ARCHITECTURAL FORUM

FEBRUARY 1938

Editor, Howard Myers; *Managing Editor*, Ruth Goodhue; *Associates*, George Nelson, Cameron Mackenzie, Paul Grotz, Madelaine Kroll Thatcher, Henry N. Wright, John Beinert, G. H. V. Baker, Barbara Hunt, Nadia Williams.

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VOLUME 68—NUMBER TWO

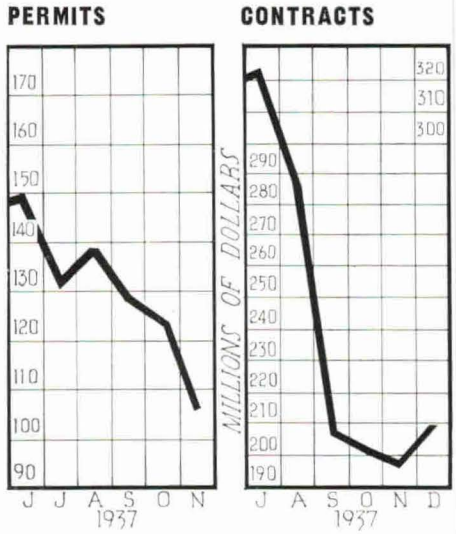
THE MONTH IN BUILDING

VOLUME

PERMITS (November)	$105,769,879	CONTRACTS (December)	$209,450,600
Residential	43,713,688	Residential	43,479,500
Non-residential	37,580,337	Non-residential	101,210,300
Additions	24,475,854	Heavy engineering	64,760,800
October, 1937	123,646,053	November, 1937	198,464,600
November, 1936	113,650,020	December, 1936	199,695,700
Permits from Dept. of Labor		Contracts from F. W. Dodge Corp.	

Twelve month totals for 1937 contracts stood 9 per cent above 1936, were the highest since 1931. A detailed comparison with 1936 showed: a 13 per cent gain in residential building; a 20 per cent increase in non-residential building; a 34 per cent increase in public utilities; and a 19 per cent loss in public works. Privately financed construction showed an increase of 31 per cent over 1936. Publicly financed projects dropped 14 per cent. The totals for the month of December alone registered the first gain over the preceding month since last July; residential contracts led the parade, stood 28 per cent over the November figure.

November permits, on the other hand, continued to reflect the stagnation of building with a sharp decline of 15 per cent from the October figure. These declines, however, were not too important since November is customarily a slow month for permits.



WASTE MOTION. At midmonth while Southern Senators chattered into the third week of their filibuster against Senator Wagner's Anti-Lynching Bill, the Housing Bill lay quietly stalled in the joint conference committee. It was the amendment tacked on by Massachusetts' Senator Henry Cabot Lodge that was keeping it there. The genteel young Senator, a one-time editorial writer for the arch-Tory *Herald Tribune*, had managed to insert a provision calling for the payment of the "prevailing rate" (i.e., the union rate) of wages on all houses insured under the new program; and since only about 10 per cent of the home building field has been unionized, his amendment would have the effect of forcing a large increase in costs at the very time that the Government was doing its best to cut them. That he had not been motivated by any interest in labor's lot the Senator made quite clear by voting against the bill even after it contained his amendment.

Meanwhile Senator Wagner and his conferees were sweating to find some formula that would not put them on record as opposing higher wages for labor but would still allow them to remove the emasculating amendment. Finally, after three wasted weeks, the conferees found political courage, reported the Bill back to the House and Senate minus the Lodge amendment. Passage in the form given in last month's FORUM was virtually certain.

EXEMPTIONS. As the country struggled to pull itself out of the recession last month, three proposals were advanced to give Building the benefit of exemptions. ¶ In Mississippi Governor Hugh White told his legislature that he wanted them to exempt all homesteads from the 4 mill State tax as well as the 15 to 70 mill town and county taxes. All Mississippi homesteads valued at less than $2,500 are now exempt from State taxes. The estimated loss in income from the proposed exemption would amount to about $7,500,000, against which Governor White has about $5,000,000 surplus in his State treasury. The legislature appeared willing to accept the Governor's benevolent suggestion.

¶ In New York, Governor Herbert H. Lehman asked his legislature for two types of exemptions for realty. The first: "(I recommend) that cities be empowered to make loans for low cost housing . . . And indebtedness so incurred should be exempted from constitutional debt limitations." This drew an immediate protest from the president of the New York real estate board on the ground that the removal of the constitutional limitation would only serve to make a bad tax situation worse. The second: "I recommend that life insurance companies be authorized to invest their funds . . . in the acquisition of land and in the construction of apartment or other dwelling houses. Restrictions . . . should be imposed."

DEATH OF FREED. "His main interest was housing . . . His loss will be felt by many people who have appreciated the work he has done," wrote Eleanor Roosevelt one day last month in her column, "My Day." In its obituary, the definitive New York *Times* called him "philanthropist and housing authority." At 46, Allie S. Freed had died of pneumonia in Washington, brought to a sudden stop one of the most meteoric careers in the housing field.

Allie Freed made, lost, and made his fortune in the hectic business of manufacturing taxicabs. It was not until the end of 1934, with the launching of the Committee for Economic Recovery, that he even gave a thought to building. Then, convinced that there was money to be made and social good to be derived from large scale housing, he surrounded himself with a corps of experts, soon proposed the formation of million dollar building corporations as the solution to the industry's problem (ARCH. FORUM, April, 1936, p. 366). For a year he talked his plan up and down the country, crammed expert facts and figures into his head, got the ear of Mrs. Roosevelt and many a Washington big-wig. Finally be embarked on Buckingham, a project for 500 families in Alexandria, Va. Buckingham was virtually completed when the busy little man who had made himself a housing authority in three years died.

239 SURVEYS. "The Chinese have a saying that he who aims at nothing has a better than even chance of hitting it." Thus did the Department of Commerce's Economist Lowell J. Chawner underline a plea to the Chamber of Commerce for cooperation in his Department's plan for collecting nationwide statistics on vacancies, marriages, and income. This ambitious program is but one of many signs that the Government has at last realized that it constitutes the only body capable of collecting the statistics which the building industry so badly needs. Other building facts and figures that have accumulated in Washington over the last six months include: 1) A rental survey for fifteen cities, with seventeen more on the way; 2) A detailed analysis of building permits in 257 cities; 3) The economic and financial phases of residential properties in 60 cities presented in awesome detail in the 1,245-page, 1937 edition of the "Financial Survey of Urban Housing"; 4) A study of urban communities in general by the National Resources Committee; 5) A survey

ARCHITECTURAL FORUM FEBRUARY 1938

MAN OF THE MONTH . . . he multiplied in order to divide (page 110)

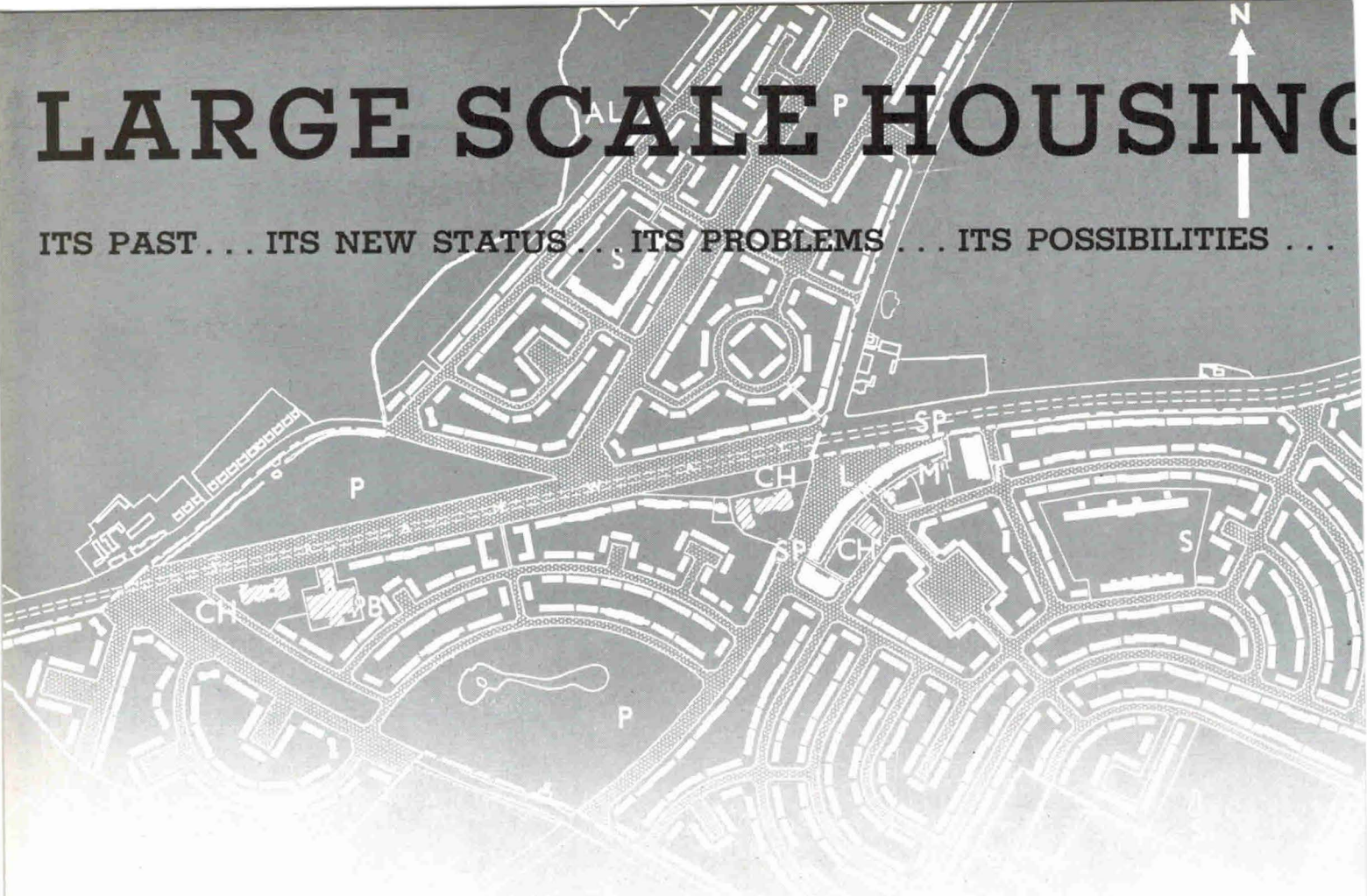
Robert M. Damora

BUILDING OF THE MONTH . . . at long last to Delaware (page 125)

PRODUCT OF THE MONTH . . . by trial and error for plywood (page 165)

LARGE SCALE HOUSING

ITS PAST . . . ITS NEW STATUS . . . ITS PROBLEMS . . . ITS POSSIBILITIES . . .



THE editors of THE ARCHITECTURAL FORUM, as a group of working journalists, researchers and technicians, deem it a proper function of a professional magazine not only to record the current building scene but from time to time to undertake original, interpretive studies of basic problems. FORUM readers will recall The Integrated House (April 1937), The Urge to Own (November 1937), Fairs (September 1936), as examples of this editorial technique.

Recent attempts by private enterprise and Government to revive building have taken several directions; most recent and notable has been a program to stimulate large scale housing operations. Objective examination and data on the implications of this method are meager. THE FORUM, therefore, undertakes in this issue a compact, preliminary survey of this subject to orient building professionals, on whom the realization of such a program depends. Of prime interest is the disclosure in this survey that a rich market for housing exists midway between the ceiling of Government subsidized projects and what has heretofore been regarded as the floor for private enterprise.

MAN OF THE MONTH: To Miles L. ("Mike") Colean, brilliant Deputy FHAdministrator, goes major credit for persuading private capital to invest in large scale rental projects. Since his arrival in Washington in May, 1934, he has played this housing ace with such persistence and persuasion that it has become a pack of projects with an FHA department of its own. Pending legislation is designed to make his game easier, safer than ever.

LARGE scale housing is the mass production Idea applied to home building. But it is both more and less than this. For the production of housing facilities differs in many important respects from the production of any other form of Consumer's Goods. And mass production, as applied to housing, exhibits corresponding peculiarities understandable only in the light of these differences. Thus while ideal Mass Production involves the continuous production at a given point of an infinite series of identical articles, home building proceeds by fits and starts, is still carried on for the most part at the point of ultimate consumption, has a market strictly defined by the need for new housing facilities, and demands considerable variation in its product to suit differing geographic and sociological conditions.

In practice, the scale of home building operations has always depended upon the state of the housing market. When the volume of new home construction goes up, the number of units built at one time by typical builders goes up with it. When volume falls off, the scale of typical operations falls in proportion; and when the housing industry stagnates, home building is mostly on an individual house scale. Housing operations on a large scale require investment capital, and investment capital usually avoids the housing field until after confidence has been established by a prolonged period of housing activity. Depression building is consumer-financed.

Certain large scale housing projects, however, have reversed this general rule. Classic example of this is Chatham Village, development of the Buhl Foundation, the first unit of which was built in Depression's 1932 low and was better than 99 per cent rented almost from the day of completion. Such projects, usually philanthropic or semi-philanthropic in purpose, have nevertheless an almost unblemished reputation for earning modest but unfailing profits.

In order to understand how this contrast is possible, it is necessary to examine critically the manner in which home building in America has generally taken place. For somewhere in this process there must exist certain ignored opportunities which permit the exceptional large scale development to flout the general trend. And it is very much to Building's interest that these be discovered and scrutinized to determine whether they contain some of the answers to Building's many problems.

To objective observers of our housing industry, two facts stand out in sharp relief:

1. Most of the nation's new housing facilities are built for sale by operative builders. This is true equally of single-family houses sold directly to their ultimate occupant and of multi-family dwellings ultimately *purchased* (but seldom *built*) as an investment.

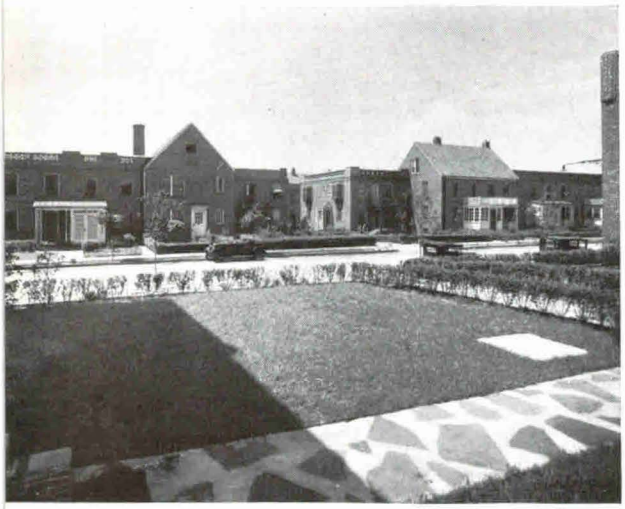
2. New house construction is almost without exception aimed at the better-than-average income brackets; the balance of the population is dependent almost entirely on the second-hand housing facilities which this group discards.

Brown Bros.

Before the War, the large scale housing you heard most about was "Industrial Housing": many of the big corporations were at that time building entire towns to house their industrial workers. Better-than-typical of the trend was this group of low-rent houses nearby U.S. Steel's giant Gary, Indiana, mill; built by the Gary Land Company, a subsidiary.

Following the post-War slump, the country experienced a home building boom the like of which it had never seen before. In New York, the State Legislature, under the pressure of an unprecedented housing shortage, passed permissive tax-exemption laws for new construction, and New York City (along with Beacon, Middle Falls, Plattsburg, and Saratoga Springs) gave local approval. Tax free until 1932, buildings erected under the laws of 1921 and '22 were restricted in cost to $1,000 per room or $5,000 per apartment. In 1923 a further limitation of $15,000 per building was added, thus restricting large apartments, adding impetus to the small house frenzy. Most notable large scale results: a $7,500,000 low-rent apartment development by the Metropolitan Life Insurance Co. in Long Island City, and thousands of identical, jerry-built houses built outside the zone of fire-restrictions in Jamaica, Long Island (below).

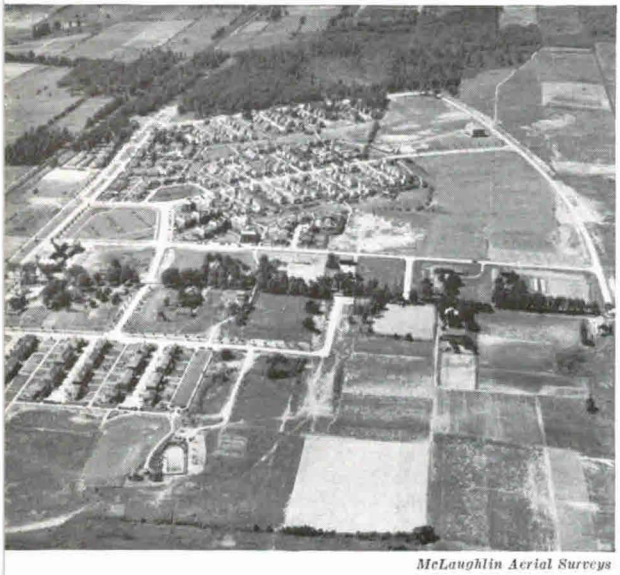
Brown Bros.



Amemya

American progenitor of the row-house type of development was SUNNYSIDE, built in Long Island City by the City Housing Corp., a semi-philanthropic limited-dividend corporation, in 1924-'28. Currently emerging from depression-born financial difficulties, SUNNYSIDE can still point to an average occupancy of over 97 per cent for its 1,277 units, as well as an early and shrewd land maneuver whereby 671,404 sq. ft. of land in scattered lots surrounding the development, purchased at about 50 cents a foot, were sold for $1.62, the best part of the profits going to . . .

Ref.: Arch. Forum, *March 1932, p. 250; April 1933, p. 263; Jan. 1935, p. 102.*



McLaughlin Aerial Surveys

RADBURN, City Housing's second development in New Jersey, which was as close as its sponsors could come to the Garden City on the English model they would like to have built. Famed for its complete separation of vehicular and pedestrian traffic, and super, parked blocks, RADBURN now comprises 502 units of a planned 7,000. Of these, 365 (background, airview) were built for sale. That they have not financially weathered the years as well as the rental row-houses and apartments (foreground), is indicated by the fact that nearly half of the once-sold houses have been foreclosed, reclaimed, and are now rented. Current occupancy, 97 per cent at about $13 per room per month.

Ref.: Arch. Forum, *March 1932, p. 239; April 1933, p. 264; Jan. 1935, p. 102; April 1936, p. 245.*

Because of these facts the home building industry is extraordinarily sensitive to business conditions. Because most houses are built for sale, building will not go ahead until people will buy (fact 1). And the individual will neither buy a house for himself nor invest in a multi-family dwelling until he has confidence in the business future. Similarly, because most new houses are beyond the reach of the average pocketbook, home building responds only indirectly to actual housing needs, and directly only to an increased demand from the above-average income group (fact 2).

Housing history of the past seventeen years has strikingly demonstrated the accuracy of this analysis. In the nine years from 1920 through 1928 when confidence in the business future was widespread and the proportion of the population in which family income was above $3,000 per year rose sharply to 24 per cent, the number of new dwelling units built was 6,525,000, or an average of 725,000 per year. From 1930 through 1934, when confidence was badly lacking and the number of families in the over-$3,000 bracket plummeted to about 6 per cent, then rose only to an estimated 8 per cent, the number of new homes built was only 681,000, or a yearly average 136,200 —less than one-fifth of the 1920-29 figure.

REVERSING THE FIELD

In the light of this analysis, the successes scored by typical large scale, limited dividend housing projects during the Depression are readily understandable. In almost every instance, the success of these projects depended upon an almost complete reversal of ordinary home building procedure. They were treated as investment properties; were built for rent; and instead of being aimed at the shrinking market of the above-average income group, they were aimed at the growing below-average income group: a market which will probably continue to increase for some time to come, whether by additions from above or below.

The experience of pioneer large scale developments clearly indicates that this approach to housing is a sound one. That it will work and work successfully in isolated instances has been demonstrated over and over again. But the aggregate of this experience is not in itself sufficient evidence that the large scale approach can be applied generally. Whether it can will depend upon two things: its ability to attract sponsors and capital, and to reach and satisfy a market.

