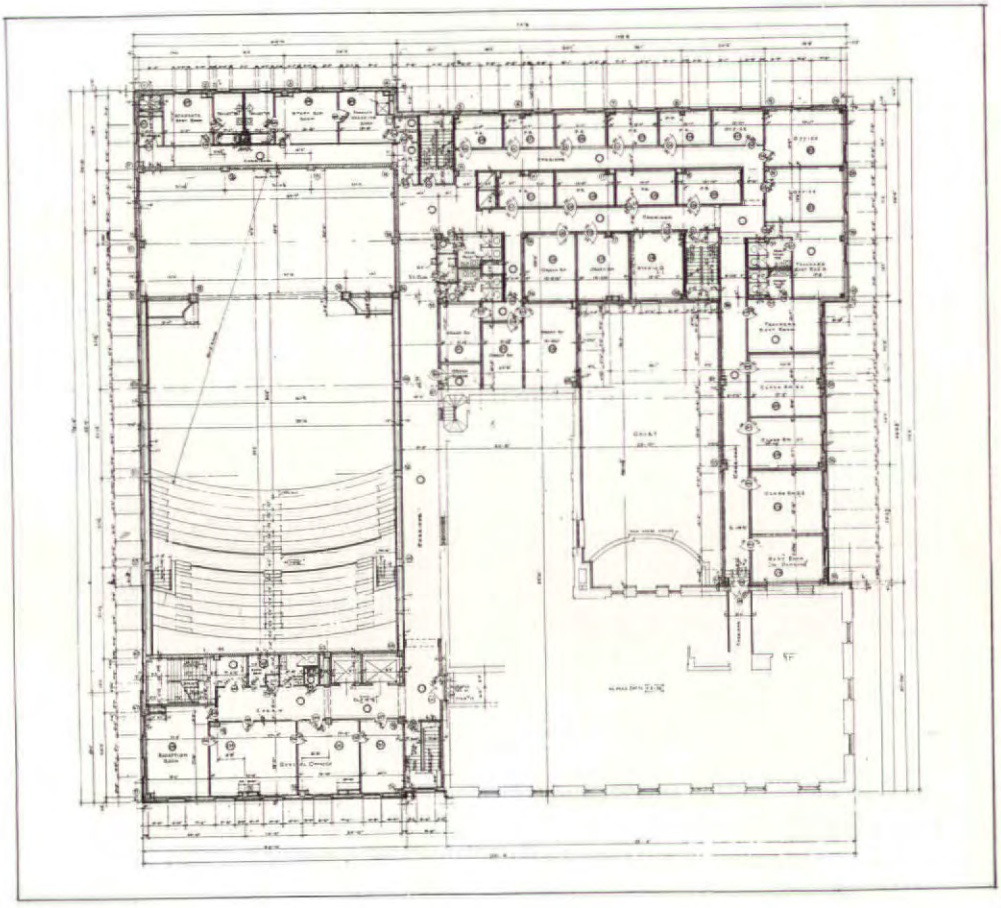


Sub-Basement Floor

SHREVE, LAMB
AND HARMON
ARCHITECTS



Fourth Floor Plan



Second Floor Plan

FIRM SPECIFICATIONS

It is possible today to contract for many fabricated materials for less than their actual material and labor cost. No overhead; profit long since forgotten. This is no help to any one. Instead, it creates a situation full of potential trouble for manufacturer, architect and client and makes it necessary more than ever for the architect to steer a careful course.

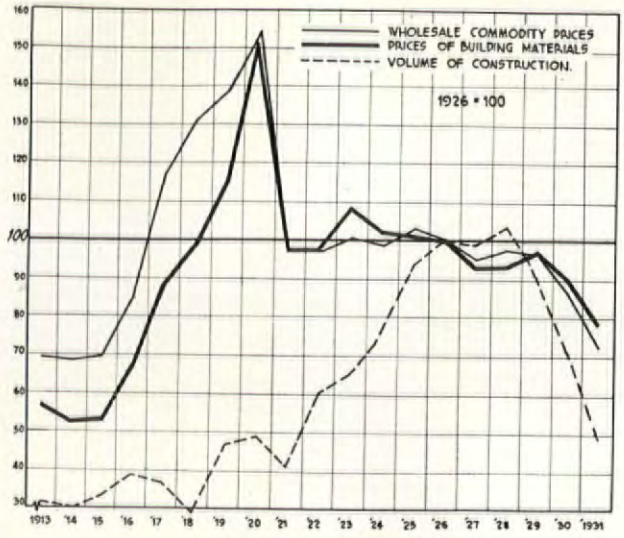
I do not refer to the general decline of material prices as a whole. This has been no more drastic than the general movement of all commodity prices. Moreover, it is a thing admittedly beyond the control of any one group. But when contractors and manufacturers come in with prices approximately one-half the figure quoted by reliable competitors, equally eager for business, then it is time to look out. Unfortunately, too, this condition is especially recurrent among fabricated products where no basic general specifications exist such as govern transactions in cement, structural steel and the like.

Superficially it may seem smart to take advantage of any price that a hitherto responsible manufacturer may offer regardless of what it costs to build his product honestly and well. Actually no series of such transactions can occur without some essential thing coming out of the quality of the thing itself. Materials may be modified in a hundred small ways; standards of workmanship are governed entirely by the general policies of the manufacturer. Moreover, reliable manufacturers, today, are faced with the alternative of closing up, or of cutting costs beyond any reasonable hope of maintaining quality.

These alternatives are equally unfortunate for the client who builds with the expectation of reasonable obsolescence and fair maintenance costs. By the time troubles develop as a result of sharp buying, the apparent economies of the transaction will be forgotten; and the architect may then be called upon to explain things in terms of conditions that no one can recall.

It cannot be argued either, that high prices during the past boom years have enabled manufacturers to build up tremendous reserves, out of which they may be expected to finance losing transactions at this time. Aside from a brief rise due to an actual scarcity of building materials in 1923, prices declined steadily throughout the entire peak of building activity which began in 1921, and began to sag in 1929. F. W. Dodge Corporation shows clearly, in the accompanying curves, what the relationship has been between volume of construction and the prices of building materials as compared to prices of commodities generally.

Granting that a real danger exists to all parties in transactions where some one has got to lose money, what can be done about it? For no one in his senses will deliberately pay high prices unnecessarily in the vague hope of rectifying a bad general situation.



It seems to me, right now, that the architect holds all the cards, and that there is no mystery about what he should do with them. One thing clearly indicated is the need for more careful study than ever before of the basic construction details of fabricated products. There is more time now for manufacturers to explain basic values, and specifications writers have more time to catch up with progress. It is time, moreover, for extreme rigidity of specifications and for sharp restriction of latitude in effecting changes of specifications as drawn. Two more or less distinct schools of thought have grown up among specifications writers: one maintaining that the architect's function nearly approaches that of purchasing agent in finality of choice between competing products; the other leaning towards the theory that specifications should allow a high degree of latitude lest monopolies be created to which their clients would inevitably pay a high toll. Certainly the latter theory is hardly tenable at this time.

Furthermore, our particular policy today is to exercise unusual care in admitting products as "or equal" under the specifications. Where a question arises under a general contract, we regard it as only reasonable for the architect to require submission of the entire file of subcontract prices and, if necessary, consult the bidders and give them a chance to justify their position, either high or low. Where equipment contracts are placed direct by the architect, we have of course an especial opportunity of standing between our clients and the clamor for business at almost any price.

In the final analysis, it is pretty well up to the architect, whether or not there is to be any continued stability in the building business. There is no similar independent professional group controlling any comparable share of American business as a whole. It is a marvelous time for professional control of a business to justify itself.

DANIEL HIGGINS, Architect,
Office of John Russell Pope.

Fischer

JUILLIARD SCHOOL OF MUSIC, NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

OTHER BUILDINGS ILLUSTRATED IN THIS PORTFOLIO:

MIDLAND COUNTRY CLUB AT MIDLAND, MICHIGAN — Frantz and Spence, Architects; Alden B. Dow, Associate Designer.

HOUSE OF H. D. HYNDS, AT SCARSDALE, NEW YORK — Dwight James Baum, Architect.

SCULPTURE IN FOYER, CINEMA ART THEATER, CHICAGO — Armstrong, Furst and Tilton, Architects.

DELAWARE COUNTY COURT HOUSE AT MEDIA, PENNSYLVANIA — Clarence W. Brazer, Architect.

Fischer

JUILLIARD SCHOOL OF MUSIC
NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

Fischer

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Fischer

JUILLIARD SCHOOL OF MUSIC
NEW YORK CITY
SHREVE, LAMB AND HARMON, ARCHITECTS

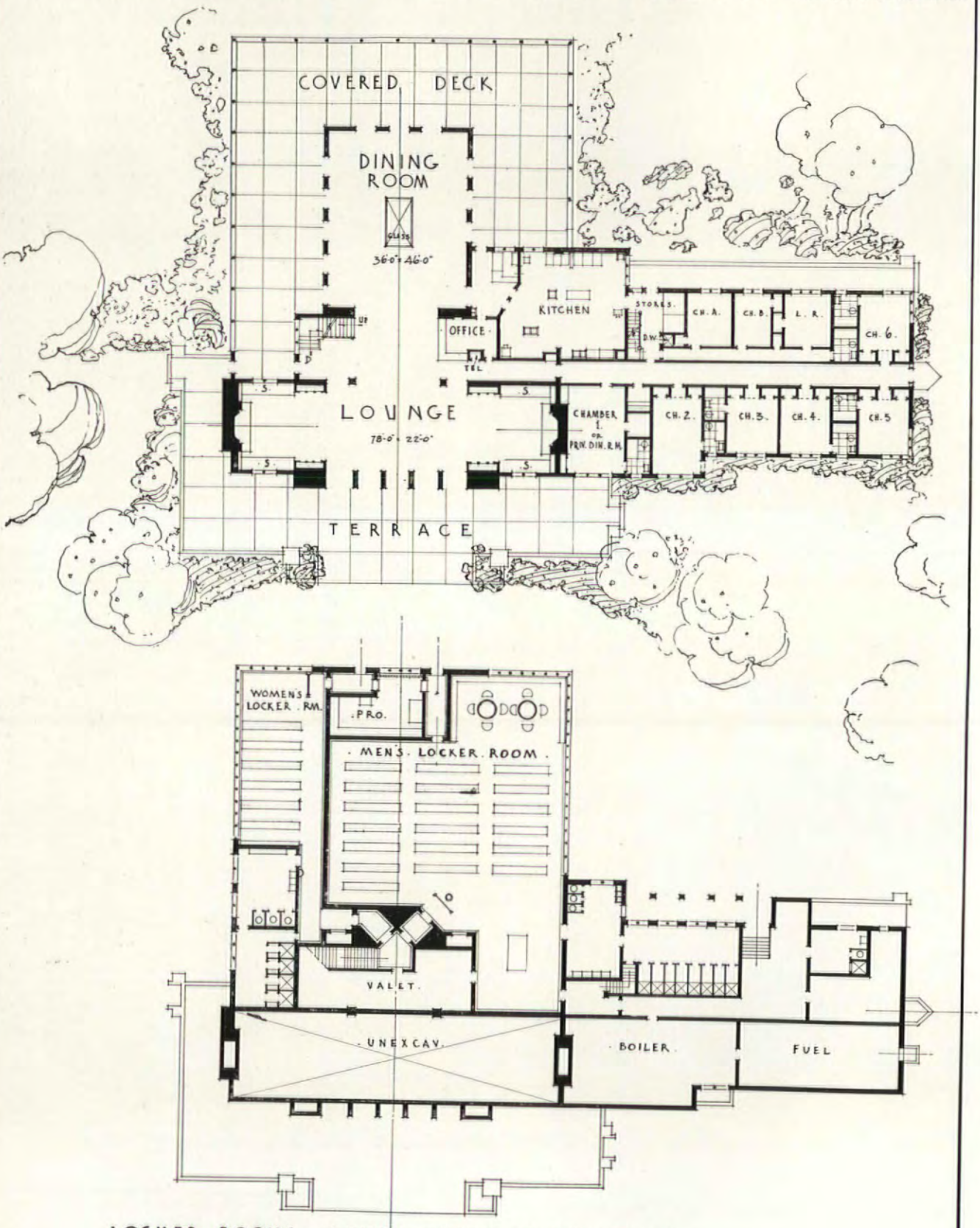
Wright's Studio

West Elevation. Location of building on sloping ground made possible the use of two levels for ground floor.

MIDLAND COUNTRY CLUB, MIDLAND, MICH.
FRANTZ AND SPENCE, ARCHITECTS
ALDEN B. DOW, ASSOCIATE DESIGNER

A CLUBHOUSE FOR THE MIDLAND COUNTRY CLUB MIDLAND MICHIGAN

ROBERT B FRANTZ AND JAMES A SPENCE ARCHITECTS SAGINAW · ALDEN B DOW ASSOCIATE DESIGNER



LOCKER ROOMS – LOWER GRADE FLOOR PLAN

SCALE — 10

East Elevation.

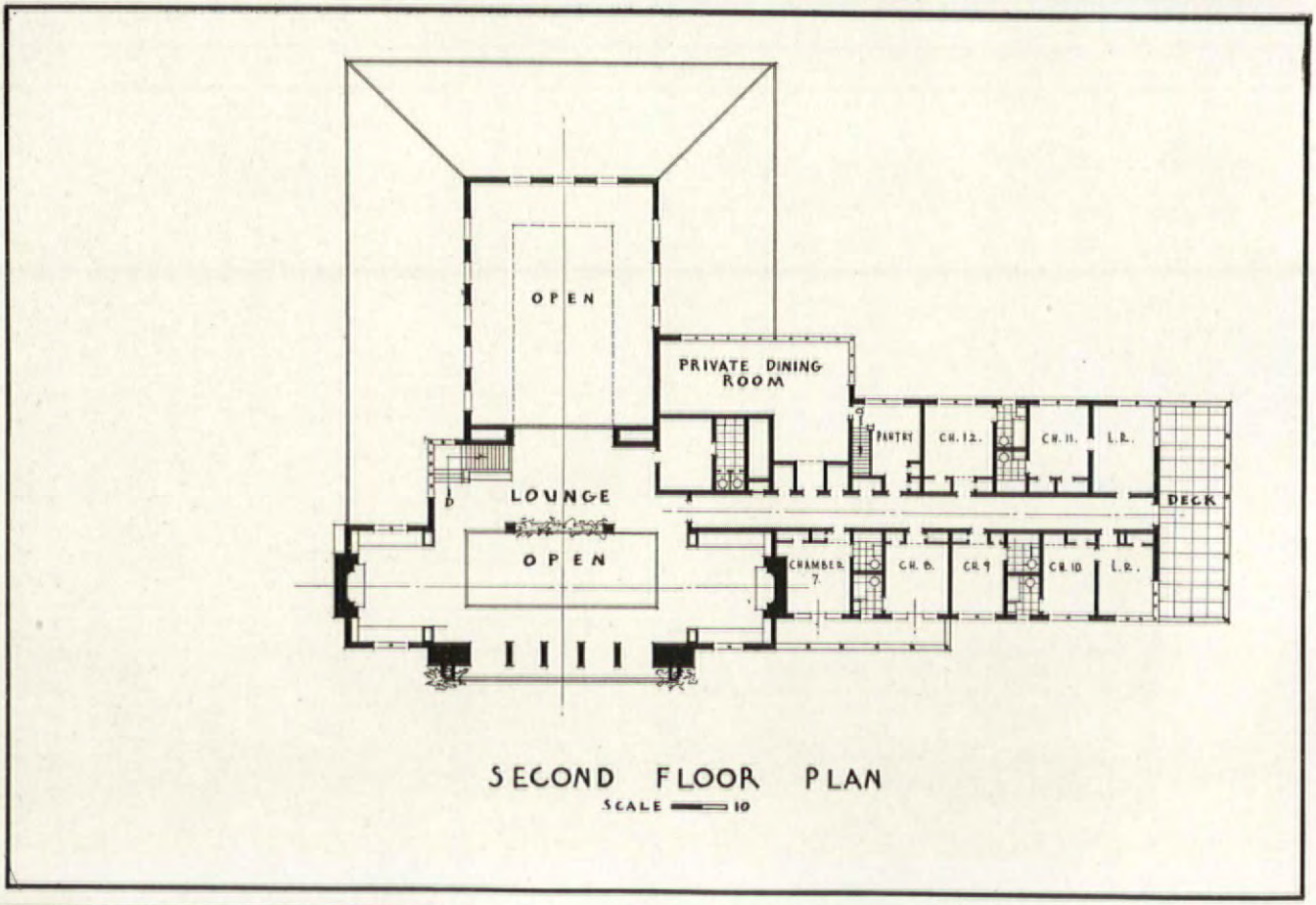
Wright's Studio

Main Entrance. Locker rooms occupy lower terrace level with direct access to both main lobby and golf course.

MIDLAND COUNTRY CLUB, MIDLAND, MICH.
FRANTZ AND SPENCE, ARCHITECTS
ALDEN B. DOW, ASSOCIATE DESIGNER

Wright's Studio

Lounge from Second Floor

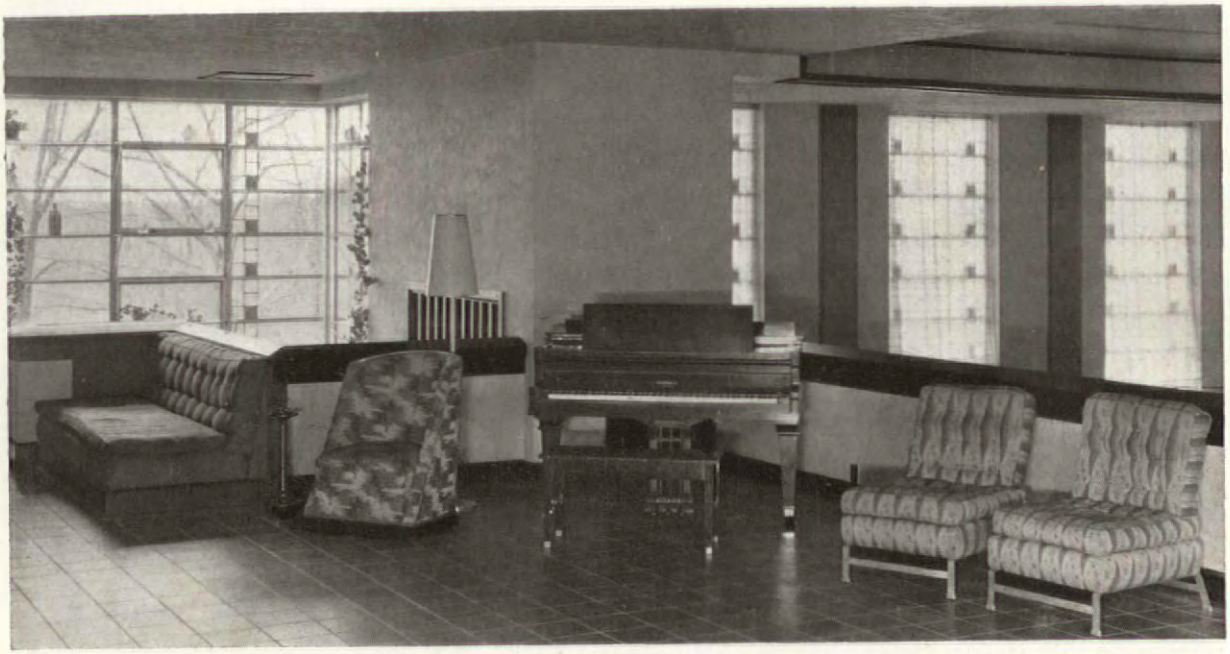


SECOND FLOOR PLAN

SCALE 10

MIDLAND COUNTRY CLUB, MIDLAND, MICH.
FRANTZ AND SPENCE, ARCHITECTS
ALDEN B. DOW, ASSOCIATE DESIGNER

Flush ceiling lights are used in dining room. Cost of building was $95,000 or 24¢ a cubic foot.



Balcony overlooking Dining Room.

Wright's Studio

Dining Room from Lobby Desk.

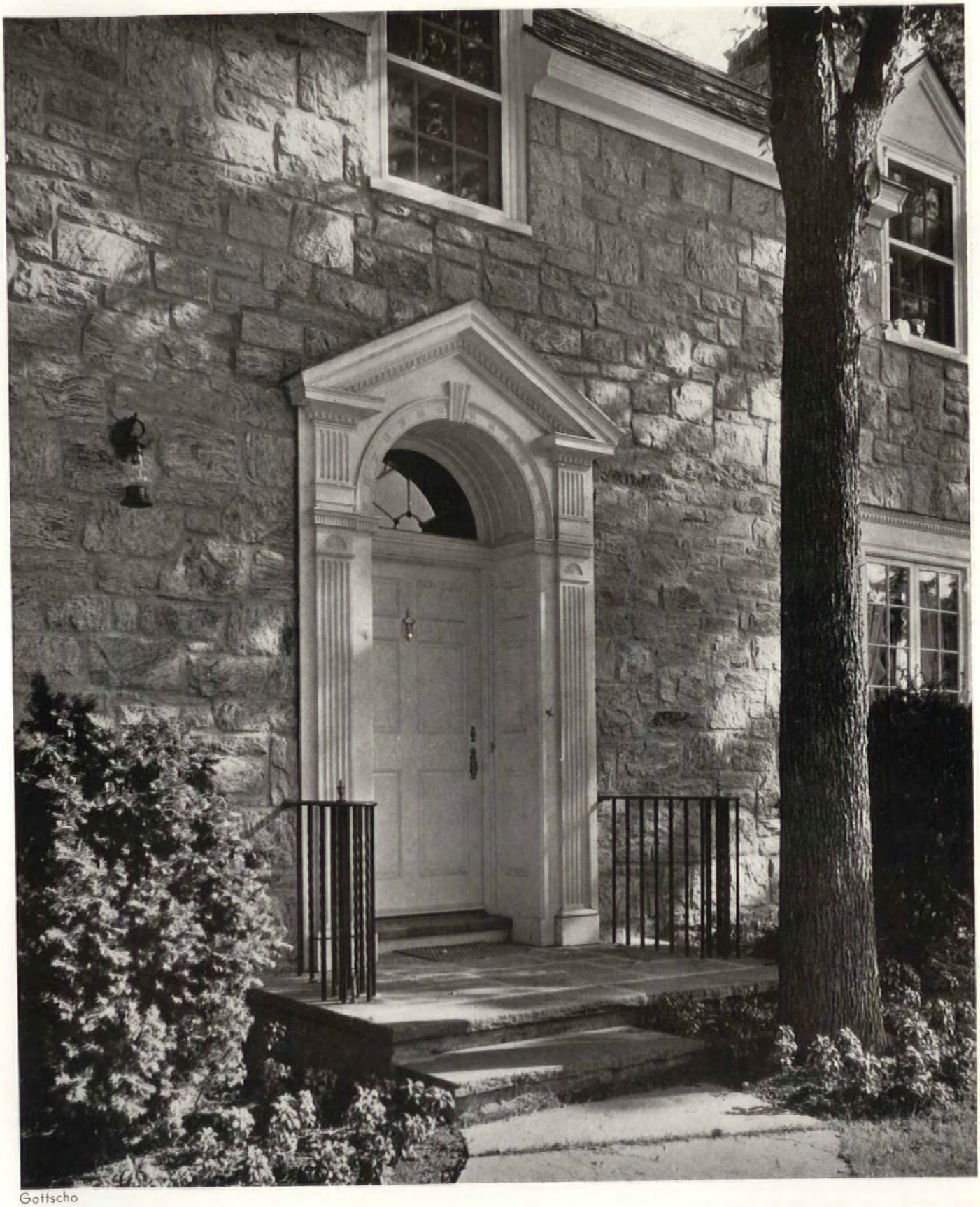
MIDLAND COUNTRY CLUB, MIDLAND, MICH.
FRANTZ AND SPENCE, ARCHITECTS
ALDEN B. DOW, ASSOCIATE DESIGNER

Screened Terrace on Three Sides of Dining Room.

Wright's Studio

Private Dining Room on Second Floor.

MIDLAND COUNTRY CLUB, MIDLAND, MICH.
FRANTZ AND SPENCE, ARCHITECTS
ALDEN B. DOW, ASSOCIATE DESIGNER

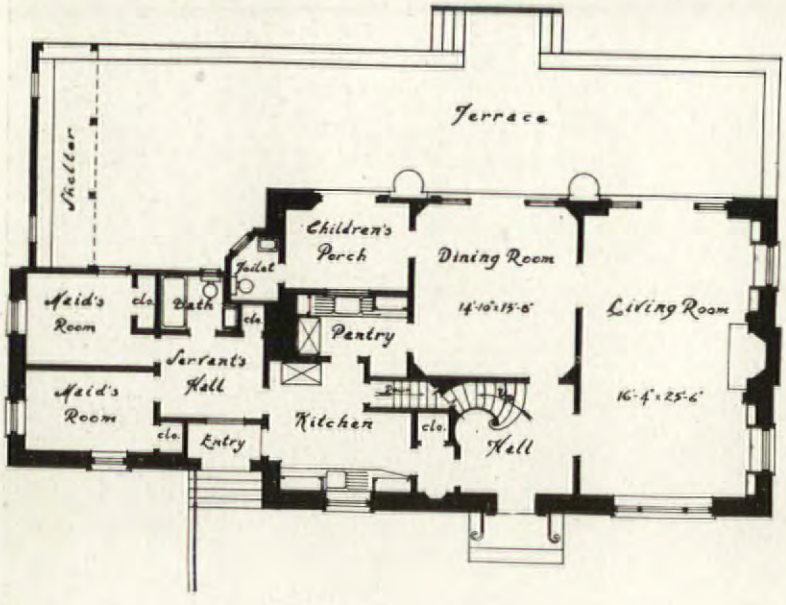


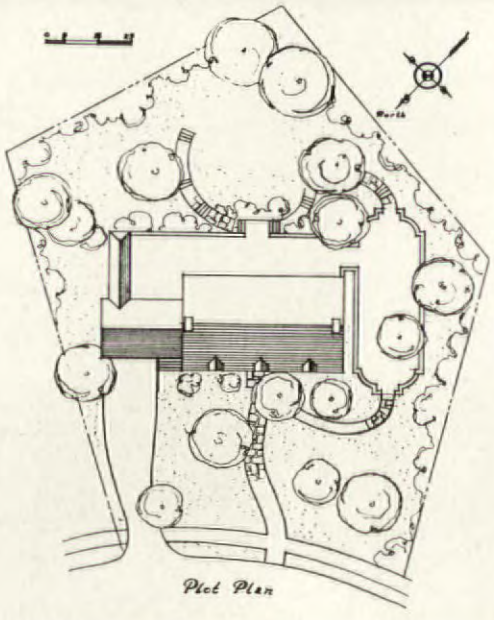
Gottscho

Entrance Detail.

HOUSE OF H. D. HYNDS
SCARSDALE, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

Gottscho





HOUSE OF H. D. HYNDS
SCARSDALE, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

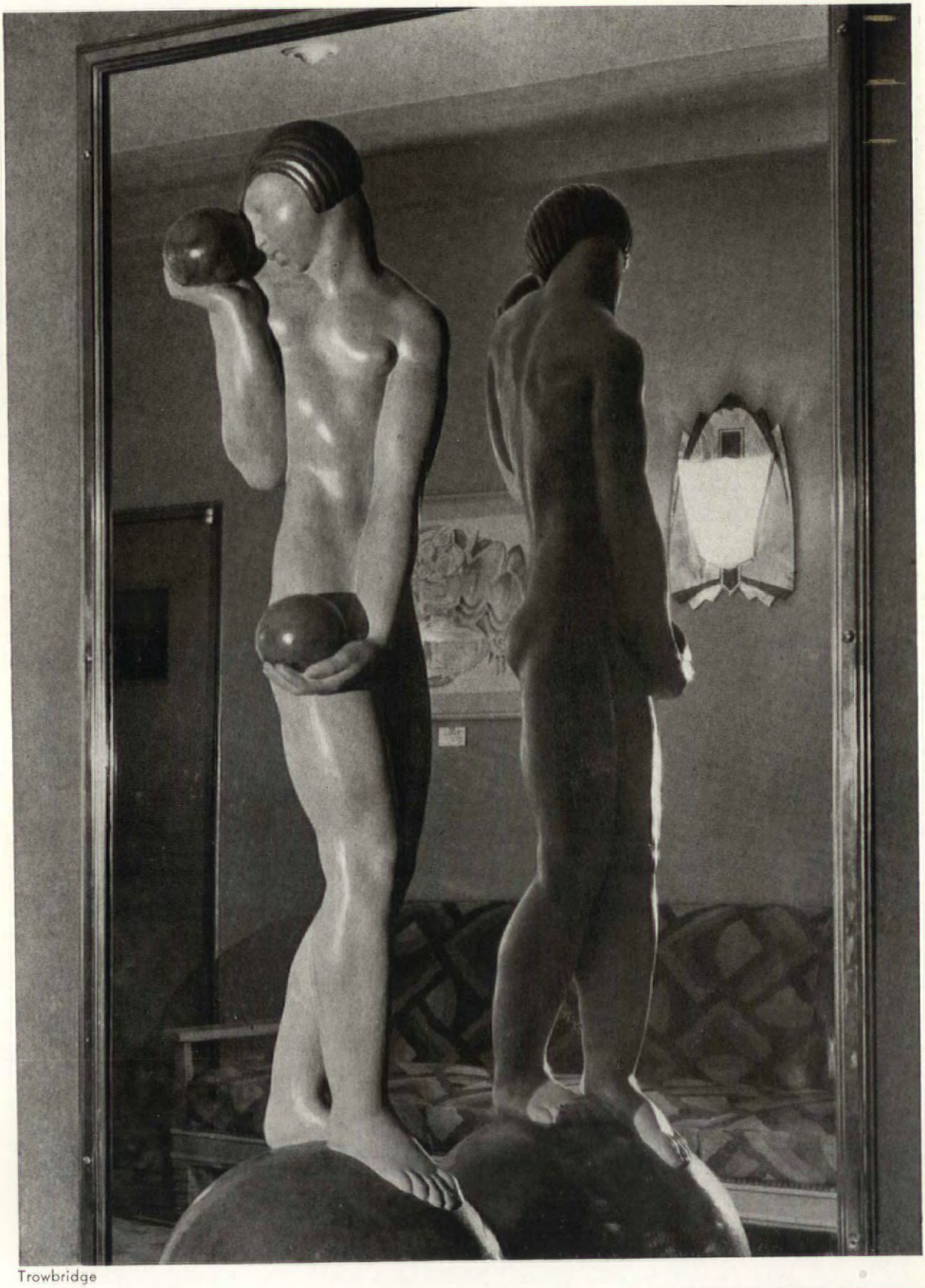
Gottscho

HOUSE OF H. D. HYNDS
SCARSDALE, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT

Gottscho

Detail of Entrance Hall.

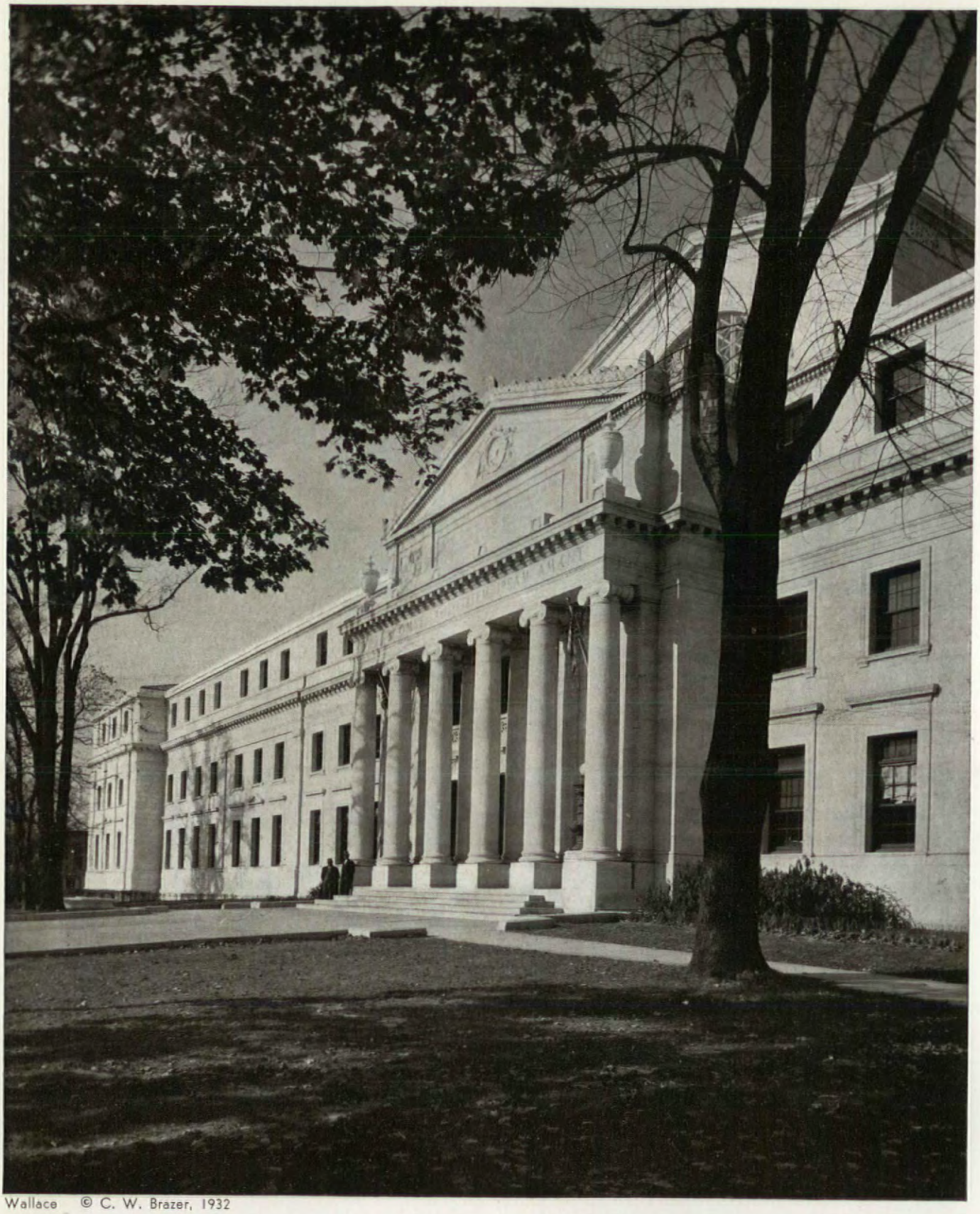
HOUSE OF H. D. HYNDS
SCARSDALE, NEW YORK
DWIGHT JAMES BAUM, ARCHITECT



Trowbridge

Sculptured Figure in Foyer.