There are definite signs that the first of these conditions is likely to be satisfied. The large scale, limited dividend project is currently attracting a new and distinctly different type of entrepreneur. Formerly the special property of housing reformers, the large scale approach has been adopted bodily by hard-headed real estate men whose primary concern has been to make a profit: most of the limited dividend projects so far approved for Federal Mortgage Insurance have been sponsored by men who are in real estate for money. In the words of one of the most successful of these:* "Three years ago a housing situation existed in Washington similar to that which now confronts many other cities; namely, a shortage of and a demand for decent and livable dwelling places for persons of comparatively low income. As a contractor, developer, and property man-

*Gustave Ring, President, Colonial Village, Inc., and Colonial Village Extension, Inc. (See page 121).

Beaudry

ager I was not particularly interested in the various theories of how such a situation should be met. I was interested in the practical opportunities it presented . . . It presents an opportunity for developers to acquire, through the course of years, a valuable property, free and clear of all obligations. It presents an opportunity for mortgage lending institutions to employ large funds over long periods, with both safety and profit."

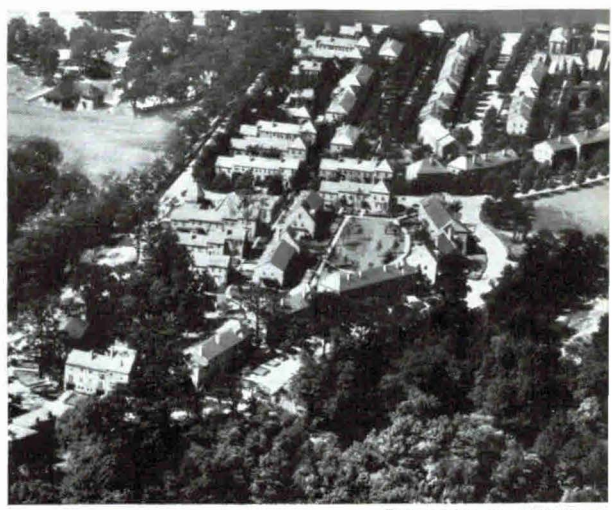
CAN LARGE SCALE VOLUME EXPAND?

Whether the second condition—large scale housing's continued ability to reach and satisfy a market—will also be fulfilled is a somewhat larger question. Its answer clearly depends upon two major factors: the savings of large scale house production; and the existence of a sizable market within the reach of such new construction. This equation is one which can only be finally worked out on a local basis by an analysis of actual local conditions, a process which is obviously beyond the scope of this article. But whether general conditions favor expansion of large scale housing may be determined tentatively by working out the equation on a national scale: by estimating the savings inherent in large scale house production, and by surveying the national market for new housing.

This process has certain obvious disadvantages. Construction costs vary widely from one community to another, and anything which is said of costs will apply only approximately to a given locality. Similarly, the housing market in a national sense is merely an abstraction—what exists actually is a series of local markets which are almost entirely independent one of the other, and which differ widely. But with these necessary qualifications, a review of large scale housing's Savings and Market still retains considerable significance, and provides as well the necessary framework for further analyses on a local basis.

On the basis of all they had learned planning SUNNYSIDE and RADBURN (see preceding page), Architects Clarence Stein and Henry Wright, in conjunction with Pittsburgh's Ingham and Boyd, were able to make CHATHAM VILLAGE—developed as an investment by the Buhl Foundation—in every sense a model community. Famed for its attractively landscaped center-of-the-block gardens, CHATHAM VILLAGE was built in two units. The first, consisting of 129 homes plus stores, was completed in 1932 at a cost of 30 cents a cubic foot. The second, consisting of 68 homes and costing 32 cents a cubic foot, was finished in 1936. Today the development comprises 197 homes, 185 garages, 7 stores, a community building, recreational facilities and 25 acres of developed woodland, and represents a total investment of $1,700,000. Its typical 6-room house cost $6,700, rents for $10.70 per room per month. Average occupancy since 1932: 99.4 per cent. Currently CHATHAM VILLAGE is 100 per cent rented, boasts a waiting list of 200, 40 times anticipated 1938 removals.

Ref: Arch. Forum, *March 1932, p. 229; April 1933, Frontis.; Jan. 1935, p. 103; Aug. 1936, p. 159.*



© Aerial Surveys of Pittsburgh

THE SAVINGS

Everybody concedes that the savings which can be effected by the large scale production of houses are considerable, but no one knows exactly how large. Nor has anyone determined with any degree of accuracy the point in the scale of number of houses produced where these savings are most pronounced and the point where a further increase in the scale of operations fails to result in further sizable savings. There exist almost no exact data upon which answers to these questions can be based.

Any estimate of the savings resulting from large scale housing can be therefore no more than a composite of informed opinion. Such opinion seems to range from savings of 10 to 35 per cent of gross cost, with the point of maximum efficiency anywhere between thirty and a thousand units. Those who assert that 10 per cent is a realistic maximum feel that such a saving is possible in an operation of about 30 to 50 houses, while those who believe that savings on the order of 25 to 35 per cent are possible, argue that savings continue to increase up to 500 or even 1,000 units.

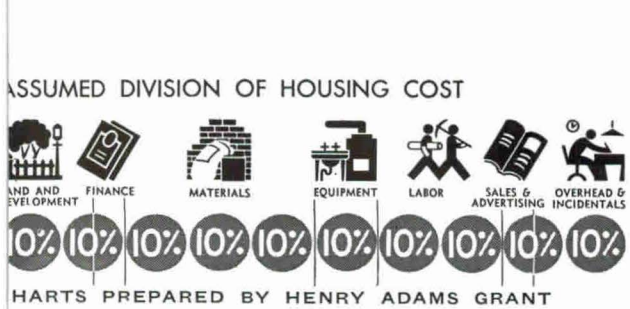
It would, of course, be ridiculous to say that the truth must lie midway between these extremes. The figure of 22 per cent saving for an operation of 500 units which would be reached in this way would have no more validity than either of the estimates upon which it was based; less, in fact, since it would be merely an arithmetical average of highly dissimilar figures rather than an expression of an integrated and at least partially defensible point of view. It is possible, however, to consider individually each component in these estimates, and to ascribe to each its relative importance in the total. From these components can be built up maximum and minimum estimates considerably more realistic than either of the extremes referred to above.

When this is done, it becomes immediately apparent that the extremes of opinion result mostly from the fact that the relative importance of one or another of the individual components has been exaggerated. Even more important is the fact that while a pessimistic view of the savings resulting from any one of the factors involved may be perfectly justified, to adopt an equally pessimistic attitude toward every factor is certainly less than logical.

ESTIMATED SAVINGS—HOUSING COST

To describe the savings in housing cost resulting from quantity production, a uniform set of conditions applying to projects of varying size must be assumed. To compare the costs of a large scale project with a single-house operation, it is necessary to assume either that the large scale project will be made up of houses identical in size and quality to the base house, or the reverse. This, of course, is an abstraction. In practice, most large scale projects are built in a somewhat more substantial—and costly—manner than the typical one-house operation. On the other hand, most houses built by themselves are considerably larger. Thus costs per cubic foot for typical large scale projects run about the same or somewhat higher than for single-house jobs. Costs per house and even per room, however, are usually somewhat lower, maintenance costs much less. Apparently, part of the savings of quantity building are typically absorbed in higher quality construction, ultimately realized in lower maintenance costs while part appear directly in lowered unit totals.

The estimates of "probable" savings in housing cost and expense given on the following page are based on an analysis of each of the separate factors which make up total savings. The complete analysis, together with explanatory charts and diagrams, appears in small type on the facing pages



COMPUTATION OF ESTIMATED SAVINGS—LARGE SCALE HOUSE PRODUCTION

Any estimate of the overall savings effected by large scale house production must be preceded by an estimate of the relative importance of the various factors which make up total cost; in order that the effect on total cost of a saving on a given item may be computed. Such a breakdown is given in the chart on the opposite page. For convenience, and to indicate the approximate character of the calculations which follow, quantity differences of less than 2½ per cent have been ignored, and each of the seven cost factors assigned a nominal value which is a multiple of 5 per cent. This results in the following scale of importance:

Land and Development	15%
Finance (Mostly fees)	5%
Materials	30%
Equipment (Plumbing fixtures and heating equipment)	10%
Labor (Exclusive of supervision)	20%*
Overhead and Incidentals (Incl. sub-contractors' overhead)	15%
Sales and Advertising	5%
Total	100%

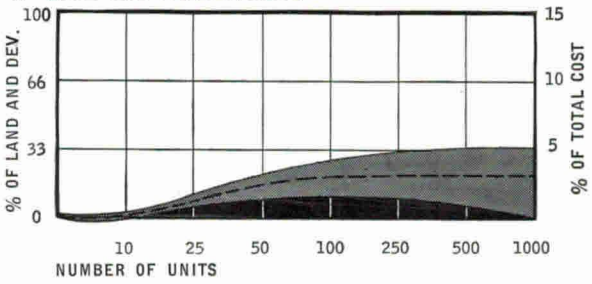
Each of the graphs shows various estimates of the savings in the cost of one of these items which can be made as the number of houses built in a single operation is increased, always compared with the estimated cost for the particular item in a typical single house operation. The horizontal scale of all of the graphs is uniform, and indicates the number of houses built at one time from 1 to 1,000, each horizontal space representing an approximate doubling of the scale of operations. The vertical scale of each graph represents estimated savings, the scale on the left-hand side of the graph showing these savings in terms of per cent of the cost of the individual item and the right-hand scale in terms of per cent of total cost. Since in all of the graphs each vertical space represents a saving in terms of total cost of 5 per cent, the savings estimates shown are directly comparable; and since the height of each graph has been made to equal 100 per cent for each item, the relative importance of the item in terms of total cost is indicated by the relative size of the graph.

In all cases, the dividing line between the gray and black areas on the graphs indicates minimum estimated savings, and the upper edge of the gray area maximum estimates. Black, therefore, indicates relatively "sure" savings and gray possible additional savings. Between these two extremes a broken line has been drawn to show estimated "probable" savings.

*Labor cost estimates vary widely above and below this figure. THE FORUM's estimate tallies with data compiled by the Purdue Housing Research Project for its more typical houses (ARCH. FORUM, Dec. 1936, p. 557 and 559, Jan. 1937, p. 75). Here labor cost averaged about 28 per cent of construction cost. On the basis of a 100:75 ratio of total cost to construction cost, this checks closely with THE FORUM's estimate of 20 per cent. By way of contrast, the records of Realtor Hugh Russell in Seattle last November showed labor as 14 per cent of his total; while Builder W. Burke Harmon places his estimate at 30 per cent.

But variations in the estimated importance of this item effect total savings only slightly. Even if the saving in the labor item amounts to as much as 25 per cent, total savings will go up or down only 2½ per cent if labor's 20 per cent be increased to 30 or decreased to 10 per cent of the total.

1. LAND AND DEVELOPMENT

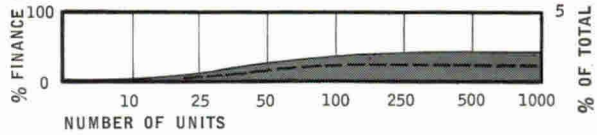


Proponents of quantity house production base many of their arguments on the considerable savings in land and land improvement costs effected by large scale methods. Regarding ordinary methods of land subdivision as exceedingly wasteful, this group of experts point to the advantages of acquiring large parcels of undeveloped land at low prices; of providing streets, sewers, and services at minimum expense through more efficient planning techniques; and to the considerable savings which result when land and improvements need not lie idle for an extended period awaiting the construction of houses, as is often the case with small scale development.

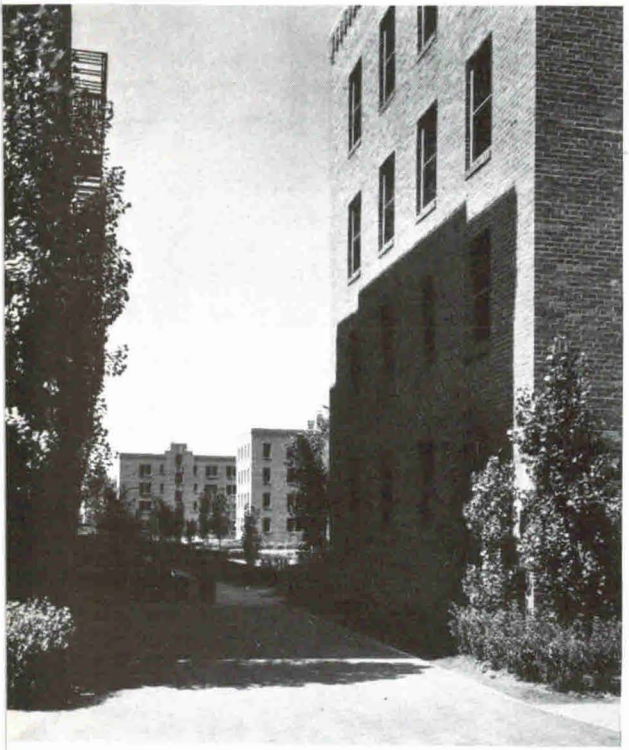
Another substantial school of opinion holds that the curve representing these savings should show quite different general characteristics. This group contends that savings in land and development costs resulting from increased project-size reach a maximum at about 100 units and thereafter *decline* as the size of the project is increased, or at least level off. This contention is based on the argument that somewhere between 100 and 200 units the project-size becomes unwieldy, and the increased carrying charges and the necessity for directly providing more complete community facilities not only prevent further savings but tend also to reduce those previously made. Still another argument in support of this view is that land often may be more advantageously purchased in medium-sized parcels, because of the opportunity this affords to acquire distressed property at bargain prices.

Actual savings in land and development, will, of course, vary widely from project to project. As a basis for an estimate of probable typical overall savings due to quantity house production, however, it seems reasonable on the basis of the above arguments to assume that they will amount to about 20 per cent at about 100 houses—or 3 per cent of total cost—and thereafter show no marked rise as the size of the project is increased.

2. FINANCE



The only portion of financing expense which may properly be charged against housing cost is the various fees, commissions, etc., which are paid in connection with obtaining the mortgage, and the cost of carrying the construction loan. The first of these are usually charged as a percentage of the face of the loan, totaling 3½ to 4½ per cent of the loan and therefore about 2 to 3 per cent of total cost. The individual home builder pays a stiff rate for his construction money, bringing this total to about 5 per cent. In financing large scale projects, fees are generally reduced a flat 1 per cent of mortgage valuation, and this is the surest and most substantial saving in this item which results from quantity house production. Savings in the cost of the construction loan and other reductions may amount to an additional 1 to 1½ per cent bringing the

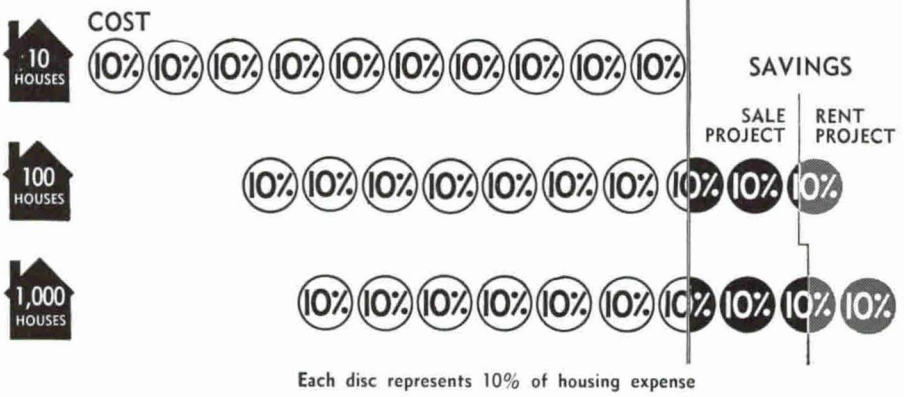


Wurts Bros.

With earnings from two Negro housing projects built in New York in 1906 and 1912, Phipps Houses Inc., in 1931 erected the first unit of PHIPPS GARDEN APARTMENTS on a double-sized block adjoining Sunnyside (page 112) in Long Island City. Designed by Architect Clarence S. Stein, this 344 unit project cost $1,904,000, or $1,575 per room. The set-up comprises 8 six-story elevator apartments and 14 four-story walk-ups, with buildings occupying 43 per cent of the land. The remainder of the plot has been developed into a large, landscaped garden court. With rents averaging $16 per room per month in the elevator units and $14 in the walk-ups, PHIPPS GARDEN APARTMENTS have maintained an occupancy average of 95 per cent since their inception. Even during its depression nadir the project earned a tidy 4 per cent, substantiating the "never-in-the-red" claim of Phipps Houses Inc.

Ref: Arch. Forum, Feb. 1932, p. 111, 183; April 1933, p. 269; Jan. 1935, p. 101.

PROBABLE SAVINGS IN HOUSING EXPENSE
RESULTING FROM LARGE SCALE HOUSING



This analysis indicates, broadly speaking, the following probable savings, also shown in the chart above and the table below: ¶ For ten houses built at one time, as compared with one house built by itself, no reduction in cost. ¶ For 50 to 250 houses (in the chart "100"), a cost saving of about 18 per cent. ¶ For 500 to 1,000 houses, a saving of about 20 per cent. ¶ Maximum and minimum estimates for the same categories total for 100 houses, minimum—10 per cent, maximum—27 per cent; for 1,000 houses, minimum—6 per cent (*less* than for 100), and maximum—35 per cent. Totals in tabular form are given below.

Approximate size of project:	Savings (per cent of total cost): Minimum	Probable	Maximum
10 dwelling units	0%	0%	0%
100 dwelling units	10%	18%	27%
1,000 dwelling units	6%	20%	35%

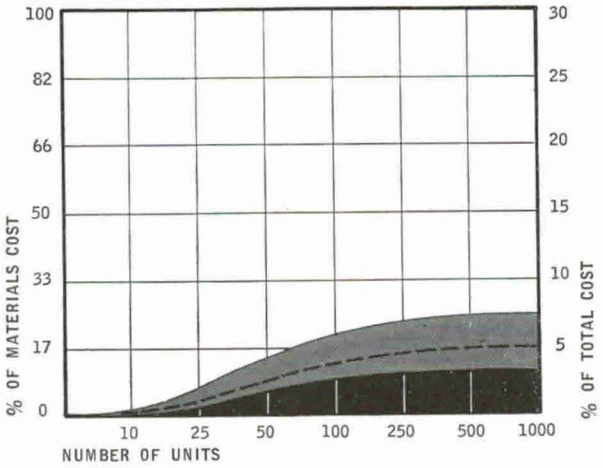
ADDITIONAL SAVINGS—RENTAL PROJECTS

Large scale rental projects are able to effect further savings in running expenses, such as finance carrying charges, and costs of management and operation, with increasing size. Since overall housing expense is generally thought to be directly proportional to total cost, savings in cost may be translated directly into savings in housing expense (a reduction in *cost* of 10 per cent equals a 10 per cent reduction in running expense). Additional savings in housing expense resulting from larger size in rental projects probably run about 8 per cent for the 100 house project and about 15 per cent for the 1,000 house size. Adding these savings in running *expense* to the estimated savings in *cost* given above for the same categories brings the total probable savings in overall housing expense for rental projects to about 26 per cent for 100 houses and 35 per cent for 1,000. Maximum and minimum estimates for the same categories total for 100 houses, minimum—18 per cent, maximum—35 per cent; for 1,000 houses, minimum—17 per cent (still slightly less than for 100), and maximum—50. Totals in tabular form:

Approximate size of project:	Savings (per cent of running expense): Minimum	Probable	Maximum
10 dwelling units	0%	0%	0%
100 dwelling units	18%	26%	35%
1,000 dwelling units	17%	35%	50%

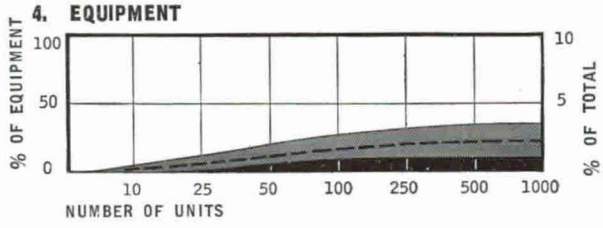
total to about 2½ per cent, or 2 per cent of total cost. Since it may also be argued that these savings can be altogether wiped out by exceptional expenses in connection with obtaining large loans, no portion of this saving has been indicated as "sure."