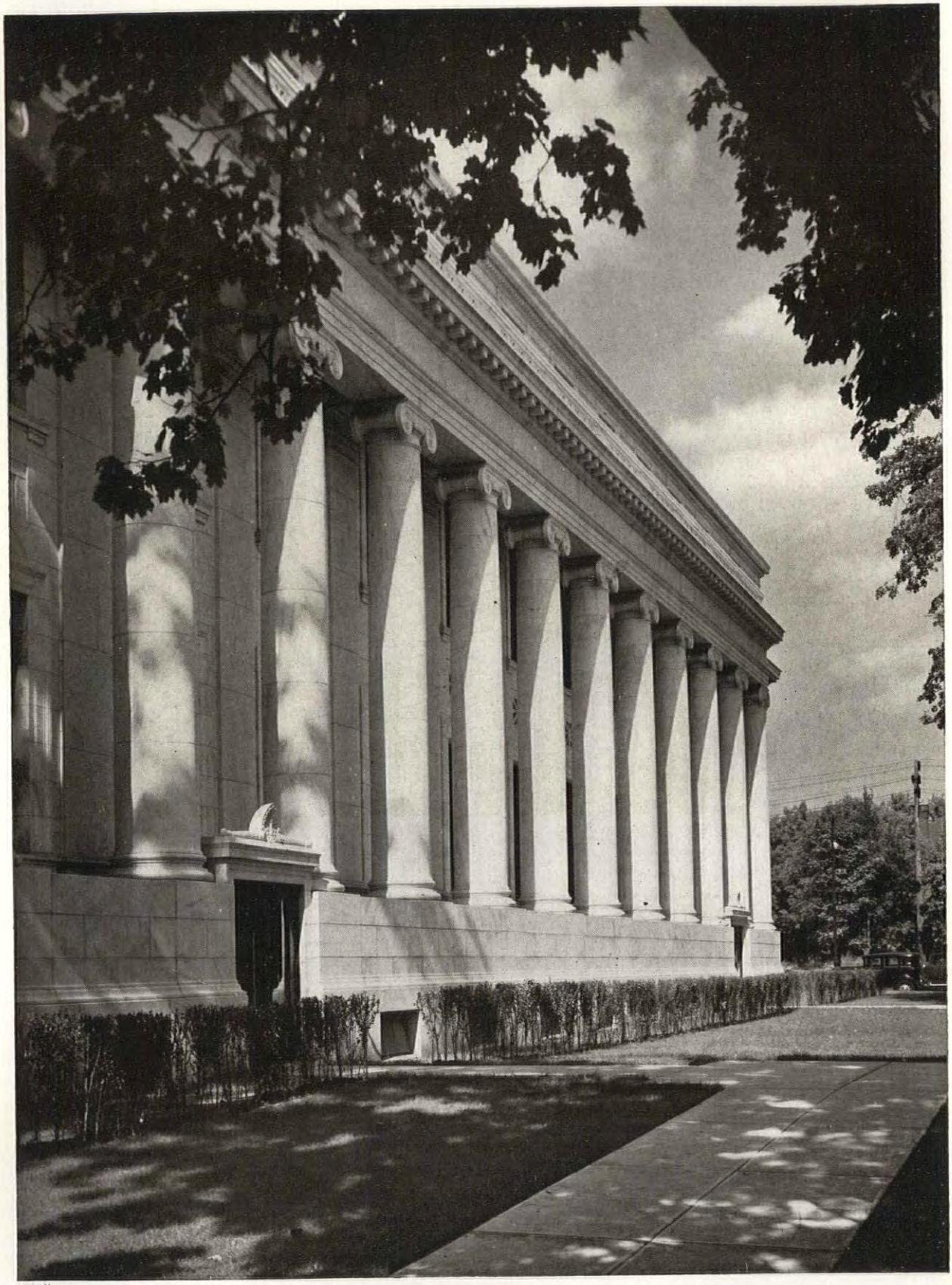
CINEMA ART THEATER, CHICAGO
ARMSTRONG, FURST AND TILTON
ARCHITECTS



Wallace © C. W. Brazer, 1932

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT

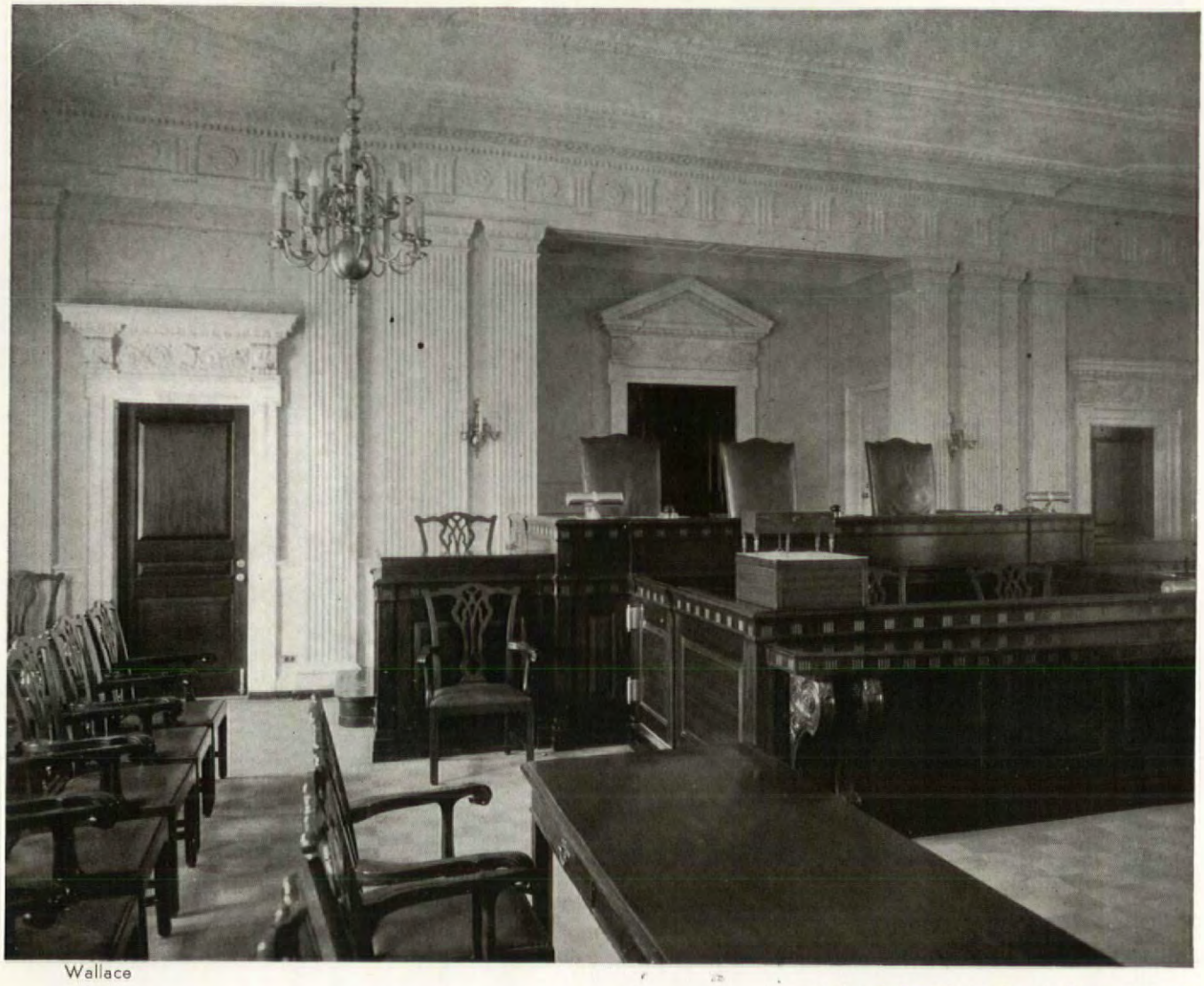
South Front. Original central portion of this building was erected in 1857. Other additions were made subsequently.



Wallace

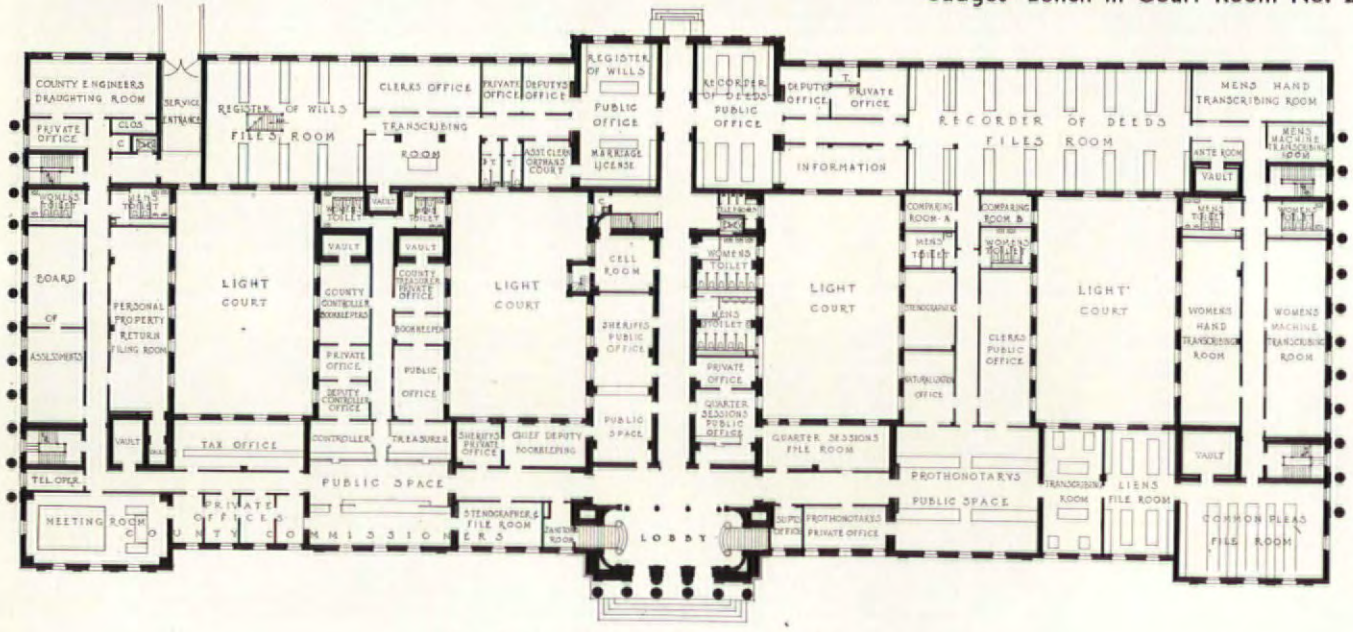
East Façade. Recent alterations comprise 3-story-and-basement wings, a new basement under entire building, and a law library on fourth floor.

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT



Wallace

Judges' Bench in Court Room No. 2



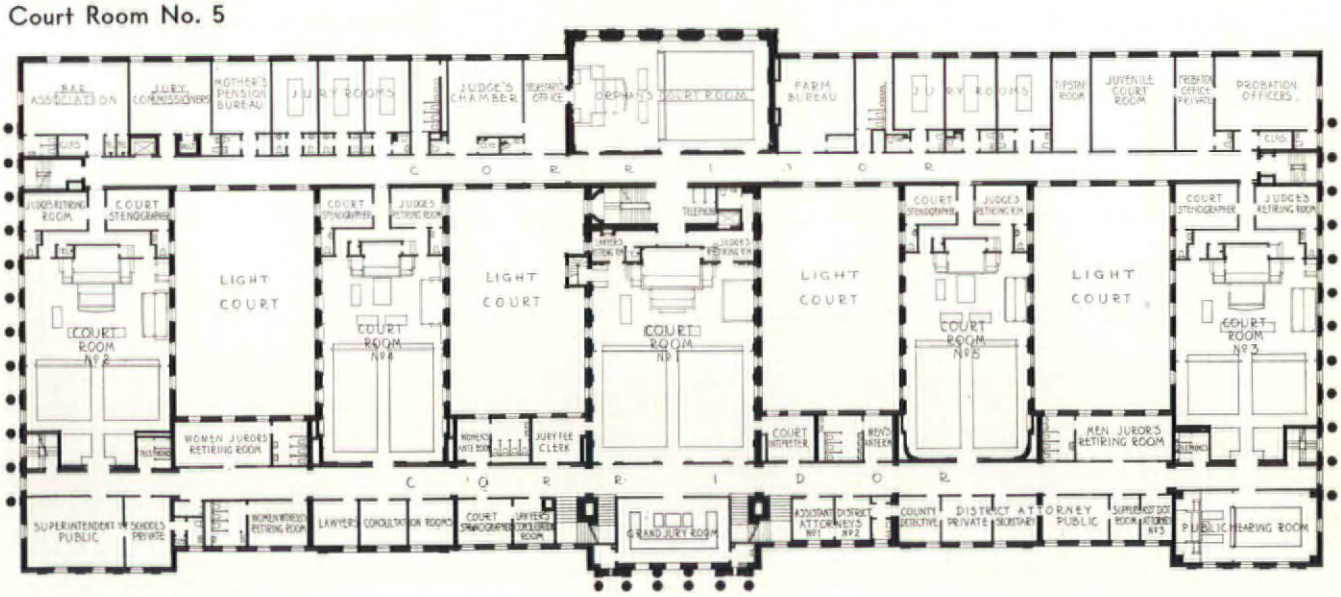
FIRST FLOOR PLAN

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT

Five new court rooms, the commissioners' meeting room, public hearing room and the law library are the main features of the building.

Wallace

Court Room No. 5



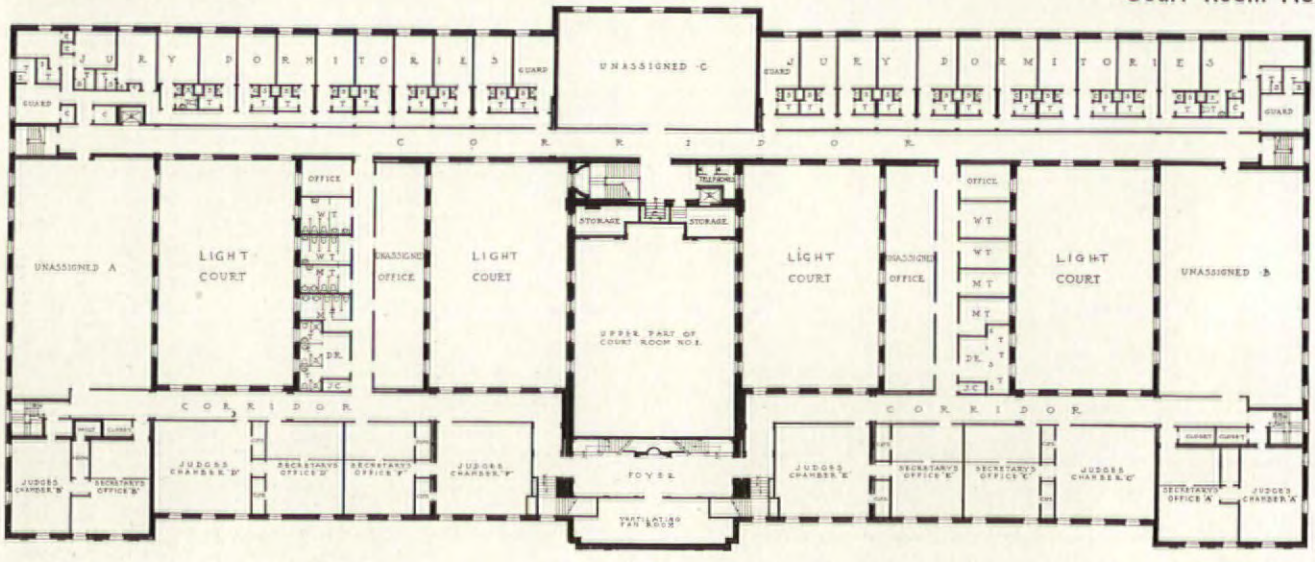
SECOND FLOOR PLAN

Each of the court rooms is designed in a period of early American architecture of approximately 1720, 1740, 1760, 1780 and 1800. The law library is in the Pompeian style.

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT

Wallace

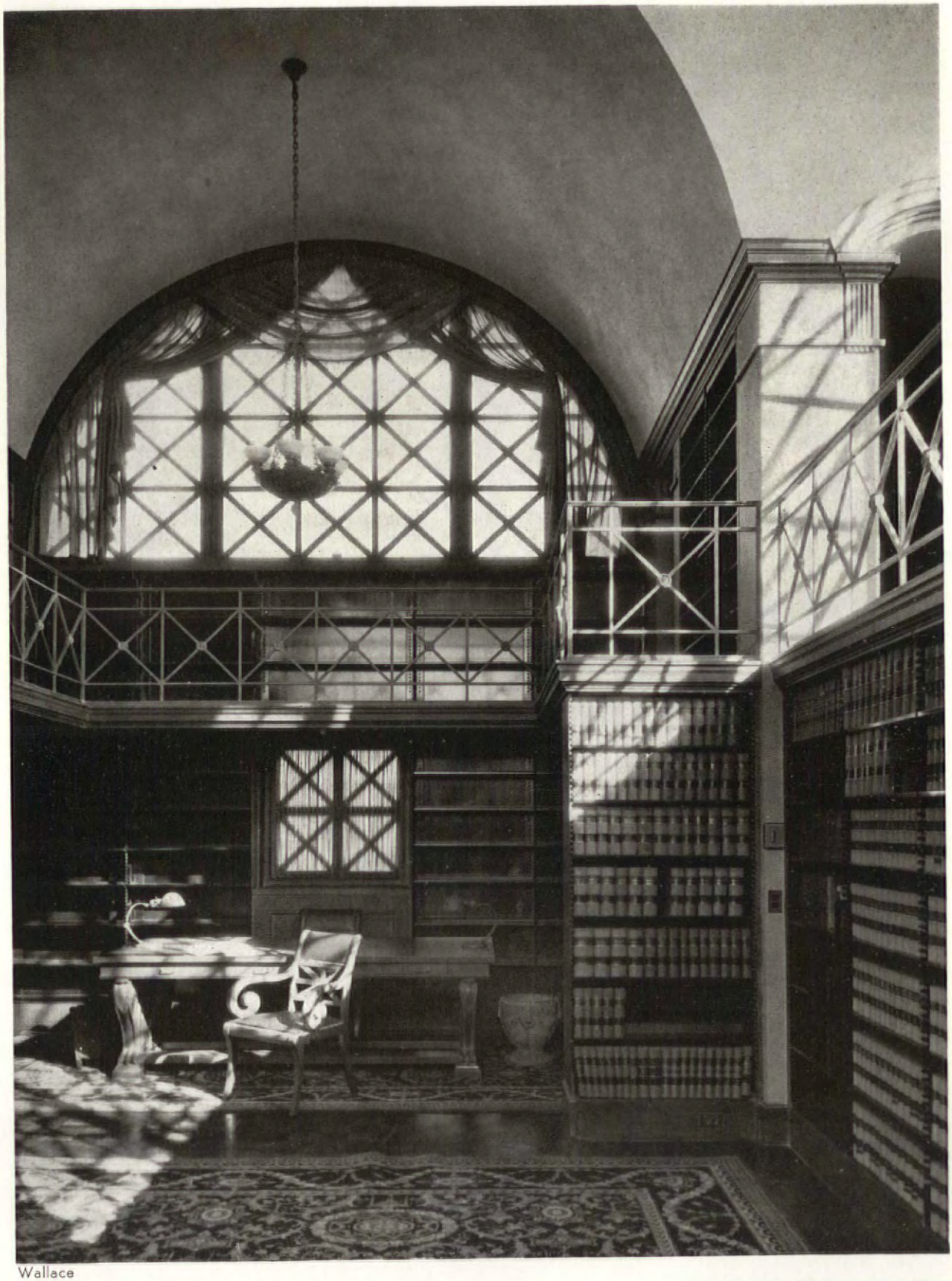
Court Room No. 5



THIRD FLOOR PLAN

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT

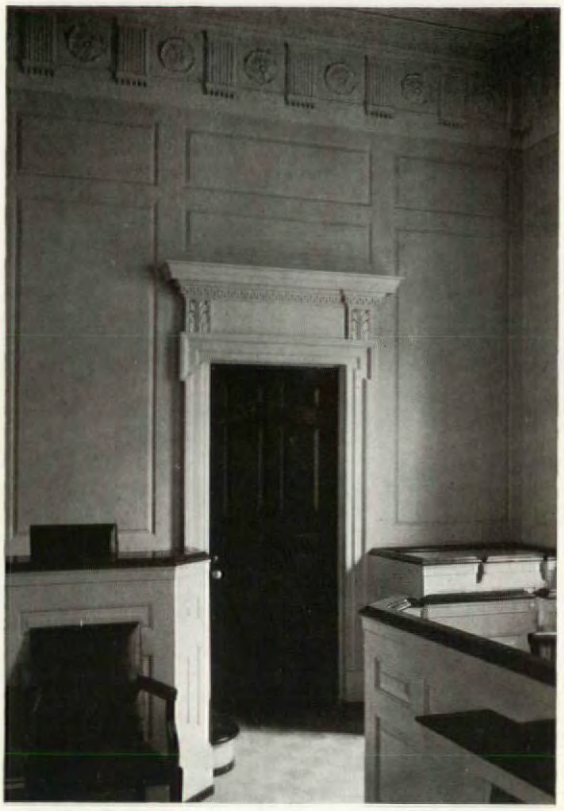
The furniture, fixtures and decorations were designed and detailed in the same periods with the assistance of Esther Stevens Fraser, decorator.



Wallace

Alcove of Law Library.

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT



Wallace

Details of doors in court rooms showing treatment in various architectural period styles.

DELAWARE COUNTY COURT HOUSE
MEDIA, PENNSYLVANIA
CLARENCE W. BRAZER, ARCHITECT

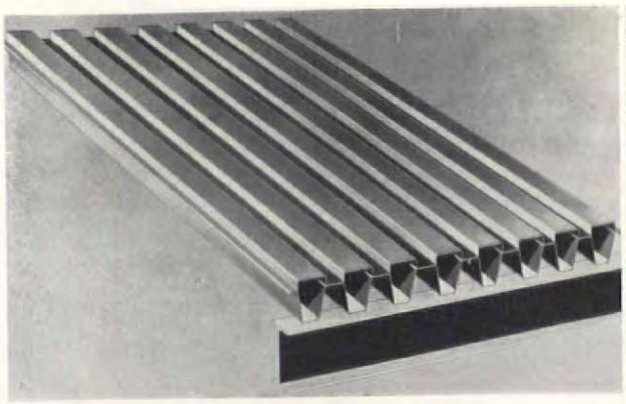


Fig. 1—K-type steel floor slab.

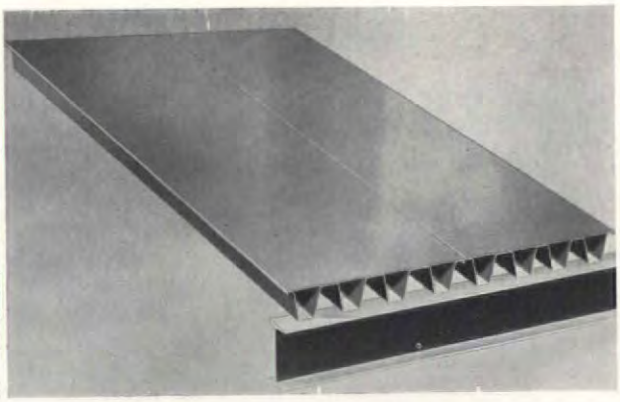


Fig. 2—FK-type steel floor slab.

This keystone steel-slab unit develops maximum efficiency in carrying loads. Units are factory-fabricated, 24 inches wide, and up to 12 feet 5 inches in length.

AN INNOVATION IN STEEL FLOORING

By J. H. YOUNG

The steel flooring described in this article is the result of a comprehensive investigation to achieve a new floor construction which is light in weight, easy to assemble and efficient in carrying loads. The experimental work has been conducted at the Mellon Institute of Industrial Research in Pittsburgh by Dr. Young, Senior Fellow on a series of Multiple Fellowships sustained by H. H. Robertson Company, Pittsburgh. The product is now on the market.

Floors have gradually evolved from the earthen floor of the primitive savage, through stone and wood, natural and readily available materials, to concrete-tile and steel, or combinations thereof. Until the advent of steel-structured buildings in the early eighties, the chief concern in the production of floors was that they should be sufficiently strong and abrasion-resistant to survive the service conditions involved.

As American commercial life changed, however, rapid expansion became necessary. The demand for large areas of business space in certain localities became great; and it was necessary to expand vertically instead of horizontally. With this vertical expansion came the ever-increasing use of steel, which finally made possible the modern skyscraper. This relatively new form of building has necessitated drastic changes in accepted methods of construction and makes it imperative that the weight of materials entering into such structures be decreased without impairing their strength. Economies of construction are also much to be desired; and more and more scientific research is being applied to make them possible.

Since the floor space in tall buildings represents a very large portion of the dead weight, it seems logical to attempt alterations in this unit. Such alterations have been made in the past mainly by the employment of combinations of inherently bulky materials. More recently, however, certain elementary types of steel floors have proved the intrinsic worth of steel as a flooring material in displacing the more cumbersome and expensive masonry types of floors. The savings in erection time and dead load made possible by such floors have created great interest in the building trades.

It has been with these facts in mind that research and development at Mellon Institute have led to further improvements in steel for flooring and have culminated in the successful production of the new type of steel floor described in this article.

Features of the New Flooring

This research-made steel floor is a factory fabricated unit 24 inches wide and up to 12 feet 5 inches in length at present. Longer spans will be manufactured within 4 months. The unit is built by preforming two steel sheets and subsequently welding them together in the plane above the neutral axis. A cross-section taken across the width of the completed unit shows four keystone-shaped cells all connected together near the neutral axis. This keystone steel-slab-unit (shown in Figs. 1 and 2) in its final form is flat and as readily handled as heavy planking. The design is such as to develop maximum efficiency of the metal from the load-carrying standpoint.

The physical properties listed in Table A are interesting in that they may assume either large or small values dependent upon the gauges of sheet metal used in fabrication. The high strength factors combined with the relatively low weight per square foot as indicated in the table suggest

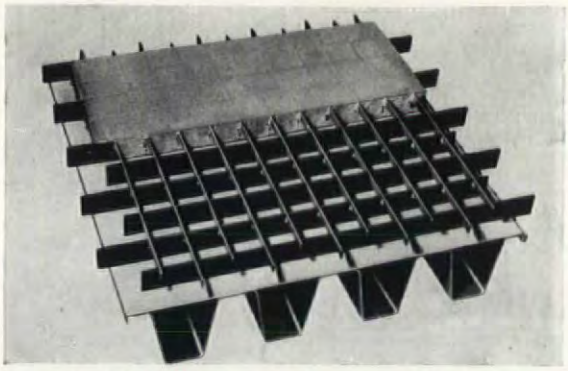


Fig. 3—Steel flooring unit on which has been placed steel grid with concrete fill to make a strong bridge floor.

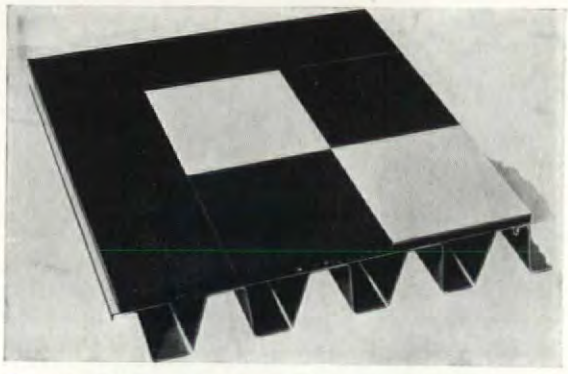


Fig. 4—Mastic tile floor finish applied over steel flooring.

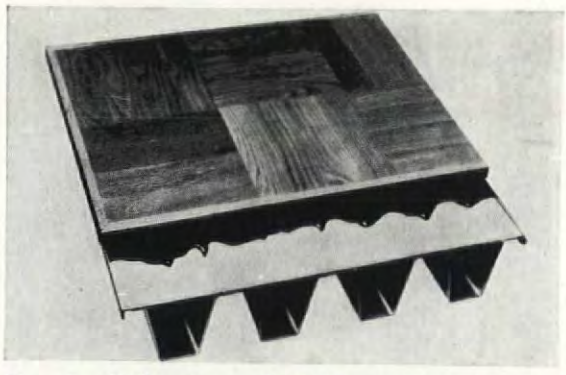


Fig. 5—Cellized wood finish applied to steel flooring.

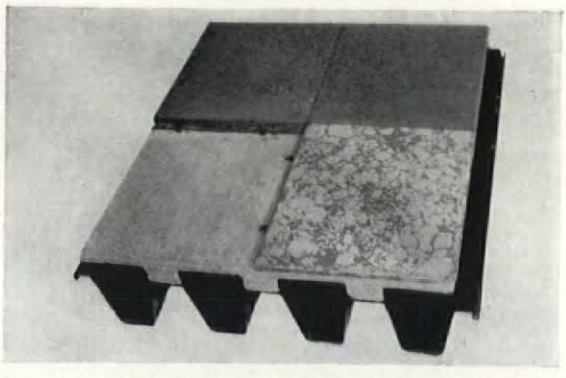


Fig. 6—Terrazzo-type floor finishes applied to steel flooring.

that savings in building construction may be effected because of the decreased load-carrying requirements for floor slabs columns and foundations. The extra strength of the units make possible their use for bridge floors (see Fig. 3).

Besides being incombustible and fire-safe this floor slab is exceptionally adaptable to various types of floor finishes. Concrete fill is applied directly to the surface of the floor. Ceilings can be suspended from the underside of the flooring; likewise, steam or water pipes. Plumbing, wiring and various other services are easily installed (and later serviced) in this cellular type of flooring (see Figs. 3 to 10).

Owing to the fact that the units are put in place by welding, construction noise is minimized.

The four keystone-shaped ducts composing each unit are spaced at 6-inch intervals and communicate directly, when in place, with the corresponding ducts of the adjacent section of floor slab. This arrangement enables the utilization of the floor, not only as a load-carrying member, but also as a multiple floor-duct system for handling all types of electrical lines.

Flexibility Offered for Wiring

As an accommodation for an under-floor duct system, this floor slab permits great flexibility in the electrical wiring of a building. It is not difficult to realize how important such flexibility will be to the individual or corporation investing in a building. Modern office buildings, as well as hospitals, professional buildings and buildings for manufacturing, should be equipped with some means whereby electrical outlets can be easily obtainable. Upon erection, the contractor places wiring and outlets wherever deemed necessary in the building. Present floor-duct systems have been developed to take care of the future electrical needs of the tenant, but do so only to a limited extent.

As an example of the electrical changes necessary to satisfy both new and old tenants of an office building, the following details can be cited. The shifting of furniture on occupation of a suite by a new tenant usually requires electrical service in new locations: the positions of telephones must be changed; buzzer service must be provided in new locations; new light outlets are likely to be necessary as well as power outlets for business machinery, such as comptometers, accounting machines and printing equipment. Outlets must be available for equipment used by physicians, dentists, barbers and beauty parlors; and in apartment houses for electrical heating.

If an office building, particularly, is not provided with adequate means of effecting changes such as the above, with ease and without exposed wires, the building soon has a multiplicity of conductors which show themselves beneath the carpets and around baseboards and molding. Such a

condition permanently detracts from the appearance of the building and the value of its rentable space, thereby causing premature obsolescence. The new steel floor, composed of parallel cells with a 6-inch spacing, enables the formation of continuous ducts and the location of electrical outlets within a radius of 3 inches from the exact location required, instead of a radius of 2 or 3 feet, as is possible with present electrical floor-duct systems, thus precluding the likelihood of electrical obsolescence.

Savings in Costs

Present floor-duct systems have been developed to take care of the future electrical needs of multiple-storied buildings. This method of power distribution has in itself an original material cost and in addition necessitates a 3- to 6-inch fill over the unfinished floor to bring the finished floor flush with the duct outlets. Elimination of the ducts alone means a saving of approximately fifty cents to a dollar per square foot, based on the total floor area of the building, while the saving in other materials and labor is considerable. Additional savings in the total erection time of the buildings are made, owing to the fact that it is possible for the electrical as well as other trades to begin work immediately after the floor is in place. Thus, though the new steel floor serves two functions, it answers the requirements of each more efficiently at approximately one-half of the cost of the two combined.

At present there are five methods of electrical distribution through the keystone cells, from which the architect can select the system best suited to the particular building he designs (see Figs. 11 to 15).

Interesting also is the fact that these floor slabs permit the carrying of other types of service as well as electricity. The recent development of flexible copper tubing that can be drawn through the keystone cells in a manner similar to that used for the wiring systems, makes it possible to supply more efficiently hot and cold water, air, steam, gas, and other services to tenants.

This floor is an engineering factory-fabricated member of a building that is not subject to variations resulting from production in place by indifferent labor under varying weather conditions. Only one kind of material for floors must be assembled on the job, prior to incorporation into the working floor structure; and as the floor material can be placed in its final position immediately upon arrival at the building site, a saving in storage space is effected. These are among the features that make this new flooring of interest to the architect, engineer and contractor.

Installation

Installation of the keystone floor is immediately attractive from the standpoints of ease and speed.

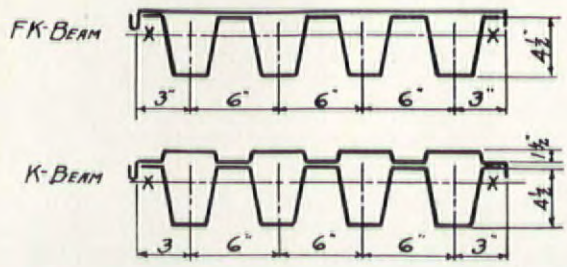
Fig. 7—Concrete fill applied directly to steel flooring.

Fig. 8—Method of suspending plastered ceiling.

Fig. 9—Method of attaching pre-cast ceiling slabs directly to bottom of steel flooring.

Fig. 10—Method of hanging steam or water pipes.

I is Moment of Inertia.*
S is Section Modulus.*
w is Weight of Beam in Pounds Per Sq. Ft.
c is Distance from Center of Gravity to Extreme Fiber.
C is Coefficient of Strength for Simple Span.*
M is Maximum Moment in Inch Pounds.*
R is Maximum End Reaction for One Cell on a Bearing of 2".
d is Depth of Beam in Inches.
* Values for the 24" Wide Unit.



		FK 16-16	FK 14-14	K 16-16	K 14-14
I	Axis X-X	15.25	19.85	25.06	31.32
S	Axis X-X	5.00	6.73	7.37	8.98
w	Wt. Lb. Sq. Ft.	8.26	10.33	9.39	11.75
c	in Inches	3.05	2.95	3.40	3.49
C	Coef. Strength	53330	71790	78610	95790
M	in Inch Pounds	80000	107680	117920	143690
R	in Pounds	4800	6340	4840	6340
d	Depth of Beam	4.625	4.656	6.125	6.156

To Find the Allowable Total Loads in Pounds Per Square Foot of Floor for Intermediate Spans Not Given Above Heavy Horizontal Lines, Divide the Coefficient of Strength by Two Times the Square of the Span in Feet.

Example: Required the Allowable Total Load in Pounds per Square Foot of Floor for K 16-16 Sheet on 8'-9" Span.

$$\text{Load} = \frac{78610}{2 \times 8.75 \times 8.75} = 513 \text{ Lb. per Sq. Ft.}$$

Span in Feet	Allowable Total Loads in Pounds Per Square Foot of Floor Calculated for Flexual Conditions and the Corresponding Deflections are Shown Above Heavy Horizontal Lines								Limiting Deflections in Inches for the Various Spans—Based on 1/360th of the Span Length
	Load	Def.	Load	Def.	Load	Def.	Load	Def.	Def.
6	749	.101	997	.105	1092	.091	1331	.089	.200
7	544	.138	733	.143	802	.123	978	.121	.233
8	417	.180	561	.186	614	.161	749	.157	.266
9	329	.228	443	.236	485	.204	592	.199	.300
10	267	.281	359	.291	393	.252	479	.246	.333
11	220	.340	296	.352	325	.305	396	.298	.366
12	182	.400	238	.400	273	.363	332	.354	.400
13	144	.433	188	.433	233	.426	284	.416	.433
14	115	.466	150	.466	189	.466	236	.466	.466
15	94	.500	122	.500	154	.500	192	.500	.500
16	77	.533	100	.533	127	.533	159	.533	.533
17	65	.566	84	.566	106	.566	133	.566	.566
18	54	.600	71	.600	89	.600	112	.600	.600
19	46	.633	60	.633	76	.633	95	.633	.633
20	40	.666	52	.666	66	.666	82	.666	.666
21			44	.700	56	.700	70	.700	.700
22					49	.733	61	.733	.733
23					43	.766	53	.766	.766
24							47	.800	.800
U. S. Standard Sheet and Plate Gauge	Top 16-Ga. Bot. 16-Ga.		Top 14-Ga. Bot. 14-Ga.		Top 16-Ga. Bot. 16-Ga.		Top 14-Ga. Bot. 14-Ga.		

Loads Below Heavy Horizontal Lines are Calculated for Plaster Limit Deflections and the Allowable Loads for Flexure Conditions on these Spans will Produce Excessive Deflections.

TABLE A—PHYSICAL PROPERTIES OF THE NEW FLOORING.

The prefabricated unit, readily handled, follows closely the erection of steel framework and keeps pace with it during the progress of construction. It forms a working floor as soon as in place, eliminating the necessity for large quantities of temporary planking and masonry forms, thus reducing fire hazards during erection. The sections, 24 inches wide, are laid across the structural beams, and are either welded, bolted or clipped to supporting members. An elimination of awkward material handling has been accomplished and the floor is ready for the other building trades to work on. The secondary distribution boxes or ducts may be located anywhere in the length of the floor cells, because there is provision for feeding in either direction, and the cross-section of the keystone cell is large enough to make feasible the fishing of wires as far as 150 or 200 feet. For most installations, only one set of cross boxes or ducts is necessary.

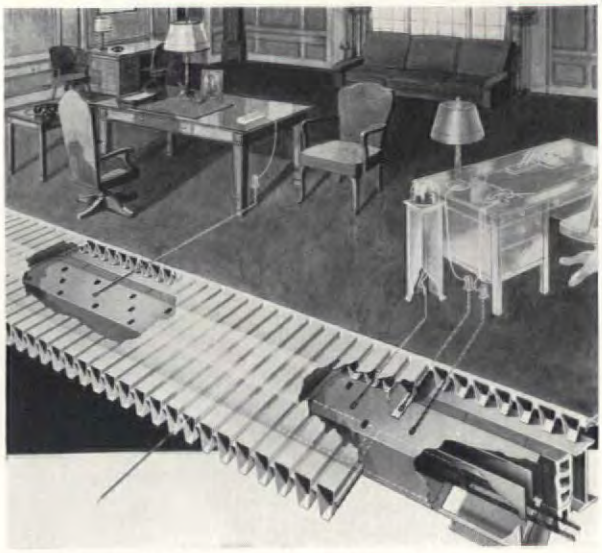


Fig. 11—In this system, the distribution box is located under the floor.

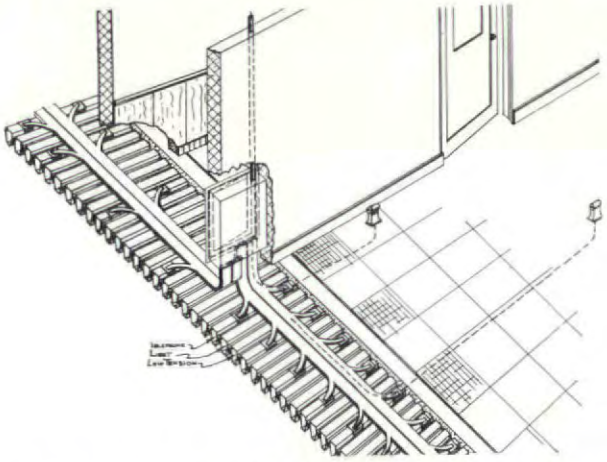


Fig. 12—A system that has many advantages in flexibility and economy. It can be effectively combined with any one of the other four systems available.

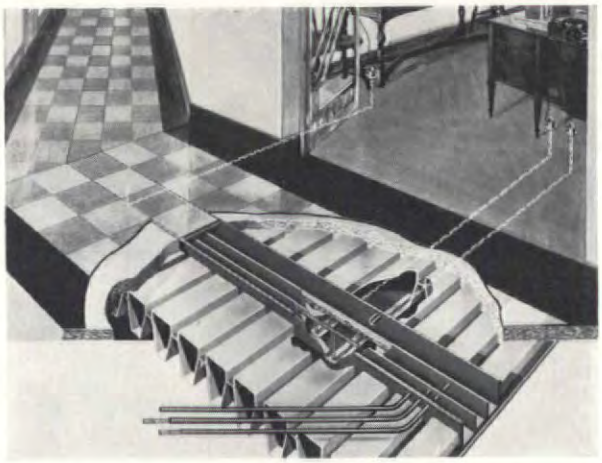


Fig. 13—A system, well adapted to most uses, in which the distribution box is possibly best located in a hallway or corridor to service adjacent offices or suites.

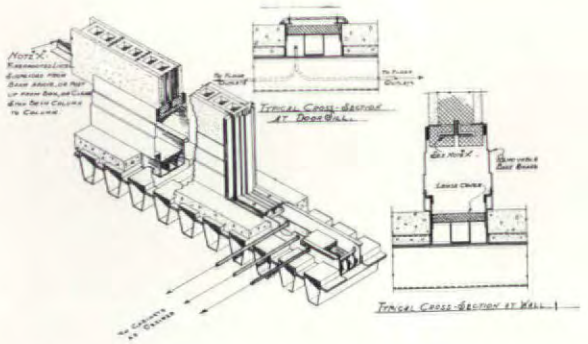


Fig. 14—A system of distribution in which the distribution box is located in a permanent partition wall.

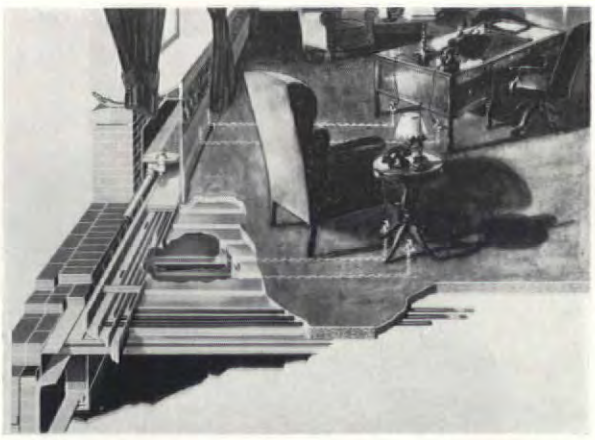
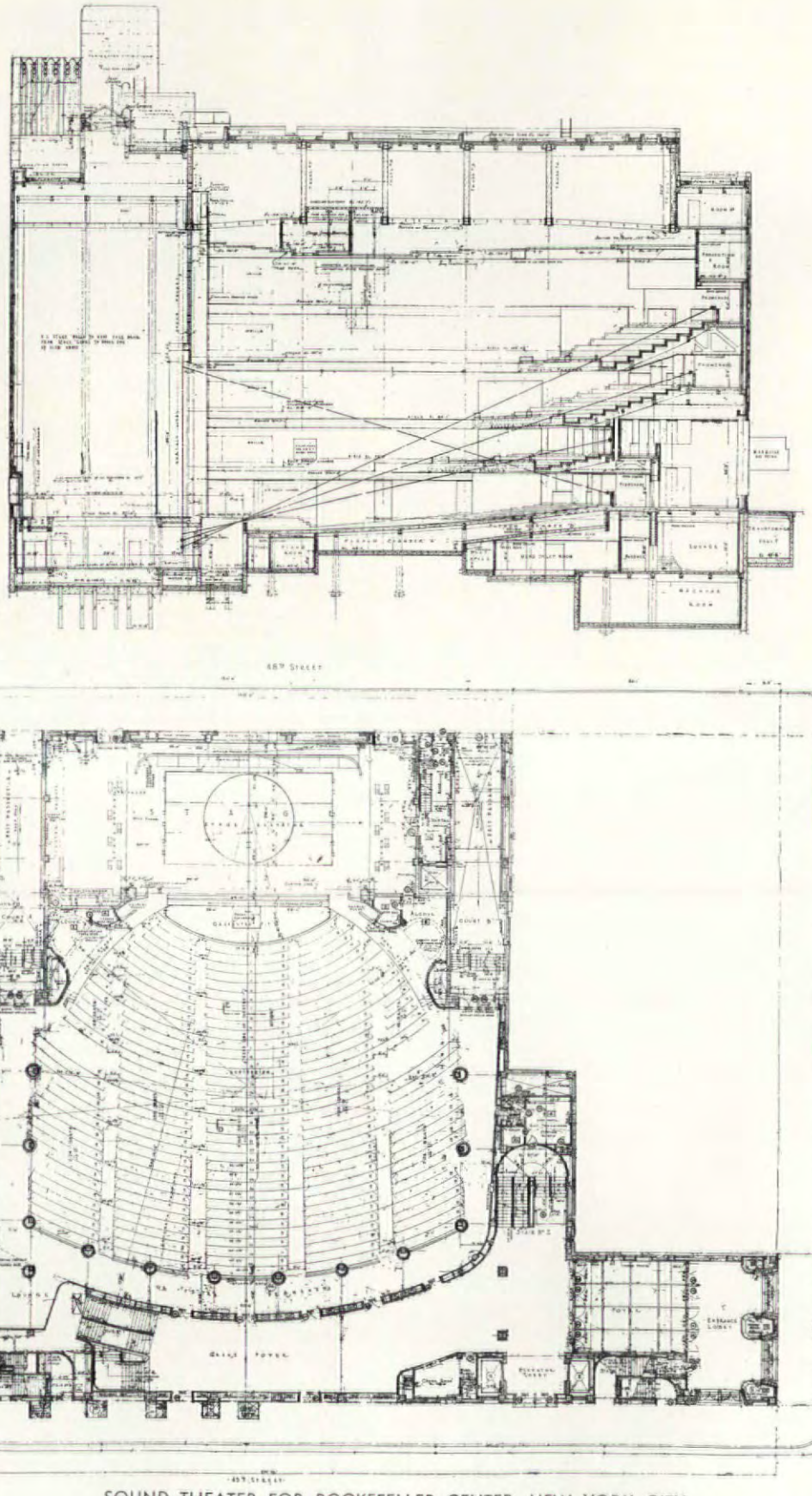
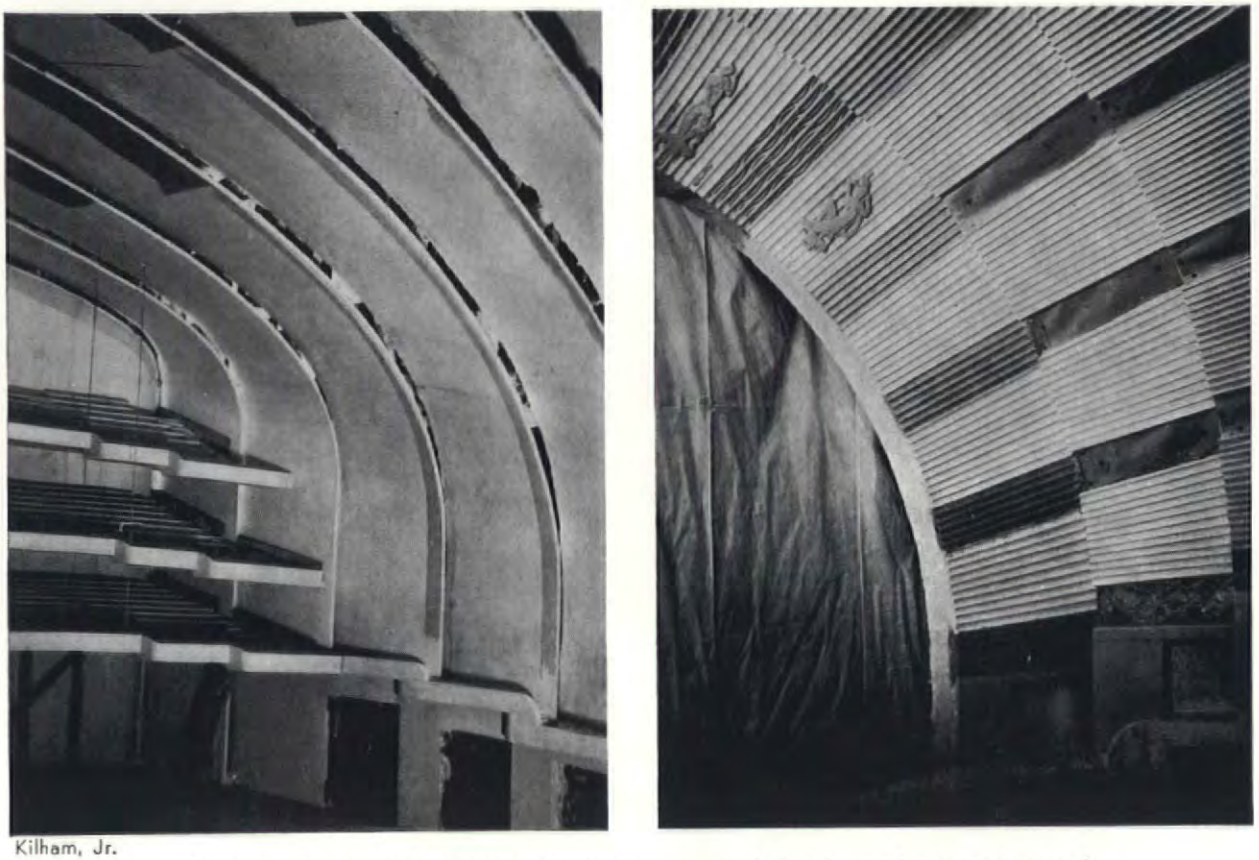


Fig. 15—A distribution system especially adapted to fine office interiors. The distribution box in this system is located beneath a radiator. Note that provision is also made for steam pipes.



SOUND THEATER FOR ROCKEFELLER CENTER, NEW YORK CITY
REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MAC MURRAY;
HOOD AND FOUILHOUX, ARCHITECTS



Kilham, Jr.

Model of International Music Hall, showing mezzanine balconies and proscenium arch.

THEATER DESIGNS FOR ROCKEFELLER CENTER

REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MAC MURRAY; HOOD AND FOUILHOUX, ARCHITECTS

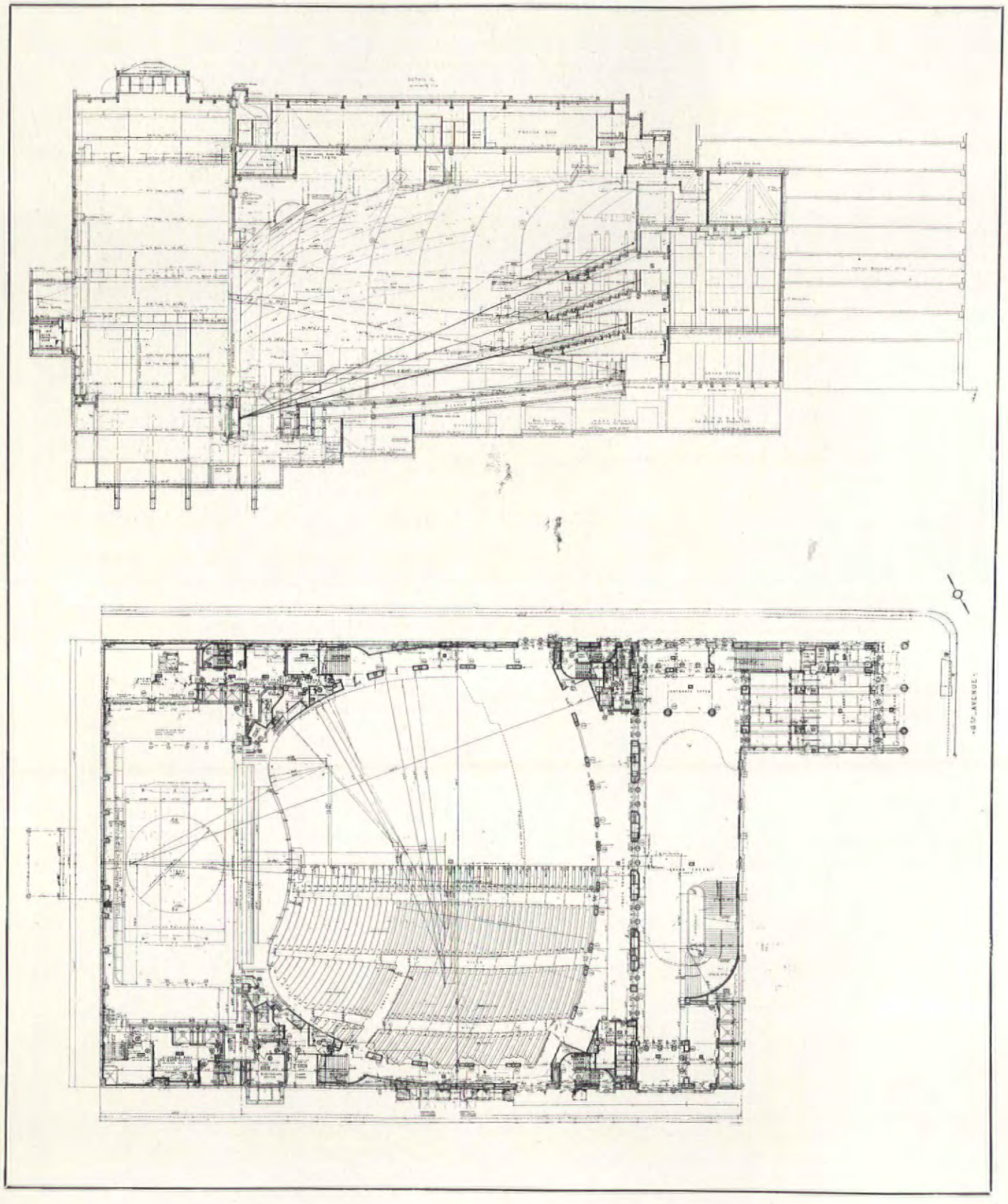
The International Music Hall and the Sound Theater, now under construction at Rockefeller Center, New York City, illustrate a new departure in the design of auditorium balconies. Instead of a single large balcony, three shorter mezzanine floors are used in each theater. These mezzanines, while seating the same number of spectators as in the case of a single large balcony, do not divide the audience into two separate groups as at present. As a result, a greater degree of intimacy between actors and audience is to be achieved in the theatrical performances.

The auditorium of the International Music Hall will seat 6,000 persons. The walls and ceilings are to be acoustic plaster, the floors carpeted and the seats upholstered in a dark red. As shown in the views of the model, the walls and ceiling converge toward the stage proscenium, the step-backs being utilized for indirect lighting. Alternate panels in the ribbed plaster serve as light panels, the openings being covered with a light fabric or mesh, thus diffusing the light from domed reflectors in back.

A flat ceiling is used in the Sound Theater. The walls are constructed of 1/8" mahogany veneer on steel plates.

In both theaters, the lights of the stage and auditorium will be controlled by a lighting director from a small pit in front of the orchestra. Control of all lighting effects, including changes of color, variation in intensity, etc., will be at the finger tips of this man. The equipment, known as Thyratron reactor lighting control, eliminates bulky back-stage theater switchboards and allows the lighting director to take his place in the auditorium where he can see the effects he produces.

The lights subject to this control can be roughly divided into those for the auditorium and those for the stage. Four colors (red, amber, green and blue) will be used in the auditorium lighting alone. The reason for their use is that modern stage productions, no longer confined to the stage itself, have many effects extending into the auditorium. This will be particularly true in the International Music Hall. Runways on each side of the auditorium will be among the architectural features. In the ceiling will be booths housing flood- and spotlights for the orchestra leaders, the orchestra, the organists and the stage. On the stage the color circuits will not only include red, amber, green and blue, as used in the auditorium, but also a daylight color effect involving additional lighting circuits.



INTERNATIONAL MUSIC HALL FOR ROCKEFELLER CENTER, NEW YORK CITY
REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MAC MURRAY;
HOOD AND FOUILHOUX, ARCHITECTS

PORTFOLIO OF THEATERS

Guild

FOX THEATER AT HACKENSACK, NEW JERSEY
THOMAS W. LAMB, ARCHITECT

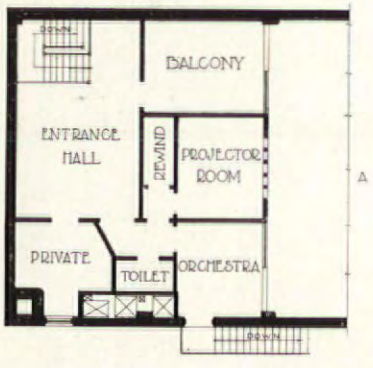
Chicago Architectural Photographing Co.

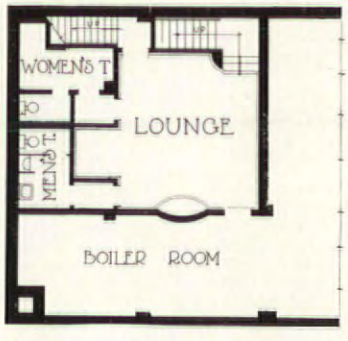
NEW SOUTHTOWN THEATER IN CHICAGO
C. W. AND GEORGE L. RAPP, ARCHITECTS

Moulin

PARAMOUNT THEATER AT OAKLAND, CALIFORNIA
J. R. MILLER AND T. L. PFLUEGER, ARCHITECTS

Bowman





CINEMA ART THEATER IN CHICAGO
ARMSTRONG, FURST AND TILTON, ARCHITECTS

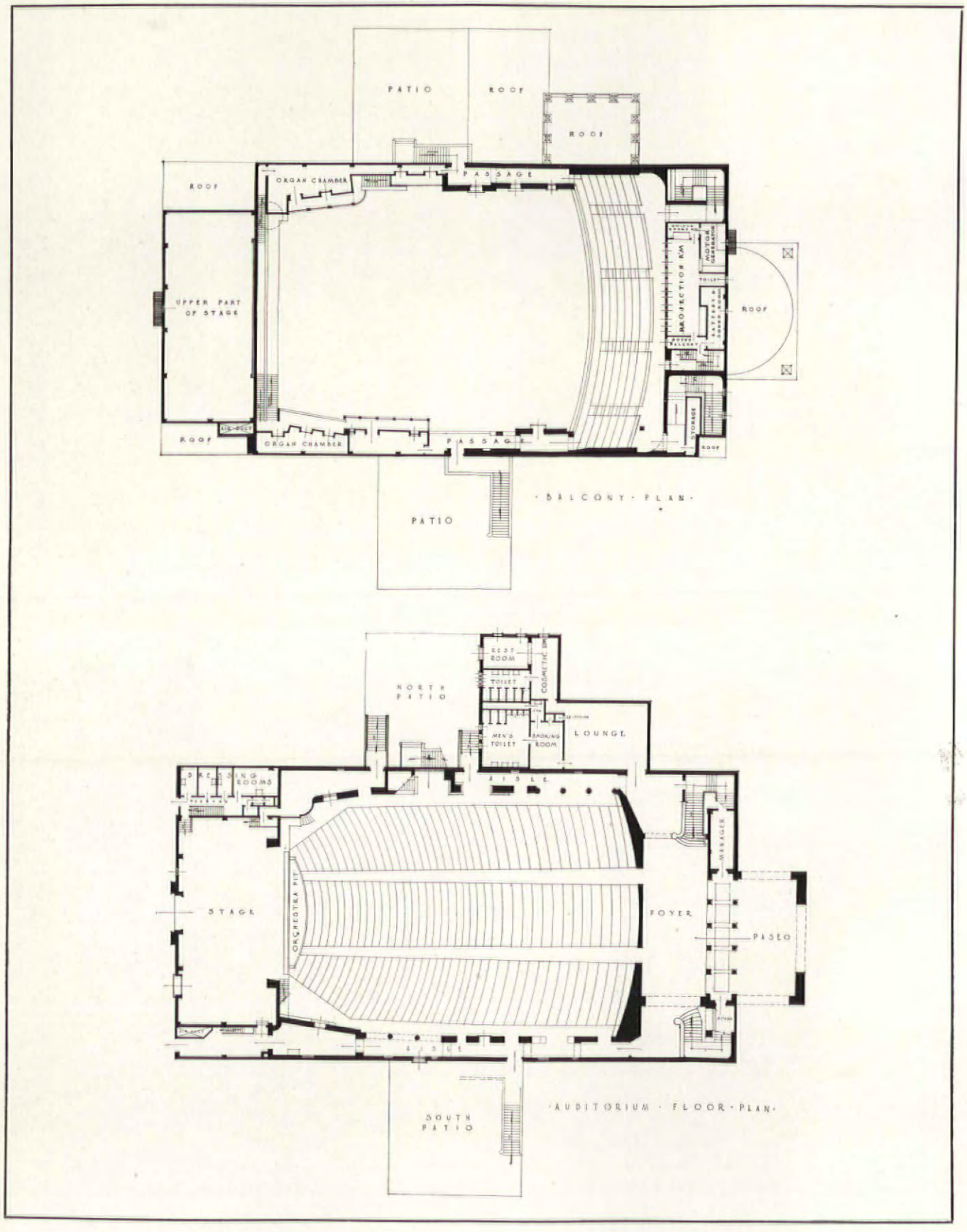
Trowbridge

CINEMA ART THEATER IN CHICAGO
ARMSTRONG, FURST AND TILTON, ARCHITECTS

Trowbridge

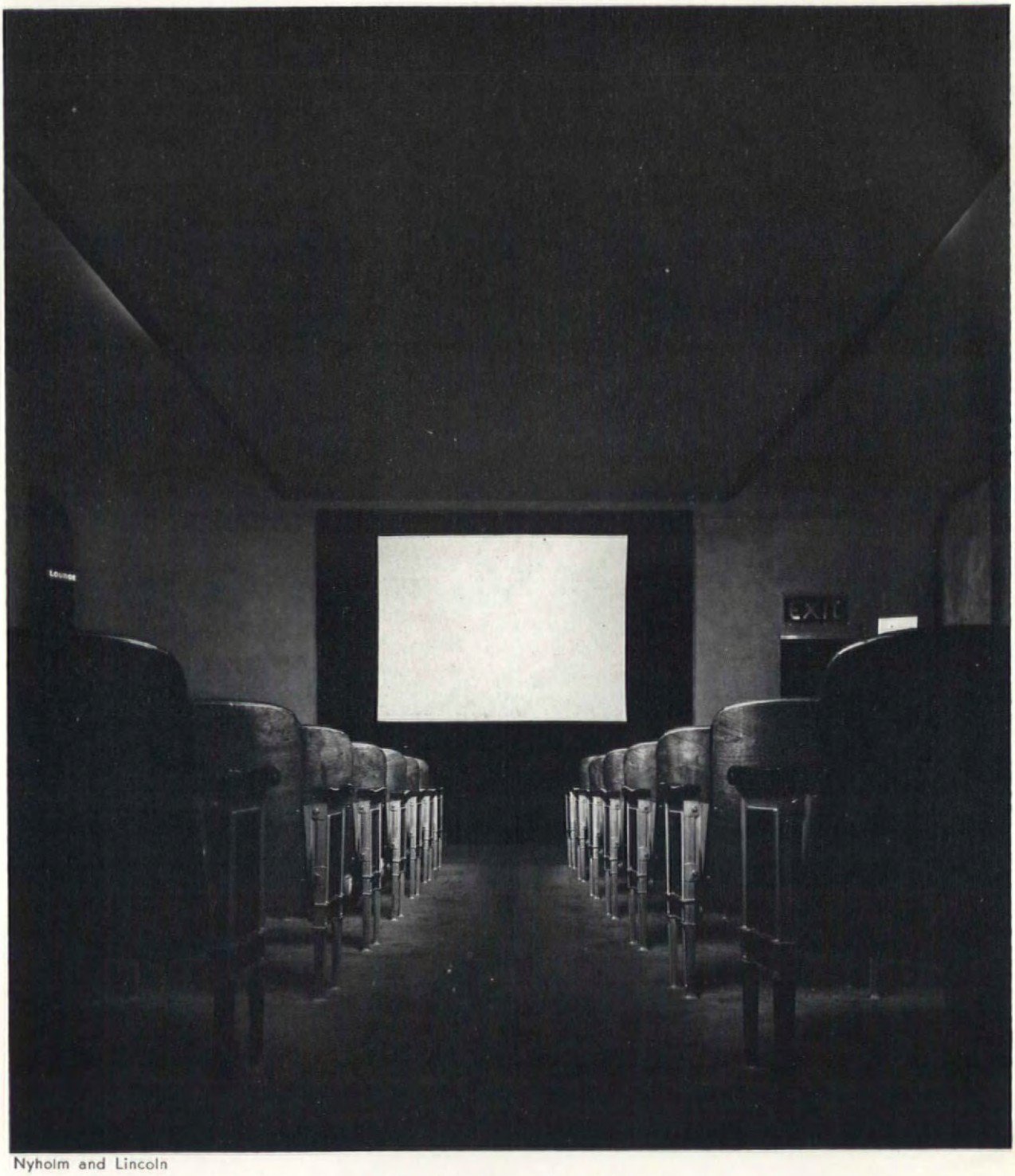
CINEMA ART THEATER IN CHICAGO
ARMSTRONG, FURST AND TILTON, ARCHITECTS

FOX ARLINGTON THEATER IN SANTA BARBARA, CALIFORNIA
EDWARDS AND PLUNKETT, ARCHITECTS



FOX ARLINGTON THEATER IN SANTA BARBARA, CALIFORNIA
EDWARDS AND PLUNKETT, ARCHITECTS

TECHNICAL NEWS AND RESEARCH



Nyholm and Lincoln

TRANS-LUX THEATER, NEW YORK CITY—HOWE AND LESCAZE, ARCHITECTS

DESIGN OF MOTION PICTURE THEATERS

By FREDERIC ARDEN PAWLEY

This article continues the studies of building types and construction methods presented each month in this Technical News and Research series. Other theater studies have appeared in May and July, 1930.

DESIGN OF SMALL MOTION PICTURE THEATERS

Courtesy BETTER THEATRES

Many new theaters show an increased use of mechanical aids and extra-income accessories: note the turnstile, the photoelectric automatic door and the soft drink stand.

STUDIO THEATER, LOS ANGELES — S. CHARLES LEE, ARCHITECT

Two essential differences distinguish the design of the motion picture theater from the legitimate theater:

(1) In the motion picture theater the attention of the audience is focused not on a 3-dimensional stage but on the screen, a fixed plane of two variable dimensions. This simplifies and definitely separates the problem of cinema sight lines from those of the stage theater, since the screen, which confines the dramatic action to a limited area, can be adjusted to any desired position. The objection of "stage obstruction"—the interference of sight lines between the spectator and the stage which is caused by incorrect curvature of the auditorium floor and the depth of the stage itself—is not as important as it is in the case of regular theater design, since the screen may be raised.

(2) The continuous flux of a changing motion picture audience makes necessary a seating plan which facilitates audience circulation. Aisle arrangements are of particular importance.

In the past, motion picture theaters have developed from conventional theater forms without consideration of special needs. In recent years there has been an increase in the number of small, intimate picture houses presenting news events and movie shorts. These small theaters require specialized planning and design.

THE SCREEN

Types and Characteristics

Various types of screens are available, according to Francis M. Falge, at present with research division at Nela Park, Cincinnati, in a paper presented before the Society of Motion Picture Engineers and reprinted in "Motion Picture Projectionist."

(1) *Diffusive or matte:*
Made of cellulose-coated materials.
Rubberized fabrics, closely-woven treated materials.
Coarsely-woven materials with or without metallic fibers.
Woven materials with irregular glass particles.
Coated metals.
Advantages:
A large percentage of light efficiently redirected.
Non-selective as to colors, which is good for color-picture projection.
Light redirected through wide angles, thus giving a satisfactory projection for wide theaters or for theaters with steep projection angles.

(2) *Reflective or metallic:*
Made of aluminum and other coated and polished materials with varying degrees of diffusiveness.
Finishes range from smooth to heavy-pebbled surfaces: the smooth has perpendicular reflective characteristics while the pebbled diffuses light somewhat and is better for wide theaters.
Advantages:
Intensity of reflected light is built up so that under certain conditions there is an apparent brilliancy as viewed from rear seats.
Economies in projection are obtainable in theaters with large ratio of length to breadth.
Disadvantages:
This screen is undesirable where angles of projection are greater than 10°.
It is color selective and therefore not satisfactory for the projection of colored pictures.

(3) *Directive or beaded:*
Diffusing screens in which are embedded glass globules.
Advantages:
Intensity of reflected light is built up, thus giving a more brilliant picture from seats in rear of theater.
Light is redirected in such a manner as to make the view of the screen image as desirable in the balcony as on the orchestra floor.
Economies of operation are effected.
Illusion of third dimension is assisted.
Easy maintenance allows much of original brilliancy of screen to be retained.
Glare seen from seats near screen is reduced.
Apparent brightness adds brilliancy to color pictures.
Disadvantages:
Screen not desirable for theaters with projection angles greater than 20°.
Likewise not desirable for wide houses.

These screen types are made with perforations or of porous material for the passing of sound from horns of loud speakers located in rear. In addition to these commercial screens there are special patented types such as the Trans-Lux or "daylight screen," which is for rear projection only. The Trans-Lux auditorium may be more highly illuminated than is possible with other screens or methods of projection. Developments of stereoscopic methods are not yet commercially practicable; these may require comparatively different types of screen and projection.