3. MATERIALS



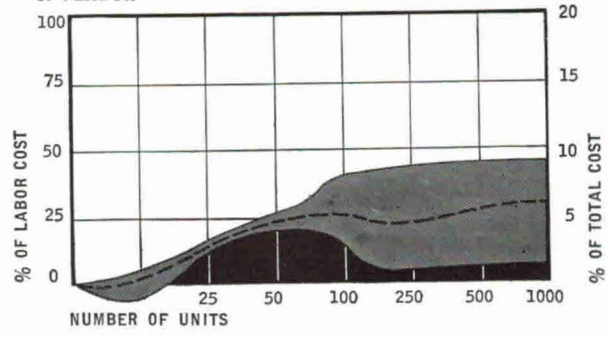
Materials constitute a large part of total housing cost, and therefore offer a substantial field for savings. Since, however, most building materials are already manufactured on a mass production basis, regardless of the size of the development in which they are ultimately used, any economies effected by large scale development methods must result from more efficient distribution.

4. EQUIPMENT



Discounts on equipment vary considerably according to the type of equipment purchased (they are generally higher, for example, on ranges than refrigerators) and the locality in which the purchase is made. Above 100 units a discount of 10 per cent has been indicated as sure, 20 per cent as the probable average, and 35 per cent as the maximum for 1,000 units; resulting respectively in savings of 1, 2, and 3½ per cent of total cost.

5. LABOR



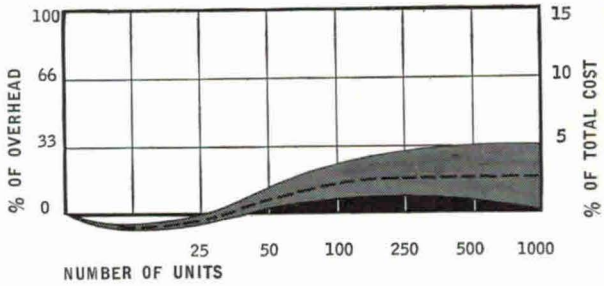
Opinion as to the savings of large scale housing methods varies more widely in respect the labor item than to any other. This uncertainty as to the effect of large scale building on labor cost is mostly a matter of rate. Nobody denies that as project size goes up the efficiency of labor under ideal conditions and expressed in terms of labor-time goes sharply upward with it; it is the question of what will happen to labor's wage, and what will be the effect of trade union regulations restricting technological efficiency which leads to the wide divergence of opinion.

Thus one group argues that as soon as project-size is increased to a certain point—variously estimated at from 50 to 500 units—the development becomes a "target" for trade-union organization; and the resulting sharp increase in wage-rates, coupled with the necessity to observe trade-union rules regarding what parts of the work must be done on the job plus the possibility of costly jurisdictional disputes between the various crafts is likely to destroy almost altogether the savings in labor cost previously effected.

The opposite side of this argument is that far from being a target for onerous trade-union practices, the large scale development company is in a position to deal more efficiently—and at the same time more equitably—with labor than the small scale operator. This point hinges upon the ability of the large scale builder to guarantee, for the first time, a determinable amount of employment per year; and thus to offer, in exchange for a reduction in hourly rates, an increased annual wage.

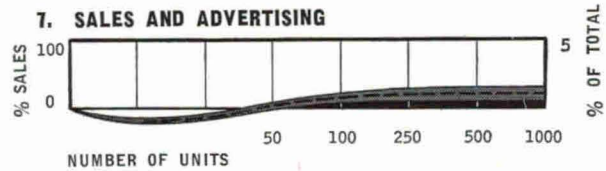
Any estimate of the "probable" savings for this item is therefore open to question, depending as it largely must on one or the other of these two hypotheses. Since the likelihood of one or the other contingency prevailing depends mostly upon conditions in the locality in which a given operation takes place, it is sufficient for the purpose of a general overall estimate to assume as a basis an average condition midway between the two extremes, with the proviso that the resulting figures be viewed merely as a general estimate subject to modification according to local conditions.

6. OVERHEAD AND INCIDENTALS



One of the principal advantages of mass production in any business is reduced overhead. And since overhead and incidentals are a large part of total housing cost, any sizable saving in these items results in a saving of considerable magnitude in terms of overall cost. As compared with the cost of these items for a single house operation, where overhead seldom appears as an item fully accounted for, such costs increase somewhat between 1 and about 30 units, representing at first not a saving but a loss. Above this point, however, the amount of bookkeeping, supervision, etc., required does not rise in proportion to the number of units built, and this results in a constant increase in savings as the scale of operations is increased. On the other hand it is sometimes contended that these costs tend to increase once development size reaches a certain point, usually put at 100 to 200 units, eventually wiping out the savings previously made.

7. SALES AND ADVERTISING



As in the case of overhead, sales expense is not generally figured as a separate item on the single house project. As

Samuel H. Gottscho

A testimony to success is this fifth, 117 unit addition to CELTIC PARK in Queens, Long Island, designed by George W. Springsteen, and completed last year by City and Suburban Homes Co. Known as "America's largest undertaking in the field of limited-dividend housing," veteran City and Suburban now owns and operates 3,916 dwelling units representing an investment of $10,500,000. Since its first building venture in 1898, this New York company has managed to hang up the following 40-year record: average return on investment, 4.65 per cent; management costs below 3 per cent; a vacancy average of but 3.39 per cent; average rent per room per month $6.85. City and Suburban's latest report indicates a surplus of $1,235,000. Plans are now afoot for 3 more units for 350 more families.

Ref: Arch. Forum, *Jan. 1935, p. 98; Aug. 1936, p. 159.*

CONCLUSIONS

These are careful estimates, based on informed opinion. The figures given as "probable" are conservative. They indicate first of all that the savings resulting from quantity house production are sizable and sure. Both the figure of 18 per cent saving in cost for the 100-house-and-up project and the estimated saving in housing expense of 26 per cent for the rental project of the same size have probably been exceeded in actual practice and will probably be exceeded again, and each is of sufficient magnitude to play an important part in breaking the log jam which is holding up house production. Secondly, these figures fix fairly accurately the point in the scale of number of houses produced where the law of diminishing returns currently begins to operate: for housing *cost*, between one- and two-hundred units; for running expense (rental projects), nearer one thousand. This, if true, indicates that rental projects should be large in scale; apparently the savings resulting from operations of more than a few hundred houses are realizable only when rental, rather than sale, is the method of distribution—and such savings are more a function of final project size than of the number of units built at one time.

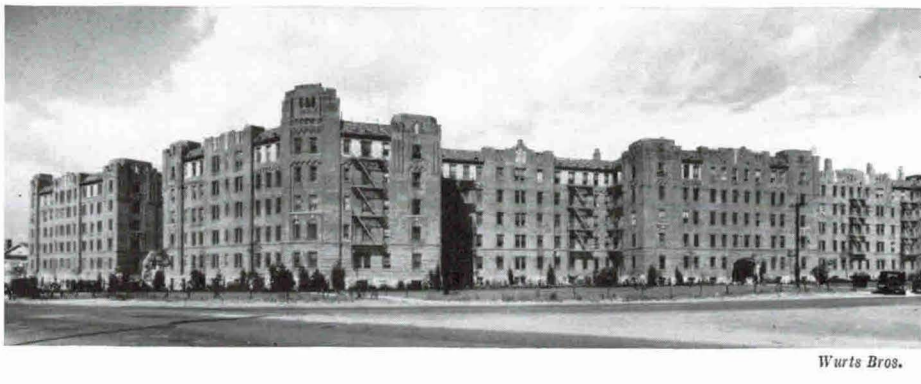
PRESENT PRACTICE VERIFIED

These conclusions are borne out in an interesting way by what has been the practice in most large scale housing developments. Generally speaking, such developments have been built in units of from one- to two-hundred houses at a time, but have usually grown much larger through the subsequent addition of one or more units of about the same size. Thus maximum cost savings have been realized through the construction of the optimum number of units (100-200), and maximum savings in running expense ultimately gained by bringing the total size of the project up to the optimum operating size (500-1,000 units).

An important advantage of this method of procedure is that it permits the developer gradually to feel out his market. The experience gained in disposing of the first 150 units serves as a valuable guide in determining the size and price of the accommodations to be offered in the second operation. And as the project approaches more nearly the point of saturating the local market—particularly in small and medium-sized communities—this experience becomes increasingly valuable and necessary. Large scale developers have in the past apparently correctly concluded that more than any other factor the market fixes the point at which the increased savings of larger operations approach zero.

Outstanding among projects built under New York's State Housing Law is cooperatively owned AMALGAMATED HOUSING in Bronx, N. Y. Sponsored by the Amalgamated Clothing Workers of America and designed by Springsteen & Goldhammer, 631 apartment units were built in four groups between 1927 and 1932, at a total cost of $4,000,000. With the exception of a loss of but $2,000 in 1935, Amalgamated Housing has operated consistently at a profit. In 1933, 1936 and 1937 this surplus was sufficient to allow tenant-owners a rebate of one-half month's rent; in 1932 they got a full month's rent free. Stock amounting to $500 is the cost per room to cooperators, though the down payment need be no more than $100. Average monthly rent per room is $10.50, current occupancy better than 98 per cent.

Ref: Arch. Forum, *March 1932, p. 233; Jan. 1935, p. 102.*



Wurts Bros.

one developer puts it, "The builder can always get his brother-in-law or someone to watch the house on Sundays for nothing, and the rest of the time he's on the job himself, so a single house job generally sells itself." A builder with eight or ten units to dispose of usually puts the job of selling them in the hands of a broker, who charges a flat 5 per cent. Thus sales and advertising probably cost more for ten houses than for one, and the savings of quantity production do not become effective until the size of the project increases to about 50 units, increasing thereafter to from 5 to 20 per cent at 100 houses and 10 to 30 per cent at 1,000.

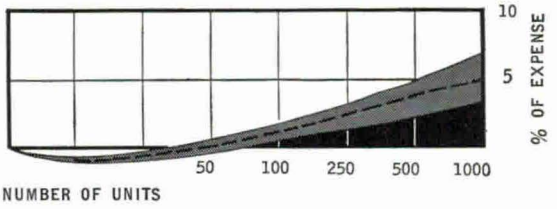
SAVINGS IN RUNNING EXPENSE

Since overall housing expense (rent) is usually thought to be directly proportional to housing cost (the figure generally used is rent per month equals 1 per cent of cost), savings in housing cost in terms of per cent may be translated directly into savings in running expense. Thus a saving of 20 per cent in *cost* would mean an equal saving in housing expense (rent) if passed along to the consumer intact. All of the figures given above as per cent of housing cost may thus equally be considered as possible savings in housing *expense* rent of the same magnitude.

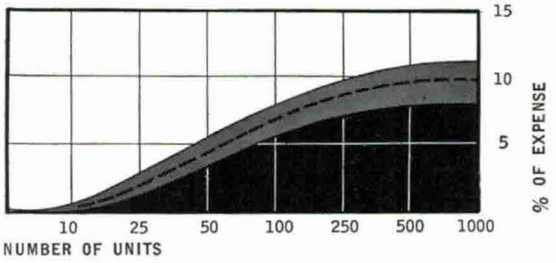
But in addition to savings in housing expense resulting from reduced first cost, further direct savings in running expense are feasible in rental projects as the size of the project is increased. Such savings result mostly from reduced financial carrying charges and lower operating and management expense. The resulting economies are generally expressed in terms of per cent of housing expense or rent. For rental projects, these savings may be added directly to the cost savings previously estimated.

The cost of management and operation falls off sharply in rental projects as project-size goes up. It takes an office only about twice as large to manage a 500 house project as one of 100 units, and purchase of fuel and other supplies may be made at considerable savings as the size of purchases is increased.

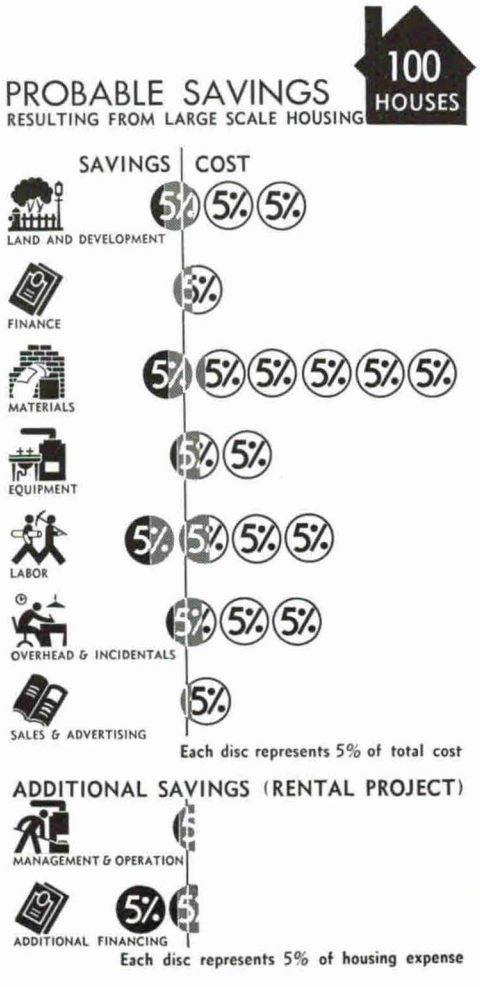
8. MANAGEMENT AND OPERATION

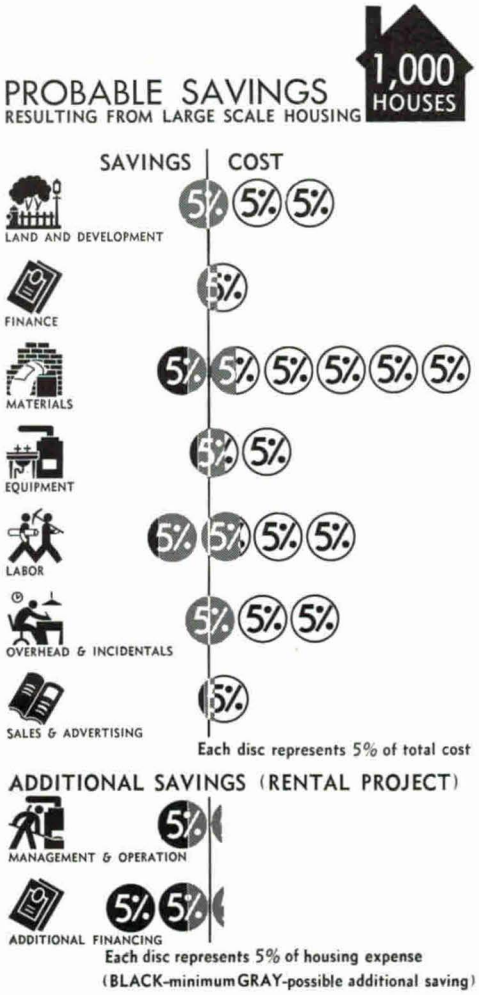


9. ADDITIONAL FINANCE



Large scale rental projects are usually able to obtain mortgage money for about 1 per cent less than the typical single house operation (4½ instead of 5½ per cent). This results in a saving in terms of rent of about 8 per cent, effective between 100 and 200 units; 4 per cent money, a possibility at 1,000 units, would mean a 12 per cent saving.





THE MARKET

The commercial success of the large scale housing project obviously depends on the existence of a market large enough to support it. That such a market exists in the national aggregate is a commonplace which the President made into a headline with his "One-third of the nation ill-housed . . ." But for the builder and his mortgagee a definition of finer precision is required: they want to know at what price level, where, and when to build.

The market for new homes consists of people living in old homes. Because most men hesitate to move out from under a mortgage, it consists largely of people who rent their homes. And because it is not presently feasible to build profitably for less, it consists also of people who pay more than $30 a month in over-all* disbursements for their homes. To answer the builder's first question, to determine the price class in which to build, we must examine the housing requirements of this group by price classes.

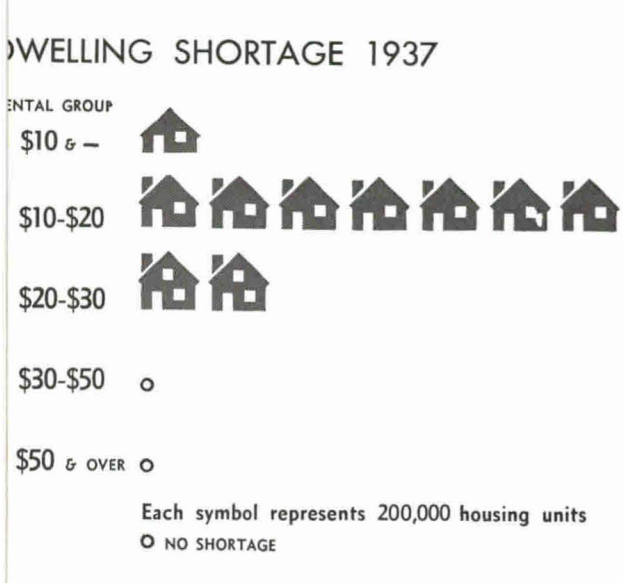
THE NEED

Let us first dissect these requirements in the hypothetical community of Suburbia. In 1930 it had 100,000 families (Census). In 1937 this had grown to 115,000 (Census annual estimate). In the same period 1,500 new dwelling units were built (Department of Labor); and 1,600 units were removed from the market by fire, demolition, condemnation (local records). Finally, in 1930 there was a vacancy of 4 per cent (Census). Thus on the basis of these public records, the housing accommodations of Suburbia as of the end of 1937 might be expressed thus: 100,000 (families in 1930) plus 4,000 (vacancies in 1930) plus 1,500 (new construction since 1930) minus 1,600 (loss by fire, etc.) equals 103,900 dwelling units.

Meanwhile the population had increased from 100,000 to 115,000 families, thereby producing a "shortage" of 8,100 units. This statement of the "shortage" in Suburbia is a relative one: there must have existed the same sort of "shortage" in 1930 to which this one is simply supplementary. Suburbia's "shortage" of 8,100 units is not evenly distributed throughout all income groups. On the one hand, for instance, there are a greater number of families in the group making over-all monthly payments under $50; while on the other, most of the building which has gone on in the last seven years has produced homes with an over-all cost of over $50 a month. In point of fact, by referring again to the 1930 Census and then to the Real Property Inventories which WPA made in 1935 we can discover that in the over-$50 group there is a surplus of accommodations; that in the $30-to-$50 group there is an even balance; and that in the under-$30 group there is a heavy "shortage."

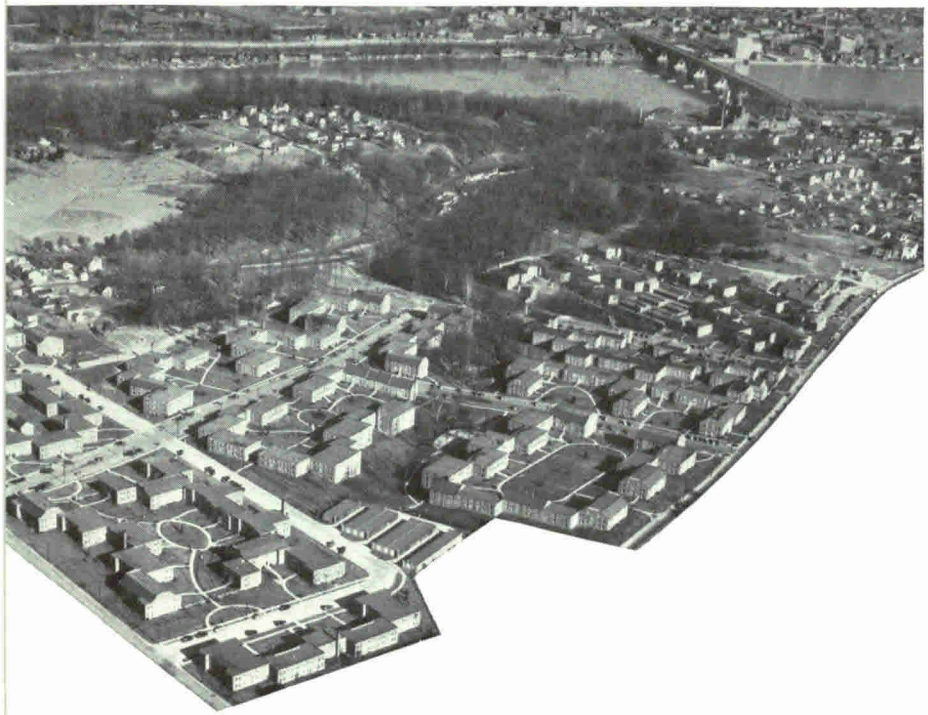
The creation of this "shortage" has been greatly accelerated by the decrease in the national income which resulted from the depression. In 1930 32.9 per cent of the people paid more than $50 a month for their homes. By 1937 this figure had shrunk to a mere 9.8 per cent; the remaining 23.1 per cent had slipped down into the under-$50 class.