Placement of Screen

Determination of the distance of the screen from the front row of seats is the chief consideration in placing the screen. It is desirable that a clear view of the screen be obtained from all seats in the house. This desideratum becomes particularly difficult of attainment with those seats at the sides and in the balconies. The screen placement is also dependent on the size of the picture desired; the grain of the picture becomes distracting if the frame size is too large when viewed from the front row of seats. A rule suggested by F. M. Falge is to allow a depth of at least 15" for each foot of screen width, based on a comfortable visual angle of 45° in the horizontal plane. Some other authorities accept a maximum angle of 60°, which allows proportionally less depth for the screen width.

In designing theaters requiring a conventional stage, the screen should be kept as low as possible with a maximum of 18" clearance above the stage floor in order to preserve the illusion of realism. This distance is further limited by the lower sight line from the first row of seats which clears the projecting stage apron and orchestra pit.

If the stage apron extends too far into the range of vision, the view of the screen is obstructed.

The alternatives for correction are:
(a) Raising the screen, or
(b) Moving the screen forward and also changing the position of the first row of seats so as to preserve the desirable distance between the two.

The logical procedure is definitely to locate the screen for cinematic projection and sight lines before introducing the framing and stage elements.

Tilting of screen is sometimes necessary in the case of silver screens in order to redirect the light to best advantage. Other types of screen have been

Courtesy BETTER THEATRES

Entrance under marquee, exit under tower.

NEW SOUTHTOWN THEATER, CHICAGO

C. W. AND G. L. RAPP, ARCHITECTS

tilted to overcome the keystoning effect (perspective distortion) due to a large projection angle, but in general tilting should be restricted only to silver screens. The tilt attracts greater dirt deposit, which a metallic surface is better able to shed.

Size and Proportion of Screen

At present, screen sizes have not been standardized. Many new processes of production and projection, some of which, like "Grandeur," "Reallife," have already been tried and either abandoned or postponed for future development, indicate enlarged motion picture screens. These maximum-size screens give more flexible play of scale of images, objects and backgrounds in relation to size of spectator. It is also considered desirable to be able to alter the proportion and shape of images at will for dramatic effect.

Generally, the screen's shape is dependent on selection of a rectangle which offers the most satisfactory proportions. The viewer should be able to focus on the screen composition without being conscious of its frame. The shape should be such as not to force the head of the spectator to move when following action or details displayed on the screen.

The present screen proportion is 3 (height) to 4 (width). The objection to this size is its accentuation of vertical effects. A possible wider screen, with a proportion of 5 : 9, is considered undesirable for its horizontality. A screen with a proportion of 3 : 5 has been proposed by various authorities. This will permit both horizontal and vertical directions to be well balanced for picture composition, and it can be modified to achieve any desired shape without causing too great a reduction in the picture size, a factor which is not true of the 3 : 4 and 5 : 9 proportions.

Interrelationship exists between the form of the auditorium and the size and proportion of the screen, as Ben Schlanger, New York theater architect, has pointed out.

The screen size and its proportion determine:

(1) Proper shape of auditorium.
(2) Floor slopes and pitches.
(3) Seating arrangement and chair back pitches.
(4) Lighting and architectural composition.
(5) Indirectly, the acoustical form of the theater structure.

The size of the screen, in turn, is ultimately dependent on:

(1) Dimensions of the theater structure.
(2) Distance from the rear seats.
(3) Distance sacrificed between screen and first row of seats.
(4) Shape of screen.
(5) Location of balcony.
(6) Width of motion picture film (at present 35 mm., although a 50 mm. film width is

being considered; 70 mm. for Grandeur film.)

(7) Projection lens size.

(8) Length of throw from projector to screen.

Present screen sizes are determined by the sight line characteristics of the seating arrangements in each particular theater; these usually limit the size to a much greater extent than do the actual dimensions of the structure.

The shape of the screen also governs its size. The height of the theater structure at the screen point is usually an optional dimension, whereas its width is generally fixed by the limits of the theater property. Therefore, if the screen should be made much wider than it is high, its height would be noticeably limited in theaters which are not very wide.

It is usually difficult to install large screens in existing theaters. There may be sufficient space in the proscenium opening, but balcony obstructions and unsuitable floor slopes would give poor sight lines for large screens, especially when viewed from extreme rear seats or from the sides.

Framing of Screen

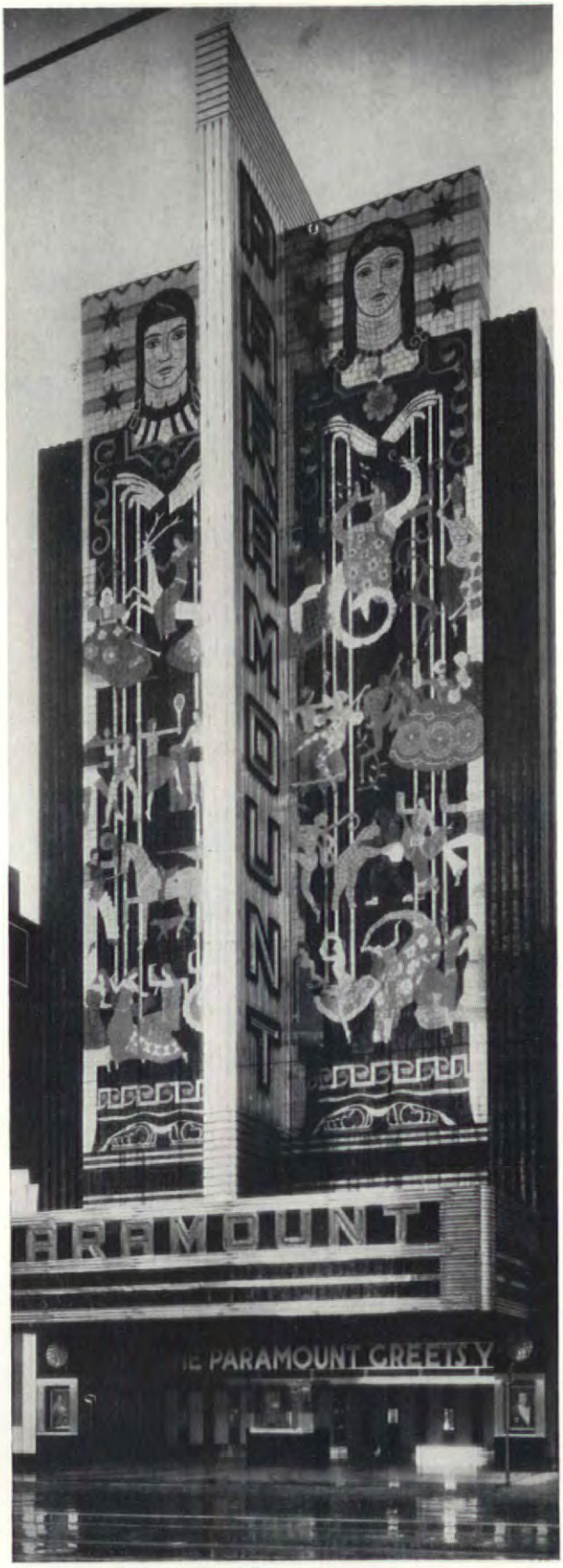
Motion picture screens must be framed with masks or borders which will absorb any light spilling over the edges, and thus minimize any visibility of motion of picture at the edges of the screen.

The usual procedure of absorbing light at the edges is a mask of black velvet stripping, 3″ - 4″ wide, next to the screen, framed in turn by a 2′ - 3′ border grading to the predominant surrounding color. The contrast between the lighted picture and the black border is usually too great, subconsciously attracting the eyes to the frame rather than to the picture image, and the attention-effort results in eye fatigue.

Inasmuch as the tone of the picture image next to the surrounding frame varies a great deal, it seems desirable to have a light-absorption mask which is also variable. More research is necessary on this point.

In the Thalia Theater in New York, a recessed mask, designed by Ben Schlanger, is used. This device decreases contrast, spilled light and movement visibility, both because of greater distance of the mask from the eye and also because of the haze of light (which may be colored) projected from the wings into the area formed by the recess. The haze of light and the recessed mask assist an illusion of the third dimension for the screen image by isolating the screen from the structure and affording an impression of undistracting space in which the action unfolds. Modifiers, technical devices now on the market, are masks remotely controlled, which permit rapid framing of the screen to any desired size.

The architectural treatment at sides and top of screen should be simple and flexible. A directional arrangement of planes or curved surfaces is preferable to a rigid, over-decorated proscenium.

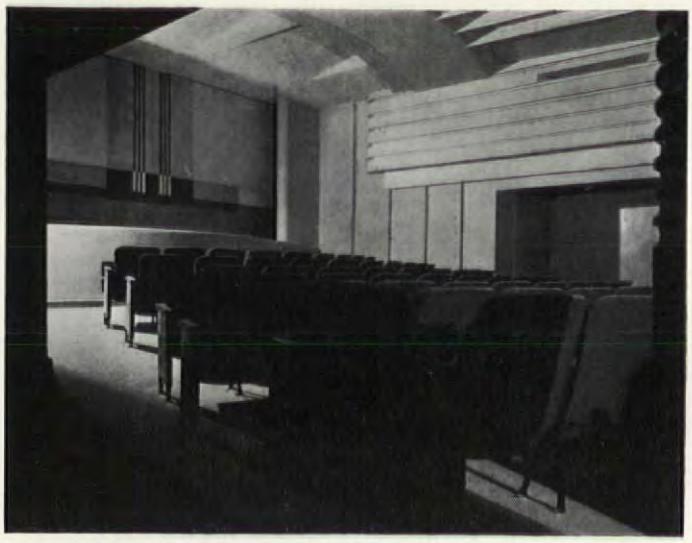


Courtesy BETTER THEATRES

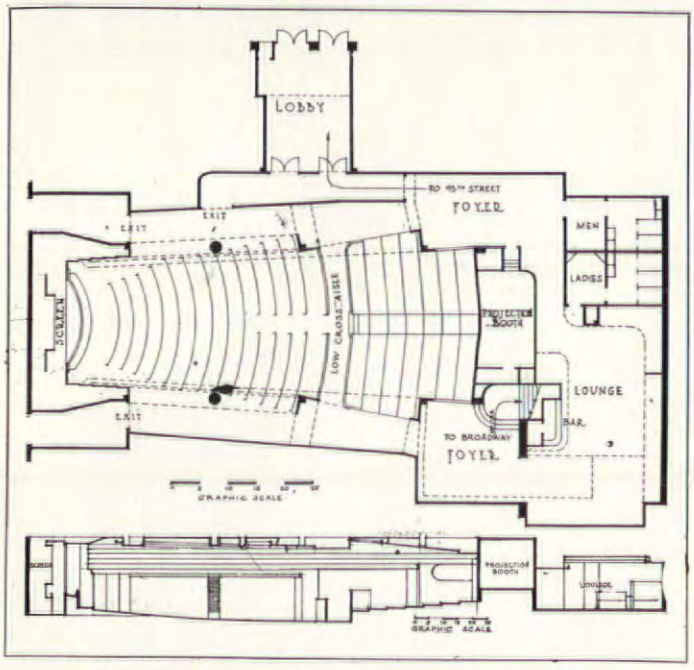
Entrance sign is visible from all directions.

PARAMOUNT THEATER, OAKLAND, CALIFORNIA

MILLER AND PFLUEGER, ARCHITECTS



Keystone-Underwood



THALIA THEATER, NEW YORK CITY
BEN SCHLANGER AND R. IRRERA, ARCHITECTS

First theater to use parabolic reversed floor described in this article; note good location of projection booth, easy sight lines and recessed screen mask.

Projection

Although it is possible to project pictures on the screen from a booth, placed high in the rear of the auditorium, so as to cause a projection angle of 30°, an unnecessary distortion of the screen image results.* Balconies also become less desirable because of the steep inclines and the relatively great height with respect to the screen. Since the physical comfort of the patrons is desirable—this factor affects box office—it is essential that such difficulties be overcome.

* 30° is 12° above maximum angle advisable.

PLANNING OF SEATS AND AISLES

Two recent papers, presented before the Society of Motion Picture Engineers by Ben Schlanger, architect, analyze a new structural form intended purely for motion picture exhibition under the best conditions. This form affects the present design of floors: it is arrived at by reversing the slope of the orchestra floor, by raising the position of the screen, and by adjusting the seats to the new angle of vision. The balcony pitch is also reduced, thus economically reducing the height of the structure and affording a more comfortable view of the screen from all seating levels. The plan also adapts itself more readily to the enlarged screen than does the present type of theater and allows for improved projection and acoustics.

Excerpts from Mr. Schlanger's two papers* follow:

"Sight lines, as now fixed in the present type of theater, cause the spectator to sit with much bodily discomfort and frequently with a distorted view of the screen. On the orchestra floor level, the present arrangement requires (except at the extreme rear of a deep auditorium) that the spectator tilt his head backward to see the upper portions of the screen, the amount of tilt reaching a somewhat painful degree. This is due to the fact that the chairs are placed on a floor that is sloping downward toward the screen, the level of the floor being, in most parts, about even with the bottom of the screen. Thus the pitch of the orchestra floor is directly opposite to the pitch the body should assume for comfort. In the balcony, the steep angle makes it necessary for the patron to pitch his body forward in order to view a screen that is at a level which is in most cases below that of the greater part of the balcony. Study has shown that it is impossible to correct these faults without entirely disregarding the present theater forms and creating new ones.

"In endeavoring to correct the faults of the present type of orchestra seating, the author has developed a plan in which the slope of the orchestra floor is reversed, bringing the high point of the floor nearer the screen instead of the low point as is now the case in the present type of theater. The screen is raised a prescribed distance above the level of the eye line of the first row of seats nearest the screen. This plan includes a systematic tilting of the backs of the chairs on the reversed orchestra floor slope. By tilting the body backward and permitting the higher part of the floor in front of the seat to support the feet, a natural and comfortable position is assumed which allows the spectator to obtain a complete view of the screen without having to raise his head from its natural position. Seats on the orchestra level more remote from the screen require less tilt. The various distances from the screen control the lessen-

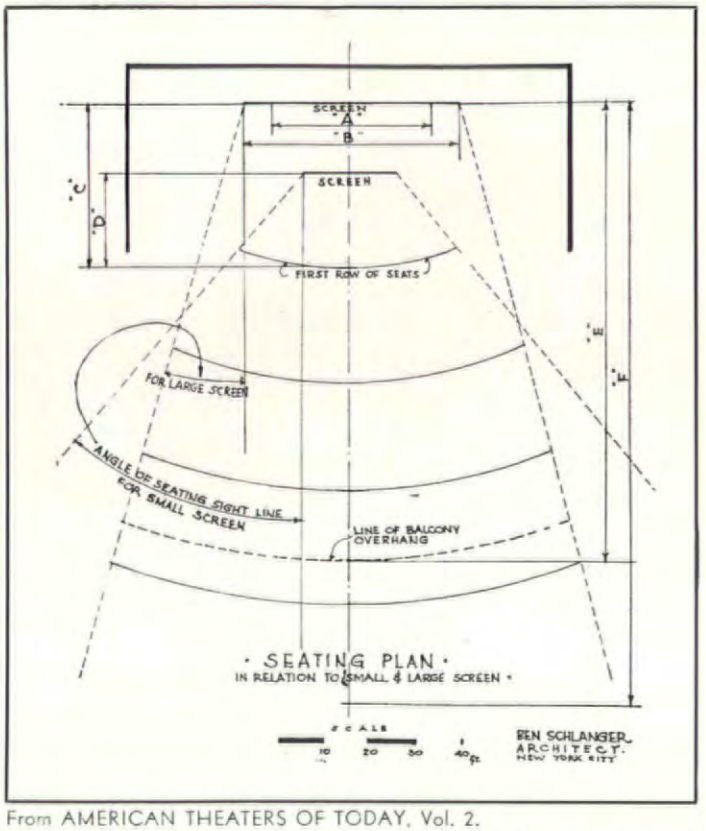
* Reprinted from Journal of the Society of Motion Picture Engineers, August, 1931, and February, 1932. Designers are cautioned against using parts of this scheme since the originator's adjustments of dimensions are delicate; poorly applied they do not result in proper sight lines.

ing of the tilts of the backs of the chairs. The angle of tilt in each case is perpendicular to a line of sight drawn from the eye level to a point on the screen about one-half the height of the screen, measured from the bottom. It is at this height of the screen where most of the action takes place and where the spectator's eye is chiefly focused. The angle formed between the back of the chair and the seat is 98 degrees and is kept constant for each and every chair. This angle has been found to be most conducive to correct and restful posture. Heretofore, only the placing of the seat and the screen were taken into consideration in determining sight lines, the matter of posture being entirely disregarded. Realizing that variously inclined surfaces are used in theater structures, it seems almost incredible that more consideration was not given to the inclination of the chairs. The reversed slope of the orchestra floor permits establishing a definite relation between the inclination of the floor and the seat, and the position and size of the screen. It would be impossible to apply this system of tilting to the present slope of the orchestra floor because the proper angle of the seat with respect to the back of the chair could not be maintained without leaving the feet unsupported. Sight lines from the orchestra level cannot, therefore, be improved for screen entertainment unless the slope of the orchestra floor is reversed.

"While this arrangement distinctly improves the orchestra seating, it also serves as a means by which the complete form of the theater may be revised to suit the requirements of screen performance. The faults of the present orchestra seating are greatly magnified when the enlarged screen is used because the spectator then has to tilt his head backward even further than is now necessary with the small screen. And so the enlarged screen has also served as an important agent in determining a new form for the theater structure.

"Reversing the slope of the orchestra floor also brings many decided advantages to the balcony, which can now be kept low and of a slight pitch, made possible by the low point of the rear of the reversed orchestra floor. The balcony thus becomes more desirable for two reasons: (1) due to the fact that the level of the screen is very much the same as that of the balcony the sight lines are greatly improved and, (2) direct and easy access to the balcony from the street level is provided, the difference in levels being surprisingly small. This is made possible by the low position of the balcony which is much less steep in pitch than the present type.

"Although the requirements of good acoustics and motion picture projection might have been secondary considerations in this instance, they were by no means disregarded. The shape of the auditorium, as developed from this new disposition of sight lines, lends itself to greater flexibility for better acoustic forms and provides for a smaller angle of projection than the shape of the present



From AMERICAN THEATERS OF TODAY, Vol. 2.

Fig. 1 — Seating plan diagram suggesting how width and depth of theater auditorium, using the large screen, may be determined. "A" is the screen width enlarged for standard use. "B," being wider, allows for a screen whereon can be projected special large scale effects. If possible, most theaters should be able to accommodate this "B" screen size.

type of theater. The projector is lowered to a level almost even with the top of the screen.

"Fig. 1 shows the maximum angle of vision as 108 degrees in relation to the screen. Seats placed outside this angle would afford a distorted view of the screen. The smaller screen permits a more obtuse angle of vision, which accounts for the fan shape of many existing theaters.

"The practicability of applying the reversed floor principle to variously sized and proportioned plots of ground has been given special attention, the object always being to obtain a maximum number of 'good' seats within a minimum area. Many different adaptations of the reversed floor principle have been devised to fit the peculiar conditions of various theater projects. The feasibility presents itself of placing a part or the whole of a theater auditorium above or below the portions of a structure which may be used for other purposes. It therefore becomes important to design a theater auditorium so that it will not require too much valuable area in the vertical sense. Thus, the remaining portions of a structure above or below the theater may provide an additional income which, in turn, results in a reduced rental for the theater itself. The use of the reversed floor permits con-

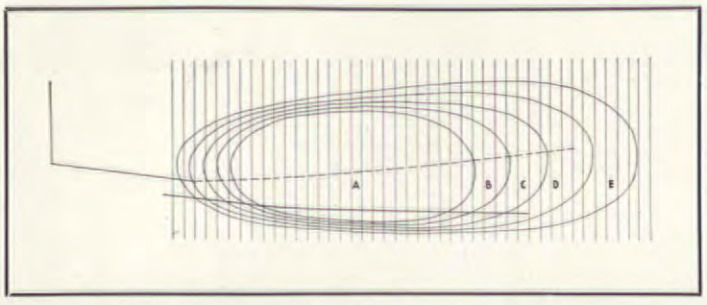


Fig. 2—VALUABLE AREA CHART, showing choice areas for location of seating. Area "A" is the most desirable, "B" is less desirable. Bodily comfort, visual fatigue, acoustics and accessibility of seats are the controlling factors used to plot these areas. Dotted line indicates conventional floor slope—full line, the reversed floor.

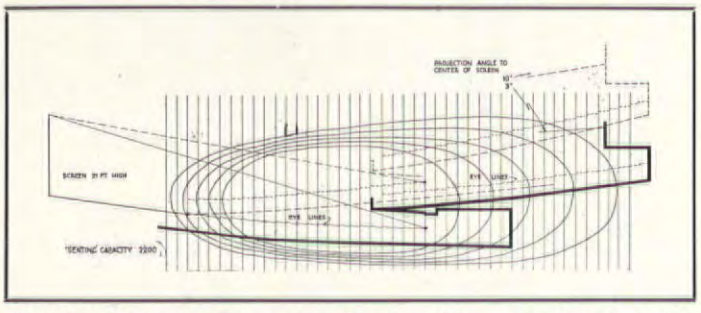


Fig. 3—One of the many theater forms designed within the areas indicated on the valuable area chart, using the reversed floor slope principle. The balcony commands a good view of the screen, and it is above an area which can be used for other elements, such as a lobby or stores. Ben Schlanger, architect.

structing a theater within a limited height, where it would be impossible to include a theater planned according to present practices.

For the purpose of making possible better vision, smaller projection angles, and reducing the cubage of the theater structure, a very intensive search has been made to ascertain which of the physical areas are most valuable as seat locations in relation to the screen, the object being to use these areas only for seating arrangements. The present system of theater planning necessitates the utilization of portions beyond these valuable areas, thus causing large projection angles, distorted vision from high balconies, unnecessarily large construction costs, and the payment of excessive rentals for space which not only has no value to the exhibitor, but which also creates conditions highly unsuitable for motion picture exhibition. For these reasons the present method of theater planning results in unscientific and uneconomically built structures. If original construction and maintenance costs can be reduced, at the same time giving to the theater patron the comforts and surroundings due him, there is little doubt as to what the effect on the box-office will be.

"A chart showing the location of the desirable areas has been developed (Fig. 2). These areas have been found by determining how much above and below, and how far from and how near a fixed screen, a spectator may sit, maintaining a comfortable bodily posture, and obtain a view of the entire screen. The spectator should be seated in such a position that the picture on the screen will appear at a level which is most imitative of the level from which natural surroundings are viewed in real life. Still another determining factor in locating these valuable areas is that it is more natural to sit low and lean slightly backward against the support of the chair back to obtain a higher view, than it is to sit high and lean forward to look down at a screen below the eye level. For these reasons, therefore, the desirable areas of seating are limited to levels below the top of the picture. While both the reversed orchestra floor slope and the present orchestra floor slope come within the desirable areas, the present slope of floor, which rises up away from the screen, causes all *upper* levels of seating to come within the areas undesirable for natural and comfortable viewing. The reversed orchestra floor slope has a much smaller pitch downward than the present type of floor has upward. The present type of floor eats into the valuable areas unnecessarily, while the reversed floor hugs the lower region of the desirable areas, leaving the remaining valuable areas for additional seating levels.

"A method of adjusting the level of the screen, the levels of the various eye lines, the distance between the eyes and the screen, the slope and inclination of the various levels of seating, and the pitches of the backs of the seats has been developed, keeping a definite relation between all the elements involved. Formulae have been evolved to define the position of the screen in relation to the slopes required for the orchestra and balcony levels. The shape and size of the screen are also a definite part of the calculations. Given the shape and size of the screen, and the distance between the screen and the nearest seat (which should equal the width of the screen, for perfect horizontal vision), the vertical distance between the level of the nearest seat and the level of the bottom of the screen is determined. This distance determines the slope of the orchestra floor and the pitches of the chair backs. The resultant slope is a parabolic curve which starts near the screen with a downward pitch, decreasing uniformly until the floor is practically flat at about the twenty-fourth row of orchestra seats.

"The slope of the orchestra floor in existing theaters is not sufficient to permit seeing the bottom of the screen over the head of the person immediately ahead. If the pitch were sufficient for this purpose, it would be too great for comfortable walking, and would make it difficult to adjust the standards and leg supports of chairs to the slope of the floor. The mild pitch of the reversed floor necessary to allow full view of the bottom of the screen eliminates these difficulties. A comfortable, full view of the entire screen can not be obtained until the ninth row of the present orchestra

Trowbridge

LOUNGE IN CINEMA ART THEATER, CHICAGO
ARMSTRONG, FURST AND TILTON, ARCHITECTS

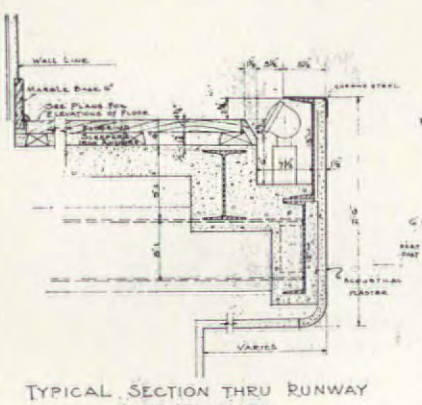
floor slope is reached, causing severe neck- and eye-strain in about 300 seats in the average theater. The reversed floor corrects this condition entirely, allowing a comfortable view from every seat in the orchestra and higher levels.

"The slope of the reversed floor automatically establishes the proper pitch for the backs of the seats in every row. This eliminates the need for specially adjusted backs, and changes in the standards and leg supports of the chairs. All chairs can then be exactly alike in every detail of construction. Instead of designing differently constructed seats to fit a floor slope, as is now necessary, the floor is designed to suit uniform seating. It is just as though the seats were placed in an ideal position for viewing the screen, the floor being built afterward to support the seats in the proper manner.

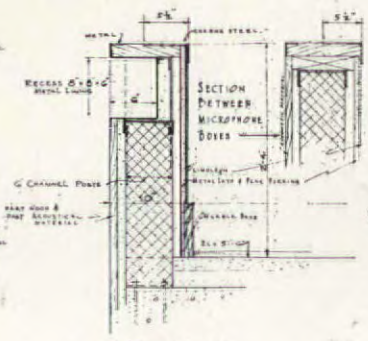
"The matter of determining the maximum tilt for chair backs has been discussed with the engineering department of a leading seating company. A tilt of twenty-seven degrees for the row of seats nearest the screen has been suggested. This tilt will equally distribute the weight of the body to the seat and back of the chair, keeping the head of the spectator in a comfortable position. The tilt diminishes to sixteen and two-thirds degrees at about the twenty-fourth row, remaining constant thereafter. The fact that the head assumes a pitch of two or three degrees less than the pitch of the body has been taken into consideration in the calculations for determining the floor slope. The feet of the occupant of a seat are properly supported, and the sensation of sliding forward out of the seat, as experienced in the present type of orchestra seating, is eliminated, because the angle and distance between the floor and the seat remain constant. Due to the fact that the same chair can be used unchanged throughout the house, a considerable economy can be effected. The 'spring edge' seats, required where the present type of floor inclines steeply from the front of the chair, are costly and unsatisfactory, and can be eliminated. The reversed floor permits the use of the 'box spring' seat, which is less costly and more durable. The uneven wearing of the seats and backs of chairs is also corrected by equally distributing the weight of the body by properly tilting the seats on the reversed floor."

In commenting on the reversed floor slope advocated by Mr. Schlanger, Mr. George Schutz, Editor of "Better Theatres," makes the following criticism:

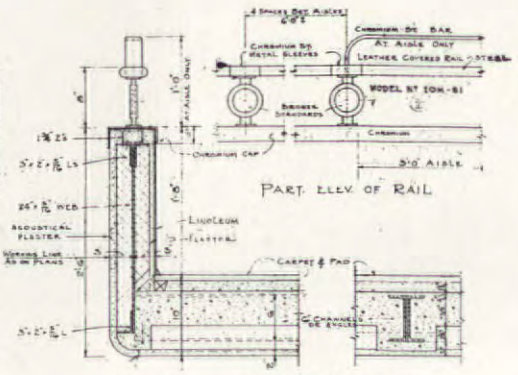
(1) The comfort of the patron is increased, sight lines are improved and, because fewer stairs are required, there is greater ease of access.
(2) Simpler seating control results since practically all seats are equally desirable and may have a single admission price.
(3) A large screen is accommodated, the intro-



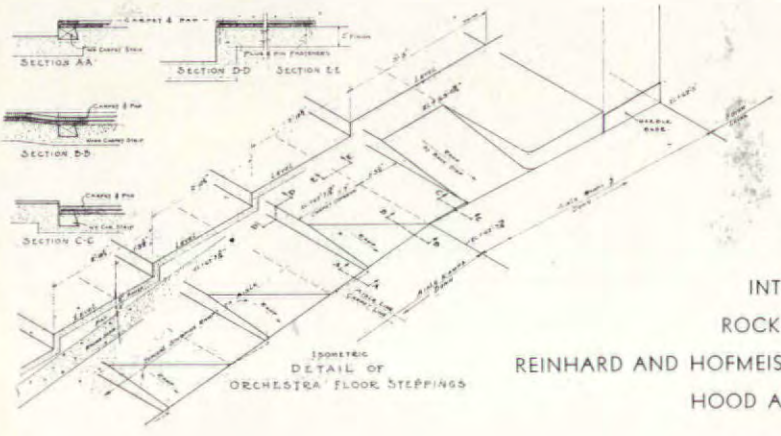
TYPICAL SECTION THRU RUNWAY & FOOTLIGHTS



DETAIL OF MUSICIAN'S RAIL



DETAIL SECTION THRU MEZZANINE FRONTS



ISOMETRIC DETAIL OF ORCHESTRA FLOOR STEPPINGS

Construction Details

INTERNATIONAL MUSIC HALL

ROCKEFELLER CENTER, NEW YORK

REINHARD AND HOFMEISTER; CORBETT, HARRISON AND MACMURRAY; HOOD AND FOUILHOUX, ARCHITECTS

duction of which would accentuate faults in theaters in which the sight lines for small screens are defective.

(4) The balcony is brought within the valuable seating area. The additional balcony seats more than offset the loss in front-row seats in the orchestra, which must be removed to permit introduction of large screens.

(5) Angle of projection is decreased.

(6) Building is more economical since the height of the structure is decreased, resulting in more seats per cubic foot.

(7) Design and construction of side walls are simplified.

(8) Proscenium is eliminated. The large screen affects the scale and interior treatment of the theater whereas the small screen is a separate part of the theater. The large screen becomes an integral part that determines the scale of the treatment.

(9) Auditorium width is restricted within the range of good horizontal sight lines.

Planning of Aisles

Two methods of facilitating audience circulation are possible:

(1) Increasing the number of aisles. The Los Angeles Theater, designed by S. Charles Lee, architect, has as few as six seats between aisles.

(2) Increasing space between rows to allow passage without disturbing seated patrons. This scheme, known as the "Continental Seating Plan," is not allowed by many building ordinances in this country. The Goodman Memorial Theater in Chicago, designed by Howard Van Doren Shaw, architect, illustrates this aisle scheme with rows 42" back to back; a U-shaped corridor around the auditorium makes circulation easy.

Seats

Since the attendance of the theater audience varies according to the time of performance it is necessary that, in order to stabilize the auditorium acoustics, the seat and back should be constructed of materials with acoustic values comparable to those obtained when the seat is occupied by a spectator.

It has been found desirable to equip seats with "program lights." This device, used for the first time in the Earl Carroll theater, consists of a shielded bulb, push button, and a flashlight battery

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Tremendous "yardage," too, brings further economies to every job. Repeated, impartial tests prove Barreled Sunlight Flat Wall Finish has *a spreading power from 16% to 50% greater than that of any other high-quality flat finish.* From 16% to 50% less paint required!

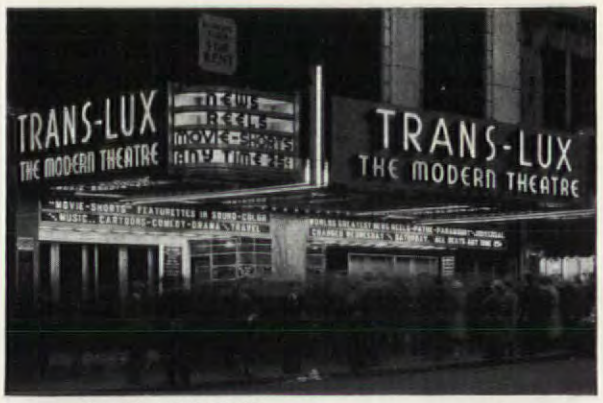
When dry, Barreled Sunlight Flat Wall Finish is distinctly handsome, flawlessly smooth, without brush marks or laps. Close inspection shows a faint sheen . . . the sign of a surface that's dirt- and dust-resistant, easy to wash!

Send for further details and a sample can of this handsome, economical new flat wall finish. Write to U. S. Gutta Percha Paint Co., 22-F Dudley St., Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

The New Barreled Sunlight

REG. U. S. PAT. OFF.

Flat Wall Finish



Gray — BETTER THEATRES

Acme — P & A — BETTER THEATRES

Entrance and interior of twin TRANS-LUX THEATERS on Broadway, New York City. L. E. Dinslow and Thomas W. Lamb, Associated Architects.

set in one unit at the back of each seat; in addition to giving light for reading programs it is useful in locating dropped articles.

Many theaters are now being equipped in part with headphones as aids to the deaf. Some devices now on the market are made with adjustable volume and others have constant volume for those only slightly deaf. These devices generally consist of a headphone with a small potentiometer, which can be obtained at the box office and then plugged into a seat receptacle.

SOUND TREATMENT

Theaters presenting sound pictures require careful acoustic treatment of the auditorium. The volume of sound from the loud speakers is a limiting factor in the maximum size of such theaters: the volume of sound sufficient to reach distant seats is generally too great for seats near the screen.

At present the sound horns are placed directly behind porous or perforated screens. The perforations have been found objectionable in that they create a "half-tone" effect of the screen image. For this reason efforts were initiated recently by the Society of Motion Picture Engineers to find horn locations which would not necessitate screen perforations, which would give the effect of sound coming from the screen image.

LIGHTING

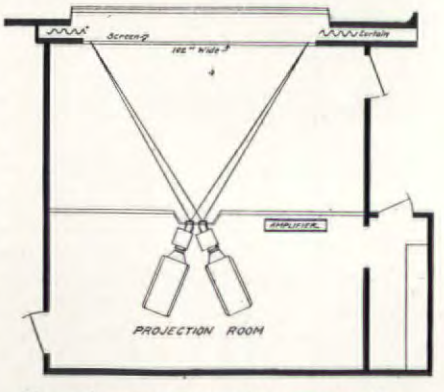
The intensity of illumination should diminish gradually from the street to the auditorium so that the eyes of the patrons may become accustomed gradually to the lower intensities. Except in the case of Trans-Lux theaters, auditorium lighting should be low in intensity, sufficient only to enable patrons to find seats but not strong enough to make movements of other patrons distracting. There should be less light at the front near the screen. All light sources should be diffused. No lights should be near the sight lines to the screen, nor should light fall on the screen itself.

Severance Hall in Cleveland (Walker and Weeks, architects), and Earl Carroll theater in New York (George Keister, architect, Jos. J. Babolnay, designer), have color-control consoles so placed that the operator may watch the color lighting effects from the front of the house.

TRANS-LUX THEATERS

Projection on the back of screens is not new. For two decades in Great Britain and on the Continent ground glass or curtains have been used for screens with rear projection. This process has the disadvantage that the wide-angle lens used to cut down the customary distance between the projector and the screen has in the past resulted in a "hot-spot" of light in the center of the image. The film also had to be reversed for titles, and with the advent of sound pictures the rebuilding of sound units was necessitated.

Trans-Lux projection has been developed from a daylight screen used in stock exchanges and brokerage offices. Projectors are directly behind the screen at a distance of 8 ft. The reversal of film is accomplished in the lens system. The screen may be as near as 13'5" to the rear wall of the stage, yet leave ample room for operating the projector. Loud speakers are below and very close to the bottom of the screen.



Plan showing Trans-Lux projection.

According to William Mayer, chief projectionist of the Trans-Lux Movies Corporation, the theater construction is more compact and less expensive. There is also a decrease in panic and fire hazards since the Trans-Lux auditorium may be more highly illuminated than is possible with other methods of projection. This also beneficially decreases contrast between screen and surroundings.

How many miles in the nurses' daily marathon?

Thanks to the courtesy of Grasslands Hospital, Valhalla, N. Y., we are able to give you the actual mileage. Fifteen different nurses at this hospital put on pedometers. The photograph above shows three nurses checking in at the end of the day.

Slightly over eight miles per day was the average of the fifteen tests. But several nurses did far longer distances. Miss S. walked twelve miles. Miss P. and Miss F. did thirteen. That's a real hike!

Hard, uncomfortable floors make those thirteen miles seem like thirty. Nurses who do their walking on hard wood or concrete suffer much more from fatigue than their more fortunate sisters who work on resilient Sealex Linoleum Floors.

In calling these floors *resilient*, we mean that they have just the right amount of "give." They conserve energy—help to keep the hospital staff more cheerful, alert and efficient to the end of the day.

In addition to underfoot comfort, Sealex Linoleum possesses many merits which will be valued in the hospital. It is sanitary, easy to clean, durable, and (thanks to recent reductions) inexpensive to buy. Write our Hospital Floors Department for further facts and figures —and for full information on our Bonded Floors installation service, in which Sealex materials are backed by Guaranty Bonds.

CONGOLEUM-NAIRN INC., KEARNY, N. J.

SEALEX
LINOLEUM FLOORS

Bonney

Recessed lights in ceiling designed by Rene Prou.

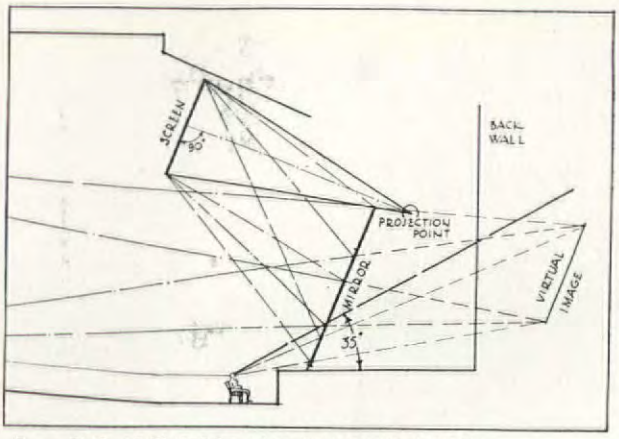
RECENT INNOVATIONS

In addition to seating arrangements and types of projection much equipment has been developed contributing to the operating efficiency of the theater or affording special service to patrons.

In the "Los Angeles" theater a mirror on the promenade wall is arranged prismatically to give a full view of the main lounge on the floor below, thus permitting patrons to meet friends as they arrive. A detector seat panel in the manager's office indicates the seats which are occupied, thus obviating a personal check of the house by ushers. A glass-inclosed soundproofed "mothers' room" on the mezzanine floor has a full view of the stage and is equipped with headphones so that children and mothers may see and hear the pictures in full enjoyment without disturbing other patrons in the theater. A "public address" system of amplifiers is used for transmitting and regulating sound in all parts of the building. In the main lounge a miniature screen (operated from the projection room by means of a prism and light tunnel) transmits the main feature for the benefit of patrons waiting to obtain seats.

Extra-income vending or entertainment machines are in increasing demand, according to theater operators. These vending machines dispense candy bars, chewing gum, cigarettes, perfume, soap, paper towels. Drinking fountains operated by the photo-electric cell and automatic photographing machines have been found successful features of this sort.

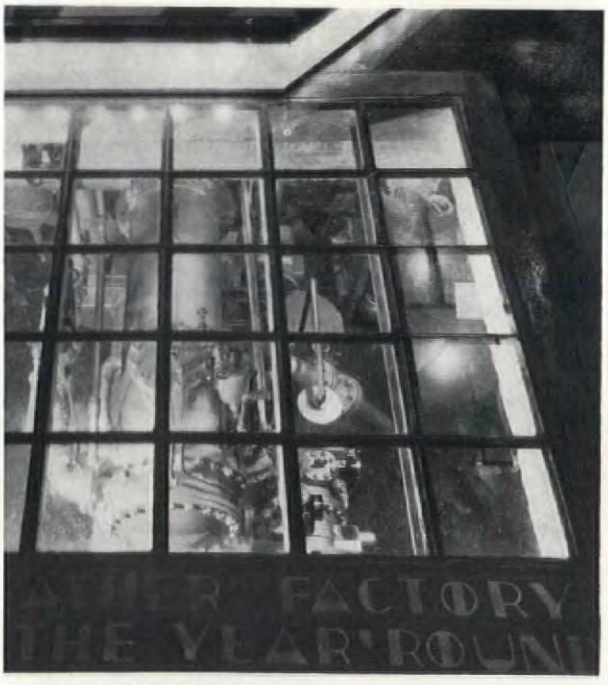
Similar devices for extra revenue are the self-photographing motion picture machine and the Melograph, which gives voice tests. These machines and devices, like the glass panel in the sidewalk showing air-conditioning apparatus in the basement of the Studio Theater, Los Angeles, have a distinct advertising value.



From THE ARCHITECT AND BUILDING NEWS

New method of periscopic projection from behind screen with aid of reflecting mirrors.

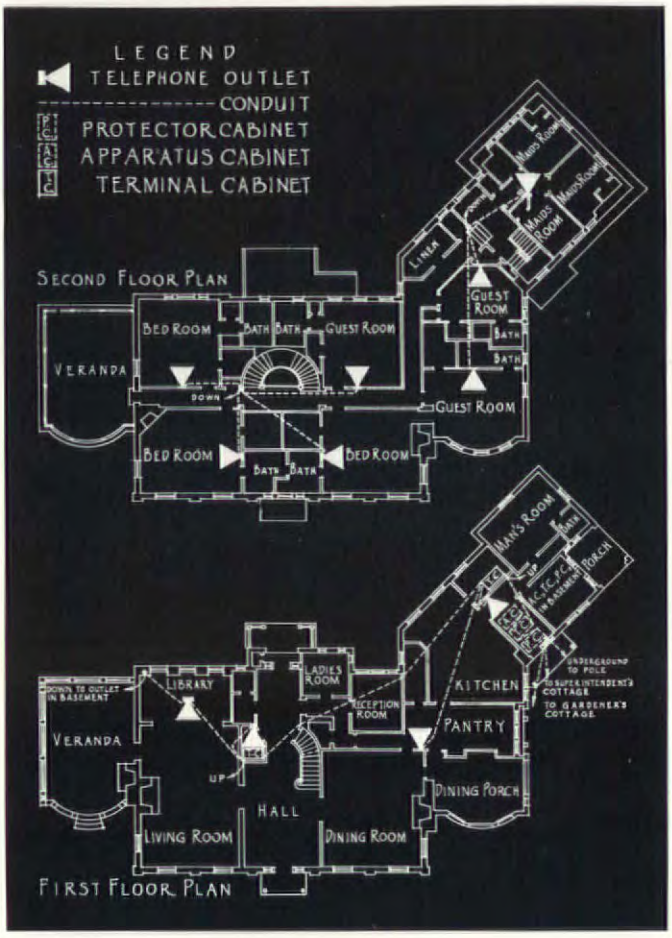
There are many potential developments of screen projection and presentation. A recent innovation is the method of periscopic projection invented by Dr. R. T. A. Innes, late astronomer to the Union of South Africa, and described in the Architect and Building News (March 18, 1932). In this system (see illustration) the projector is behind the curtain line, concealed from the audience and directed toward a screen placed high up in the auditorium outside the proscenium opening, which is now no longer necessary. The audience sees the image on the screen in a mirror placed in the usual location of a motion picture screen, but tilted to catch the proper reflection. The idea of periscopic projection is to lengthen the "throw" and correct distortion due to excessive projection angles. Stereoscopic effects are claimed because of the reflections from the two surfaces of the glass.



Courtesy BETTER THEATRES

Sidewalk window, showing air conditioning equipment. Studio Theater, Los Angeles.

• • • YOUR CLIENTS CAN CALL ACROSS THE HALL, OR ACROSS THE COUNTRY, OVER REGULAR BELL TELEPHONES



IN PLANNING larger homes and estates, it is often important to provide for communication between rooms and between buildings, as well as to the outside world. Then boudoir can talk to kitchen, or library to garage, easily, quickly. Time and steps are saved for all the household.

Such convenience can be readily arranged by consulting the local telephone company. They'll help you choose the Bell inter-communicating system best adapted to your project. They'll show you how conduit can be built into walls and floors to carry and conceal all wiring . . . to provide telephone outlets wherever they're wanted . . . and to protect against most types of service interruptions. There is no charge for this advisory service. Just call the Business Office and ask for "Architects' and Builders' Service."

The residence of Mr. Frederick Wing Rockwell, Norfolk, Connecticut, is equipped for complete telephone convenience with two central office lines, a dial inter-communicating system, and twelve telephone outlets. There are additional outlets in the superintendent's and gardener's cottages. TAYLOR AND LEVI, Architects, *New York City*. OTTO E. GOLDSCHMIDT, Consulting Engineer, *New York City*. *For full efficiency, such arrangements should be carefully planned in advance.*

WAGE SCALES IN THE BUILDING TRADES

Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of May 15, 1932

	Asbestos Workers	Bricklayers	Bricklayers' Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.37½	$1.45	$0.45	$0.95	$0.90	$0.90	$0.70	$1.00	$1.15	$0.45	*$1.37½	$0.90	*$1.62½	$0.80	$1.00	$0.95	$0.95	$0.95	$1.00	*$1.45	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	‡.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.12½	*1.25	1.00	*1.00	*1.25	*1.43¾	*1.25	*1.65	*1.65	.35 .40	*1.50	*.90	*1.25	1.00	*1.00	1.00	1.00	*1.37½	*1.25	1.25	1.25	.72
Boston	*1.50	*1.30	*.70	*1.17½	1.17½	*1.50	1.17½	1.17½	1.17½	.70	*1.50	*1.17½	*1.62½	*.95	*1.25	*1.37½	*1.37½	1.17½	*1.25	*1.30	*1.50	*.95
Buffalo	1.50	*1.25	.50 .60	*1.00	1.12½	*1.30	$49.50 to $55.00 wk.	.85	*1.37½	.50 .60	1.37½	*1.00	1.62½		1.25	.85	1.37½	1.10	*1.50	*1.25	*1.43¾	.70
Chicago	1.30	*1.37½		*1.31¼	1.31¼	1.25 1.50	1.31¼	1.31¼	1.35	.82½	*1.37½	*1.41	*1.37½	.88¾	1.37½	1.37½	1.40	1.37½	1.37¼	1.37½	1.37½	.90
Cincinnati*	1.15	1.37½	.70	1.20	1.02½	1.25	1.07½	1.25	1.25	.45	1.31¼	1.10	1.37½	.70	1.25	.92½	1.07½	1.07½	1.25	1.37½	1.25	.75
Cleveland*	1.17½	1.37½	.72	1.12½	1.12½	1.05 1.25	1.12½	1.25	1.25	.72	1.37½	1.12½	1.37½	.72	1.25	1.15	1.37½	1.12½	1.25	1.37½	1.25	.81¼
Columbus	1.25	1.30	.90	1.00	.85 1.25	1.00	.60 1.25	1.25	1.25	.50	1.37½	1.00	1.00	.40 .50	1.00	.70 .80	.80 1.00	1.00	1.00	1.30	1.37½	.45
Dallas††	10.50	8.00 10.00	.40 .50	6.00 8.00	8.00 10.00	8.00 *11.00	9.00 10.00	8.00 10.00	8.00 10.00	.30 .40	8.00 10.00	6.00 *9.00	8.00 *10.00	.40 *.50	12.00	8.00	9.00	8.00 *10.00	12.00	8.00 10.00	*12.00	.55 †*.75
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	1.35	.35	1.10	1.00	1.25	.80	1.15½	.85	1.00	1.00	1.15½	1.30	1.50	.60
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	†.62½
Des Moines	1.00	1.25	.65	1.00	1.00	1.00	1.00	1.00	1.00	.55	1.00	1.00	1.25	.75	1.25	1.12½	1.12½	1.12½	1.25	1.50	1.25	.67½
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.55	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	1.00	1.10	.35 .45	.75 .85	.75 .85	.90	.80	.80	.90	.35 .45	.85	.80	1.10	.70	.95	.70	.70	.80	.95	.75 1.10	1.25	.80
Erie	.80 .90	1.31¼	.50 .60	1.00	1.00	1.00 *1.25	1.12½	.60 .90	1.10 1.12½	.35	1.12½	.75 .90	1.31¼	.50 .60	1.18¾	.60 .70	.60 .70	1.00	*1.18¾	1.31¼	1.00	.50
Grand Rapids	.65 .80	1.25	.40	.65	.65	.90	.75	.80	1.00	.40	.80	.60	.80	.40	.90	.50	.70	.70	.90	1.25	1.25	.50
Houston	NO FIGURES AVAILABLE																					
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	1.05	1.32½	.80	1.12½	1.12½	1.50	1.12½	1.12½	1.12½	.70	1.25	1.12½	1.32½	.80	1.25	.92½	.92½	1.37½	1.25	1.12½	1.25	.75
Los Angeles††	10.00	8.00	6.00	7.00	8.00	8.00	8.00	7.00	7.00	4.00	8.00	7.00	9.00	7.00	9.00	7.00	7.00	7.00	9.00	11.00	10.00	†.75
Louisville	1.12½	1.25	.65	.80	1.00	1.00	1.00	1.25	1.25	.50	1.37½	.90	1.62½	.65	1.12½	.30 .50	.85	.85	1.12½	1.25	1.25	.50
Memphis	1.00	1.37½	.50	.50 .87½	.50 .75	1.00		.75	.75	.20	1.00	.75	1.25	.50	1.25	1.00	1.25	1.12½	*1.25	1.37½	1.25	
Milwaukee	1.15	1.00	.90	1.10	1.00	1.25		1.05	1.05	.50 .75	1.31¼	1.00	1.00	.90	1.00	1.00	1.00	.92½	.93¾	1.00	1.37½	.75
Minneapolis	1.06¼	1.10	.55 .65	.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	.65
Nashville	1.00	1.00		.65		.75 .87½					1.00	.80	1.00	.30		.65	.65	.65	1.25	.90	.65	
New Haven*	.70 .90	1.40	.50 .60	.90 1.06¼	1.40	.85 1.00	1.16¾ 1.27½	1.37½	1.37½	.50 .65	1.27½	.80 1.00	1.40	.50 .65	1.06¼	.65	1.50	1.06¼	1.06¼	1.40	1.40	.87½
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.90 1.15	.90	1.05 1.25	1.50	1.25	.35
New York City††	10.00	12.00	7.00	10.00	10.00	10.00	12.00				10.00	10.00	10.00	7.00	10.00	9.00	11.00	10.00	10.00		10.00	7.00
Oakland††	8.00	11.00	7.00	9.00	9.00	9.00	9.00	9.00	11.00	5.50	10.00	9.00	11.00	7.50	10.00	8.00	8.00	9.00	10.00	8.50 9.00	10.00	†.75
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	.80	7.00 8.00	.80	4.00	.80	6.00	6.00	8.00	8.00		11.00	†.62½
Omaha	1.32	1.25	.65 .75	1.00	1.25	1.25	1.12½	1.12½	1.12½	.50	1.12½	.90 1.00	1.25 1.37½	.70	1.12½	1.00	1.00	.90	1.12½	1.12½	1.25	.60
Philadelphia	1.12½	1.50	.70	1.25	.80 1.05	1.00 1.50	$40.00 to $50.00 wk.	1.25 1.62½	1.00 1.15	.30 .45	1.37½ 1.62½	.80	*1.62½	1.12½	1.04	.80 1.00	1.00	1.30	1.04	.50 1.00	1.25	
pittsburgh	*1.70	*1.50		*1.25	*1.40	*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	*†.80	*1.66¼	*1.27½	*1.66¼		*1.71⅞	*1.50	*1.57½	*1.31¼	*1.71⅞	*1.62½	1.33¾	.88
Portland, Ore.††	8.00	*12.00	7.20	7.20	*7.20	*8.00	7.20	8.80	8.80	4.80	*8.80	7.04	*9.60	4.80 *7.20	*8.80	7.20	7.20	*8.00	*8.80	*10.00	10.00	
Reading	.70 .80	.90	.75	.75	.85	.75				.35	.75	.70	.85	.75	.90		.80	.80	.90	.75	.90	.50
Richmond	.60 .65	1.50	.55	.80	.75	.75 .87½	.75 .90	.90 1.00	.87½ 1.12½	.40	.75	1.70	1.25 1.50	.50 .60	.87½	.80	.80	.87½	.87½	1.25	1.12½	
Rochester	1.26½	1.25		*1.00	*1.12½	*1.15½	1.00	*1.00	*1.00	.55	1.00	*1.00	*1.25		*1.17½	*.90	*.90	*1.00	*1.17½	*1.25	*1.25	
Salt Lake††	6.00 7.20	9.00	6.00 8.00	7.20	8.00	8.00	9.00	8.00	8.00	4.00	10.00	7.20	10.00	8.00	9.00	7.20	7.20	8.00	9.00	9.00	9.00	†.50
San Antonio††	4.50 9.00	6.00 12.00	2.50 3.00	5.00 7.00	3.00 6.00	6.00 9.00	3.00 5.00	4.00 5.00	4.00 8.00	2.00 2.75	8.00 12.00	4.00 7.00	6.00 8.00	2.25 3.00	6.00 8.00	4.00 6.00	6.00 8.00	6.00 10.00	8.00	6.00 12.00	8.00 12.00	
San Francisco	8.00	11.00	7.00	9.00	9.00	9.00	9.00		11.00	5.50	8.50 10.00	9.00	11.00	7.50	10.00	8.00	8.00	9.00	10.00		10.00	
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	*7.20	*9.60	*6.40	*8.80	7.20		8.00	*8.80	9.60	8.00	
Sioux City	.90	1.50	.40 .60	1.12½	.90 1.00	1.00	.75 1.00	.75 1.00	.75 1.00	.40 .50	1.00	1.00	1.25	.60 .70	1.12½ 1.50	.85	.85	1.00	1.00 1.25	1.50	1.50	.40
St. Louis	1.25		1.00	1.25	1.31¼	1.67½		1.47	1.47		1.25	1.25		1.06¼		1.17½	1.25	1.25		1.25	1.25	
St. Paul	1.18	1.10		.75 .85	.75 .85	.90	.80	.90	.90	.45	.75 .85	.80	1.10	.70	.95	.70	.70	.80	.95	1.10	1.25	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	.50 1.00	.50 1.00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.37½	12.00	6.80	10.00	9.00	11.00	10.00	12.00	12.00		12.00	10.00	12.00	6.80	11.00	10.20		10.00			10.00	.70

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. †Rate per hour. *On 5-day week basis. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

LOS ANGELES COUNTY
GENERAL HOSPITAL

Architect: Allied Architects, *Cons. Engr.:* E. L. Ellingwood, *Gen. Con.:* Weymouth C. Crowell, *Plumb. and Heat. Con.:* Howe Brothers. All of Los Angeles, California

A NEW TEMPLE OF HEALING INVITES THE SUN

ON a hill remote from the din and stress of the city, bathed by the sun and soft airs of a favored region, admirable for design, great in size and facilities, complete in every modern resource, the Los Angeles County General Hospital takes high rank among the marvelous institutions of its kind built in this country in recent years. Their like never was before in the world. For never had science and the arts reached a development to make them possible.

Only the best in design, construction and equipment could be thought fit to go into such a building for any use.

It is a matter of pride for the manufacturers of NATIONAL Pipe that in the Los Angeles County General Hospital, as in other noteworthy hospitals lately completed, the major tonnage of pipe was NATIONAL—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

Subsidiary of United States Steel Corporation

NATIONAL PIPE

Terrazzo floor in the Medical Arts Bldg., Pittsburgh. M. Nirdlinger, architect; Patrizio Art Mosaic Co., terrazzo contractor, both of Pittsburgh. Atlas White portland cement used.

EXACTLY what you desire in color and design—that is one of the satisfactory dividends obtained from an investment in an Atlas White terrazzo floor.

With this modern flooring material, you may create your own patterns and color schemes. Terrazzo designs are limited only by convention and the imagination. To carry out the designs created, you may select from a wide variety of marble chips of many colors and shades; you may select from a number of color pigments for matrix tints; you may create innumerable effects by variation and combination. Whatever the design, whatever the colors, they will be faithfully interpreted with Atlas White portland cement.

Further information on terrazzo made with Atlas White portland cement will be furnished by terrazzo contractors or by

UNIVERSAL ATLAS CEMENT CO.

208 South La Salle Street, Chicago

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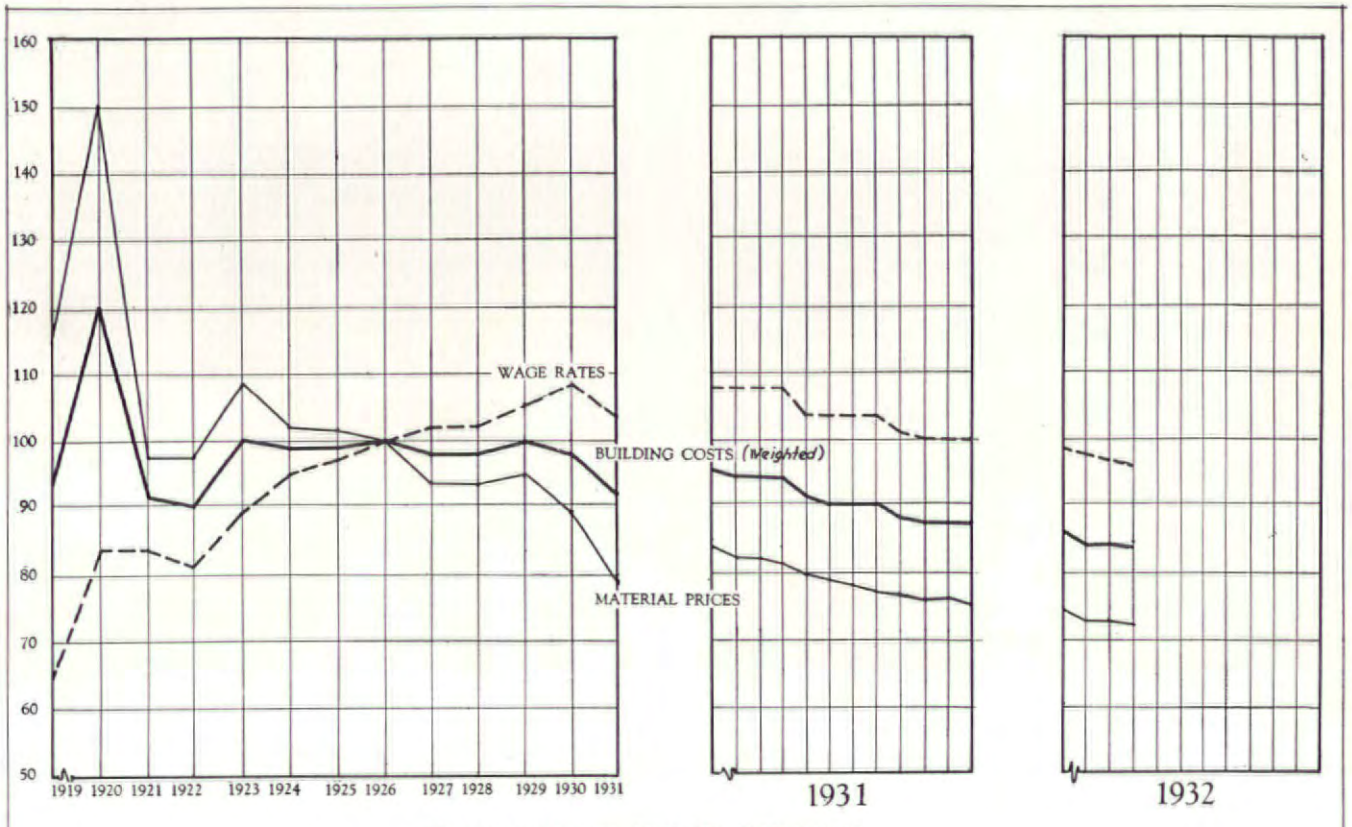
ATLAS WHITE PORTLAND CEMENT

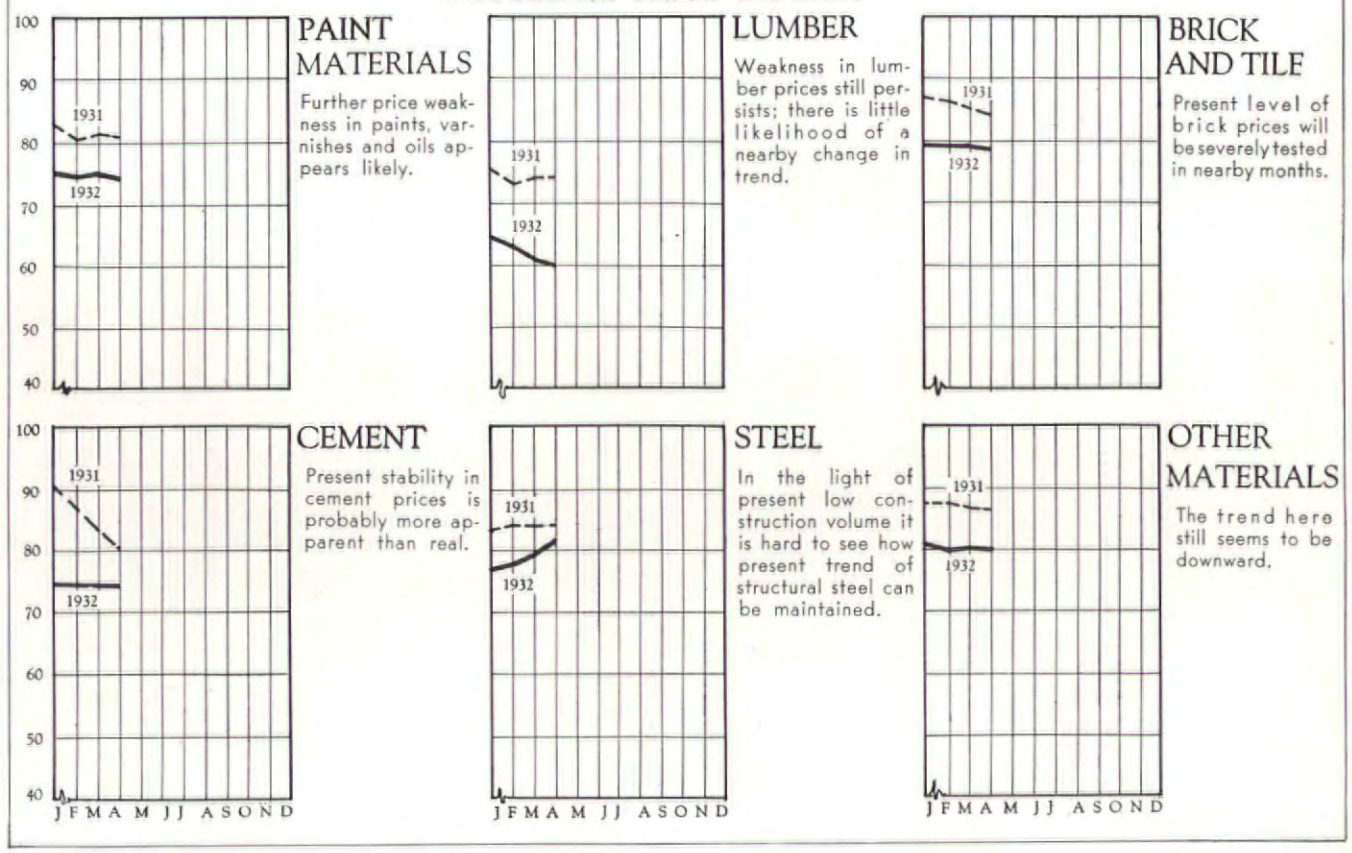
PLAIN AND WATERPROOFED

MATERIAL PRICES, BUILDING WAGE RATES AND BUILDING COSTS COMPARED

1926 Monthly Average — 100



WHOLESALE PRICE INDEXES



PAINT MATERIALS

Further price weakness in paints, varnishes and oils appears likely.

LUMBER

Weakness in lumber prices still persists; there is little likelihood of a nearby change in trend.

BRICK AND TILE

Present level of brick prices will be severely tested in nearby months.

CEMENT

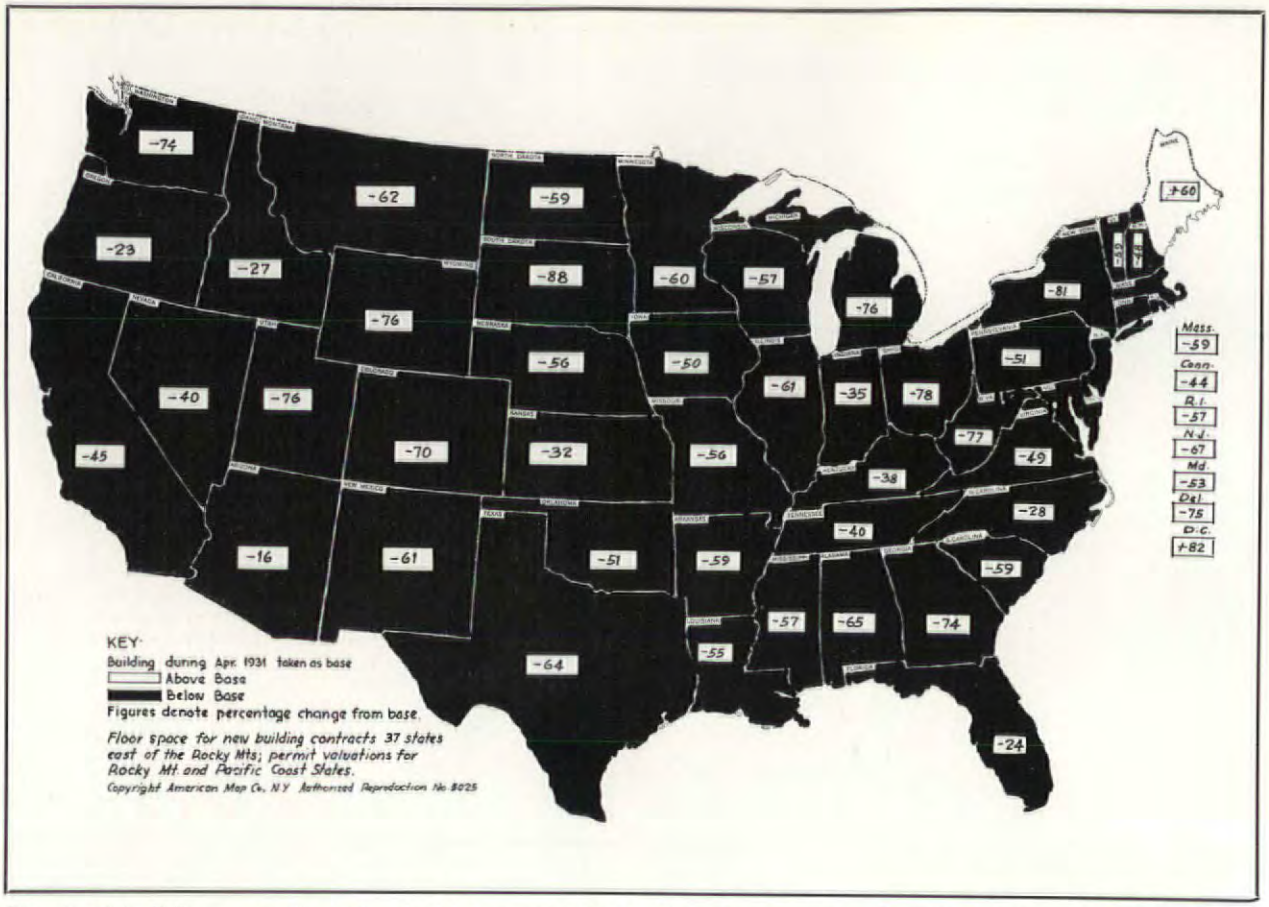
Present stability in cement prices is probably more apparent than real.

STEEL

In the light of present low construction volume it is hard to see how present trend of structural steel can be maintained.

OTHER MATERIALS

The trend here still seems to be downward.



The April building map showed only Maine and the District of Columbia, of all the states east of the Rocky Mountains, where floor space totals of new building contracts were higher than in April, 1931. In March the map showed five states where awards were higher than in the corresponding month of last year, while the February map showed seven states on a higher basis than a year earlier.

BUILDING TRENDS INDICATED BY THE CENSUS*

PART 8—THE OUTLOOK FOR RECREATIONAL BUILDINGS

By L. SETH SCHNITMAN

Society has always provided itself with the instruments for mental and physical relaxation. Man's progress has been marked by his theaters, parks and park buildings, clubs and lodges, and auditoriums and halls. It is a far cry from the discus thrower of ancient Greece to the "talkies" of modern civilization. But each form of relaxation has left its impress upon the architecture of our recreational facilities. Theater architecture as expressed with all of its trappings and embellishments since the War will serve for years to come, to symbolize the speculative era which culminated so disastrously. If American industry has learned anything from the current depression, architecture, as it relates to our recreational requirements, will in the future likely rest upon a broader utilitarian conception than during the decade which closed in 1930.

During the ten years from 1921 through 1930 approximately $1,875,000,000 went into the erection and extension of social and recreational facilities throughout the United States. During the same period total construction of all descriptions approximated $71,800,000,000. Thus, about $2.70 was expended on new recreational facilities for each $100.00 of all other classes of construction. A comparison with residential building is perhaps of broader significance; on this basis approximately $385.00 was expended on new recreational facilities for each of the 4,900,000 housing units that were erected during the decade. The total value of new school and college buildings during the same decade approximated $3,750,000,000; the erection of new church buildings amounted to about $1,100,000,000; and the erection of hospitals and institutions showed a total approximating $1,400,000,000. Combined, these four major classifications ministering to the purely social needs of our people, exclusive of

(Continued on page 48)

* Earlier articles in this series of population studies have appeared in these issues: Parts 1 and 2—August, 1931; Part 3—September, 1931; Part 4—October, 1931; Part 5—November, 1931; Part 6—February, 1932; Part 7—April, 1932.