The method here outlined for determining the "shortage" in hypothetical Suburbia is the skeleton of one actually used in a survey of housing needs** made by the National Housing Committee which covered the whole of the U.S. In computing their "shortage," however, the Committee was forced by lack of adequate statistics to use as their base unit the nine standard



*The term "over-all cost" is used throughout to mean: 1) in rental quarters, the rent plus the cost of heat where this is not furnished; 2) in owned quarters, the monthly mortgage payment plus the cost of heat, taxes, insurance, and interest on money invested.

**_The Housing Market_, National Housing Committee, Washington, D. C.



$17,500,000 in rental projects is the extent to date of FHA's limited-dividend housing program. Largest and oldest of its projects is COLONIAL VILLAGE and EXTENSIONS, completed last year in Arlington, Va., near Washington, under the sponsorship of Gustave Ring and designed by Harvey Warwick. This **$3,894,900** development, which accommodates **974** families in its neat, two-story brick houses, placed all **3** of its **4½** per cent mortgages with the New York Life Insurance Co., for an amortization period of **20** years. Average rent per room per month, **$10.50**; occupancy, **100** per cent; current waiting list, **200** families.

Ref: Arch. Forum, *Aug. 1935, p. 137; Aug. 1936, p. 152.*

regional divisions of the country instead of individual communities. The results of their study are broadly indicated by the chart on the preceding page.

THE DEMAND

This chart shows the housing picture as of 1937, a market already built and buried. In the same position on page 122 is a similar chart more relevant to the determination of the profitable price level for new building: it shows the "demand" which will develop in the U.S. over the next two years. Notice that it does *not* take into account the shortage already extant; the shortages shown in the first chart as of 1937 might logically be added to the demand predicted for 1938-39. The second chart was derived from the same sources as the first. To determine the demand for new homes over the next two years, the factors of population growth was assumed to increase at the same rate that it had from 1935 to 1937; this net increase in population was distributed throughout the various rental groups according to the distribution of 1937; loss by fire, demolition, etc., was calculated as a steady factor. The number of new units which would be built was assumed to be the average of construction from 1930 to 1937.

These new units were distributed throughout the rental levels according to the average distribution in this same period, represent what price levels builders *would* build their new units in *if* they followed the pattern of the last seven years. Highlights: they would build more over-$50 houses than the market could absorb; they would build only about 40,000 of the 114,000 houses required to meet annual demand in the $30-to-$50 class during 1938-39.

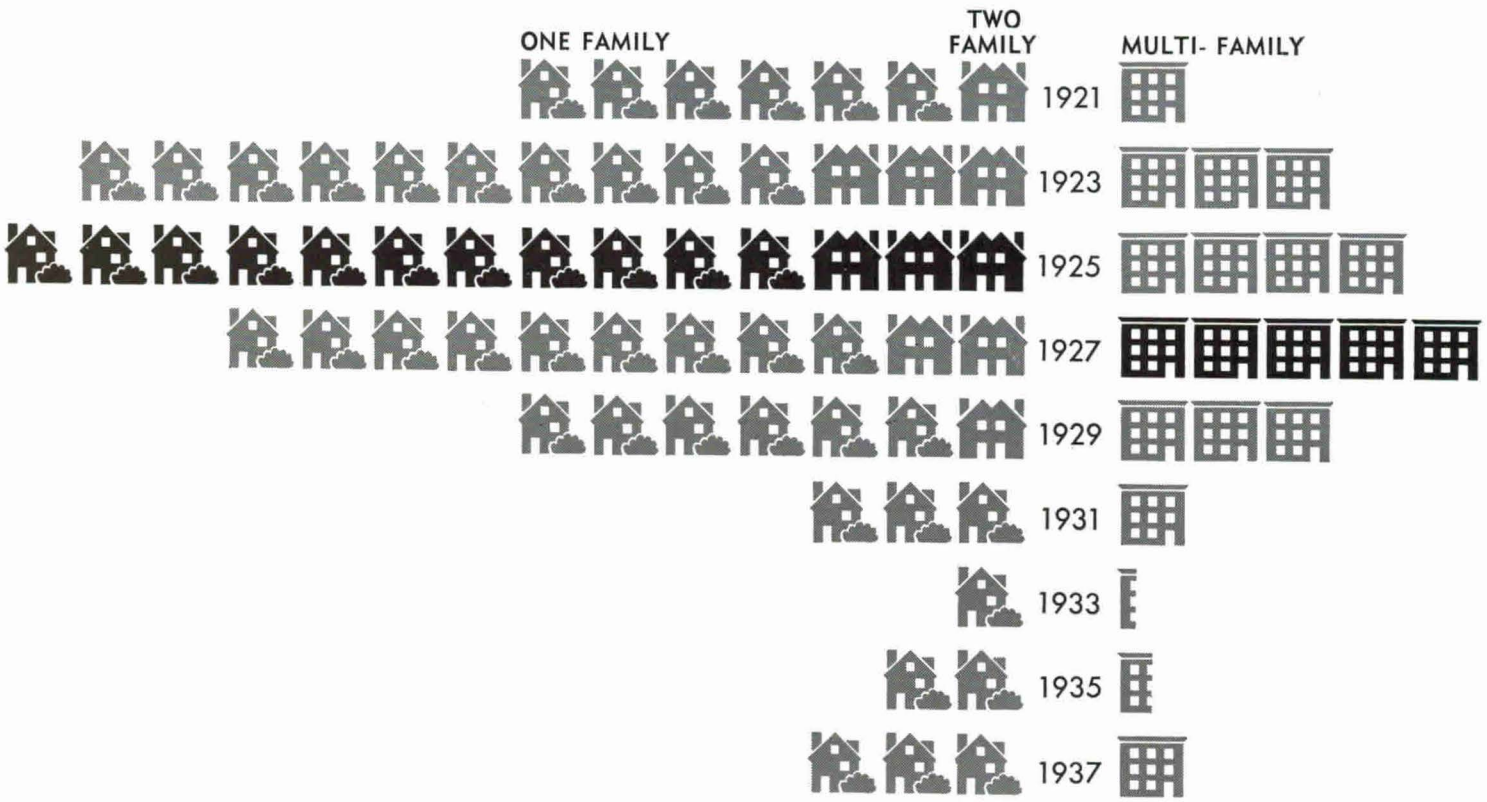
Parenthetically, it should be noted that these figures have not been put forward as absolutes. The arbitrary demarcations of the rental levels, for instance, take no account of the fact that the standard of living varies widely from one community to the next. Nor do the totals for the demands for new housing by price class have any precise value; again, they serve merely to demonstrate the broad fact that the general price level offering the widest market has been receiving a minimum of attention.

This is the record of BAYSIDE HILLS, L. I. (below): **435** houses built within the last two years, **432** sold, **350** under way or planned. Builders Gross-Morton (permitted by the NEW YORK TIMES to advertise as "America's Largest Home Builders") have erected **5,500** houses since **1920**. Their **1928-'29** season was an all-time high: **1,126** single-family houses, this number amounting to **10** per cent of the total number built in New York State that year. As large-scale builders, the Brothers Gross and Lawrence Morton have as their byword continuous, rather than simultaneous, operations. Their estimate of the savings effected by large scale building: **15-20** per cent. Currently the Gross Morton Co. is hard at work on **153** new houses, some on their JAMAICA ESTATES property and some at BAYSIDE HILLS. Plans for **1938** call for some **300** more.

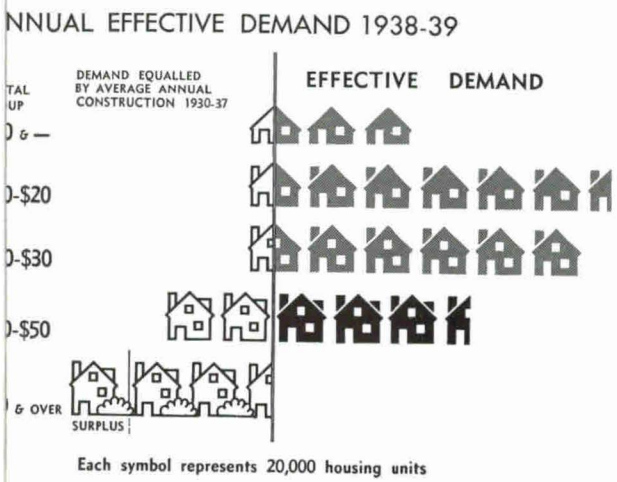
Ref: Arch. Forum, *Feb. 1936, p. 37.*

Fairchild Aerial Surveys

NUMBER OF DWELLING UNITS BUILT (BY TYPE OF DWELLING)



Each symbol represents 50,000 dwellings



Each symbol represents 20,000 housing units

The nub of these two charts is, of course, the fact that there will be a minimum annual demand for 114,000 units in the $30-to-$50 class, only about one-third of which would be met if the builder stuck to his old ways. That is certainly the first market for the large scale builder to aim at.

Which brings us to a consideration of the meaning of a "shortage." Actually, the word is a misnomer. There cannot in fact exist a shortage of homes in the sense that people have no homes to live in, or even in the sense that there can be a shortage of meat after a drought. Statistically it means that there are less units of a given monthly over-all cost than there are families able to meet that cost. Factually, it means doubling up; it means interim remodeling of large units into more smaller ones; it means a steady pressure for the reduction of the monthly payments on vacant houses in the next higher group; and it means that some families will pay a disproportionate amount of their income for rent. Thus the term "shortage" might well be translated as "pressure," the pressure set up by these various factors which will make people especially eager and predisposed to move into new homes.

It is instructive to bring this $30-to-$50 income group into somewhat sharper focus. According to a survey made by the Department of Commerce*, the average family in 61 cities pays 23.7 per cent of its income for the over-all costs of its home. This means that the group which pays between $30 and $50 a month earns between $1,400 and $2,400 a year. It is in short a group composed of skilled workers, small tradespeople, and white collar employes; a group which, in communities large enough to sup-

*Financial Survey of Urban Housing

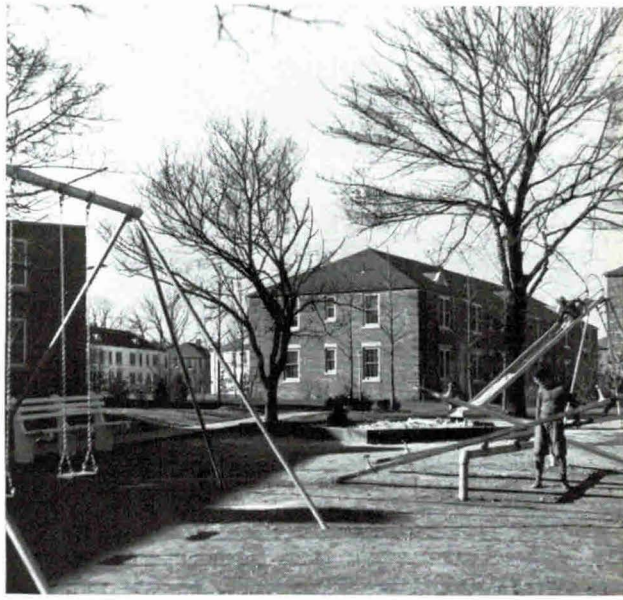
port large scale projects, generally rents its homes, and it is certainly a group which has to scratch to find enough money for the down payment on a house for sale. To build homes for sale for this income group might well prove a poor investment; but homes for rent could be filled without changing by one iota their social or their financial habits. These factors become peculiarly cogent in times of uncertainty such as obtain today: no man buys a home until he feels sure of his future.

CONCLUSIONS

The net of this entire line of reasoning is that the wise builder and his mortgagee will build their large scale project in the local version of the national $30-to-$50 bracket. And they will build homes to rent, not to sell.

And yet this conclusion will be strongly resisted, and for a curious reason: the market is not yet "ready" for large scale rental construction. This is a curious reason because it is quite without logic. It assumes that today's housing market has approximately the same general characteristics as the housing market of 12 to 14 years ago, when as a matter of fact its characteristics differ almost entirely. And it springs primarily from the established nature of the home building process. This process begins at the end of a depression when Builder Smith scrapes together enough capital to build five houses; from the profits he builds ten, then twenty, then 30 and eventually perhaps even 100 in successive, snowballing years. Thus he has created a housing boom, and thus made the home building market portentous enough to attract the kind of capital required to float a large scale project. This progression is clearly indicated by the large chart on the opposite page, which shows how the 1925 peak in single- and two-family dwelling construction antedated the 1927 peak in multi-family construction by two full years.

When the builder says the market is not "ready" for large scale projects what he really means is that it is not yet at that stage of activity which experience has taught him is required to attract large capital. His diagnosis has nothing whatever to do with the opportunities for large capital investments in the present market. In point of fact the housing market today is a great deal more advantageous for investment capital than it is likely to be again for a decade; and there is no good reason why a period of speculative building should invariably precede that of investment building like a squad of ward-heelers making way for the mayor.

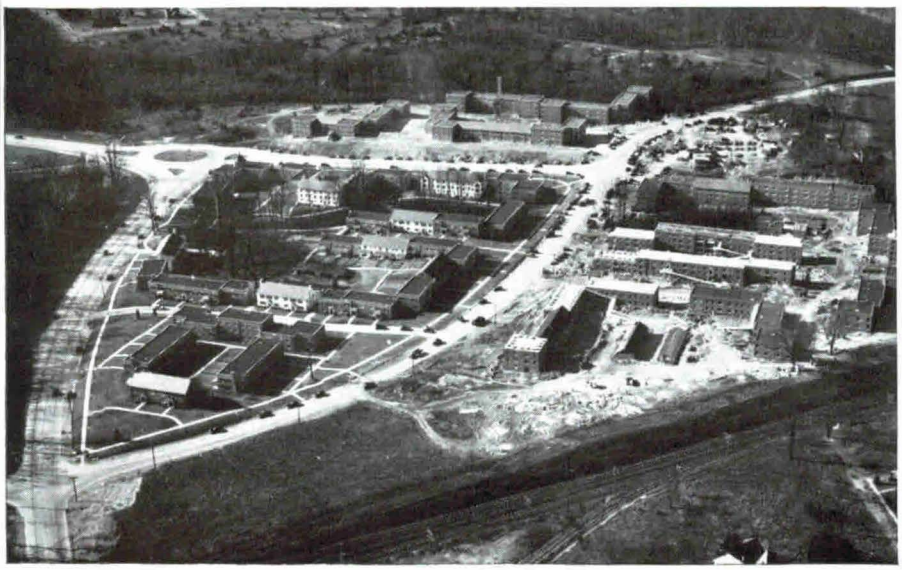


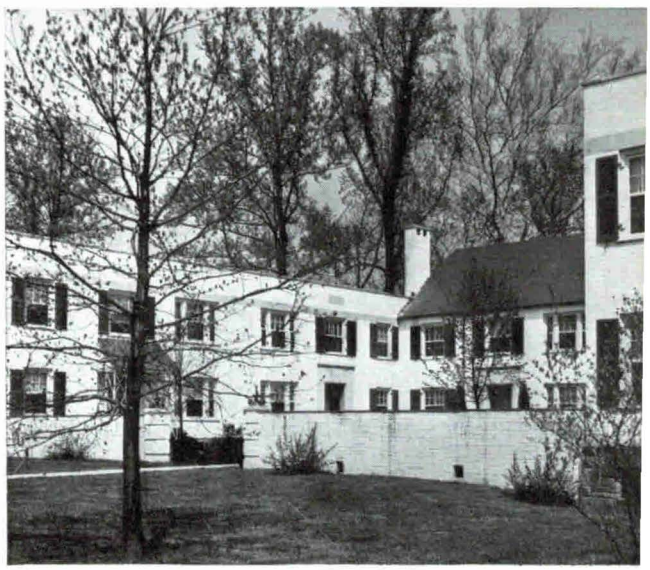
The late Allie Freed (see page 2) was the sponsor of FHA's BUCKINGHAM project, located, along with COLONIAL VILLAGE, in Arlington, Va. Built in two sections, the first consisting of 456 units, the second of 98, BUCKINGHAM COMMUNITY'S total cost was $2,596,720. Architects: the late Henry Wright, Allan F. Kamstra, and Albert Lueders. The first section, on which the Prudential Insurance Co. took a $1,670,000 mortgage, rents for an average $13.50 per room per month; the second, or smaller section, where Colonial Trust Co. acts as trustee for the holders of $300,000 in bonds, rents for $14.60. Currently, vacancies in Allie Freed's development are just what he would have wished: zero. Second largest of the FHA limited-dividend projects, the third in line is . . .

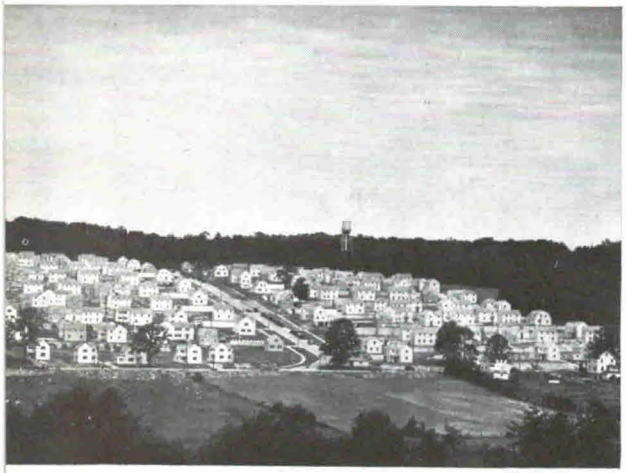
Ref: Arch. Record, *Jan. 1938, p. 69.*

FALKLAND (below). At a cost of $1,100,000, 178 dwelling units were completed last year by Falkland Properties Inc. at Silver Spring, Md. (just outside Washington). Sponsored by the Blair Estate, mortgaged by the Union Central Life Insurance Co., and designed by Louis Justement, FALKLAND consists mostly of 2-story brick houses in an exceptionally attractive setting. Within one year this project has proved so successful that work is now under way on a 301 unit addition. Average monthly rent per room: $14.50. There are no vacancies in the original group, and 21 applications are already on file for units in the extension.

Ref: Arch. Forum, *Jan. 1937, p. 79; Dec. 1937, p. 507.*



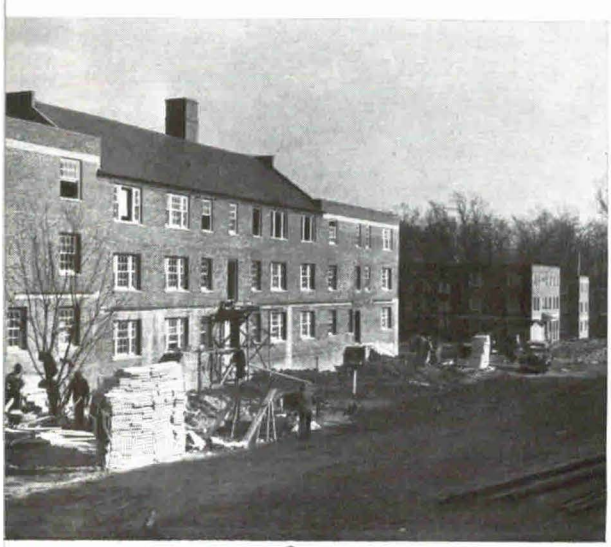




K. C. Glaubach

The Citizens of once-overcrowded MEADVILLE are primarily responsible for these 202 single-family, low-rent houses in Meadville, Pa. Back in 1935 the town faced an industrial housing shortage. Outcome: a stock subscription of $121,000 was raised as equity; the FHA agreed to insure the necessary $800,000 mortgage; the Pennsylvania State Workmen's Insurance Board stepped in to handle the financing. Designed by E. A. and E. S. Phillips, today the project is complete, 90 per cent occupied, and rents for $7.35 per room per month.
Ref: Arch. Forum, *March 1935, p. 262; Jan. 1937, p. 78.*

Currently under construction is BRENTWOOD (below), fourth and smallest of the FHA rental projects near Washington. Designed by Raymond C. Snow and scheduled for spring completion, this 426 unit development will rent at the monthly rate of $14 per room. To date 975 applications have been received and deposits accepted on 265 apartments.