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NATIONAL THEATRE SUPPLY COMPANY

Offices in All **Principal Cities**

MATERIAL PRICE MEASURING ROD*

The prices in this tabulation enable one to visualize at a glance the main trend of the material market.

Their significance does not extend beyond that point, and the explanation under them should be read carefully.

F. W. Dodge Corporation Composite Prices as Indicated in Explanation—

Material	This Month	Month Ago	Year Ago
Portland Cement.....	$2.00	$2.00	$2.04
Common Brick.....	11.93	11.93	12.74
Structural Steel.....	1.60	1.50	1.65
Lumber.....	15.85	15.92	19.08

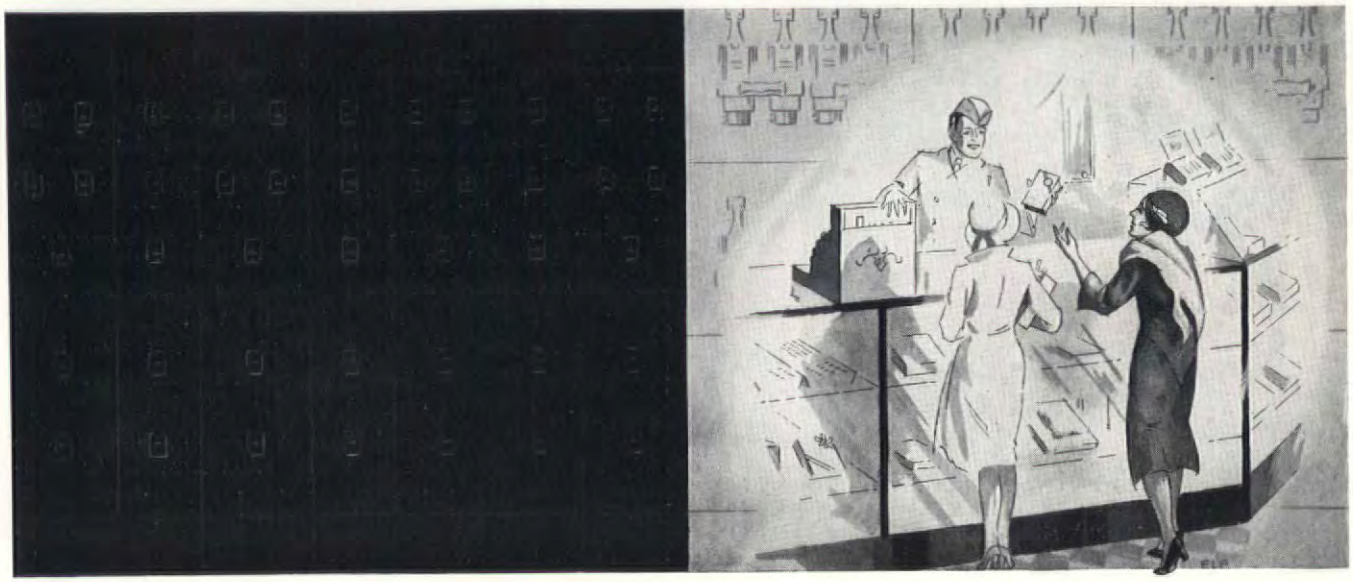
Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M, delivered on the job.

* (as previously published in *General Building Contractor*)

shelter, have shown an expenditure for new buildings during the decade that ended with 1930 approximating $8,125,000,000. To put this in another way, out of each $1,000 that has been expended on these social types $462 went into schools and colleges; $231 into recreational facilities, exclusive of those in connection with schools; $172 into the erection of hospitals and institutions; and $135 into church edifices. On this basis approximately $1,660 was expended for new social structures, as above defined, for each new housing unit that was erected during the decade.

In the 13 cities in the United States which in 1930 had 500,000 or more inhabitants, expenditures for new recreational buildings during the decade approximated $675,000,000. In these same cities expenditures for new schools and colleges over the same period totaled $950,000,000; new church building approximated $275,000,000; and the erection of new hospitals and institutions reached the approximate total of $425,000,000. These four types of social buildings aggregated about $2,325,000,000. Thus out of each $1,000 that was expended for social facilities $409 went into schools and colleges; $290 into recreational buildings; $183 into hospitals and institutions; and $118 into the erection of new churches. In these 13 largest cities approximately $1,200 has been expended for social structures as above combined for each new housing unit that was erected in those cities during the decade. This is in sharp contrast with the $1,660

Room for a candy stand in the space you save



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Space saving is only one advantage of Nofuze switchboards. Fuse troubles are eliminated—a flip of a handle restores service if an overload opens a circuit. Completely dead-front protection prevents unwary fingers from touching live parts.

A 76-page catalog completely describing Nofuze switchboards, panelboards, load centers (for residences) and industrial "De-ion" breakers can be obtained by mailing the coupon.

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A.P.W. Products in new Oklahoma Skyscraper

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ratio for the country at large.

From this contrast it is not safe to conclude that in our largest cities construction of facilities to meet our social needs has lagged; it is rather that residential building in the metropolitan centers anticipated too large a concentration of population in the Metropolitan centers. The growth-rate for urban centers as a whole between 1920 and 1930 was 26.9 per cent while for the 13 cities combined the population growth during the decade was only 23.8 per cent. At the same time residential building in the 13 cities during the ten-year period represented about 40 per cent of all residential building in the United States though these cities accounted for only 17 per cent of the entire population of the country.

It is not singular that recreational facilities and hospitals and institutions for the 13 cities should have shown higher ratios during the decade than was shown for the country at large for these types of social facilities. Nor is it singular that these centers should have shown smaller ratios for schools and colleges and churches than were indicated for the entire country. Proportionately we spent more for new hospitals and institutions in our largest cities because it was in these centers where adult population was concentrated. We expended more money relatively on recreational facilities such as theaters, lodges, halls and auditoriums, because these, too, were essentially to meet adult needs. And we spent relatively less on schools and colleges because actually the child factor had become smaller in importance.

Theater construction during the decade throughout the United States exclusive of theaters built in combination with other superstructures, amounted to about $680,000,000. In the 13 largest cities theater construction approximated $165,000,000 during the ten-year period ended 1930 or 24 per cent of the total for the entire country. During this period many combination theater projects were constructed particularly in our largest cities; were it possible to include data on these projects a greater concentration of theaters in our largest cities would be disclosed.

Altogether we can conclude that the erection of theaters and other recreational facilities during the next few years will likely bear a higher relationship to total social building as previously defined than during the past decade. It appears especially true for our cities under 500,000 population, where the ratio of recreational buildings during the last decade to total social edifices was much lower than in our largest centers. Though life expectancy has made considerable advance in recent years the mortality rate in degenerative diseases has increased with our industrial progress. Certainly from a sociological point of view it is far better to erect facilities for physical and mntal relaxation. Designs for recreational buildings of the future will doubtless rest upon a more fundamental appraisal of social needs. Population data concerning the composition, distribution, and characteristics of our people should afford a logical basis for study of the new requirements.

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to tear down

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a few hundred dollars worth of Cheney Flashing installed just above the roof line and under coping stones made this building permanently watertight. Conclusive proof that it is better to thru-flash in the beginning.

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3. Unsightly efflorescence will destroy the Architectural beauty.
4. Spandrels and lintels will rust and disintegrate.
5. The dangerous hazard of falling walls always will be present, especially in freezing weather.
6. Costly and frequent repairs fail to solve the problem.
7. Permanent repairs are extremely expensive.
8. Owners become exasperated at the continuous trouble and expense.
9. Contractors and sub-contractors will not accept the responsibility.
10. Eventually the architect is blamed by the owner.

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CRITICAL BEAM CONNECTIONS

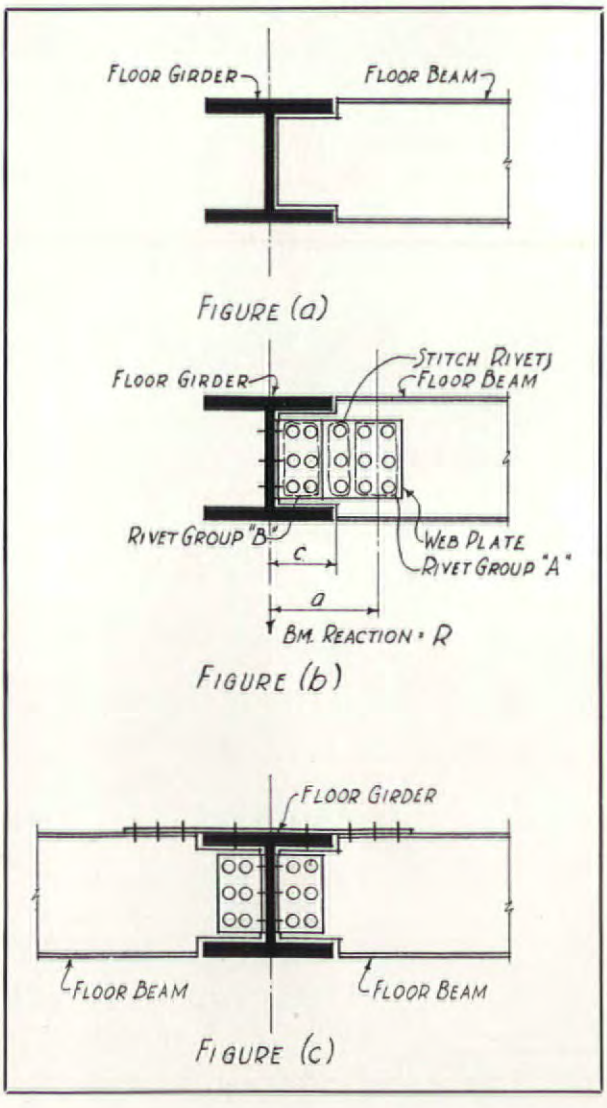
There is a tendency in modern construction, when employing structural-steel framing, to use the newer, heavy wide-flanged girders. This is especially true in recent office buildings, and particularly where headroom is limited or important in cubage values.

Incident to such conditions, there is an important feature which should not be overlooked by architects and structural engineers. When floor beams of depths nearly equal to that of the girder framed into occur, considerable coping or blocking must be done, as illustrated in Figure (a).

The floor beam is weakened at the end, due to the excessive cutting away of the flanges and web, and a critical bending condition in the web may occur at the inner end of the cope.

In order to have the end detail satisfactory as far as stress is concerned, additional plates and rivets may be required.

A few cases of this sort on a large job might not have much influence on the cost of the steel framing, but should this condition be fairly typical it might cause considerable increase in fabrication cost. Unless such typical details are shown originally on the architect's framing drawings, they



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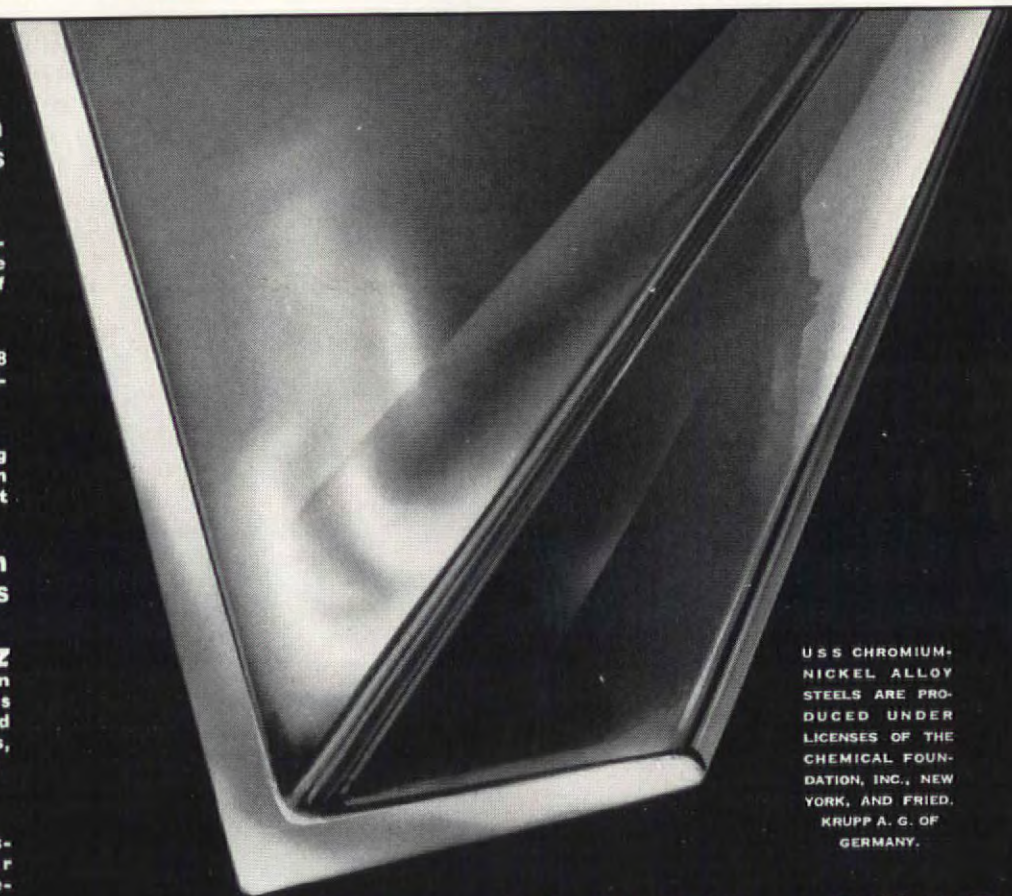

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will not be included in the contractor's original estimate. The steel contractor may submit shop details with common beam connections. When the shop drawings are submitted for approval and are checked with revisions involving extra web plates and rivets requested, the contractor may demand a considerable extra. In Figure (b), the moment at the critical section (the inner end of the cope) is R.c. The moment capacity of the beam at this point is that of the net web only and if this is not as great as the actual moment, the difference must be made up by extra web plates.

The allowable end reaction of the beam without the plates may be found by dividing the moment capacity by the distance "c." The difference between the actual and the allowable reactions multiplied by "a" will give the moment to be applied to the rivet group "A." Rivet group "A" may then be designed by providing for the combining of the shear due to the part of the reaction taken by the plates and the moment in the rivet group.

The shop rivets and the field rivets in the connection angles "B" should of course be sufficient to develop the end reaction, R, at their maximum allowable values.

The rivets between the connections angles "B" and the moment group "A" are stitch rivets. These should be so arranged that the spacing in the direction of the stress is not more than 16 times the thickness of the plates.

The plates should not be too thin for practical reasons; a 5/16" minimum thickness is recommended.

An alternate method for the condition discussed might be made as suggested in Figure (c). If the beams and girder are flush top, a top plate could be used. The tension indirectly induced would be taken out by rivets as indicated. The ends of the beams could be milled to take out any compression. A bottom plate could be employed instead if the beams were flush bottom with the girder.

However, the use of plates interferes with fire protection, clearance with respect to the finished floor or ceiling, and reinforcing rods passing over the connection.

Edward A. Varney
Cleverdon, Varney and Pike,
Structural Engineers, Boston

"HOME FINANCE AND TAXATION"

Volume two of the final reports of the President's Conference on Home Building and Home Ownership—"Home Finance and Taxation"—is now ready for distribution. The first volume of the President's Conference reports entitled "Planning for Residential Districts" appeared in March. Nine more volumes, making a total of eleven. They will appear in the course of the next few months. The volumes can be purchased for $1.15 each postpaid, from Dr. John M. Gries, Executive Secretary, President's Conference on Home Building and Home Ownership, Department of Commerce Building, Washington, D. C.

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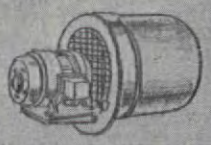
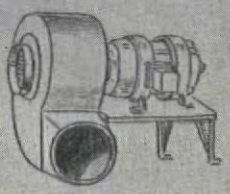
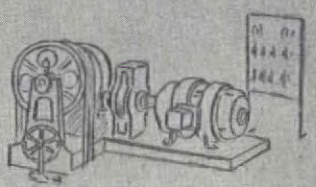


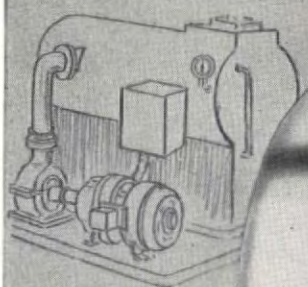
ON FORCED DRAFT BLOWER



ON VENTILATOR



ON ELEVATOR AND DUMBWAITER SERVICE



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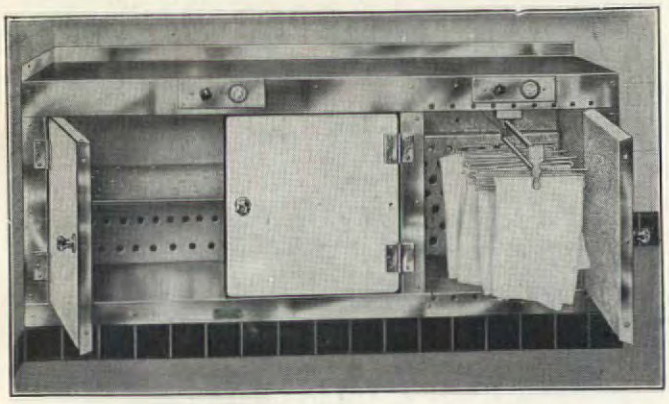

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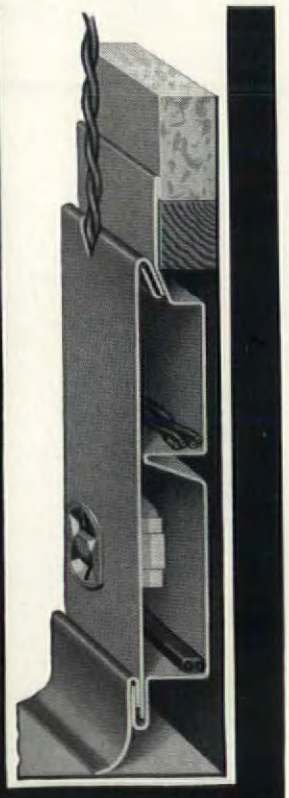

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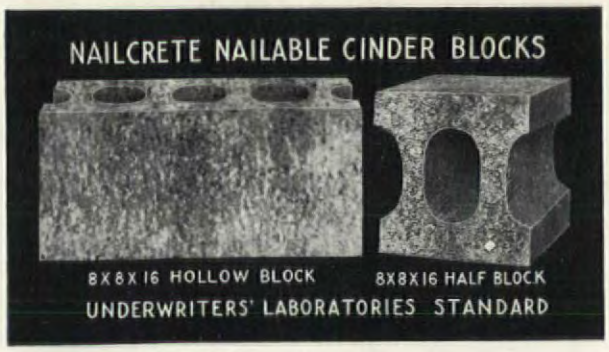

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The Nailcrete Corporation, 105 West 40th Street, New York, has endeavored to keep its product "Nailcrete" Nailing Concrete up to the highest standards of quality, reliability and permanency. To determine positively the fire-resisting value, the Nailcrete Blocks were recently submitted to a test at the Underwriters' Laboratories in Chicago and have just been approved by the National Board of Fire Underwriters. "Certificated" Blocks for walls or partitions can now be furnished by Nailcrete Licensees where this type is specified. Other impartial tests have shown that with the asbestos content sound transmission through walls and floors is largely eliminated.

HOPE'S WINDOWS, INC.

The stockholders of Henry Hope & Sons, Inc., New York, and the International Casement Co., Inc., Jamestown, New York, have, on the advice of their directors, decided to merge their interests, and the combined business will henceforth carry on under the new title of Hope's Windows, Inc., with headquarters at Jamestown, N. Y.

FIR PLYWOOD COMPETITION

Appointment of three A. I. A. architects to act as judges in its $1,500 architectural contest is announced this month by Douglas Fir Plywood Manufacturers. Arthur L. Loveless and David J. Myers of Seattle will collaborate with Charles H. Alden, Professional Adviser, in selecting the winning entries.

Entries in the contest, which calls for interior room designs showing practical uses of Douglas Fir Plywood in walls, ceilings and built-ins, and in one-room camp cottage construction, will be accepted until June 15. Winners will be announced in August. Full rules and details of the competition were published in the March issue of THE ARCHITECTURAL RECORD.

NEW FLOOR COATING RESISTS WEAR

A floor coating—recently announced by the Medusa Products Company, a subsidiary of the Medusa Portland Cement Company, 1002 Engineers Building, Cleveland, Ohio—contains a special pigment which is three times harder than steel and insures resistance against normal abrasion and wear on concrete and wood floors.

THE ARCHITECTURAL RECORD

INDEX TO VOLUME 71--JANUARY-JUNE, 1932

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A

Abraham and Straus Store, Brooklyn, N. Y. Starrett and Van Vleck, Architects. May 343, 344, 363
Ackerman, Frederick L., Architect.
Faculty Apartments, Cornell University. Ithaca, N. Y. March 164
Munsey Park Business Center, Long Island. City Housing Corporation. May 332
Office Building and Shopping Center, Radburn, N. J. May 328
Two-story Flat, Sunnyside, Long Island, N. Y. March 151
Acropolis, showing the Parthenon and the Odeum. May 38 (adv.)
Activities of the A. I. A. Chapters and Architectural Clubs. May 333-335
Adler Planetarium, Chicago, Ill. Ernest A. Grunsfeld, Jr., Architect. January 17, 18
Administration Building, Chicago Exposition. Asbestos Cement Exterior Wall Finish; Foundations. April 284
Administration Building of the Chicago Municipal Airport, Chicago, Ill. Paul Gerhardt, Jr., City Architect. February 117-120
A. I. A. Chapters and Architectural Clubs, Activities of. May 333-335
Air Conditioning. March 56 (adv.)
Air Conditioning, Heating, Cooling. Summary by K. Lönberg-Holm. January 72
Air-Conditioning Equipment, Sidewalk Window Showing. Studio Theater, Los Angeles, Calif. June 40 (adv.)
Air Conditioning for Homes. January 54 (adv.) May 58, 60, 62 (adv.)
Airplane, Boeing Monomail. January 60
Airport, Chicago Municipal. Article by Paul Gerhardt, Jr., City Architect, Chicago. January 30 (adv.) February 117-120 June 411
Alden Park Manor, Philadelphia, Pa. Edwyn Rorke, Architect. March 148
All-Metal Office Building in Richmond, An. Article by James Bolton, Department of Public Works. February 121, 122, 48, 50, 52, 56 (adv.)
Alteration Work, Show Windows in. Article by John F. Coman, Architect. May 359
Aluminum. Summary by K. Lönberg-Holm. January 64, 65
American Institute of Architects, Washington, D. C.—April 1932, The 65th Convention of the June 367, 368
American Institute of Architects, Why I Like the. Letter from Clement W. Fairweather, Architect. June 26, 28 (adv.)
American Legion, Memorial Clubhouse, Hollywood Post 43. Weston and Weston, Architects. January 19
Apartment Building, Elmhurst, Ill. George Fred Keck, Architect. March 185, 186
Apartment Building at Oak Park, Ill. Houlihan, Hauser and Marks, Architects. March 177
Apartment Buildings be Reduced? Low-Rental Dwellings—How Can Construction and Service Costs of. March 151-156
Apartment Costs by Economy of (1) Planning, (2) Construction, (3) Operation, Reducing. Article by Eugene H. Klaber, Architect. March 157-163
Apartment Facilities be Provided for the Lower-Income Groups? How Can. Article by Henry Wright, Architect and Town Planner. March 147-150
Apartment Group in Chicago, Ill., Proposed Low-Rental. Eugene H. Klaber, Architect. March 160, 161, 163
Apartment Hotel Meany, Seattle, Wash. R. C. Reamer, Architect. March 178, 179
Apartments in New York, Prize-Winning. Plates. March 199-208
Appomattox Court House Memorial Competition. Winning Design by Harry Sternfeld and J. Roy Carroll, Jr., Architects, and Gaetano Cecere, Sculptor. April 277
Appreciation, An. William Aiken Starrett. Portrait. April 275
Architects, Correspondence from. March 62, 64 (adv.) April 273-275 May 335
Architects Should Support this Bill Demanding Their Employment for Public Buildings. January 57, 58
Support for Architects' Employment Bill. March 52 (adv.)
Architects? What Has Happened to. Article by Thomas S. Holden. May 291-293
Architectural Clubs, Activities of the A. I. A. Chapters and. May 333-335
Architectural Criticism. Small Houses. June 28 (adv.)
Architectural League of New York, The Second. March 62, 64 (adv.)
Arc-Welded Steel Frame Housing. April 50 (adv.)
Arlington Theater, Fox, Santa Barbara, Calif. Edwards and Plunkett, Architects. June 427, 428
Armstrong, Furst and Tilton, Architects. Cinema Art Theater, Chicago, Ill. May 40 (adv.) June 405, 424-426, 437
Art Museum, Changing a Residence into An. Article by William Rice Pearsall, Consulting Architect. May 349
1301 Astor Street Apartments, Chicago, Ill. Philip B. Maher, Architect. Feb. 30 (adv.) March Cover, 180, 181
Atterbury, Grosvenor, Architect. Institute of Human Relations and Sterling Hall of Medicine, Yale University. Feb. 134, 136
Auditorium Seating. April 261
Ault Park Recreation Building, Cincinnati, Ohio. Fechheimer and Ihorst, Architects. May 302
Auto Parking, Push-Button Machines for. April 276

B

"Bachelors, The"—A Haberdashery. Hite-Billicke, Ltd., Los Angeles, Calif. J. R. Davidson, Designer. April 233, 234
Bank of Manhattan Building, New York City. H. Craig Severance, Inc., Architect. Feb. 38 (adv.)
Banks—Huntley Office Building, Los Angeles, Calif. John and Donald B. Parkinson, Architects. Feb. 114-116
Barber and McMurry, Architects. House of J. W. Dean, Knoxville, Tenn. Feb. 103-105
Barbour, W. Warren, House, Locust Point, Red Bank, N. J. Robert M. Carrere, Architect. Feb. 111-113
Bathroom with Walls Covered with Lightweight Linoleum. Mar. 55 (adv.)
Bathrooms; Bedrooms—Part 2 of Dimensions. Article by A. Lawrence Kocher and Albert Frey. Feb. 123-128
Baum, Dwight James, Architect.
Dean's Residence, Wells College, Aurora, N. Y. May 299-301
House of Francis Collins, Fieldston, N. Y. March 38 (adv.) April Cover, 235-238
House of H. D. Hynds, Scarsdale, N. Y. June 401-404
House of Thomas McCall, Fieldston, N. Y. April 241, 242
Beam Connections, Critical June 52, 54 (adv).
Beaux, Ernesta, Interior Decorator; Bottomley, Wagner and White, Architects. House of Amory S. Carhart, Warrenton, Va. Jan. Frontispiece, 27-29
Bedroom, House of Mrs. D. D. Cotton, Santa Barbara, Calif. Roland E. Coate, Architect May 306
Bedrooms; Bathrooms—Part 2 of Dimensions, Article by A. Lawrence Kocher and Albert Frey. Feb. 123-128
Belin, Mrs. Paul B., Estate, Waverly, Pa. C. W. Leavitt and Son, Landscape Engineers. March 60 (adv.)
"Better Homes" Small House Architectural Competition, The 1931. Article by James Ford. April 255
Plates. April Cover, 235-254
Bibliography of Seating. April 272
Blackboards, Glass. April 52 (adv.)
Bley and Lyman, Architects. 800 West Ferry Street, Buffalo, N. Y. March 175, 176
Bloss, Gilbert, House, Palos Verdes Estates, Calif. H. Roy Kelley, Architect. April 247, 248
Blouke, Pierre, Architect, Garden Façade, Reid House, Rome, N. Y. May 297
Blueprinting, The Early History of. May 335
Bolton, James, Department of Public Works. Article, An All-Metal Office Building in Richmond. Feb. 121, 122 48, 50, 52, 56 (adv.)
Book Reviews
Airport Rating Regulations. Feb. 42, 44 (adv.)
American Life in Architecture. May 38 (adv.)
American Society of Landscape Architects. Illustrations of Work of Members. March 60 (adv.)
An Autobiography: Frank Lloyd Wright. April 30 (adv.) June 379, 380
Applied Architectural Drawing. Feb. 42 (adv.)

California Gardens. March 60 (adv.) April 32 (adv.)
Contempary American Architects. Feb. 42 (adv.)
English Wrought Ironwork, Medieval and Early Renaissance, English Brickwork Details, 1450-1750. May 36 (adv.)
Kidder-Parker Architect's and Builder's Handbook. Feb. 42 (adv.)
Men and Buildings. April 30 (adv.) May 36 (adv.)
Planning for Sunshine and Fresh Air. March 62 (adv.)
Recent Trends in American Housing. May 38 (adv.)
School Buildings of Today and Tomorrow. April 32 (adv.)
The Acropolis. May 38 (adv.)
The Brown Decades. April 32 (adv.)
The Orders of Architecture. March 62 (adv.)
The Promotion of Commercial Buildings. May 36 (adv.)
Two Lectures on Architecture by Frank Lloyd Wright. April 30 (adv.)
Year Book of the New York Chapter. American Society of Landscape Architects. March 60 (adv.)
Born, Ernest, Architect.
Article, Veterans Memorial Bridge at Rochester, N. Y. Gehron and Ross, Architects. May Frontispiece 336-340
Study of Forum, Education Building, Harrisburg, Pa. Gehron and Ross, Architects. April 220
Bottomley, Wagner and White, Architects.
House of Amory S. Carhart, Warrenton, Va. Jan. Frontispiece 27-29
River House, New York City. March 206
Boyd, John Taylor, Jr., Holden, McLaughlin & Associates, Architects. Chrystie-Forsythe Development, New York City. Plans. Feb. 77, 79
Boys' School, Cranbrook, Mich. Eliel Saarinen, Architect. Jan. 10, 11
Brazer, Clarence W., Architect; Esther Stevens Fraser, Decorator. Delaware County Court House, Media, Pa. June 406-412
Bridge at Rochester, N. Y., Veterans Memorial. Gehron and Ross, Architects. Article by Ernest Born, Architect. May Frontispiece, 336-340
Bridge, George Washington, New York City. Jan. 59
Broadway Building, New York City. Ely Jacques Kahn, Architect. Feb. 42 (adv.)
Brooks, Ricard and Eric Gugler, Designers and Painters. Forum, Education Building, Harrisburg, Pa.
—Ceiling. April 227
—Promenade. April 232
Brownell Ranch, Woodland, Calif. Foreman's House. Johnson and Perry, Architects. Jan. 26
Buffalo City Hall. Dietel and Wade, Architects, Associated with Sullivan W. Jones. Jan. 40 (adv.)
Buhl Foundation Housing Project, Pittsburgh, Pa. Ingham and Boyd, Architects; Stein and Wright, Consultants. March 150, 165
Building Methods for Chicago Exposition. New Materials and. Article by Nathaniel A. Owings. April 279-288 40 (adv.)
Building Trends, Current. Article by L. Seth Schnitman. Jan. 36, 38, 40 (adv.)
Building Trends Indicated by the Federal Census. Article by L. Seth Schnitman.
Part 6—Increasing Demand for Hospitals and Institutions. Feb. 144 April 42, 44, 46 (adv.)
Part 7—The Outlook for Church Construction. April 42, 44, 46 (adv.)
Part 8—The Outlook for Recreational Buildings. June 42, 45, 46, 48, 50 (adv.)
Bull, Mr. Marsh, House, Syracuse, N. Y. Charles H. Umbrecht, Architect. June 32 (adv.)
Bullard, Roger H., Philip L. Goodwin, Kenneth Franzheim, Architects. 400 East 57th Street, New York City. March 205
Bungalows. Jan. 43-48
Burroughs, M. P., House, St. Louis, Mo. Trueblood and Graf, Architects. May 36 (adv.)
Business Center, Munsey Park, Long Island. City Housing Corporation. Frederick L. Ackerman, Architect. May 332
Butler, Charles and Robert D. Kohn, Architects. Operating Room, Mount Sinai Hospital, New York City. Feb. 140, 142