The total demand for new housing to be created over the next 24 months according to the national housing committee survey, will approximate 1,250,000 units, distributed in all price classes. But about 1,000,000 units of this potential demand fall in the under-$30 price class which the housing industry has so far shown no ability to reach; and of the balance, that portion which falls in the over-$50 class will—even if building does not exceed its 1930-37 average—be somewhat more than satisfied. Thus if home building is to continue to expand, it must expand in the direction of the $30-to-$50 market. And the ability to reach this market has so far been consistently demonstrated only by the carefully planned, large scale rental project.

Two variations of this general theme are, however, suggested by the proposed amendments to the National Housing Act. Under the original Act it is necessary for the operative builder to organize a limited-dividend corporation if he wishes to obtain financing backed by FHA Mortgage Insurance in blocks larger than $16,000—the maximum loan for a 4-family structure costing all told about $20,000 with land. And the mortgage obtained in this way is indivisible: it cannot be broken up into smaller units in order to dispose of the property by sale. Thus to gain many of the advantages of large scale operation under the present Act, it is necessary for an operator to build about 100 to 200 houses at a time—since a project on a smaller scale would scarcely justify the expenses of corporate organization; and it is also necessary for him to retain title to the entire development intact. Which means that he must rent rather than sell his houses.

NEW POSSIBILITIES

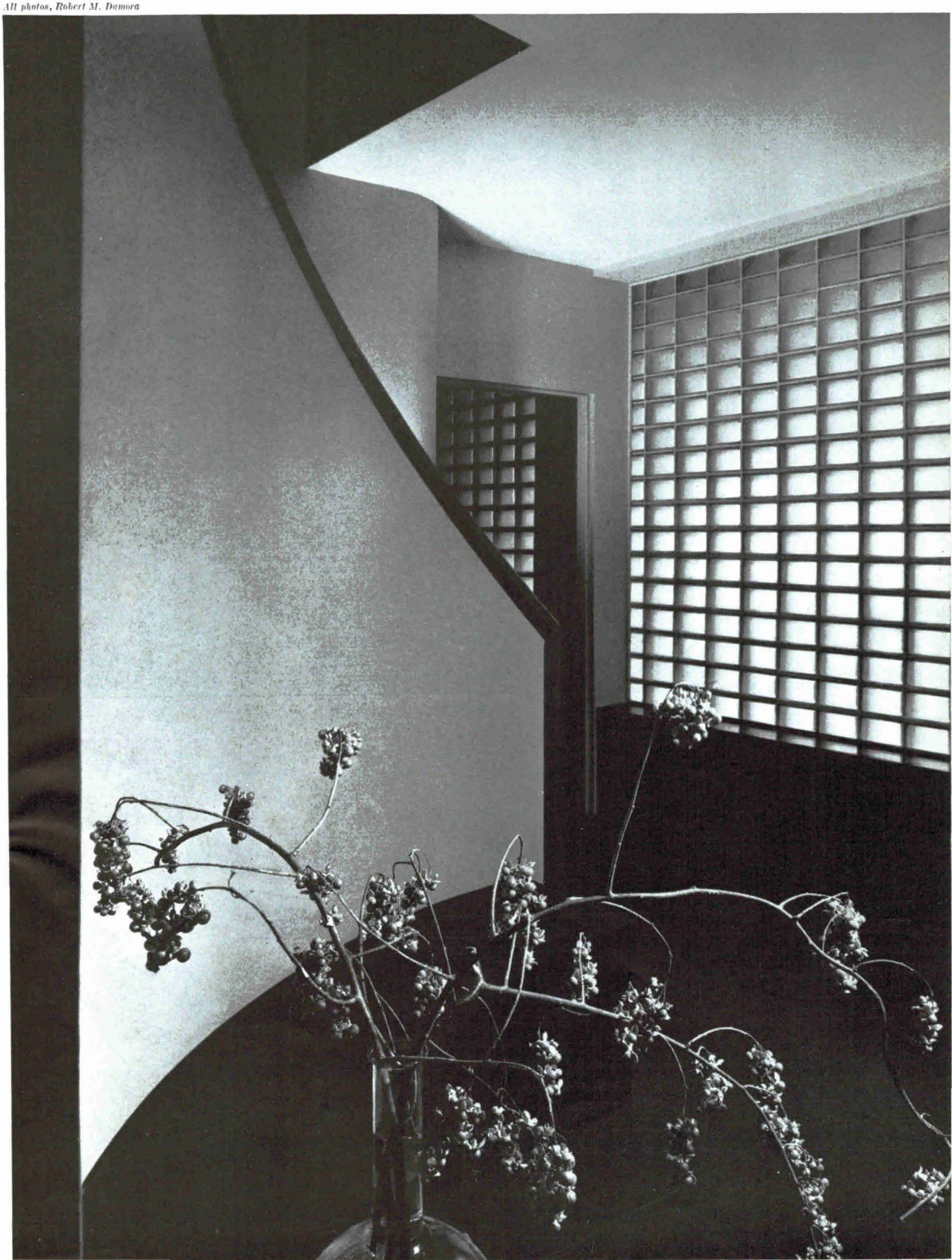
Under the provisions of the proposed amendments, neither of these restrictions would obtain any longer. The amendments provide that FHA Mortgage Insurance shall be available for loans on multi-family structures and groups of 10 or more single-family houses of from $16,000 to $250,000 (including construction loans), without the necessity of organizing limited-dividend corporations; and further provides that individual units may be released from such a "blanket" mortgage if sold, at which time they would be eligible for FHA Mortgage Insurance of the ordinary type.

It seems likely, therefore, that the type of large scale development which the proposed amendments should stimulate will differ somewhat from that built under Section 207. In the first place, the way will have been opened for the construction of 5-family-and-up rental structures in communities by no means large enough to support a full-fledged limited-dividend housing project. Such communities constitute a large part of the national aggregate, and the amount of new building of this type which the new terms of the Act should call forth will probably constitute a large part of the total. Secondly, there is considerable likelihood that some arrangement whereby tenants are enabled to contract for the ultimate purchase of their homes without the necessity for large down payments may grow out of the new blanket mortgage provision of the Act. There is nothing sacred which says that low cost rental projects must necessarily be landscaped row house developments; nor is there anything which says that today's tenants cannot become tomorrow's owners, particularly if the down-payment obstacle can be removed. The typical large scale project is simply the product of certain governing conditions, and it will probably respond to new and varying conditions in new and varying ways.

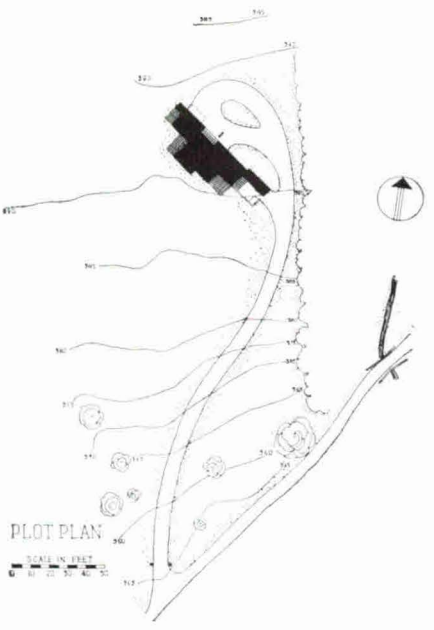
HOUSE FOR HENRY B. ROBERTSON, CENTERVILLE, DEL.

VICTORINE AND SAMUEL HOMSEY, ARCHITECTS

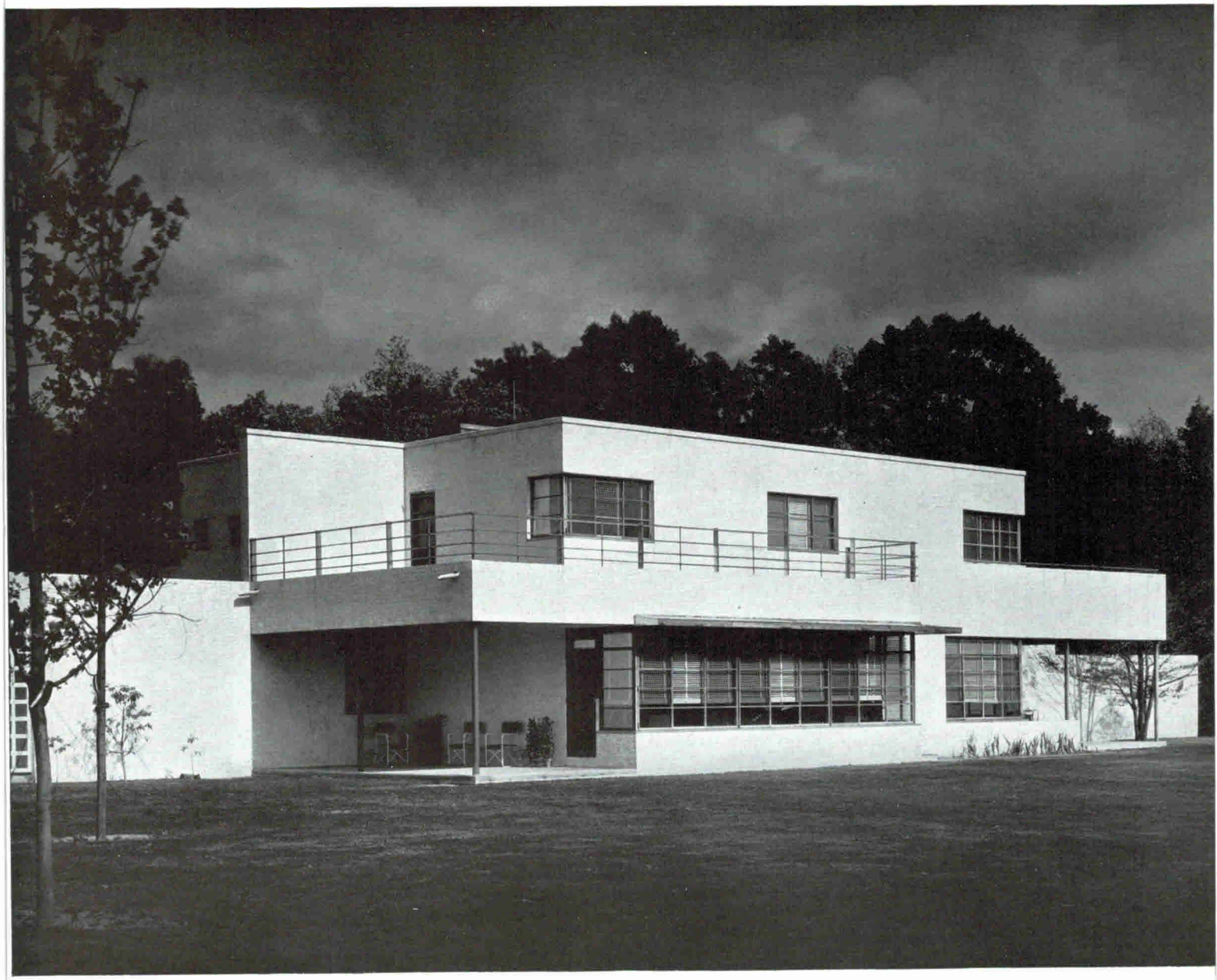
All photos, Robert M. Damora

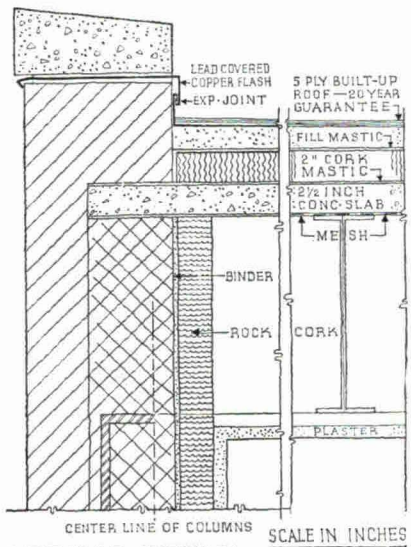


ROBERTSON RESIDENCE, CENTERVILLE, DEL.



THE note of restraint in recent modern houses, very pertinently illustrated by this residence in Delaware, is another instance of the growing assurance and maturity of today's approach to the problems of contemporary architecture. Set on a generous plot of moderately irregular ground, the house is an unassuming structure in steel and brick, entirely lacking in the shiny gadgetry and "modernistic" decoration used with such fatal effect in some of the earlier efforts. Fenestration has not been forced into any unnatural forms for facade effects, but clearly reflects the internal requirements. As indicated by the photographs and plans, ample provision has been made for outdoor living spaces, both open and covered, which have been placed to insure maximum

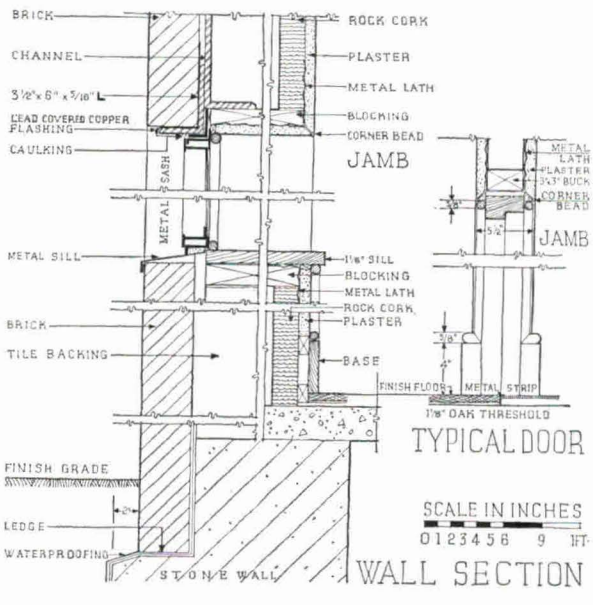


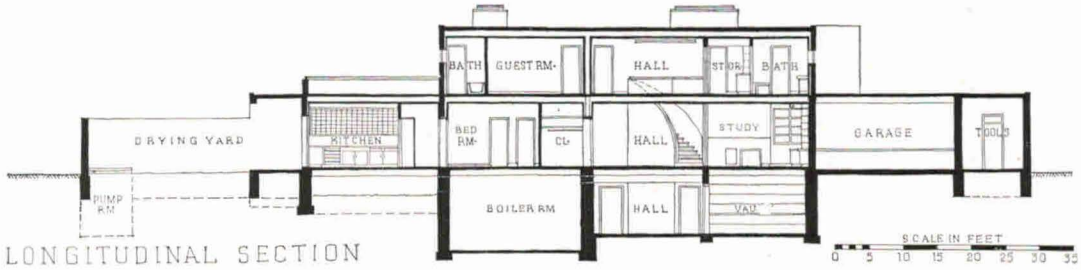


COPING DETAIL

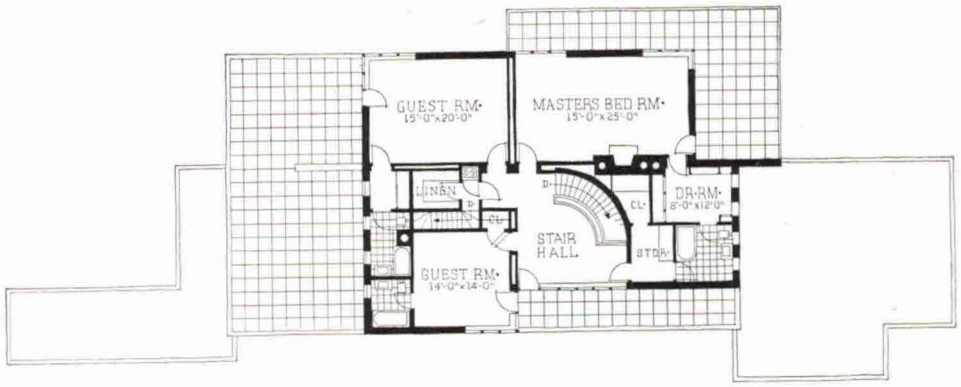
LIVING ROOM

usefulness. The interiors repeat the essentially simple forms of the exterior, and such furniture as is not built in has been carefully selected to conform with the general scheme. The radio has been properly treated as part of the fixed furnishings, thereby getting rid of the usual bulky and almost invariably unattractive cabinet. The result of this careful integration of design and decoration has been a series of restful and dignified interiors, of which the living room is typical. Decorative accents are confined to a few pieces, a treatment consistent with a scheme which relies to such an extent on the view seen through the large expanse of windows. The plan is well worth study as a compact, extremely convenient arrangement, with the needs

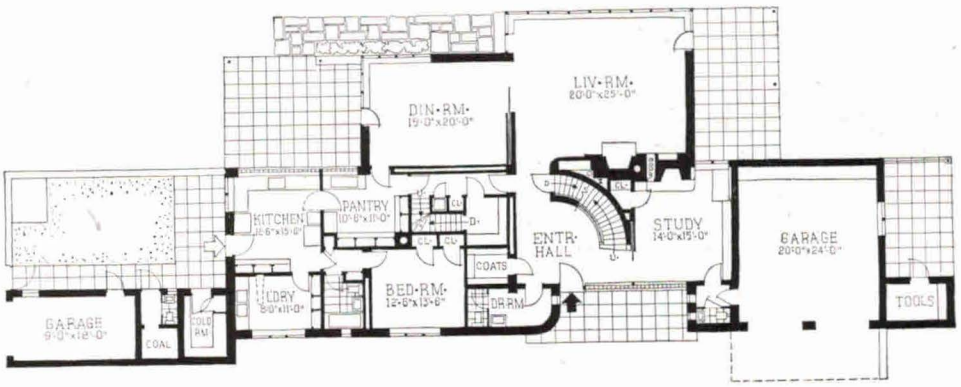




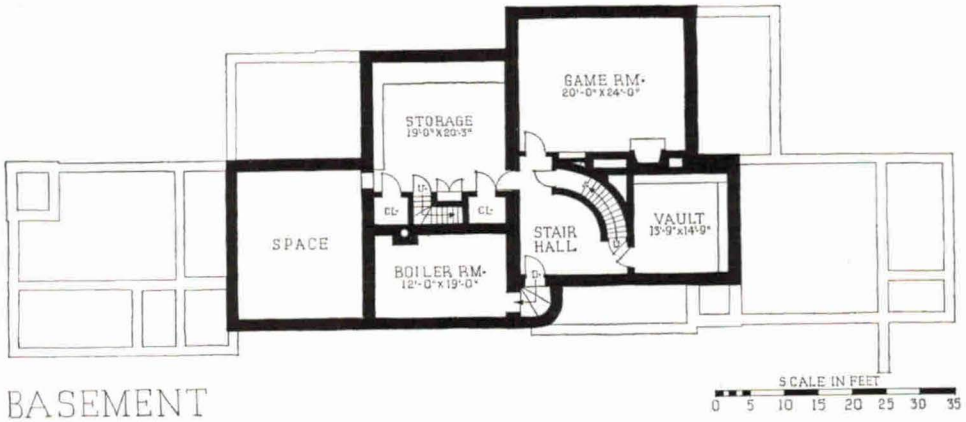
LONGITUDINAL SECTION



SECOND FLOOR

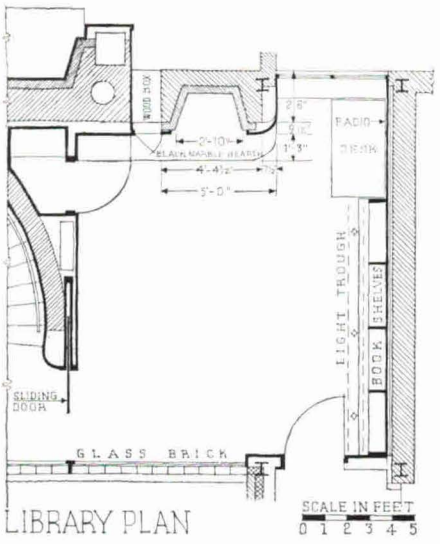


FIRST FLOOR



BASEMENT

LIBRARY



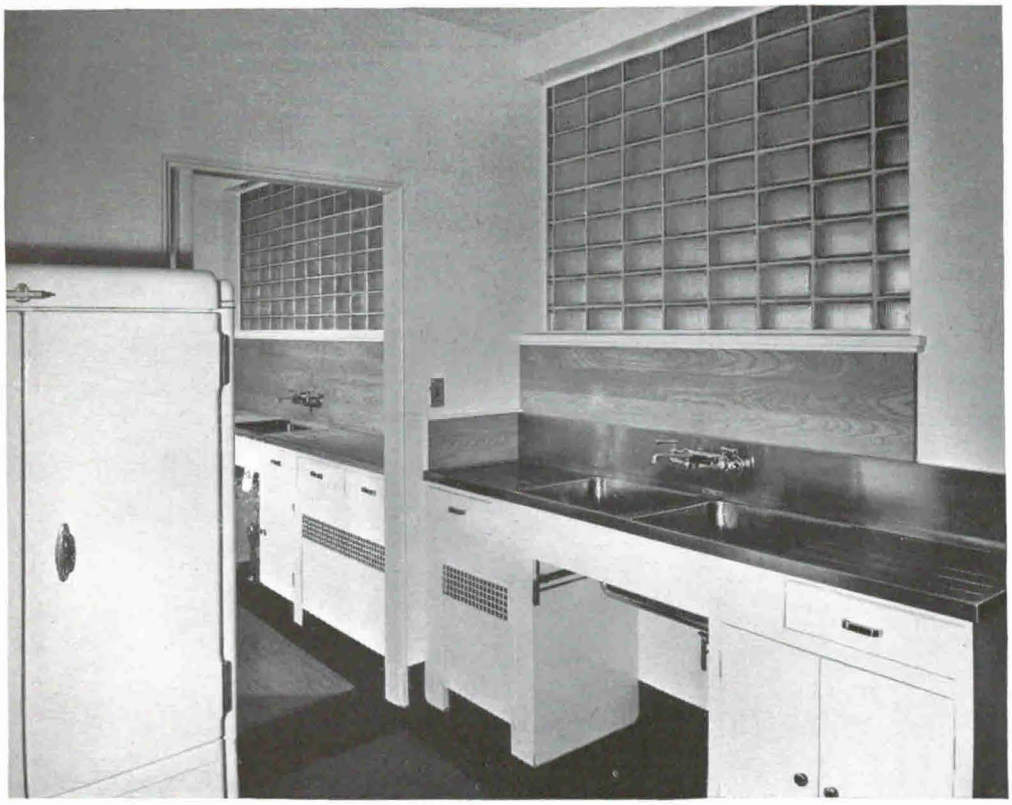
LIBRARY PLAN

of each room related to the whole in a very workmanlike manner. It is interesting to note that where privacy is required, as in the study and on the dining terrace, glass block has been employed, a very intelligent use of the material. The two other interiors on these pages further illustrate the treatment employed. The library is paneled in cherry, and built-in cabinets and desk provide storage and work space with the least possible sacrifice of floor area. A noteworthy feature of this room is the lighting trough in the ceiling which inconspicuously solves the generally ignored problem of bookshelf lighting.