C

Carhart, Amory S., House, Warrenton, Va. Bottomley, Wagner and White, Architects; Charles F. Gillette, Landscaper; Ernesta Beaux, Interior Decorator. Jan. Frontispiece, 27-29
Carrere, Robert M., Architect. House of W. Warren Barbour, Locust Point, Red Bank, N. J. Feb. 111-113
Carroll, J. Roy, Jr., and Harry Sternfeld, Architects, and Gaetano Cecere, Sculptor. Winning Design in the Appomattox Court House Memorial Competition. April 277
Castle Harbour Hotel, Tucker's Town, Bermuda. Mayers, Murray and Phillips, Architects. Jan. 52 (adv.)
Cecere, Gaetano, Sculptor, and Harry Sternfeld and J. Roy Carroll, Jr., Architects. Winning Design in the Appomattox Court House Memorial Competition. April 277
Cellized Wood Finish Applied to Steel Flooring. May 414
Celtic Park Apartments, City and Suburban Homes Company, Long Island City, N. Y. Architects: Ernest Flagg; Springsteen and Goldhammer. March 167-169
Century Apartments, New York City. Irwin S. Chanin, Architect. March 190, 191
Century of Progress, 1933 World's Fair, Chicago, Ill. General Exhibits Group. Harvey Wiley Corbett, Architect. May 296
Chamberlain, Samuel, Artist. Drawing of Hotel de Ville at Loches, France. June Frontispiece
Chanin, Irwin S., Architect. Century Apartments, New York City. March 190, 191
Chapel, Gideon F. Egner Memorial. Muhlenberg College, Allentown, Pa. Frank R. Watson, Edkins and Thompson, Architects. Feb. 99-102
Chapel, Healy, Aurora, Ill. George G. Elmslie, Architect. May 314, 315
Chart of Early American Architecture. Jan. 44 (adv.)
Check-List of Suggested Hotel Modernization Procedure, A. By A. E. Price, Manager, Alteration Department, F. P. Platt and Brother, Architects. May 360
Chicago Exposition, New Materials and Building Methods for. Article by Nathaniel A. Owings. April 279-288 40 (adv.)
Chicago House Designed by Frank Lloyd Wright in 1908. June 379
Chicago Indoor Stadium, Chicago, Ill. Hall, Lawrence and Ratcliffe, Architects. April 269
Chicago Municipal Airport. Article by Paul Gerhardt, Jr., City Architect, Chicago. Jan. 30 (adv.) Feb. 117-120
Chronology of Development of Garden Apartments and Group Row Houses. March 164, 165
Chrystie-Forsythe Development, New York City.
John Taylor Boyd, Jr., Holden, McLaughlin & Associates, Architects. Plans. Feb. 77, 79
Howe and Lescaze, Architects. March 194, 195
Church Construction, The Outlook for—Building Trends Indicated by the Federal Census. Part 7. Article by L. Seth Schnitman. April 42, 44, 46 (adv.)
Church Seating. April 261
Cinema Art Theater, Chicago, Ill. Armstrong, Furst and Tilton, Architects. May 40 (adv.) June 405, 424-426, 437
Circuit Breaker, "De-Ion." April 52 (adv.)
City Hall, Buffalo, N. Y. Dietel and Wade, Architects, Associated with Sullivan W. Jones. Jan. 40 (adv.)
City Housing Corporation, Munsey Park Business Center. Frederick L. Ackerman, Architect. May 332
City and Suburban Homes Co., Brooklyn, N. Y.
Celtic Park Apartments, Long Island City, N. Y. Architects: Ernest Flagg; Springsteen and Goldhammer. March 167-169
Garden Apartments. Andrew J. Thomas, Architect. March 164
Clark, Edwin H., Architect. Reed Memorial Library, Lake Forest, Ill. May 316-320
Clauss, Mr. Alfred, Apartment, Long Island City, N. Y. Clauss and Daub, Architects. March 198
Clauss and Daub, Architects.
Apartment of Mr. Alfred Clauss, Long Island City, N. Y. March 198
Garden Apartment Schemes Developed in Long Island City, N. Y. March 196, 197 June 378
Clubhouse, Hollywood Post 43, American Legion, Memorial. Weston and Weston, Architects. Jan. 19
Coate, Roland E., Architect.
House of Mrs. D. D. Cotton, Santa Barbara, Calif. May 303-306
House of William B. Hart, Los Angeles, Calif. May Cover, 307-310
House of Mr. and Mrs. H. C. Lippiatt and Mrs. F. M. P. Taylor, Bel Air, Calif. May 311-313
Collins, Francis, House, Fieldston, N. Y. Dwight James Baum, Architect. March 38 (adv.) April Cover, 235-238
Colonnade Apartments, Evanston, Ill. March 187, 188
Thielbar and Fugard, Architects.
Colonnade at Rear of Forum, Education Building, Harrisburg, Pa. Gehron and Ross, Architects. April 230, 231
Colors to Relieve Eye Strain in the Surgical Operating Theater. Article by J. Eastman Sheehan, M.D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University. March 209-211
Columbia-Presbyterian Medical Center, Neurological Institute of New York. James Gamble Rogers, Architect; C. F. Neergaard, Consulting Architect. Feb. 129, 130, 132
Coman, John F., Architect. Article, Show Windows in Alteration Work. May 359
Comparative Cost Studies of New Group Dwellings. Article by Henry Wright. March 213-216, 44 (adv.)
Comparative Costs of Piling and Framing, Chicago Exposition. Charts. April 282
Concealed Door Closer. Feb. 40(adv.)
Concrete Fill Applied Directly to Steel Flooring. May 415
Concrete. Summary by K. Lönberg-Holm. Jan. 66
Convention of the American Institute of Architects, Washington, D. C.—April 1932, The 65th. June 367, 368
Coolidge, Shepley, Bulfinch and Abbott, Architects; Gavin Hadden, Associate. Swimming Pool, Harvard Athletic Building, Harvard University, Cambridge, Mass. April 269, 272
Cooperative Apartments. Proposed Garden Apartment in Detroit, Mich. Michigan Housing Association. Sukert and Cordner, Architects. March 178
Copley Hospital, Aurora, Ill. Schmidt, Garden and Erikson, Architects. May 294
Corbett, Harvey Wiley, Architect. General Exhibits Group, Century of Progress, 1933 World's Fair, Chicago, Ill. May 296
Corbett, Harrison and MacMurray; Hood and Fouilhoux; Reinhard and Hofmeister, Architects. Construction Details, International Music Hall, Rockefeller Center, New York City. June 438
Theater Designs. June 418-420
Cord Meyer Development. Forest Hills, Long Island, N. Y. Lexington Apartments. Th. Engelhardt, Architect. March 207, 208
Corlett, E. H., House, Lake Katonah, N. Y. Waldron Faulkner, Architect. April 249, 250
Cornell University, Ithaca, N. Y. Faculty Apartments. Frederick L. Ackerman, Architect. March 164
Cort, H. Russell, Remodeled House, Framingham Center, Mass. George F. Marlowe, Architect. May 350, 351
Cory, Russell G. and Walter M., Yasuo Matsui, Associate Architects. Starrett-Lehigh Building, New York City. Jan. 30-35
Cotton, Mrs. D. D., House, Santa Barbara, Calif Roland E. Coate, Architect. May 303-306
Country Club, Midland, Mich. Frantz and Spence, Architects; Alden B. Dow, Associate Designer. June 395-400
Court House, Delaware County, Media, Pa. Clarence W. Brazer, Architect; Esther Stevens Fraser, Decorator. June 406-412
Court House Memorial Competition, Winning Design in the Appomattox. By Harry Sternfeld and J. Roy Carroll, Jr., Architects, and Gaetano Cecere, Sculptor. April 277
Court House and Post Office, Chattanooga, Tenn. R. H. Hunt Company, Architects; Shreve, Lamb and Harmon, Consultants. Rendering by Ernest Born. May 295
Court House, Racine County, Racine,

Wis. Holabird and Root, Architects. Jan. 30 (adv).
Feb. Cover, Frontispiece, 89-98
Cram, Ralph Adams, Architect. Federal Building, Boston, Mass.
Feb. 42 (adv.)
Crane, Theodore. Article, Remodeling Procedure. May 344
Critical Beam Connections.
June 52, 54 (adv.)
Current Building Trends. Article by L. Seth Schnitman.
Jan. 36, 38, 40 (adv.)
Customs Building, New United States, Denver, Colo. James A. Wetmore, Supervising Architect. Jan. 56
Cuthbert and Suehrk, Architects. House of W. E. Suehrk, Topeka, Kansas. Jan. 22

D

Davidson, J. R., Designer. "The Bachelors"—A Haberdashery. Hite-Bilicke, Ltd., Los Angeles, Calif.
April 233, 234
Dean, J. W., House, Knoxville, Tenn. Barber and McMurry, Architects.
Feb. 103-105
Dean's Residence, Wells College, Aurora, N. Y. Dwight James Baum, Architect. May 299-301
Charles Deering Memorial Library. Evanston, Ill. James Gamble Rogers, Inc., Architects. June 377
"De-Ion" Circuit Breaker.
April 52 (adv.)
Delaware County Court House, Media, Pa. Clarence W. Brazer, Architect; Esther Stevens Fraser, Decorator.
June 406-412
Department of Agriculture Building, Washington, D. C. Rankin and Kellogg, Architects; James A. Wetmore, Supervising Architect.
Jan. 56
De Remer, Joseph Bell; W. F. Kurke; Holabird and Root, Associated Architects. State Capitol, Bismarck, N. D. Rendering by Gilbert T. Hall.
April 276
Derrick, Robert O., Inc., Architects. House of John B. Ford, Jr., Detroit, Mich. Jan. 23
Design Problems, Drafting and. Neighborhood Shopping Centers.
May 325-332
Seating Heights and Spacing, Table Sizes and Heights. Article by A. Lawrence Kocher and Albert Frey.
April 261-267
Design of Small Motion Picture Theaters. Article by Frederic Arden Pawley. June 429-438
38, 40 (adv.)
Dewitt and Washburn, Architects. W. A. Green Store, Dallas, Texas.
Jan. 26
Dietel and Wade, Architects, Associated with Sullivan W. Jones, Buffalo City Hall. Jan. 40 (adv.)
Dimensions. Article by A. Lawrence Kocher and Albert Frey.
Part 1, Kitchens. Jan. 49-54
Part 2, Bedrooms; Bathrooms.
Feb. 123-128
Dinslow, L. E. and Thomas W. Lamb, Associated Architects. Twin Trans-Lux Theaters, New York City.
June 38 (adv.)
Dixie Drive-In Market and Shopping Center, Lexington, Ky. Richard J. Neutra, Architect. May 331, 332
Doctors Hospital, New York City. Operating Room. Color Scheme by Dr. J. Eastman Sheehan and Dr. P. J. Flagg. March 209
Domeless State Capitol. April 277
Door Closer, Concealed. Feb. 40 (adv.)
Door Construction, Balanced.
Feb. 40 (adv.)
Doors, Fire Tested, Elevator. May 364
Dorfman, Boris W., Architect. 55 Winthrop Street Apartments, Brooklyn, N. Y. March 192-194
Dow, Alden B., Associate Designer; Frantz and Spence, Architects. Midland Country Club, Midland, Mich.
June 395-400
Drafting and Design Problems. Neighborhood Shopping Centers.
May 325-332
Seating Heights and Spacing, Table Sizes and Heights. Article by A. Lawrence Kocher and Albert Frey.
April 261-267
Dreyfus and Son Store, Dallas, Texas. Alonzo H. Gentry and Lang and Witchell, Associated Architects.
Jan. 25
Drinking Fountains and Lavatories.
Feb. 127
Drive-In Market and Shopping Center, Dixie, Lexington, Ky. Richard J. Neutra, Architect. May 331, 332
Drive-In Market on Site of Restricted Depth. Plan. May 327
Duplex Apartments, 800 West Ferry Street, Buffalo, N. Y. Bley and Lyman, Architects. March 175, 176
"Dustop"—Air Filter. May 56 (adv.)
Dyche Stadium, Northwestern University, Evanston, Ill. James Gamble Rogers, Architect; Gavin Hadden, Associate. April 268, 272

E

Early American Architecture, Chart.
Jan. 44 (adv.)
Early History of Blueprinting, The.
May 335
120 East End Avenue, New York City. Charles A. Platt, Architect.
March 199, 200
137 East 57th Street Loft Building, New York City. Thompson and Churchill, Architects. Feb. 106-110
400 East 57th Street, New York City. Roger H. Bullard, Philip L. Goodwin, Kenneth Franzheim, Architects.
March 205
116 East 68th Street, New York City. Andrew J. Thomas, Architect.
March 203, 204
Economic Factors in Modernizing Restaurants. Article by Louis O. Rohland (F. P. Platt and Brother, Architects). May 345-348
Economics of Site-Planning and Housing, A. I. A. Convention, Report of the Committee on. June 369-375
Edwards and Plunkett, Architects. Fox Arlington Theater, Santa Barbara, Calif. June 427-428
Effect of Reduced Population Growth on Construction Demand. Article by Thomas S. Holden. Jan. 3-8
Egner, Gideon F., Memorial Chapel, Muhlenberg College, Allentown, Pa. Frank R. Watson, Edkins and Thompson, Architects. Feb. 99-102
Eisner, I., Estate, Los Angeles, Calif. Gordon B. Kaufmann, Architect; Paul G. Thiene, Landscape Architect.
April 32 (adv.)
Electric Heating in Wood Block Construction. Jan. 50 (adv.)
Electrical Building, Chicago Exposition. Application of Ribbed Metal Siding. April 279, 285
Electrical Communication. Summary by K. Lönberg-Holm. Jan. 69
Electron Tube Control. Summary by K. Lönberg-Holm. Jan. 66-68
Elevated Sidewalks for New York.
Jan. 46 (adv.)
Elevator Doors Fire Tested. May 364
Elevators, Standard Specifications for. Jan. 48 (adv.)
Elevators. Summary by K. Lönberg-Holm. Jan. 68
Elmslie, George G., Architect. Healy Chapel, Aurora, Ill. May 314, 315
Empire State Building, New York City. Shreve, Lamb and Harmon, Architects. Jan. 20
Engelhardt, Th., Architect. Lexington Apartments, Cord Meyer Development, Forest Hills, Long Island, N. Y. Mar. 207, 208
Entrance Grille, Studies for Monumental. Designed by Frederic C. Hirons, Architect. Plates. May 341, 342
Equity Trust a Practical Means of Slum Clearance? Is the.
April 273-275
Exerjian, Manoug, Architect. Remodeled Apartment, Greenwich Avenue, New York City. May 348
Exhibition Room of the Gargoyle Club, St. Paul, Minn. May 335
Eye Strain in the Surgical Operating Theater, Colors to Relieve. Article by J. Eastman Sheehan, M. D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University. March 209-211
Eyre, Wilson, Architect. Row Housing, Forest Hills, Long Island, N. Y.
March 165

F

Face Brick, Standard Grading Adopted for. Feb. 36 (adv.)
Facing Realities in Slum Clearance. Article by Arthur C. Holden, Architect. Feb. 75-82
Faculty Apartments, Ithaca, N. Y. Frederick L. Ackerman, Architect.
March 164
Fairweather, Clement W. Letter, Why I Like the American Institute of Architects. June 26, 28 (adv.)
Farmhouse of Low Cost, Model. A. Lawrence Kocher and Albert Frey, Architects. May 297
Faulkner, Waldron, Architect. House of E. H. Corlett, Lake Katonah, N. Y.
April 249, 250
Favrot and Livaudais, Architects. Hutchinson Memorial Building. Tulane University, New Orleans, La.
June 377
Fechheimer and Ihorst, Architects. Ault Park Recreation Building, Cincinnati, Ohio. May 302
Federal Building, Boston, Mass. Ralph Adams Cram, Architect.
Feb. 42 (adv.)
Federal Building, Newark, N. J. William E. Lehman and George Oakley Totten, Jr., Associated Architects.
May 295
Federal Hall, Replica of. Joseph H. Freedlander, Architect. May 296
Feinberg, Alfred, Renderer. Operating Room, Doctors Hospital, New York City. March 209
Ferriss, Hugh, Renderer. Second Prize Design for the Palace of the Soviets in Moscow. Alfred Kastner and Oscar Stonorov, Architects.
April 278
Ferro Enamel Corporation, Sponsors of First Porcelain-Enamel House, Cleveland, Ohio. Charles Bacon Rowley and Associates, Architects and Engineers; Meade Ashley Spencer, Associate. May 297
Field Building, Chicago, Ill. Graham, Anderson, Probst and White, Architects. Rendering. April 277
Findings and Suggestions of the Housing Conference. Article by Michael A. Mikkelsen. Jan. 39-43
Firm Specifications. Comment by Daniel Higgins, Architect, Office of John Russell Pope. June 388
FK-type Steel Floor Slab. May 413
Flagg, Ernest, Architect. Celtic Park Apartments, City and Suburban Homes Company, Long Island City, N. Y. March 167-169
Flagg, Dr. P. J. and Dr. J. Eastman Sheehan. Color Scheme in Operating Room, Doctors Hospital, New York City. March 209
Flewelling, Ralph C., Architect. Seeley Wintersmith Mudd Memorial Hall of Philosophy, University of Southern California. Jan. 19
Floodlighting Unit, Hot-Cathode Neon.
Jan. 71
Floor Coating, New Paint.
June 56 (adv.)
Floor Slabs, Steel. May 413, 414
Flooring, An Innovation in Steel. Article by J. H. Young.
June 413-417
Floors, Shock-Absorbing.
Jan. 54 (adv.)
Ford, Edsel B., House, Grosse Pointe Shores, Mich. Albert Kahn, Inc., Architects. Jan. 24
Ford, James. Article, The 1931 "Better Homes" Small House Architectural Competition. April 255
Plates. April Cover, 235-254
Ford, John B., Jr., House, Detroit, Mich. Robert O. Derrick, Inc., Architects.
Jan. 23
Foreman's House, Brownell Ranch, Woodland, Calif. Johnson and Perry, Architects. Jan. 26
Forest Products Laboratory at Madison, Wis. Holabird and Root, Architects. Feb. 40 (adv.)
Forum, Education Building, Capitol Park, Harrisburg, Pa. Gehron and Ross, Architects.
Ceiling, Eric Gugler and Ricard Brooks, Designers and Painters.
April 222
Colonnade. April 230, 231
Entrance. April Frontispiece
Interior. April 223, 225
Interior, Rendering by Ernest Born.
April 220
Promenade. April 232
Fox Arlington Theater, Santa Barbara, Calif. Edwards and Plunkett, Architects. June 427, 428
Fox Theater, Hackensack, N. J. Thomas W. Lamb, Architect.
June 421
Frameless Steel House, Experimental, Cleveland, Ohio. Erected by Insulated Steel Floor and Wall Company.
May 297
Franklin Field, University of Pennsylvania, Philadelphia, Pa. Gavin Hadden, Engineer. April 268
Frantz and Spence, Architects; Alden B. Dow, Associate Designer. Midland Country Club, Midland, Mich.
June 395-400
Franzheim, Kenneth, Roger H. Bullard, Philip L. Goodwin, Architects. 400 East 57th Street, New York City.
March 205
Fraser, Esther Stevens, Decorator; Clarence W. Brazer, Architect. Delaware County Court House, Media, Pa. June 406-412
Freedlander, Joseph H., Architect. Replica of Federal Hall. May 296
French Companies, Fred F., Designers

and Builders. Housing Project, Lower East Side, New York City. Rendering. April 277
French View of Modern Architecture, A. May 335
Frey, Albert, and A. Lawrence Kocher, Architects. Model of Farmhouse of Low Cost. May 297
Article, Design and Drafting Problems: Seating Heights and Spacing Table Sizes and Heights. April 261-267
Article, Dimensions.
Part 1, Kitchens. Jan. 49-54
Part 2, Bedrooms; Bathrooms. Feb. 123-128
Furniture, Childrens'. April 263

G

Gaarder, Leroy, Associated; Hamilton, Fellows and Nedved, Architects. Remodeled High School, Albert Lea, Minn. May 354, 355
Gaertner, F. (Starrett and Van Vleck, Architects). Article, Modernization of Stores. May 361-364
Gaines, Henry I., Architect. House of Louis Lipinsky, Asheville, N. C. Jan. 23
Garage Door Operators with Remote Control. April 48 (adv.)
Garages, Underground Parking, in Buenos Aires, Argentine. Stok and Stok, Architects. June 377
Garber and Woodward, Architects. Phelps Apartments, Cincinnati, Ohio. March 183, 184
Garden Apartments and Group Row Houses, Chronology of Development of. March 164, 165
Garden Designs, Plan Renderings of New. Article by J. J. Haffner, Professor of Architecture, Harvard University. April 256-260
Gargoyle Club, St. Paul, Minn. Exhibition Room. May 335
Gas Stations, Grouping of Stores Around. May 326, 327
Gehron and Ross, Architects. The State Education Building, Harrisburg, Pa. April Frontispiece, 219-232
Veterans Memorial Bridge, Rochester, N. Y. Article by Ernest Born, Architect. May Frontispiece, 336- 340
General Exhibits Group, Century of Progress, 1933 World's Fair, Chicago, Ill. Harvey Wiley Corbett, Architect. May 296
Generation of Power. Summary by K. Lönberg-Holm. Jan. 61
Gentry, Alonzo H. and Lang and Witchell, Associated Architects. Dreyfus and Son Store, Dallas, Texas. Jan. 25
George Washington Bridge, New York City. Jan. 59
Gerhardt, Paul, Jr., City Architect, Chicago. Article, Chicago Municipal Airport. Jan. 30 (adv.) Feb. 117-120
Gilchrist, Edmund B., Architect. Group Housing, St. Martins, Philadelphia, Pa. March 165
Sketch, Group Dwellings, Mariemont, Ohio. March 156
Whitman's Store, Philadelphia, Pa. Jan. 12, 13
Gillette, Charles F., Landscaper; Bottomley, Wagner and White, Architects. House of Amory S. Carhart, Warrenton, Va. Jan. Frontispiece, 27-29
Glass Blackboards. April 52 (adv.)
Goldwater, S. S., M. D., Hospital Consultant. Article, Planning the Surgical Facilities. Feb. 138-143
Goodwin, Philip L., Kenneth Franzheim. Roger H. Bullard, Architects. 400 East 57th Street, New York City. March 205
Gottscho, Samuel H., Photographer. Night Views of New York City. June 381-384.
Graham, Anderson, Probst and White, Architects. Field Building, Chicago, Ill. Rendering. April 277
Graham, John, Jr.; Purves and Day; Tilden, Register & Pepper; Edmund G. Krimmel, Architects Associated for Model Housing. New Housing for Philadelphia Slums. Feb. 83-88
Grand Street Apartments for Amalgamated Housing Corporation, New York City. Springsteen and Goldhammer, Architects. Jan. 24
Green, Edward B. and Sons, Albert Hart Hopkins, Architects. Mayfair Lane Apartments, Buffalo, N. Y. March 188, 189
Green, W. A. Store, Dallas, Texas. Dewitt and Washburn, Architects. Jan. 26
Grille, Studies for Monumental Entrance. Designed by Frederic C. Hirons, Architect. Plates. May 341, 342
Group Dwellings. Mariemont, Ohio. Sketch by Edmund B. Gilchrist, Architect. March 156
Group of Honolulu Architects. May 334
Group Housing, St. Martins, Philadelphia, Pa. Edmund B. Gilchrist, Architect. March 165
Grunsfeld, Ernest A., Jr., Architect. Adler Planetarium, Chicago, Ill. Jan. 17, 18
Gugler, Eric and Ricard Brooks, Designers and Painters. Forum, Education Building, Harrisburg, Pa.
—Ceiling. April 222
—Promenade. April 232

H

Hadden, Gavin, Engineer. Franklin Field, University of Pennsylvania, Philadelphia, Pa. April 268
Hadden, Gavin, Associate; Coolidge, Shepley, Bulfinch and Abbott, Architects. Swimming Pool, Harvard Athletic Building, Harvard University, Cambridge, Mass. April 269, 272
Hadden, Gavin, Associate; James Gamble Rogers, Architect. Dyche Stadium, Northwestern University, Evanston, Ill. April 268, 272
Hadlow, Hughes, Hick and Conrad, Architects. Michigan-Diamond Office Building for the Ohio Bell Telephone Company, Cleveland, Ohio. Jan. 14
Haffner, J. J., Professor of Architecture, Harvard University. Article, Plan Renderings of New Garden Designs. April 256-260
Hall, Gilbert T., Renderer. State Capitol, Bismarck, N. D. Holabird and Root; Joseph Bell DeRemer; W. F. Kurke, Associated Architects. April 276
Hall, Lawrence and Ratcliffe, Architects. Chicago Indoor Stadium, Chicago, Ill. April 269
Hamilton, Fellows and Nedved, Architects; Leroy Gaarder, Associated. Remodeled High School, Albert Lea, Minn. May 354, 355
Hamilton, Hector O., Architect. Winning Design for the Palace of the Soviets in Moscow. Rendering. April 278
Hamlin, Talbot Faulkner, Architect. Review, The Prize-Winning Buildings of 1931. Jan. 10-26
Hart, William B., House, Los Angeles, Calif. Roland E. Coate, Architect. May Cover, 307-310
Harvard Athletic Building, Harvard University, Cambridge, Mass. Coolidge, Shepley, Bulfinch and Abbott, Architects; Gavin Hadden, Associate. Swimming Pool. April 269, 272
Haugaard, William E., Commissioner of Architecture; Sullivan W. Jones, State Architect. State of New York Office Building, New York City. Jan. 54
Healy Chapel, Aurora, Ill. George G. Elmslie, Architect. May 314,315
Heating, Cooling, Air Conditioning. Summary by K. Lönberg-Holm. Jan. 72
Hepburn, Andrew H., Architect. Row Houses, Bridgeport, Conn. March 165
Hicks, Herbert, House, San Marino, Calif. Arthur R. Hutchason, Architect. April 253, 254
Higgins, Daniel, Architect, Office of John Russell Pope. Comment. Firm Specifications. June 388
Highway Intersection, Clover Leaf, near Woodbridge, N. J. By New Jersey State Commission. June 378
Hirons, Frederic C., Architect. Studies for Monumental Entrance Grille. Plates. May 341, 342
Hite-Bilicke, Ltd., Los Angeles, Calif. "The Bachelors"—A Haberdashery. J. R. Davidson, Designer. April 233, 234
Holabird and Root, Architects.
Apartment of Mr. John Root, Chicago, Ill. March 182
Forest Products Laboratory, Madison, Wis. Feb. 40 (adv.)
Kenwood Mills, Inc., Shop. Michigan Square Building, Chicago, Ill. Jan. 36
Racine County Court House, Racine, Wis. Jan. 30 (adv.)
Feb. Cover, Frontispiece, 89-98
Holabird and Root; Joseph Bell DeRemer; W. F. Kurke, Associated Architects. State Capitol, Bismarck, N. D. Rendering by Gilbert T. Hall. April 276
Holden, Arthur C., Architect. Article, Facing Realities in Slum Clearance. Feb. 75-82
Holden, McLaughlin and Associates, Architects. Tompkins Boulevard Development, New York City. Plan. Feb. 81
Holden, McLaughlin & Associates; John Taylor Boyd, Jr., Architects. Chrystie-Forsythe Development, New York City. Plans. Feb. 77, 79
Holden, Thomas S. Article, Effect of Reduced Population Growth on Construction Demand. Jan. 3-8
Article, What Has Happened to Architects? May 291-293
Hollander Company Building, New York City. Shreve, Lamb and Harmon, Architects. Jan. 21
"Home Finance and Taxation." June 54 (adv.)
Honolulu Architects. Group of. May 334
Hood, Raymond, Architect. McGraw-Hill Building, New York City. Feb. 42 (adv.)
Hood and Fouilhoux; Reinhard and Hofmeister; Corbett, Harrison and MacMurray, Architects. Construction Details, International Music Hall, Rockefeller Center, New York City. June 438
Theater Designs. June 418-420
Hopkins, Albert Hart, Edward B. Green and Sons, Architects. Mayfair Lane Apartments, Buffalo, N. Y. March 188, 189
Horsley, S. Clements, Designer. Prize-Winning Design in Competition for "A Small House for Mass Production," Sponsored by Architects' Emergency Committee of the New York Architectural League. March 50 (adv.)
Hotel de Ville at Loches, France. Drawing by Samuel Chamberlain. June Frontispiece
Houlihan, Hauser and Marks, Architects. Apartment Building, Oak Park, Ill. March 177
Housing Conference, Findings and Suggestions of the. Article by Michael A. Mikkelsen. Jan. 39-43
Housing Development for New York City, Proposed Chrystie-Forsythe. Howe and Lescaze, Architects. March 194, 195
Housing Economy, The Need for a New. Article by L. Seth Schnitman. March 211, 212
Housing Project, Lower East Side, New York City. Designed by Fred F. French Companies. Rendering. April 277
Housing Projects Are Developed, How Large-scale. March 166
Housing Research Advanced Through Architects' Emergency Relief Work. May 298
How Can Apartment Facilities Be Provided for the Lower-Income Groups? Article by Henry Wright, Architect and Town Planner. March 147-150
How Large-scale Housing Projects Are Developed. Mar. 166
Howe and Lescaze, Architects. Proposed Chrystie-Forsythe Housing Development for New York City. Mar. 194, 195
Trans-Lux Theater, New York City. June 429
Humidity Detector. Mar. 58 (adv.)
Hunt Company, R. H., Architects; Shreve, Lamb and Harmon, Consultants. Rendering by Ernest Born. Post Office and Court House, Chattanooga, Tenn. May 295
Hutchason, Arthur R., Architect. House of Herbert Hicks, San Marino, Calif. April 253, 254
Hutchinson Memorial Building, Tulane University, New Orleans, La. Favrot and Livaudais, Architects. June 377
Hynds, H. D., House, Scarsdale, N. Y. Dwight James Baum, Architect. June 401-404

I

Imperial Hotel in Tokio. Frank Lloyd Wright, Architect. April 30 (adv.)
Increasing Demand for Hospitals and Institutions—Building Trends Indicated by the Federal Census. Part 6. Article by L. Seth Schnitman. Feb. 144, 34, 44, 46 (adv.)
Indiana State Library and Historical Bureau. Pierre and Wright, Architects. Jan. 42 (adv.)
Ingham and Boyd, Architects; Stein and Wright, Consultants. Buhl Foundation Housing Project, Pittsburgh, Pa. March 150, 165
Innovation in Steel Flooring, An. Article by J. H. Young. June 413-417

Institute of Human Relations and Sterling Hall of Medicine at Yale University. Grosvenor Atterbury, Architect. Feb. 134, 136
Institutions for the Mentally Afflicted. (A Program of Planning Requirements.) Article by Lewis F. Pilcher, Architect. Feb. 129-137
Insulated Steel Floor and Wall Company, Erectors of Experimental Frameless Steel House, Cleveland, Ohio. May 297
Internal Revenue Building, Washington, D. C. James A. Wetmore, Supervising Architect. Jan. 54
International Music Hall, Rockefeller Center, New York City. Reinhard and Hofmeister; Corbett, Harrison and MacMurray; Hood and Fouilhoux, Architects. Construction Details. June 438
Plans. June 420
Irrera, I. and Ben Schlanger, Architects. Thalia Theater, New York City. June 434

J

Jennewein, C. Paul, and Harry Kreis, Sculptors of Carved Panels and Modeled Decoration. Education Building, Harrisburg, Pa. April 225, 227
Johnson and Perry, Architects. Foreman's House, Brownell Ranch, Woodland, Calif. Jan. 26
Jones, Sullivan W., Associated with Dietel and Wade, Architects. Buffalo City Hall. Jan. 40 (adv.)
Jones, Sullivan W., State Architect; William E. Haugaard, Commissioner of Architecture. State of New York Office Building, New York City. Jan. 54
Juilliard School of Music, New York City, The. Shreve, Lamb and Harmon, Architects. May 40 (adv.)
June Cover 385-387, 389-394

K

Kahn, Albert, Inc., Architects.
House of Edsel B. Ford, Grosse Pointe Shores, Mich. Jan. 25
S. S. Kresge Administration Building, Detroit, Mich. Jan. 16
New York Times Building, Brooklyn, N. Y. Jan. 15
Kahn, Ely Jacques, Architect. Broadway Building, New York City. Feb. 42 (adv.)
Kastner, Alfred, and Oscar Stonorov, Architects. Second Prize Design for The Palace of the Soviets in Moscow. Rendering by Hugh Ferriss. April 278
Kaufmann, Gordon B., Architect; Paul G. Thiene, Landscape Architect. Estate of I. Eisner, Los Angeles, Calif. April 32 (adv.)
Keck, George Fred, Architect. Apartment Building, Elmhurst, Ill. March 185, 186
Keefe, Charles S., Architect. Guest House, Estate of E. Hope Norton, Darien, Conn. April 245, 246
Kelley, H. Roy, Architect. House of Gilbert Bloss, Palos Verdes Estates, Calif. April 247, 248
Kenwood Mills, Inc., Shop, Michigan Square Building, Chicago, Ill. Holabird and Root, Architects. Jan. 36
Kimball, Fiske. Review, Builder and Poet—Frank Lloyd Wright. June 379, 380
Kitchen Unit, Steel. March 58 (adv.)
Kitchens—Part I of Dimensions. Article by A. Lawrence Kocher and Albert Frey. Jan. 49-54
Klaber, Eugene H., Architect.
Article, Reducing Apartment Costs by Economy of (1) Planning, (2) Construction, (3) Operation. March 157-163
Portrait. March 38 (adv.)
Proposed Low-Rental Apartment Group in Chicago. March 160, 161, 163
Kocher, A. Lawrence, and Albert Frey, Architects. Model of Farmhouse of Low Cost. May 297
Article, Design and Drafting Problems: Seating Heights and Spacing, Table Sizes and Heights. April 261-267
Article, Dimensions.
Part 1, Kitchens. Jan. 49-54
Part 2, Bedrooms; Bathrooms. Feb. 123-128
Kohn, Robert D. and Charles Butler Architects. Operating Room, Mount Sinai Hospital, New York City. Feb. 140, 142
Kreis, Harry and C. Paul Jennewein, Sculptors of Carved Panels and Modeled Decoration. Education Building, Harrisburg, Pa. April 225, 227
Kresge, S. S., Administration Building, Detroit, Mich. Albert Kahn, Inc., Architects. Jan. 16
Krimmel, Edmund G.: John Graham, Jr.; Purves and Day; Tilden, Register & Pepper, Architects Associated for Model Housing. New Housing for Philadelphia Slums. Feb. 83-88
K-type Steel Floor Slab. May 413
Kurke, W. F.; Holabird and Root; Joseph Bell DeRemer, Associated Architects. State Capitol, Bismarck, N. D. Rendering by Gilbert T. Hall. April 276

L

La Farge, L. Bancel, Architect; Rodgers and Poor, Associated Architects. A Tenement Modernized as a 2-Family City House. May 352, 353
Lamb, Thomas W., Architect. Fox Theater, Hackensack, N. J. June 421
Lamb, Thomas W. and L. E. Dinslow, Associated Architects. Twin Trans-Lux Theaters, New York City. June 38 (adv.)
Lang and Witchell and Alonzo H. Gentry, Associated Architects. Dreyfus and Son Store, Dallas, Texas. Jan. 25
Latta, E. D., Nurses' Home, Asheville, N. C. Lord and Lord, Architects. Jan. 23
Lavatories and Drinking Fountains. Feb. 127
Lawrie, Lee, Sculptor. Bronze Doors, Entrance to Forum, Education Building, Harrisburg, Pa. April 225
Leavitt, C. W. and Son, Landscape Engineers. Estate of Mrs. Paul B. Belin, Waverly, Pa. March 60 (adv.)
Lee, S. Charles, Architect. Studio Theater, Los Angeles, Calif. June 430
40 (adv.)
Lehman, E. and George Oakley Totten, Jr., Associated Architects. Federal Building, Newark, N. J. May 295
Lewis, Schell, Renderer. 120 East End Avenue, New York City. Charles A. Platt, Architect. March 200
Lexington Apartments, Cord Meyer Development, Forest Hills, Long Island, N. Y. Th. Engelhardt, Architect. March 207, 208
Library, Long Island, Charles G. Loring, Architect. June 32 (adv.)
Library, Reed Memorial, Lake Forest, Ill. Edwin H. Clark, Architect. May 316-320
Lipinsky, Louis, House, Asheville, N. C. Henry I. Gaines, Architect. Jan. 23
Lippiatt, Mr. and Mrs. H. C. and Mrs. F. M. P. Taylor, House, Bel Air, Calif. Roland E. Coate, Architect. May 311-313
Loeser and Company, Frederick, Store, Brooklyn, N. Y. Starrett and Van Vleck, Architects. May 362
Loft Building, 137 East 57th Street, New York City. Thompson and Churchill, Architects. Feb. 106-110
Lönberg-Holm, K. Summary—Technical Developments 1931. Jan. 59-72
Lord and Lord, Architects. E. D. Latta Nurses' Home, Asheville, N. C. Jan. 23
Loring, Charles G., Architect. Long Island Library. June 32 (adv.)
Louvered Sidewalls, Aluminum. Cleveland Municipal Stadium. Walker and Weeks, Architects; Osborn Company, Engineers. Jan. 64
Low-Cost Nonserviced Apartment, A New Type of. Plans. March 155
Lower East Side, New York City. Airplane view. Feb. 76
Low-Rental Apartment Group in Chicago, Ill., Proposed. Eugene H. Klaber, Architect. March 160, 161, 163
Low-Rental Dwellings—How Can Construction and Service Costs of Apartment Buildings be Reduced? March 151-156