STAIR DETAIL

ROBERTSON RESIDENCE

VICTORINE AND SAMUEL HOMSEY, ARCHITECTS



KITCHEN

TACY STOKES OF ELIZABETH EMER
ASSOCIATED DECORATOR

RUPERT & FULENWIDER, INC.
GENERAL CONTRACTORS

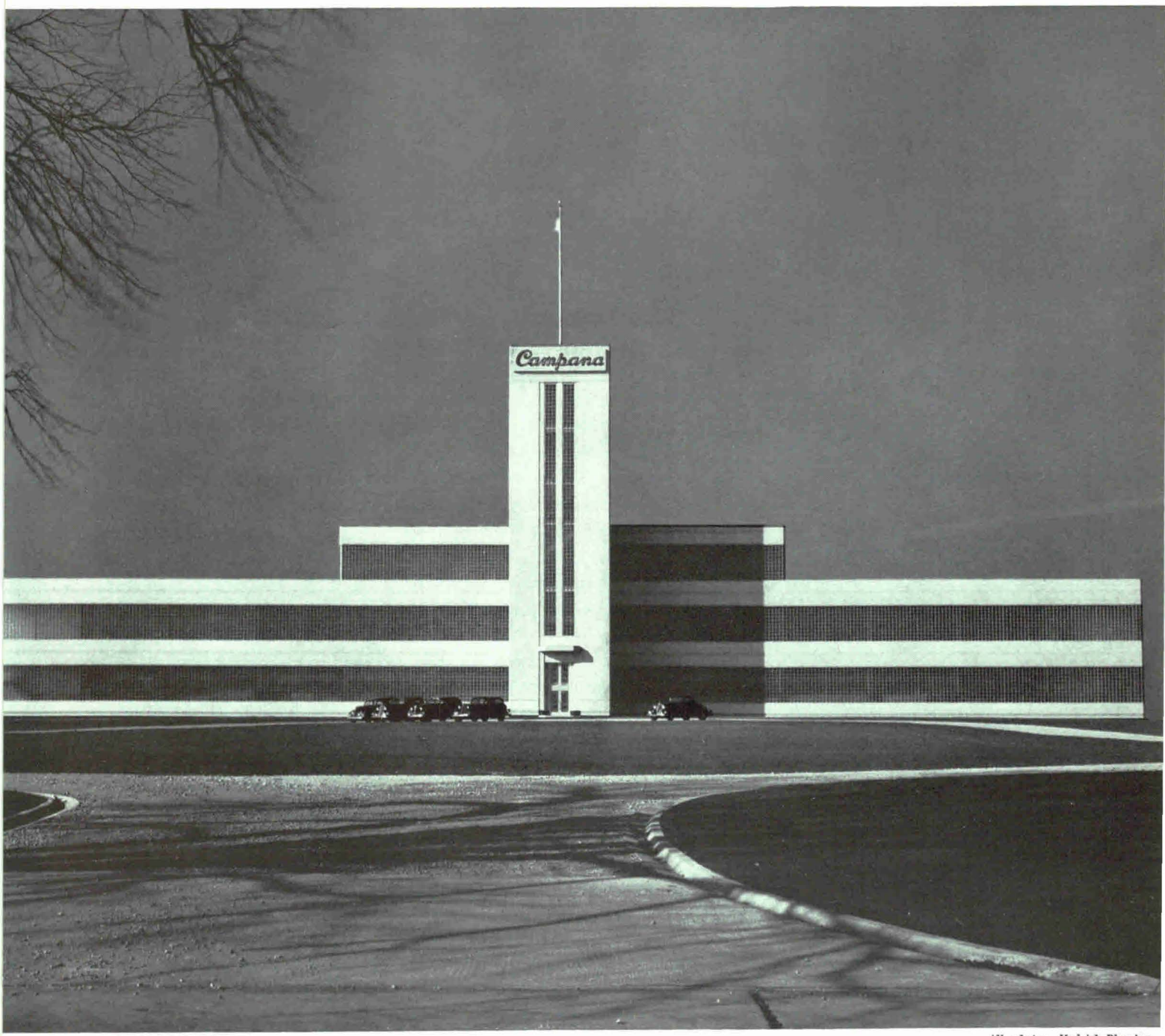
CONSTRUCTION OUTLINE

FOUNDATION: Walls—continuous local rubble stone. Cellar floor—concrete slab on cinder fill. Waterproofing—dashed and ironized on outside.
STRUCTURE: Structural Steel, Bethlehem Steel Corp. Exterior walls—4 in. brick backed with 4 in. hollow tile, dashed with 1 in. Portland cement, waterproofed with Master Builder's Ironite. Two inch rock cork, Johns-Manville, Inc. Wire lath and plaster. Interior partitions—mill type stud framing, metal lath and plaster. Floor construction—2½ in. concrete slab on expanded metal on Macmar steel joist, Bethlehem Steel Corp.
ROOF: Construction—4 in. concrete slab covered with Barrett Co. 5-ply built-up roofing. Decks—4 and 6 in. concrete slabs, slate tiles laid in mastic.
CHIMNEY: Brick-clay flue lining; H. W. Covert Co. improved dampers in all fireplaces; soap stone back and sides.
SHEET METAL WORK: Flashing—lead coated copper. Gutters: Main roof—6 in. interior cast iron downspout. Decks—terra cotta half-round spills.
INSULATION: Walls and roof—2 in. cork laid on slab, Johns-Manville, Inc. Weatherstripping on doors—Chamberlain Metal Weather Strip Co.
GLASS BLOCK: Insulux, Owens-Illinois Glass Co.
WINDOWS: Steel casements—Campbell Metal Window Co. Glass—thermopane throughout, Libbey-Owens-Ford Glass Co. Screens—aluminum wire cloth, Campbell Metal Window Corp.
STAIRS: Stringers—concrete. Risers, treads and wainscot—wood.
FLOORS: Living room, bedrooms, halls and bathrooms—Masonite interlocking cushion tile, Masonite Corp. Kitchen—linoleum, Armstrong Cork Co.
WALL COVERINGS: Bathrooms—Carrara glass, Pittsburgh Plate Glass Co.
WOODWORK: Trim and cabinets—painted pine. Doors—flush, birch veneer. Garage doors—flush, Idaho pine.
HARDWARE: Interior and exterior—chrome, satin finish, special.
PAINTING: Interior: Walls and ceilings—paint, E. I. DuPont de Nemours Corp. Floors—wax. Exterior walls—lime paint, Medusa Portland Cement Co.
ELECTRICAL INSTALLATION: Wiring—triangle conduit and BX. Switches—tumbler type, Bryant Electric Co. Fixtures—all special, built-in and direct using Holophane lenses, Holophane Co.
KITCHEN EQUIPMENT: Stove—AGA, coal fired, American Gas Accumulator Co. Refrigerator—Frigidaire Corp. Sink—Monel Metal, International Nickel Co. Garbage disposal—General Electric Co. Cabinet—special. Ventilators—ILG exhaust fan and hood exhaust over stove, ILG Electric Ventilating Co. Laundry trays—Standard Sanitary Mfg. Co.
BATHROOM EQUIPMENT: Fixtures by Standard Sanitary Mfg. Co. and Crane Co. Seats by C. F. Church Mfg. Co. Showers—Speakman Co.
PLUMBING: Pipes: Soil—cast iron. Water—85 per cent red brass, Chase Brass & Copper Co. Pump—deep well with pressure tank, A. D. Cook.
HEATING AND AIR CONDITIONING: Complete Delco system, air conditioned, with provision for summer cooling later, Delco-Frigidaire Conditioning Corp. Ventilating equipment—exhaust fan, two speed Ventura type, American Blower Co.
SPECIAL EQUIPMENT: Radio outlets in each room. Exterior garden incinerator—Kerner Incinerator Co. Venetian blinds—Western Venetian Blind Co.

CAMPANA FACTORY, BATAVIA, ILLINOIS

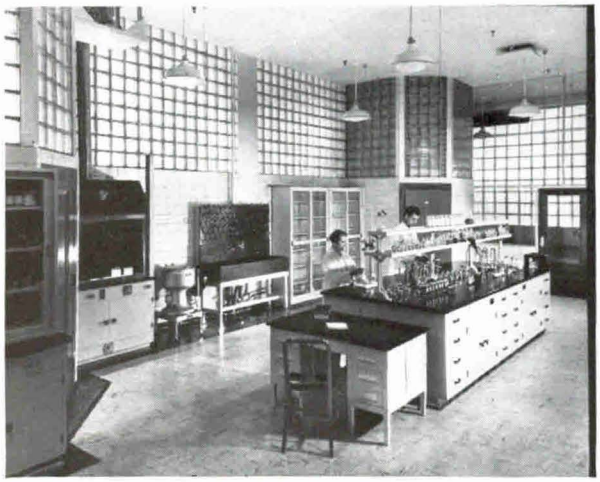
FRANK D. CHASE AND CHILDS & SMITH, ASSOCIATED ARCHITECTS AND ENGINEERS

PERE ANDERSON & CO., GENERAL CONTRACTORS



All photos, Hedrich-Blessing

CAMPANA FACTORY, BATAVIA, ILL.



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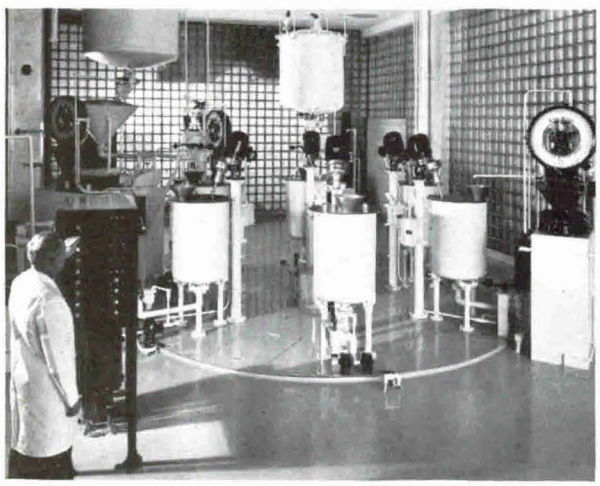

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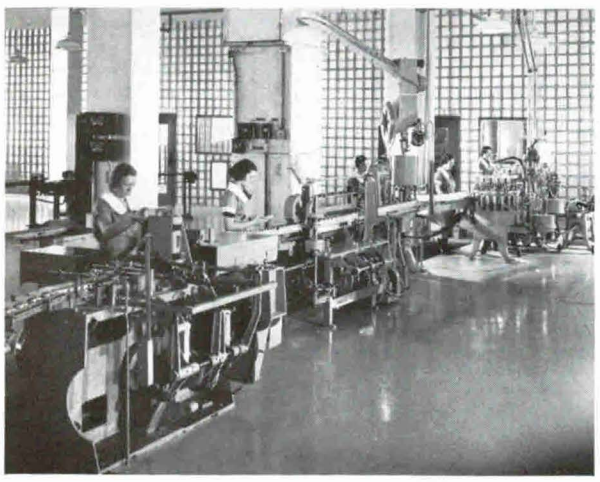

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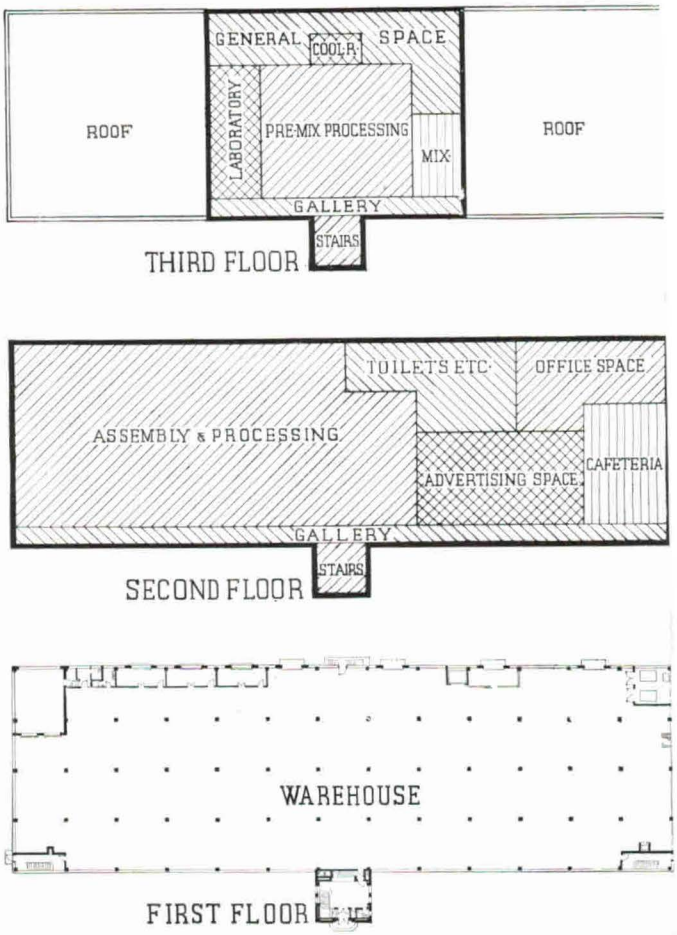
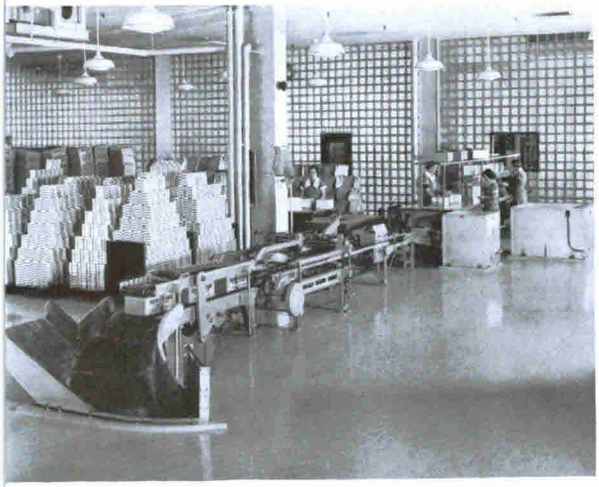
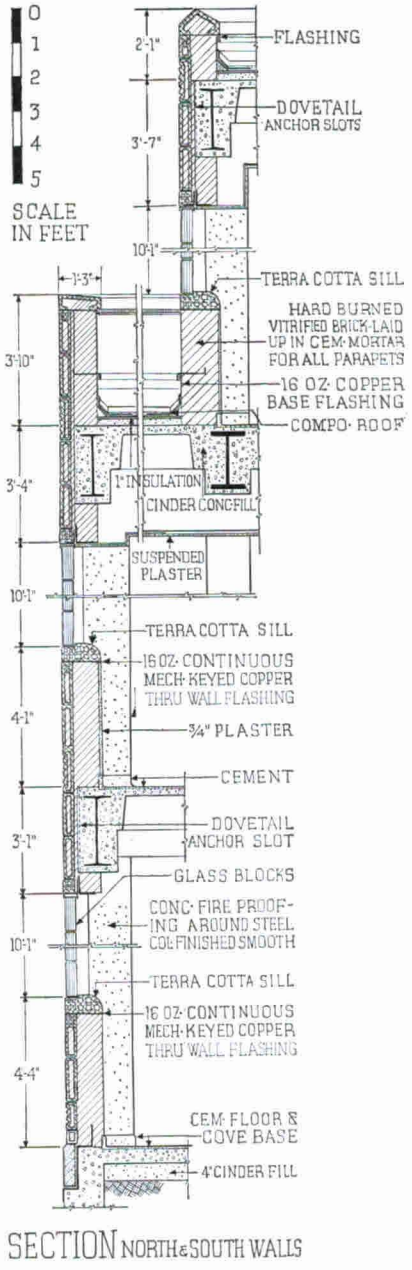


LOCATED in open country this long white terra cotta tile and glass block factory building has been advantageously placed on a main highway where its dramatic facade serves as an excellent advertisement for the beauty products made within. The building is completely air conditioned and the manufacturing processes completely mechanized. Raw materials are first tested in laboratories on the third floor (1), automatically weighed and mixed, then stored in glass-lined tanks (2). Each of the two weighing and mixing machines (3) consists of four small mixing tanks mounted on a turntable which swings them from one charging point to the next. Each ingredient is automatically weighed on a scale governed by a photo-electric eye, and the whole mechanism not only carefully interlocked within itself but also with the air conditioning equipment (set for a constant 70° F.), so that if the latter breaks down all processing equipment is automatically stopped. By gravity feed the liquids pass from the storage tanks to the automatic packaging machines on the second floor (4). To avoid any possibility of dust seeping in, this room is kept under a slight static air pressure. Packed in corrugated cases which are automatically sealed (5), the bottles are chuted down to the first floor warehouse (6), being counted by photo-electric eye on the way. The cafeteria (7) is on the second floor. In the basement are twelve General Electric boilers (8) which cut in and out automatically according to the number required to maintain the fixed temperature. In the summer the hot water system is shut off and cold water run through the same coils. The general public can view the factory at work from glass-fronted galleries on the second and third floors (9). A typical corridor (10) has white Kittanning bricks at the base and glass block above.