M

McCall, Thomas, House, Fieldston, N. Y. Dwight James Baum, Architect. April 241, 242
McCreery and Company Store, New York City. Starrett and Van Vleck, Architects. May 361
McGraw-Hill Building, New York City. Raymond Hood, Architect. Feb. 42 (adv.)
Maher, Philip B., Architect. 1301 Astor Street Apartments, Chicago, Ill. Feb. 30 (adv.)
March Cover, 180, 181
Mann & Co., Architects. House of Mrs. Alice Mosses, Great Bend, Kansas. Jan. 22
Maragliotti, Vincent, Painter of Entrance Lobby Ceiling, Education Building, Harrisburg, Pa. April 221
Marlowe, George F., Architect. Remodeled House of H. Russell Cort, Framingham Center, Mass. May 350, 351
Mastic Tile Floor Finish Applied Over Steel Flooring. May 414
Matsui, Yasuo, Russell G. and Walter M. Cory, Associate Architects. Starrett-Lehigh Building, New York City. Jan. 30-35
Mausolff, Alfred, Architect. Shopping Center, New Canaan, Conn. April 36 (adv.)
May 328, 330
Mayers, Murray and Phillips, Architects. Castle Harbour Hotel, Tucker's Town, Bermuda. January 52 (adv.)
Mayfair Lane Apartments, Buffalo, N. Y. Edward B. Green and Sons, Albert Hart Hopkins, Architects. March 188, 189
Members of the Tennessee Chapter of the A. I. A. on top of Umbrella Rock, Lookout Mountain, Chattanooga, Tenn. May 333
Mentally Afflicted, Institutions for the. (A Program of Planning Requirements.) Article by Lewis F. Pilcher, Architect. February 129-137
Metallizer Spraying Metallic Coatings on Wood, Cloth, Masonry or Other Metals. March 56 (adv.)
Michigan Square Building, Chicago, Ill. Kenwood Mills, Inc., Shop. Holabird and Root, Architects January 36
Midland Country Club, Midland, Mich. Frantz and Spence, Architects; Alden B. Dow, Associate Designer. June 395-400
Mikkelsen, Michael A. Article, Findings and Suggestions of the Housing Conference. January 39-43
Miller, J. R. and T. L. Pflueger, Architects. Paramount Theater, Oakland, Calif. June 423, 433
Model of Farmhouse of Low Cost, A. Lawrence Kocher and Albert Frey, Architects. May 297
Modern Architecture, A French View of. May 335
Modernization: Its Importance to the Architect. Article by L. Seth Schnitman. May 50, 52, 54, 56 (adv.)
Modernization Procedure, A Check-List of Suggested Hotel. By A. E. Price, Manager, Alteration Department, F. P. Platt and Brother, Architects. May 360
Modernization of Stores. Article by F. Gaertner; Starrett and Van Vleck, Architects. May 361-364
Modernized as a 2-Family City House, A Tenement. L. Bancel La Farge, Architect; Rodgers and Poor, Associated Architects. May 352, 353
Modernizing Buildings, Remodeling and. May 343-364
Modernizing Restaurants, Economic Factors in. Article by Louis O. Rohland (F. P. Platt and Brother, Architects). May 345-348
Mosses, Mrs. Alice, House, Great Bend, Kansas. Mann & Co., Architects. January 22
Motion Picture Theaters, Design of Small. Article by Frederic Arden Pawley. June 429-438
38-40 (adv.)
Mount Sinai Hospital, New York City. Operating Room. Charles Butler and Robert D. Kohn, Architects. February 140, 142
Muhlenberg College, Allentown, Pa. Gideon F. Egner Memorial Chapel. Frank R. Watson, Edkins and Thompson, Architects. February 99-102
Municipal Stadium in Cleveland. Walker and Weeks, Architects; Osborn Company, Engineers. January Cover, 37, 38, 64
Munsey Park Business Center, Long Island. City Housing Corporation. Frederick L. Ackerman, Architect. May 332
Mural, "The Quest for the Fountain of Youth," by Ezra Winter, for Rockefeller Center. May 294
Murchison, Kenneth M., Architect. Impersonating George Washington. May 296
Murphy, John F. and Winsor Soule, Architects. House of W. E. Risser, Santa Barbara, Calif. April 239, 240
Museum, Changing a Residence into an Art. Article by William Rice Pearsall, Consulting Architect. May 349
Music Shell in Pasadena, Calif., New. June 378

N

"Nailcrete" Cinder Blocks. June 56 (adv.)
Need for a New Housing Economy,

The. Article by L. Seth Schnitman. March 211, 212
Neergaard, C. F., Consulting Architect; James Gamble Rogers, Architect. Neurological Institute of New York, Columbia-Presbyterian Medical Center. Feb. 129, 130, 132
Neighborhood Shopping Centers—Drafting and Design Problems. May 325-332
Necarsulmer, Edward, Architect. Franklin Simon & Co. Store, Greenwich, Conn. June 32 (adv.)
Neurological Institute of New York, Columbia-Presbyterian Medical Center. James Gamble Rogers, Architect; C. F. Neergaard, Consulting Architect. Feb. 129, 130, 132
Neutra, Richard J., Architect. Dixie Drive-In Market and Shopping Center, Lexington, Ky. May 331, 332
New Building for the Royal Institute of British Architects, London, England, Grey Wornum, Architect. June 376
New Finish for Exterior Painting. April 52 (adv.)
New Housing for Philadelphia Slums. Edmund G. Krimmel; John Graham, Jr.; Purves and Day; Tilden, Register & Pepper, Architects Associated for Model Housing. Feb. 83-88
New Materials and Building Methods for Chicago Exposition. Article by Nathaniel A. Owings. April 279-288 40 (adv.)
New Materials, Products and Finishes. Summary by K. Lönberg-Holm. Jan. 62
New Southtown Theater, Chicago, Ill. C. W. and George L. Rapp, Architects. June 422, 432
New York Times Building, Brooklyn, N. Y. Albert Kahn, Inc., Architects. January 15
Night Views of New York City. Photographed by Samuel H. Gottscho. June 381-384
Northwestern University, Evanston, Ill. Dyche Stadium. James Gamble Rogers, Architect; Gavin Hadden, Associate. April 268, 272
Norton, E. Hope, Guest House on Estate of, Darien, Conn. Charles S. Keefe, Architect. April 245, 246
Nurses' Home, E. D. Latta, Asheville, N. C. Lord and Lord, Architects. January 23

O

Ohio Bell Telephone Company, Michigan-Diamond Office Building for the. Cleveland, Ohio. Hadlow, Hughes, Hick and Conrad, Architects. January 14
Olympic Village at Los Angeles, Calif. May 294
Osborn Company, Engineers; Walker and Weeks, Architects. Municipal Stadium in Cleveland. January Cover, 37, 38, 64
Outlook for Church Construction, The—Building Trends Indicated by the Federal Census. Part 7. Article by L. Seth Schnitman. April 42, 44, 46 (adv.)
Outlook for Recreational Buildings, The—Building Trends Indicated by the Census. Part 8. Article by L. Seth Schnitman. June 42, 45, 46, 48, 50 (adv.)
Owings, Nathaniel A. Article, New Materials and Building Methods for Chicago Exposition. April 279-288 40 (adv.)

P

Palace of the Soviets in Moscow. Prize-Winning Designs for the. April 278
Paramount Theater, Oakland, Calif. J. R. Miller and T. L. Pflueger, Architects. June 423, 433
Parker, William Stanley, Architect. Editorial, Public Works and the Depression. January 54-57
Parkinson,John and Donald B., Architects. Banks-Huntley Office Building, Los Angeles, Calif. February 114-116
Pawley, Frederic Arden. Article, Design of Small Motion Picture Theaters. June 429-438 38, 49 (adv.)
Peabody, Wilson and Brown, Architects. House of L. H. Tyng, Southampton, Long Island, N. Y. January 26
Pearsall, William Rice, Consulting Architect. Article, Changing a Residence into an Art Museum. May 349
Pelham, G. Frederic, Architect. Article, A Remodeled House in Dutchess County, New York. May 356-359
Remodeled House, Long Island, N. Y. April 36 (adv.)
Pflueger, T. L. and J. R. Miller, Architects. Paramount Theater, Oakland, Calif. June 423, 433
Phelps Apartments, Cincinnati, Ohio. Garber and Woodward, Architects. March 183, 184
Phipps Garden Apartments, Long Island City, N. Y. Clarence S. Stein, Architect. March 201, 202
Photoelectric Lighting Control Units. January 67
Pierre and Wright, Architects. Indiana State Library and Historical Bureau. January 42 (adv.)
Pilcher, Lewis F., Architect. Article, Institutions for the Mentally Afflicted. (A Program of Planning Requirements.) February 129-137
Plan Renderings of New Garden Designs. Article by J. J. Haffner, Professor of Architecture, Harvard University. April 256-260
Planetarium, Adler, Chicago, Ill. Ernest A. Grunsfeld, Jr., Architect. January 17, 18
Planning the Surgical Facilities. Article by S. S. Goldwater, M.D., Hospital Consultant. February 138-143
Plastered Ceiling, Method of Suspending. May 415
Platt, Charles A., Architect, 120 East End Avenue, New York City. March 199, 200
Platt, F. P. and Brother, Architects. Restaurant, Remodeled from Hotel Dining Room, New York City. May 347
Plywood Deck on Steel Truss Joists, Chicago Exposition. April283
Population Growth on Construction Demand, Effect of Reduced. Article by Thomas S. Holden. January 3-8
Porcelain-Enamel House, First, Cleveland, Ohio. Sponsored by Ferro Enamel Corporation. Charles Bacon Rowley and Associates, Architects and Engineers; Meade Ashley Spencer, Associate. May 297
Portable Movie Theater, Los Angeles, Calif. June 378
Post Office, New Canaan, Conn. Alfred Mausolff, Architect. May 328, 330
Post Office and Court House, Chattanooga, Tenn. R. H. Hunt Company, Architects; Shreve, Lamb and Harmon, Consultants. Rendering by Ernest Born. May 295
Price, A. E., Manager, Alteration Department, F. P. Platt and Brother, Architects. A Check-List of Suggested Hotel Modernization Procedure. May 360
Prize-Winning Apartments in New York. Plates. March 199-208
Prize-Winning Buildings of 1931, The. Reviewed by Talbot Faulkner Hamlin, Architect. January 10-26
Prize-Winning Design in Competition for "A Small House for Mass Production," Sponsored by Architects' Emergency Committee of the New New York Architectural League. S. Clements Horsley, Designer. March 50 (adv.)
Prize-Winning Designs for The Palace of the Soviets in Moscow. April 278
Prize-Winning Small Houses, 1931 "Better Homes in America" Architectural Competition. Article by James Ford. April 255 Plates. April Cover, 235-254
Promoting Cooperative Apartments. March 48, 50 (adv.)
Prospect for Building and Engineering Work, First Quarter, 1932. Article by L. Seth Schnitman. January 8, 9
Protected Metal, A New. May 62 (adv.)
Prou, Rene. Designer of Recessed Lights in Ceiling of Theater. June 40 (adv.)
Public Buildings, Architects Should Support this Bill Demanding Their Employment for. January 57, 58
Support for Architects' Employment Bill. March 52 (adv.)
Public Works and the Depression. Editorial by William Stanley Parker, Architect. January 54-57
Purves and Day; Tilden, Register & Pepper; Edmund G. Krimmel; John Graham, Jr., Architects Associated for Model Housing. New Housing for Philadelphia Slums. February 83-88

R

Racine County Court House, Racine, Wis. Holabird and Root, Architects. January 30 (adv.) February Cover, Frontispiece, 89-98
Radiator Valve, A New. May 62 (adv.)
Railway Car, German Propeller-Driven. January 60
Ranges. January 52
Rankin and Kellogg, Architects; James A. Wetmore, Supervising Architect, Department of Agriculture Building, Washington, D. C. January 56
Rapp, C. W. and George L., Architects. New Southtown Theater, Chicago, Ill. June 422, 432
Reamer, R. C., Architect. Hotel Meany, Seattle, Wash. March 178, 179
Recreation Building, Ault Park, Cincinnati, Ohio. Fechheimer and Ihorst, Architects. May 302
Recreational Buildings, The Outlook for—Building Trends Indicated by the Census. Part 8. Article by L. Seth Schnitman. June 42, 45, 46, 48, 50 (adv.)
Reducing Apartment Costs by Economy of (1) Planning, (2) Construction, (3) Operation. Article by Eugene H. Klaber, Architect. March 157-163
Reed Memorial Library, Lake Forest, Ill. Edwin H. Clark, Architect. May 316-320
Refrigerators. January 53
Reid House, Rome, N. Y. Pierre Blouke, Architect. Garden Façade. May 297
Reinhard and Hofmeister; Corbett, Harrison and MacMurray; Hood and Fouilhoux, Architects. Construction Details, International Music Hall, Rockefeller Center, New York City. June 438
Theater Designs. June 418-420
Remodeled Apartment, Greenwich Avenue, New York City. Manoug Exerjian, Architect. May 348
Remodeled High School, Albert Lea, Minn. Hamilton, Fellows and Nedved, Architects. Leroy Gaarder, Associated. May 354, 355
Remodeled House in Dutchess County, New York, A. Article by G. Frederic Pelham, Architect. May 356-359
Remodeled Restaurant, from Hotel Dining Room, New York City. F. P. Platt and Brother, Architects. May 347
Remodeling and Modernizing Buildings. May 343-364
Remodeling Procedure. Article by Theodore Crane. May 344
Renderings of New Garden Designs, Plan. Article by J. J. Haffner, Professor of Architecture, Harvard University. April 256-260
Report of the Committee on Economics of Site-Planning and Housing, A. I. A. Convention. June 369-375
Residences, Air Conditioning for. May 58, 60, 62 (adv.)
Restaurant, Remodeled from Hotel Dining Room, New York City. F. P. Platt and Brother, Architects. May 347
Restaurants, Economic Factors in Modernizing. Article by Louis O. Rohland (F. P. Platt and Brother, Architects). May 345-348
Risley, Winchton L., Architect. House of Stella Smith, Palos Verdes Estates, Calif. April 243, 244
House at 440 Via Media, Palos Verdes, Calif. April 251, 252
Risser, W. E., House, Santa Barbara, Calif. Winsor Soule and John F. Murphy, Architects. April 239, 240
River House, New York City. Bottomley, Wagner and White, Architects. March 206
Rockefeller Center, New York City. French Building. May 294
Mural, "The Quest for the Fountain of Youth," by Ezra Winter. May 294
Rockefeller Center, New York City. Reinhard and Hofmeister; Corbett, Harrison and MacMurray; Hood and Fouilhoux, Architects. Construction Details, International Music Hall. June 438
Theater Designs. June 418-420
Rodgers and Poor, Associated Architects; L. Bancel La Farge, Architect. A Tenement Modernized as a 2-Family City House. May 352, 353
Rogers, James Gamble, Inc., Architects. Charles Deering Memorial Library, Evanston, Ill. June 377
Rogers, James Gamble, Architect; Gavin Hadden, Associate. Dyche Stadium, Northwestern University, Evanston, Ill. April 268, 272
Rogers, James Gamble, Architect; C. F. Neergaard, Consulting Architect. Neurological Institute of New York, Columbia-Presbyterian Medical Center. February 129, 130, 132
Rohland, Louis O. (F. P. Platt and Brother, Architects). Article, Economic Factors in Modernizing Restaurants. May 345-348
Root, Mr. John, Apartment, Chicago, Ill. Holabird and Root, Architects. March 182
Rorke, Edwyn, Architect. Alden Park

Manor. Philadelphia, Pa. March 148
Row Houses, Bridgeport, Conn. Andrew H. Hepburn, Architect. March 165
Row Housing, Forest Hills, Long Island, N. Y. Wilson Eyre, Architect. March 165
Rowley, Charles Bacon and Associates, Architects and Engineers; Meade Ashley Spencer, Associate. First Porcelain-Enamel House, Cleveland, Ohio. Sponsored by Ferro Enamel Corporation. May 297
Royal Institute of British Architects, New Building for The, London, England. Grey Wornum, Architect. June 376

S

Saarinen, Eliel, Architect. Boys' School, Cranbrook, Mich. January 10, 11
Saint-Gaudens, Augustus, Sculptor. "Diana of Madison Square." June 376
Schlanger, Ben, Architect.
Area Charts for Theaters. June 436
Seating Plan for Theater. June 435
Schlanger, Ben and I. Irrera, Architects. Thalia Theater, New York City. June 434
Schmidt, Garden and Erikson, Architects. Copley Hospital, Aurora, Ill. May 294
Schmidt, Garden and Erikson, Architects; E. A. Stubenrauch, Associate Architect. Sheboygan Hospital, Sheboygan, Mich. June 377
Schnitman, L. Seth.
Article, Building Trends Indicated by the Federal Census. Part 6—Increasing Demand for Hospitals and Institutions. February 144 34, 44, 46 (adv.)
Part 7—The Outlook for Church Construction. April 42, 44, 46 (adv.)
Part 8—The Outlook for Recreational Buildings. June 42, 45, 46, 48, 50 (adv.)
Article, Current Building Trends. January 36, 38, 40 (adv.)
Article, Modernization; Its Importance to the Architect. May 50, 52, 54, 56 (adv.)
Article, Prospect for Building and Engineering Work, First Quarter, 1932. January 8, 9
Article, The Need for a New Housing Economy. March 211, 212
School Seating. April 261, 264, 265
Bibligraphy. April 272
Seamen's House—Y. M. C. A., New York City. Shreve, Lamb and Harmon, Architects. May 321-324
Seating Heights and Spacing, Table Sizes and Heights—Design and Drafting Problems. Article by A. Lawrence Kocher and Albert Frey. April 261-267
Seating, Stadium. Article by Carl T. Washburn. April 268-272
Seating Plan for Theater. Ben Schlanger, Architect. June 435
Second Architectural League of New York, The. March 62, 64 (adv.)
Severance, H. Craig, Inc., Architects. Bank of Manhattan Building, New York City. February 38 (adv.)
Sheboygan Hospital, Sheboygan, Mich. Schmidt, Garden and Erikson, Architects; E. A. Stubenrauch, Associate Architect. June 377
Sheehan, Dr. J. Eastman and Dr. P. J. Flagg. Color Scheme in Operating Room, Doctors' Hospital, New York City. March 209
Sheehan, J. Eastman, M.D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University. Article, Color to Relieve Eye Strain In the Surgical Operating Theater. March 209-211
Shopping Center, Dixie Drive-In Market and, Lexington, Ky. Richard J. Neutra, Architect. May 331, 332
Shopping Centers, Neighborhood—Drafting and Design Problems. May 325-332
Show Windows in Alteration Work. Article by John F. Coman, Architect. May 359
Shreve, Lamb and Harmon, Architects.
Empire State Building, New York City. January 20
L. P. Hollander Co. Building, New York City. January 21
Juilliard School of Music, New York City. May 40 (adv.) June Cover, 385-387, 389-394
Seamen's House-Y. M. C. A., New York City May 321-324
Shreve, Lamb and Harmon, Consultants; R. H. Hunt Company, Architects. Rendering by Ernest Born. Post Office and Court House. Chattanooga, Tenn. May 295
Franklin Simon & Co., Store, Greenwich, Conn. Edward Necarsulmer, Architect. June 32 (adv.)
Site-Planning and Housing, A. I. A. Convention, Report of the Committee on Economics of. June 369-375
Sixty-fifth Convention of the American Institute of Architects, Washington, D. C.—April, 1932, The. June 367, 368
Slum Clearance, Facing Realities in. Article by Arthur C. Holden, Architect. February 75-82
Slum Clearance? Is the Equity Trust a Practical Means of. April 273-275
Slums, New Housing for Philadelphia. Edmund G. Krimmel; John Graham, Jr.; Purves and Day; Tilden, Register & Pepper, Architects Associated for Model Housing. February 83-88
"Small House for Mass Production, A." Prize-Winning Design in Competition Sponsored by Architects' Emergency Committee of the New York Architectural League. S. Clements Horsley, Designer. March 50, (adv.)
Small Houses—Architectural Criticism. June 28 (adv.)
Small Houses, Prize-Winning. 1931 "Better Homes in America" Architectural Competition.
Article by James Ford. April 255
Plates. April Cover, 235-254
Smith, Stella, House, Palos Verdes Estates, Calif. Winchton L. Risley, Architect. April 243, 244
Soule, Winsor and John F. Murphy. Architects. House of W. E. Risser, Santa Barbara, Calif. April 239, 240
Sound Theater, Rockefeller Center, New York City. Reinhard and Hofmeister; Corbett, Harrison and MacMurray; Hood and Fouilhoux, Architects. June 418
Specifications, Firm. Comment by Daniel Higgins, Architect, Office of John Russell Pope. June 388
Spencer, Meade Ashley, Associate; Charles Bocon Rowley and Associates, Architects and Engineers. First Porcelain-Enamel House. Cleveland, Ohio. Sponsored by Ferro Enamel Corporation. May 297
Springsteen and Goldhammer, Architects. Grand Street Apartments for Amalgamated Housing Corporation, New York City. January 24
Springsteen and Goldhammer; Ernest Flagg, Architects. Celtic Park Apartments, City and Suburban Homes Company, Long Island City, N. Y. March 167-169
Stadium Seating. Article by Carl T. Washburn. April 268-272
Stadium of Elliptical Shape. April 261
Standard Grading Adopted for Face Brick. February 36 (adv.)
Standard Specifications for Elevators. January 48 (adv.)
Starrett-Lehigh Building, New York City. Russell G. and Walter M. Cory, Yasuo Matsui, Associate Architects. January 30-35
Starrett and Van Vleck, Architects.
Abraham and Straus Store, Brooklyn, N. Y. May 343, 344, 363
Frederick Loeser and Company Store, Brooklyn, N. Y. May 362
McCreery and Company Store, New York City. May 361
Starrett, William Aiken, An Appreciation. Portrait. April 275
State Capitol, Bismarck, N. D. Holabird and Root; Joseph Bell DeRemer; W. F. Kurke, Associated Architects. Rendering by Gilbert T. Hall. April 276
State Education Building, Harrisburg. The. Gehron and Ross, Architects. April Frontispiece, 219-232
State of New York Office Building, New York City. William E. Haugaard, Commissioner of Architecture; Sullivan W. Jones, State Architect. January 54
Steam or Water Pipes, Method of Hanging. May 415
Steel Floor Slabs. May 413, 414
Steel Flooring. An Innovation in. Article by J. H. Young. June 413-417
Steel Flooring Units. May 414
Steel Frame Housing, Arc-Welded. April 50 (adv.)
Steel Frames for Homes. , January 46 (adv.)
Steel Kitchen Unit. March 58 (adv.)
Stein, Clarence S., Architect. Phipps Garden Apartments, Long Island City, N. Y. March 201, 202
Stein and Wright, Consultants; Ingham and Boyd, Architects. Buhl Foundation Housing Project, Pittsburgh, Pa. March 150, 165
Sterling Hall of Medicine, Institute of Human Relations and, Yale University. Grosvenor Atterbury, Architect. February 134, 136
Sternfeld, Harry and J. Roy Carroll, Jr., Architects, and Gaetano Cecere, Sculptor. Winning Design in the Appomattox Court House Memorial Competition. April 277
Stok and Stok, Architects. Underground Parking Garages in Buenos Aires, Argentine. June 377
Stonorov, Oscar and Alfred Kastner, Architects. Second Prize Design for The Palace of the Soviets in Moscow. Rendering by Hugh Ferriss. April 278
Stores and Car Parking at Intersection of Two Streets. Plan. May 326
Stores, Modernization of. Article by F. Gaertner, (Starrett and Van Vleck, Architects.) May 361-364
Stubenrauch, E. A., Associate Architect; Schmidt, Garden and Erikson, Architects. Sheboygan Hospital, Sheboygan, Mich. June 377
Studio Theater, Los Angeles, Calif. S. Charles Lee, Architect. June, 430, 40 (adv.)
Study of Relative Coverages and Sunlight Exposure for Two-, Three- and Four-story Dwellings. March 153
Suburban Community, Shopping Center at Entrance to. Plan. May 327
Suburban Garden Designs. J. J. Haffner, Architect. April 258, 259
Suburban-type Apartment. Lexington Apartments, Cord Meyer Development, Forest Hills, Long Island, N. Y. Th. Engelhardt, Architect. March 207, 208
Suehrk, W. E., House, Topeka, Kansas. Cuthbert and Suehrk, Architects. January 22
Sukert and Cordner, Architects. Proposed Garden Apartment in Detroit, Mich. Michigan Housing Association. March 178
Sunlight Exposure for Two-, Three- and Four-story Dwellings, Study of Relative Coverages and. March 153
Sunlighting Building Interiors. January 44 (adv.)
Surgical Facilities, Planning the. Article by S. S. Goldwater, M.D., Hospital Consultant. February 138-143
Surgical Operating Theater, Color to Relieve Eye Strain in the. Article by J. Eastman Sheehan, M.D., Professor of Plastic Surgery, Post-Graduate Medical School, Columbia University. March 209-211
Suspending Plastered Ceiling, Method of. May 415
Swimming Pool, Harvard Athletic Building, Harvard University, Cambridge, Mass. Coolidge, Shepley, Bulfinch and Abbott, Architects; Gavin Hadden, Associate. April 269, 272
Swimming Pool, Seamen's House-Y. M. C. A., New York City. Shreve, Lamb and Harmon, Architects. May 324

T

Table Sizes and Heights, Seating Heights and Spacing—Design and Drafting Problems. Article by A. Lawrence Kocher and Albert Frey. April 261-267
Taylor, Mrs. F. M. P. and Mr. and Mrs. H. C. Lippiatt, House, Bel Air, Calif. Roland E. Coate, Architect. May 311-313
Technical Developments 1931. Summary by K. Lönberg-Holm. January 59-72
Technical News and Research
A Remodeled House in Dutchess County, New York. Article by G. Frederic Pelham, Architect. May 356-359
Changing a Residence into an Art Museum. Article by William Rice Pearsall, Consulting Architect. May 349
Comparative Cost Studies of New Group Dwellings. Article by Henry Wright. March 213-216 44 (adv.)
Design of Small Motion Picture Theaters. Article by Frederic Arden Pawley. June 429-438, 38, 40 (adv.)
Economic Factors in Modernizing Restaurants. Article by Louis O. Rohland (F. P. Platt and Brother, Architects). May 345-348
Institutions for the Mentally Afflicted. Article by Lewis F. Pilcher, Architect. February 129-137
Modernization of Stores. Article by F. Gaertner; Starrett and Van Vleck, Architects. May 361-364
New Materials and Building Methods for Chicago Exposition. Article

by Nathaniel A. Owings.
April 279-288, 40 (adv.)
Planning the Surgical Facilities. Article by S. S. Goldwater, M. D., Hospital Consultant.
February 138-143
Remodeling and Modernizing Buildings. May 343-364
Remodeling Procedure. Article by Theodore Crane. May 344
Technical Developments 1931. Summary by K. Lönberg-Holm.
January 59-72
Show Windows in Alteration Work. Article by John F. Coman, Architect. May 359
Tenement Modernized as a 2-Family City House, A. L. Bancel La Farge, Architect; Rodgers and Poor, Associated Architects. May 352, 353
Terrazzo-type Floor Finishes Applied to Steel Flooring. May 414
Thalia Theater, New York City. Ben Schlanger and R. Irrera, Architects.
June 434
Theater Designs for Rockefeller Center. Reinhard and Hofmeister; Corbett, Harrison and MacMurray; Hood and Fouilhoux, Architects.
June 418-420
Theater Lighting. Designed by Rene Prou. June 40 (adv.)
Theater Seating. April 261, 266, 267
Theaters, Design of Small Motion Picture. Article by Frederic Arden Pawley. June 429-438, 38, 40 (adv.)
Thielbar and Fugard, Architects. Colonnade Apartments, Evanston, Ill.
March 187, 188
Thiene, Paul G., Landscape Architect; Gordon B. Kaufmann, Architect. Estate of I. Eisner, Los Angeles, Calif.
April 32 (adv.)
Thomas, Andrew J., Architect
116 East 68th Street, New York City. March 203, 204
Garden Apartments for City and Suburban Homes Co., Brooklyn, N. Y. March 164
Garden Apartments, East 158th Street, New York City. March 164
Van Tassel Apartments, North Tarrytown, N. Y. February 30 (adv.)
March Frontispiece, 170-174
Thompson and Churchill, Architects. 137 East 57th Street Loft Building, New York City. February 106-110
Three-story Two-family Flat, A New Type of. Plan. March 152
Tilden, Register & Pepper; Edmund G. Krimmel; John Graham, Jr., Purves and Day, Architects Associated for Model Housing. New Housing for Philadelphia Slums. February 83-88
Tompkins Boulevard Development, New York City. Plan. Holden, McLaughlin and Associates, Architects.
February 81
Totten, George Oakley, Jr., and E. Lehman, Associated Architects. Federal Building, Newark, N. J. May 295
Tower-type Apartment. River House, New York City. Bottomley, Wagner and White, Architects. March 206
Town Hall at Loches, France. Drawing by Samuel Chamberlain.
June Frontispiece
Transite, Painting. March 48 (adv.)
Trans-Lux Theater, New York City. Howe and Lescaze, Architects.
June 429
Trans-Lux Theaters, Twin, New York City. L. E. Dinslow and Thomas W. Lamb, Associated Architects.
June 38 (adv.)
Travel and Transportation Building, Chicago Exposition. Railroad Dome Suspended from Cables.
April 40 (adv.)
Trueblood and Graf, Architects. House of M. P. Burroughs, St. Louis, Mo.
May 36 (adv.)
Tulane University, New Orleans, La. Hutchinson Memorial Building. Favrot and Livaudais, Architects.
June 377
Twin Trans-Lux Theaters, New York City. L. E. Dinslow and Thomas W. Lamb, Associated Architects.
June 38 (adv.)
Two-Family City House, A Tenement Modernized as a. L. Bancel La Farge, Architect; Rodgers and Poor. Associated Architects. May 352, 353
Two- and Three-story Dwellings at Mariemont, Ohio. Sketch by Edmund B. Gilchrist, Architect. March 156
Two- and Three-story Group Dwellings, Block Arrangements for.
March 154
Two-family Flat with Two Stories and Basement for a Hillside Location. Plan. March 152
Two-family Flats, New York City.
March 148
Two-story Flat, Sunnyside, Long Island, N. Y. Frederick L. Ackerman, Architect. March 151
Tyng, L. H., House, Southampton, Long Island, N. Y. Peabody, Wilson and Brown, Architects. January 26
Typical Trends in Low-Cost Housing—And the Opportunities Existing for Architects. January 43-48

U

Umbrecht, Charles H., Architect. House of Mr. Marsh Bull, Syracuse, N. Y.
June 32 (adv.)
United States Customs Building, New, Denver, Colo. James A. Wetmore, Supervising Architect. January 56
U. S. S. Akron. January 60
University of Pennsylvania, Philadelphia, Pa. Franklin Field. Gavin Hadden, Engineer. April 268
University of Southern California, Seeley Wintersmith Mudd Memorial Hall of Philosophy. Ralph C. Flewelling, Architect. January 19
Urban, Joseph, Architect. Honorable Mention—Design for The Palace of the Soviets in Moscow. April 278

V

Van Tassel Apartments, North Tarrytown, N. Y. Andrew J. Thomas, Architect.
February 30 (adv.)
March Frontispiece, 170-174
Veterans Memorial Bridge at Rochester, N. Y. Gehron and Ross, Architects. Article by Ernest Born, Architect.
May Frontispiece, 336-340
Village Improvement Company, Shopping Center, New Canaan, Conn. Alfred Mausolff, Architect.
April 36 (adv.)
May 328, 330

W

Walker and Weeks, Architects; Osborn Company, Engineers. Municipal Stadium in Cleveland.
January Cover, 37, 38, 64
Warehouse; Starrett-Lehigh Building, New York City. Russell G. and Walter M. Cory, Yasuo Matsui, Associate Architects. January 30-35
Washburn, Carl T. Article, Stadium Seating. April 268-272
Washington Impersonated by Kenneth M. Murchison, Architect. May 296
Water Pipes, Method of Hanging Steam or. May 415
Watson, Frank R., Edkins and Thompson, Architects. Gideon F. Egner Memorial Chapel, Muhlenberg College, Allentown, Pa.
February 99-102
Welding. Summary by K. Lönberg-Holm. January 63
Wells College, Aurora, N. Y. Dean's Residence, Dwight James Baum, Architect. May 299-301
West Arch over Roadway, Veterans Memorial Bridge, Rochester, N. Y. Gehron and Ross, Architects.
May 340
800 West Ferry Street, Buffalo, N. Y. Bley and Lyman, Architects.
March 175, 176
Weston and Weston, Architects. Hollywood Post 43, American Legion, Memorial Clubhouse. January 19.
Wetmore, James A., Supervising Architect. Internal Revenue Building, Washington, D. C. January 54
New United States Customs Building, Denver, Colo. January 56
Wetmore, James A., Supervising Architect; Rankin and Kellogg, Architects. Department of Agriculture Building, Washington, D. C. January 56
What Has Happened to Architects? Article by Thomas S. Holden.
May 291-293
Whitman's Store, Philadelphia, Pa. Edmund B. Gilchrist, Architect.
January 12, 13
Why I Like The American Institute of Architects. Letter from Clement W. Fairweather, Architect.
June 26, 28 (adv.)
Winning Design in the Appomattox Court House Memorial Competition. By Harry Sternfeld and J. Roy Carroll, Jr., Architects, and Gaetano Cecere, Sculptor. April 277
Winter, Ezra, Artist. Mural, "The Quest for the Fountain of Youth," for Rockefeller Center. May 294
55 Winthrop Street Apartments, Brooklyn, N. Y. Boris W. Dorfman, Architect. March 192-194
Wood Block Construction, Electric Heating in. January 50 (adv.)
Wornum, Grey, Architect. New Building for the Royal Institute of British Architects, London, England.
June 376
Wright, F. A. Article, The Second Architectural League of New York.
March 62, 64 (adv.)
Wright, Frank Lloyd
Architect, Imperial Hotel, Tokio.
April 30 (adv.)
Builder and Poet — Frank Lloyd Wright. Review by Fiske Kimball.
June 379, 380
Chicago House Designed in 1908.
June 379
Honored Again. January 40 (adv.)
Portrait. April 30 (adv.)
Wright, Henry, Architect and Town Planner.
Article, Comparative Cost Studies of New Group Dwellings.
March 213-216, 44 (adv.)
Article, How Can Apartment Facilities Be Provided for the Lower-Income Groups? March 147-150
Portrait. March 38 (adv.)

Y

Y. M. C. A.-Seamen's House, New York City. Shreve, Lamb and Harmon, Architects.
May 321-324
Young, J. H. Article, An Innovation in Steel Flooring. June 413-417