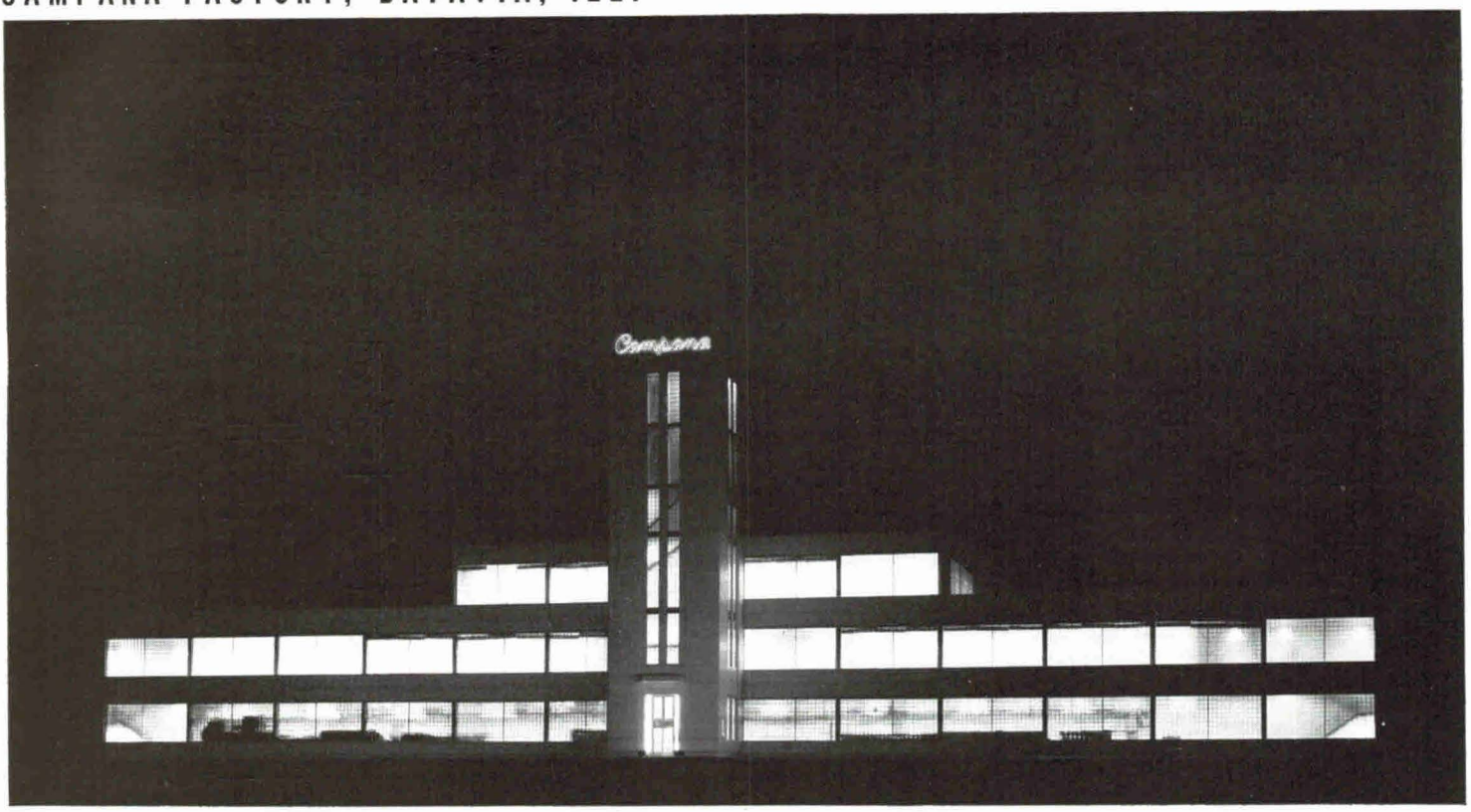


SECTION NORTH & SOUTH WALLS

9.

10.

CAMPANA FACTORY, BATAVIA, ILL.



FRANK D. CHASE AND CHILDS & SMITH, ASSOCIATED ARCHITECTS AND ENGINEERS
PERE ANDERSON & CO., GENERAL CONTRACTORS

CONSTRUCTION OUTLINE

FOUNDATION: Footings and foundation walls—reenforced concrete. Waterproofing—integral, Toch Bros. R.I.W. on exterior of basement wall.

STRUCTURE: Exterior walls: Glass block, Pittsburgh Corning Corp.; terra cotta tile, North Western Terra Cotta Co., and white Kittanning face brick on west exterior walls. Common brick used as filler; inside surfaces tile and cement plaster, National Fireproofing Co. Interior partitions—Natco tile, National Fireproofing Co. and glass block, Owens-Illinois Glass Co.; terra cotta with alumilite trim around plate glass partitions, North Western Terra Cotta Co. Columns—steel encased in concrete and finished in plaster. Structural steel framing—Bethlehem Steel Co. Floor construction—pan type concrete, Joseph T. Ryerson & Son, Inc.; cement, Portland Cement Co. Second and third floor ceilings—suspended plaster; machine line rooms and office areas—Acousti-Celotex, Celotex Corp.

ROOF: Construction—3 in. pan type concrete slab, Joseph T. Ryerson & Son, Inc.; 1 in. cork under roof for insulation, Armstrong Cork Products Co; finish—20 yr. Bonded roofing, Barrett Co.

SHEET METAL: Flashing and gutters—copper.

WINDOWS: Sash (only four small sash in entire building)—Fenestra, metal frame, wire glass, Detroit Steel Products Co.

STAIRS: Steel and concrete treads; main stair of steel encased in alumilite with terrazzo treads and risers. Ramps—concrete. Elevators—Reliance freight, 2,500 lbs.

FLOOR COVERINGS: Public stairways, hallways and all washrooms—terrazzo. Locker rooms and offices—tread tile and roll linoleum, Congoleum-Nairn, Inc. President's office, cafeteria, analytical chemical laboratories—rubber tile, Turner Resilient Floor Co. Warehouse—concrete treated with Kedmont floor hardener, Kedmont Mfg. Co. Concrete floors in processing and machine line room areas finished with Cementhide cement paint, Pittsburgh Plate Glass Co. Quarry tile used in heating plant in basement.

TRIM: Alumilite. Metal doors—7 coats baked-on enamel, Dahlstrom Metal Door Co. Garage, special, trucking court and shipping room doors—Sitka spruce. Motor operated doors—Overhead Door Co.

HARDWARE: Interior and exterior—Sargent & Co.

PAINTING: Walls and ceilings—Devoe & Raynolds Co.

ELECTRICAL INSTALLATION: Wiring system—3 phase, 4-wire. Main switch—Westinghouse Electric & Mfg. Co.; breaker—Harvey Hubbell, Inc. Fixtures—Goodrich Electric Co.'s glass steel and R.L.M. type reflectors in general area with Hawkins Electric Co. special flush type ceiling fixtures in stair tower.

PLUMBING: All fixtures by Crane Co. Pipes: Soil and waste—cast iron; galvanized iron down spouts. All sanitary hot and cold water piping—copper with Mueller Brass Co. stream lined fittings. Water supply—two deep wells, equipped with Pomona Pump Co. pumps delivering a total capacity of 550 gallons per minute, 52° F. temperature water. Pomona pumps discharge into underground pneumatic pressure tanks equipped with automatic mercoid control pressure switches. One Precision Scientific Instrument Co.'s still for 25-gallon per hour distilled water capacity.

HEATING AND AIR CONDITIONING: Air conditioning equipment—designed by Samuel R. Lewis, Engineer, Chicago, fabricated and supplied by Trane Co. in conjunction with General Electric Co. Single coil system, circulating hot water in winter and cold well water in the summer, reversing the flow respectively through coils, depending upon season. All air is filtered through glass wool, natural de-humidifying in summer. No special requirements for humidity necessary. One C. H. Dutton Co. 75 lb. pressure steam boiler oil fuel for high pressure steam connected with water; twelve General Electric Co.'s oil fuel unit boilers connecting into main header and from thence to heat interchanger supplying hot water to circulating tank. Boilers designed to come on and off the line automatically as required by temperature regulation and air conditioning requirements. Radiators—Trane Co. Valves—Ohio Injector Co. Thermostats and regulators—automatic electric air conditioning control, Barber-Colman Co.

SPECIAL EQUIPMENT: A complete chemical treatment, odorless sewage treatment plant has been erected and equipped to handle all sanitary domestic sewage and will also handle garbage. Sign—Neon silhouette type at top front face of tower, Claude Neon Federal Sign Co. A processing department fully automatic. Scales with photo-electric eyes and remote control panels connected in relay sequence—Toledo Scale Co. Automatic control equipment of electrical nature—General Electric Co. Turntables—Stephens Adamson Co. Special alloy electric control and solenoid valves—Davis Regulator Co. Special alloy piping and pumps—Specialty Brass Co., Thomas Pump Co. and Viking Pump Co. Special steel and glass lined tanks—Pfaudler Co.

COLUMBIA HIGH SCHOOL, COLUMBIA, MISS.

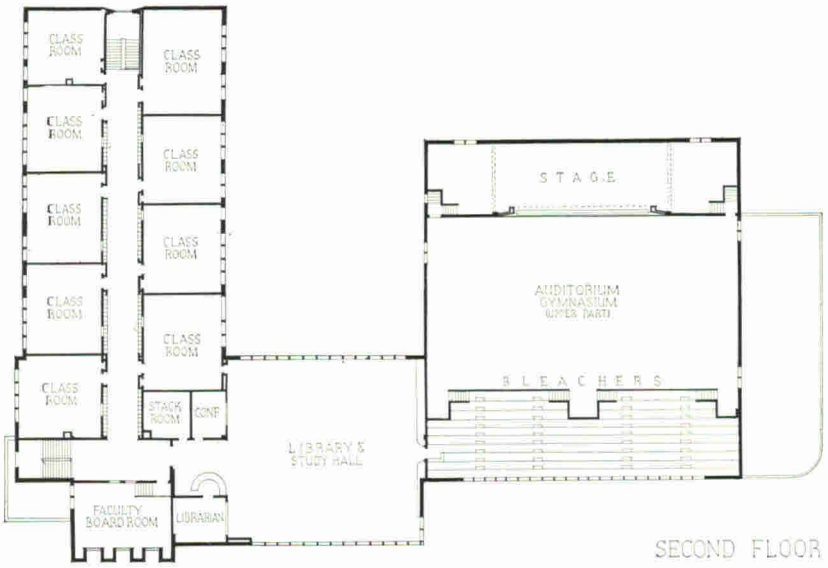
N. W. OVERSTREET & A. H. TOWN, ARCHITECTS

Hiatt Photos

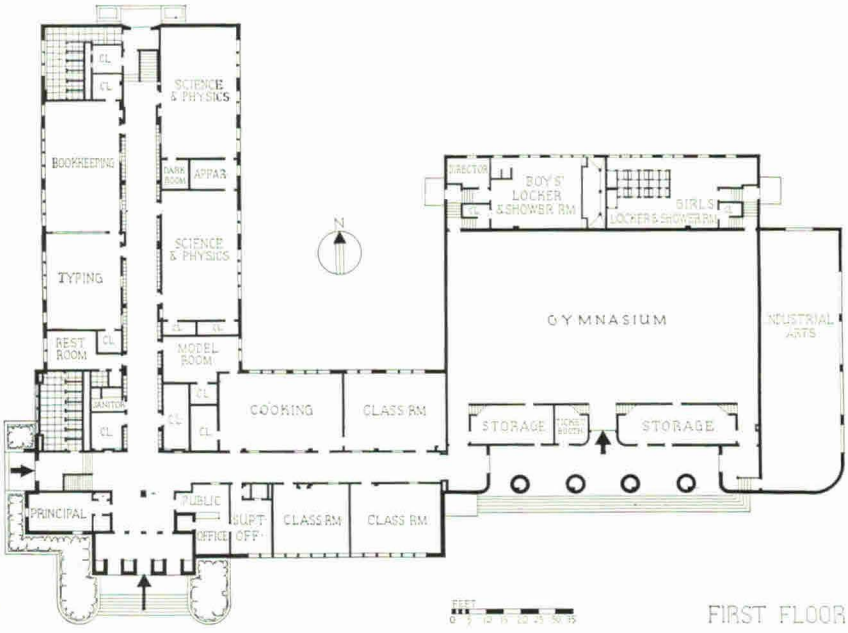
COLUMBIA HIGH SCHOOL, COLUMBIA, MISS.

WHEN modern schools appear in California and Connecticut, in Mississippi and Colorado (see page 140), it may be safely predicted that a new approach to school building is taking root. Due to its location in the traditional South this building in the modern idiom is of particular interest. What could provide a more dramatic contrast to the old-style schoolhouse than the library and study hall on the second floor of this new building, a large room with continuous windows along the north and south walls? Less functional is the overemphatic main entrance.

This school serves also as a community center. For this reason the gymnasium-auditorium has a separate entrance, so that it can be closed off from the main classroom block. This provision for community use, which is typical of the new school buildings, carries their architectural influence beyond the younger generation to the community as a whole. Cost $127,401. Cubage 1,143,883.



SECOND FLOOR



FIRST FLOOR

LIBRARY AND STUDY HALL

CONSTRUCTION OUTLINE

FOUNDATIONS
Footings and walls—reenforced concrete. Lone Star cement, reenforcing by Connors Steel Co., 10 per cent hydrated lime in all concrete.

STRUCTURE
Exterior walls—Monolithic reenforced concrete with lime added so as to make white waterproof walls. Boncrete, U. S. Gypsum Co., was used directly on these walls finished with U. S. Gypsum Co., plaster and Best Brothers Keene's Cement Co. for wainscot. Interior partitions—hollow tile and studs, plastered. Columns—reenforced concrete. Steel—trusses over auditorium and shelf angles for certain joists, Carnegie Illinois Steel Corp. Floor construction—concrete corridors and slabs on ground; wood joists elsewhere.

ROOF
Wood joists and sheathing, pitch and slag covered, The Ruberoid Co.

SHEET METAL WORK
Flashing and gutters—Toncan galvanized iron, Republic Steel Corp. Ducts—galvanized iron.

INSULATION
Roofs—Celotex, The Celotex Corp.

WINDOWS
Sash—wood and metal; steel by Detroit Steel Products Co. Glass—generally double strength, quality B., Libbey-Owens-Ford Glass Co.; wire glass in some locations. Glass Brick—Insulux, Owens-Illinois Glass Co.

FLOORS
Corridors and shower rooms—concrete. Classrooms—quarter sawed oak, E. L. Bruce Co. Gymnasium—maple. Entrance and toilets—terrazzo.

WOODWORK AND TRIM
Trim—sap gum generally. Storage room shelves—pine. Interior doors—figured red gum, Roddis Lumber & Veneer Co. Exterior doors—cypress, Acme Building Supply Co. Garage doors—Overhead Door Corp.

HARDWARE
Interior—dull chromium; dull bronze for exterior, Norwalk Lock & Mfg. Co.

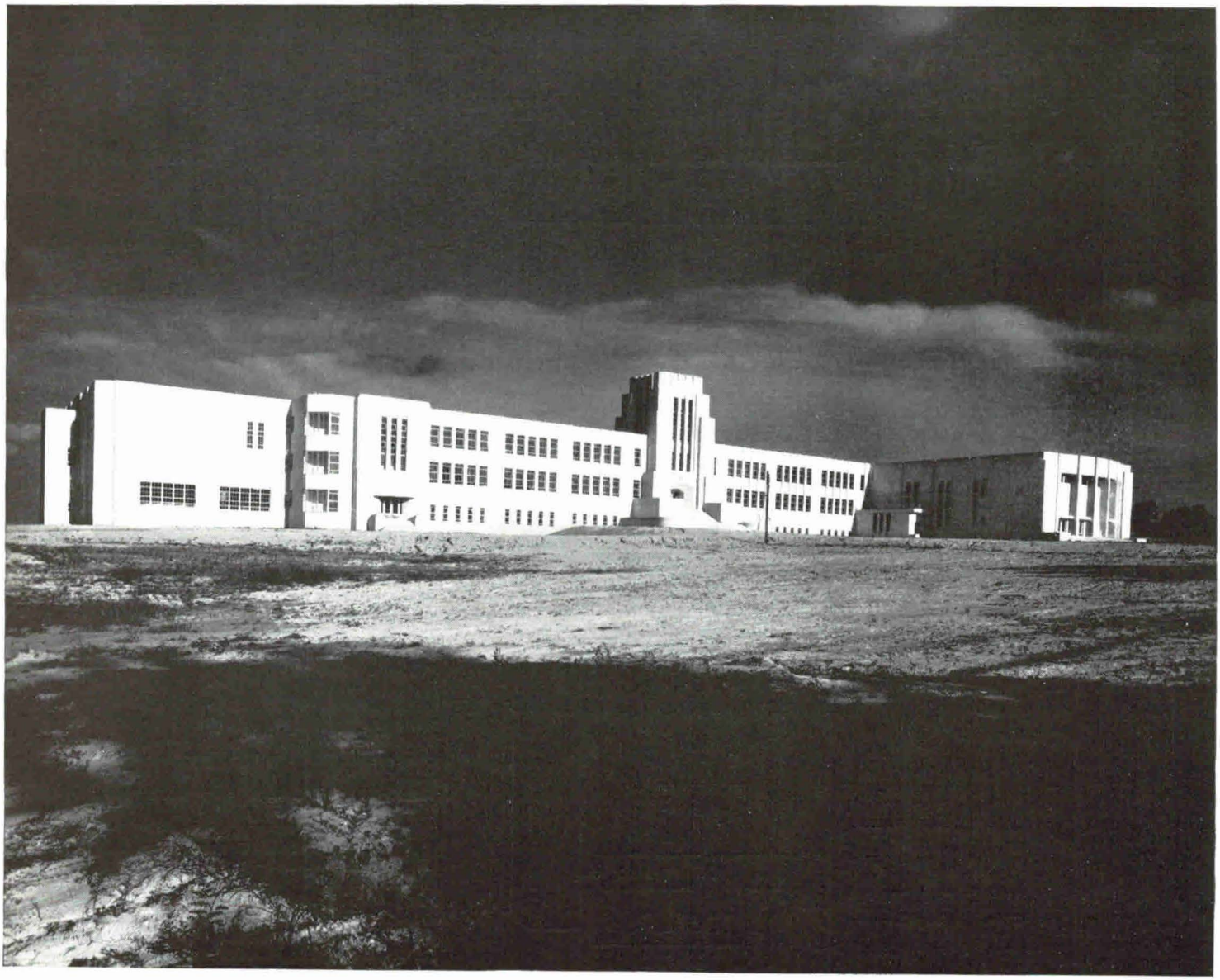
PAINTING
Floors—2 coats sealer, 2 coats wax, Monarch Chemical Co. Trim—3 coats paint, enamel in interior, Sherwin-Williams Co. Sash—steel, aluminum paint.

ELECTRICAL INSTALLATION
Wiring system—rigid conduit throughout. Switches—Bulldog Electric Products Co. Fixtures: Toilets and corridors—Gross Chandelier Co. Library—Gill Glass & Fixture Co. Remainder—Moe Bridges Corp.

PLUMBING
All fixtures by Crane Co. Pipes: Soil—cast iron with cast iron fittings, Emery Foundry Co. All exposed water piping is galvanized steel, Fretz Moon Tube Co. and all concealed is Government type K copper with Mueller Brass Co. fittings. Storage heater—No. 200 Multi-Coil, Ruud Mfg. Co.

HEATING AND AIR CONDITIONING
Gas unit heaters throughout. Classrooms and toilet rooms heated by 21 model No. 4536 Janitrol gas fired unit heaters, Surface Combustion Co. Library and gymnasium heated by seven model No. 85 Bryant gas fired unit heaters, Bryant Heater Co. Hallway and entrance to building heated by 23 gas-steam radiators, American Gas Products Co.

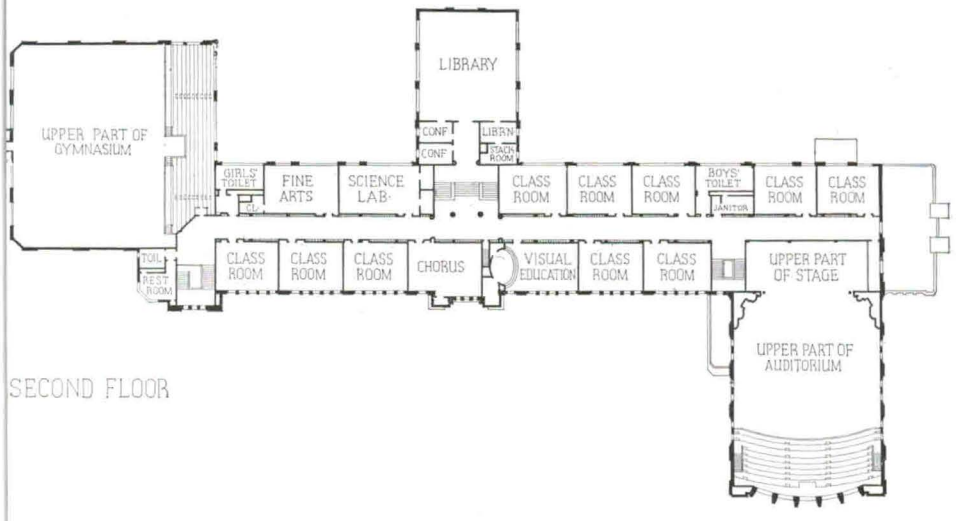
EDWARD L. BAILEY JUNIOR HIGH SCHOOL, JACKSON, MISS.



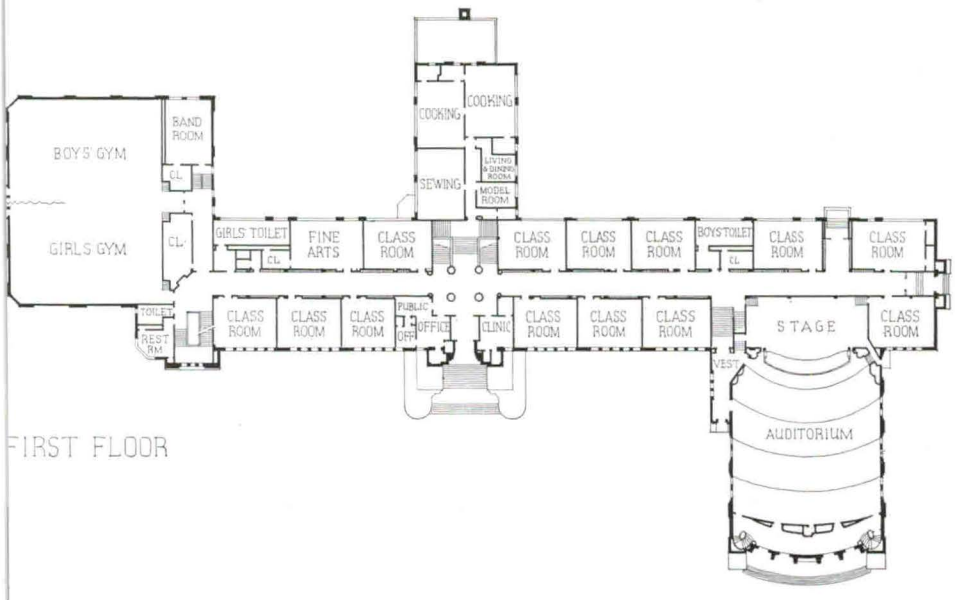
Hiatt Photos

DESIGNED specifically for the Junior High School grades, this Jackson, Mississippi, school was planned according to the best current practice with gymnasia, library, and auditorium isolated from the classroom portion of the building in separate wings. Monolithic concrete construction proved the most economical solution of the difficult problem presented by a swampy site, and became the basis of the frank if somewhat monumental treatment of the exterior. Cost: $317,400 at 17½ cents per cubic foot.

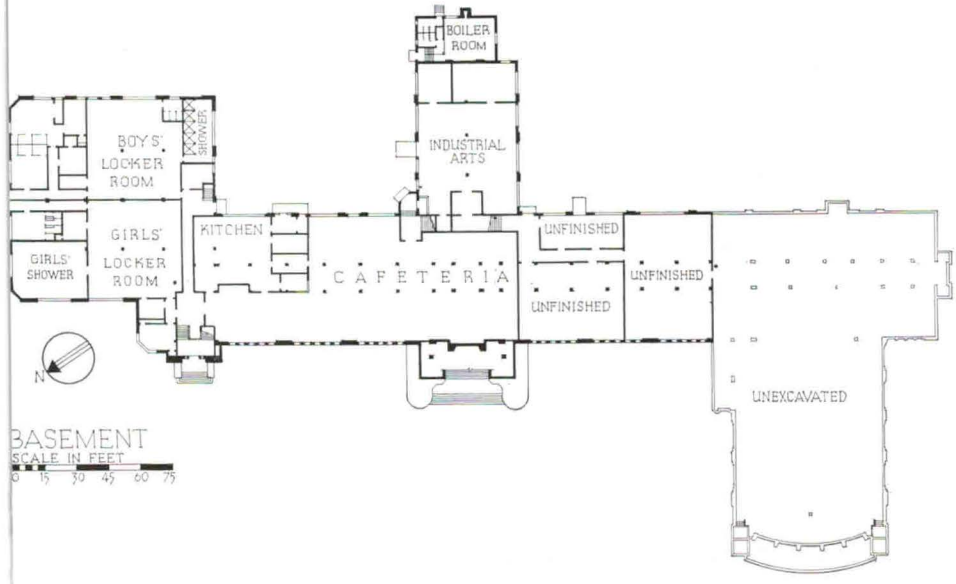
. W. OVERSTREET & A. H. TOWN, ARCHITECTS



SECOND FLOOR



FIRST FLOOR

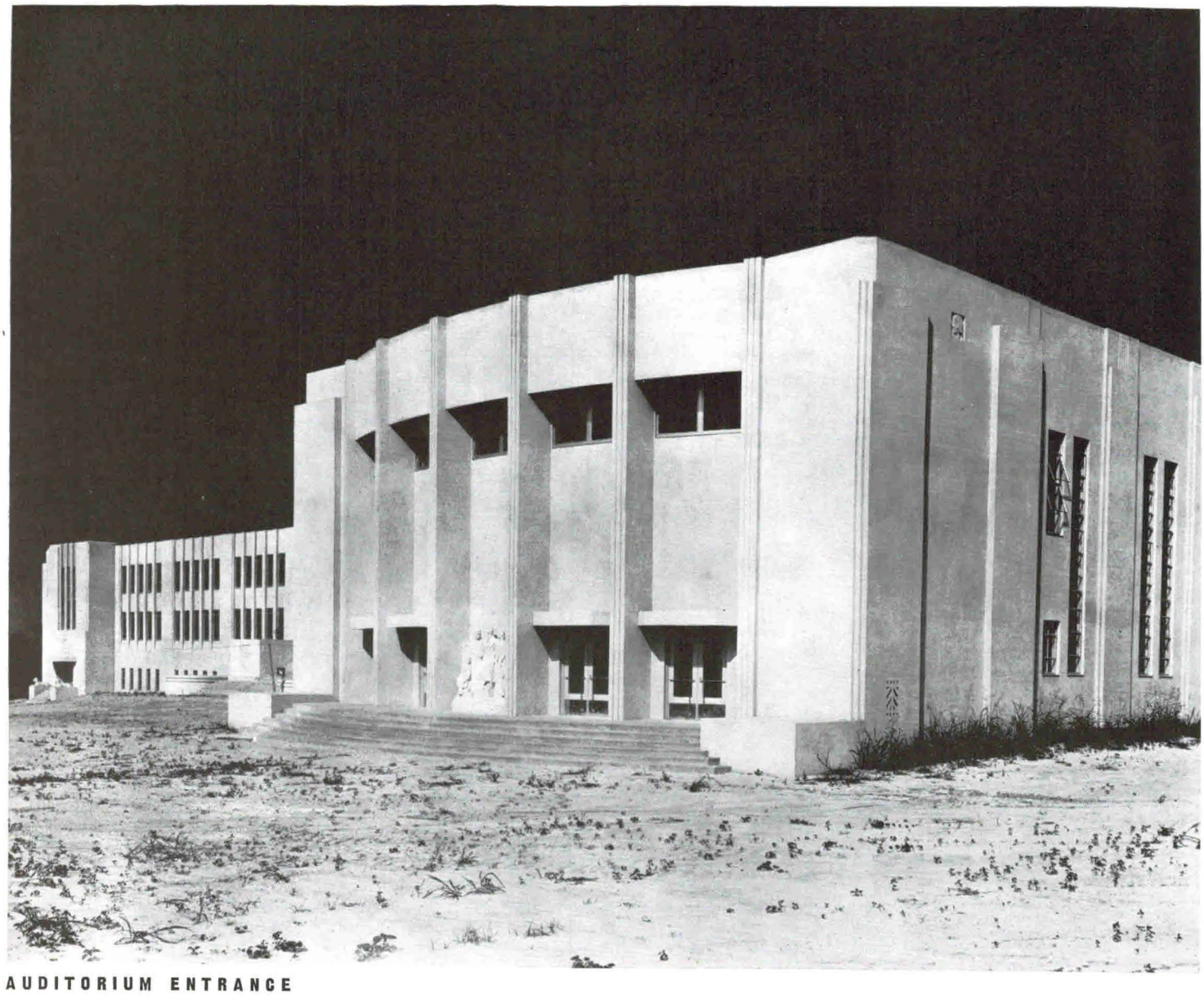


BASEMENT

SCALE IN FEET

0 15 30 45 60 75

EDWARD L. BAILEY JUNIOR HIGH SCHOOL



AUDITORIUM ENTRANCE

MAIN STAIR LANDING

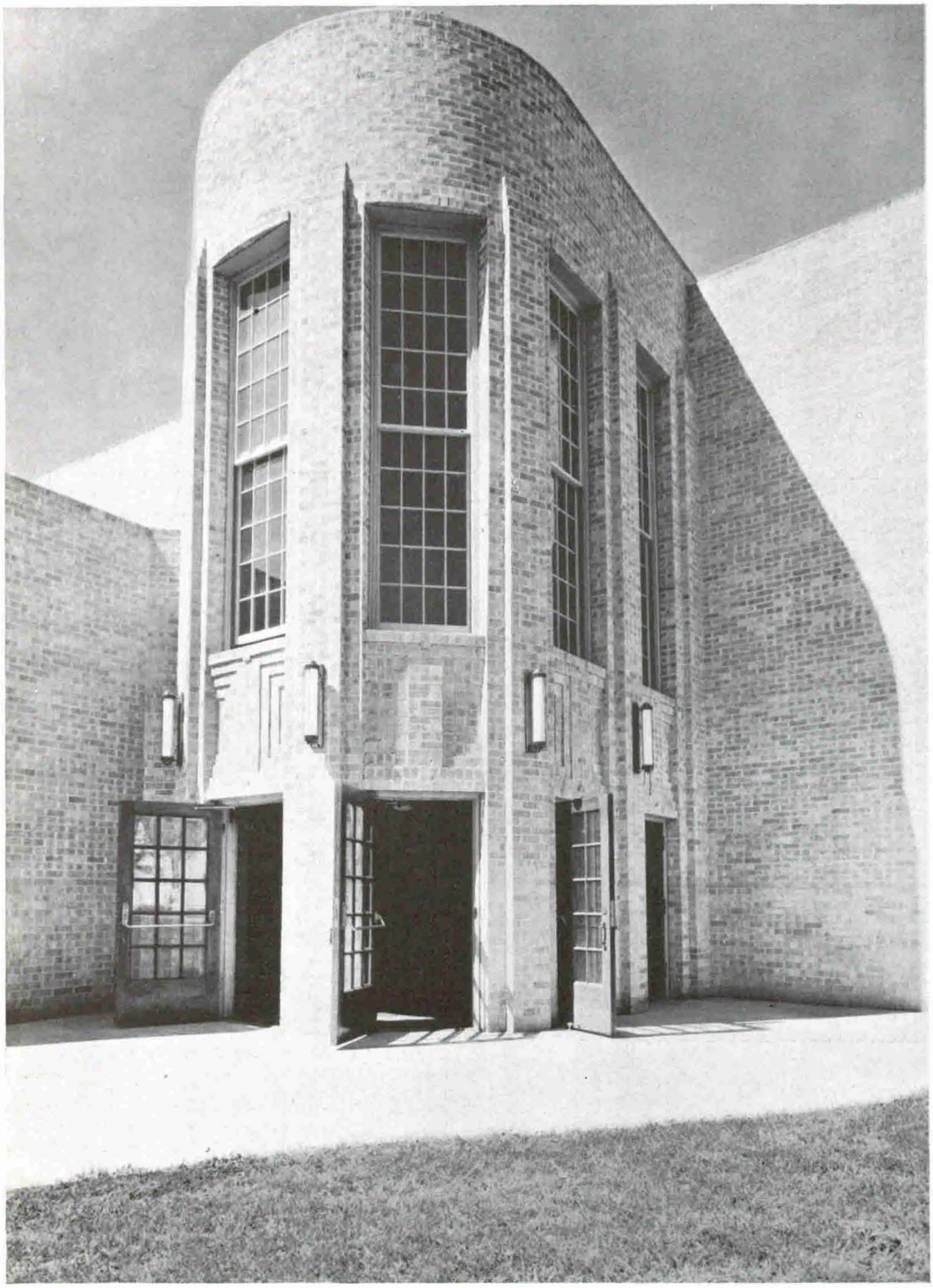
AUDITORIUM

LIBRARY

CONSTRUCTION OUTLINE

FOUNDATIONS
Footings—concrete spot footing with grade beams, Lone Star Cement Co. Walls—reenforced concrete.
STRUCTURE
Exterior walls—constructed of Monolithic reenforced concrete with lime added to make white waterproof walls. Bondcrete was used directly on these walls finishing up with plaster, U.S. Gypsum Co. Interior partitions—hollow tile, plastered with U. S. Gypsum Co. plaster. Steel trusses over gymnasium and auditorium—Tennessee Coal Iron & Railroad. Floors: Corridors—reenforced concrete slabs with terrazzo finish. Class rooms—steel bar joists, LaClede Steel Co. Wood sub-floor with oak finished flooring.
ROOF
Built-up, 15 year, roofing over wood deck, Flintkote Co.
SHEET METAL WORK
Flashing—copper, Chase Brass & Copper Co. Gutters and ducts—Toncan metal, Republic Steel Corp.
SOUND INSULATION
Auditorium ceiling—fiber board, U. S. Gypsum Co.
WINDOWS
Sash and screens—Fenestra, Detroit Steel Products Co. Glass—double strength, quality A, Libbey-Owens-Ford Glass Co.
STAIRS
Constructed of reenforced concrete with terrazzo surface.
FLOORS
Corridors, cafeteria, toilets and shower rooms—terrazzo. Classrooms—oak floor on steel bar joists. Gymnasium—maple on steel bar joists. Industrial arts and locker room—cement.
WALL COVERINGS
Vestibules—wainscot is Formica, Formica Insulation Co.
WOODWORK AND TRIM
Trim—red gum. Interior doors—rotary cut red gum, Roddis Lumber & Veneer Co. Exterior doors—cypress. Garage—Overhead Door Corp.
HARDWARE
Interior and exterior—P. & F. Corbin. Special—Oscar C. Rixson Co. and Yale & Towne Mfg. Co.
PAINTING
Interior: Floors—3 coats varnish and 1 coat wax, Selig Co. Sash and trim—enamel, Mobile Paint Co.
ELECTRICAL INSTALLATION
Wiring system—Arrow, Hart & Hegeman Electric Co. Switches—American Steel & Wire Co. Fixtures: Library and principal's office—Edwin F. Guth Co. Auditorium—Livers Lighting & Bronze Co. Classrooms—John C. Virden.
PLUMBING
Fixtures—Crane Co. Soil pipes—Sanitary Pipe Co. Water pipes—copper, Chase Brass & Copper Co. Valves—Speakman Co. Tanks and heaters—Troupe Co. Pump—Duro Co.
HEATING
Gas fired steam heating system; boilers, radiators by Burnham Boiler Corp. Thermostats—Spencer Heater Co. Unit heaters in gymnasium, Pittsburgh Gas Steam Radiator Co.

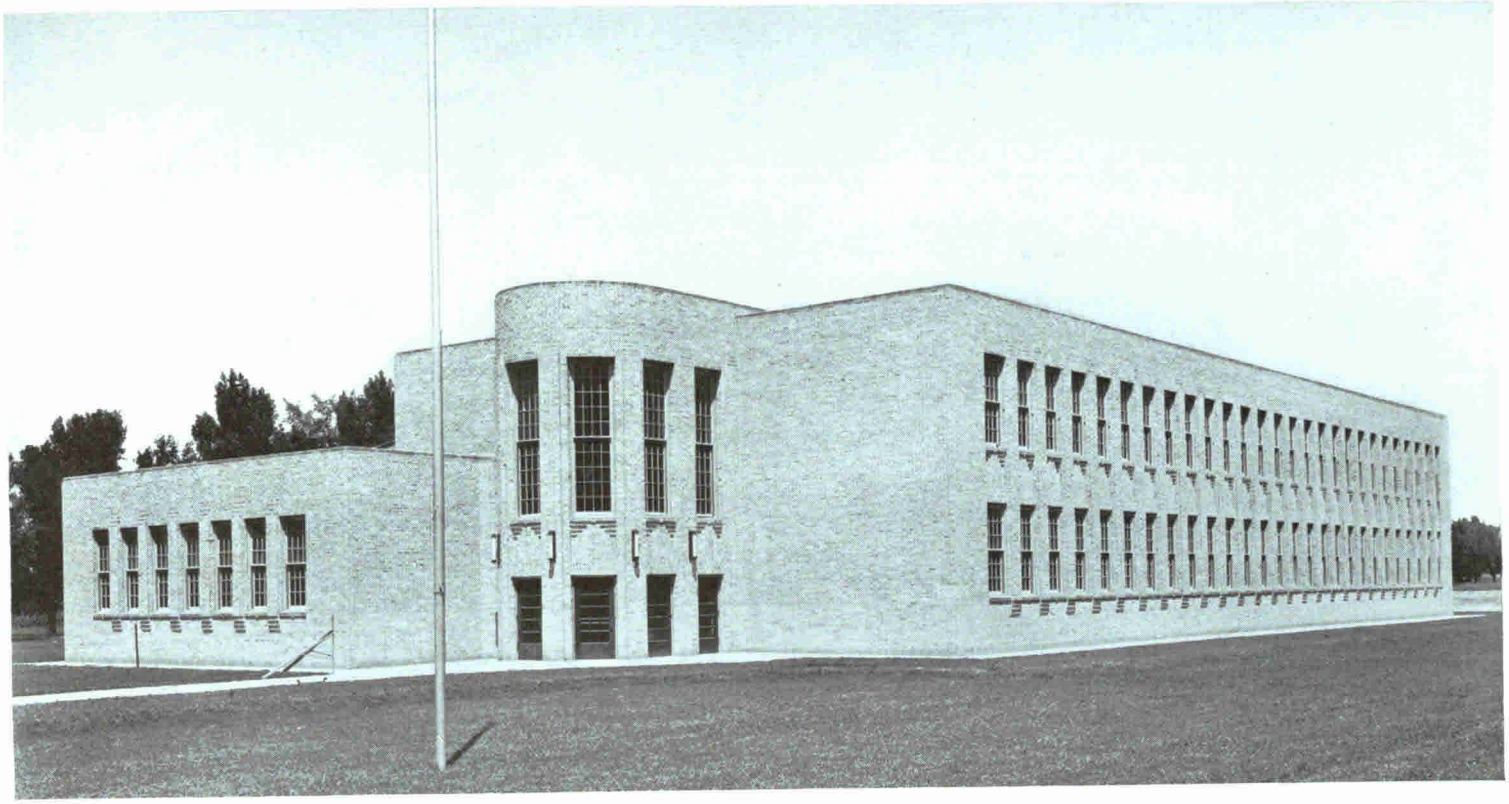
HIGH SCHOOL, FRUITA, COLORADO



Dean Photos

WHEN its former school burned Fruita replaced it with this striking new building which serves also as a community center. For this reason both the library and the combined auditorium-gymnasium are set off in wings from the classroom block and provided with separate entrances. Interesting use has been made of a central corridor (with connecting ramps instead of stairs) to serve as a buffer between the auditorium, science laboratory, home economics room, manual training shop, etc., and the classrooms and offices. Clothes lockers are recessed in the corridor walls, and toilet rooms are placed on each side of the stage so that they may also serve as dressing rooms when the auditorium is used for theatricals. Due to excessively alkaline soil and water close to the surface, there is no basement, foundations are given extremely wide shallow footings, and all concrete below grade is entirely covered with waterproof paper.

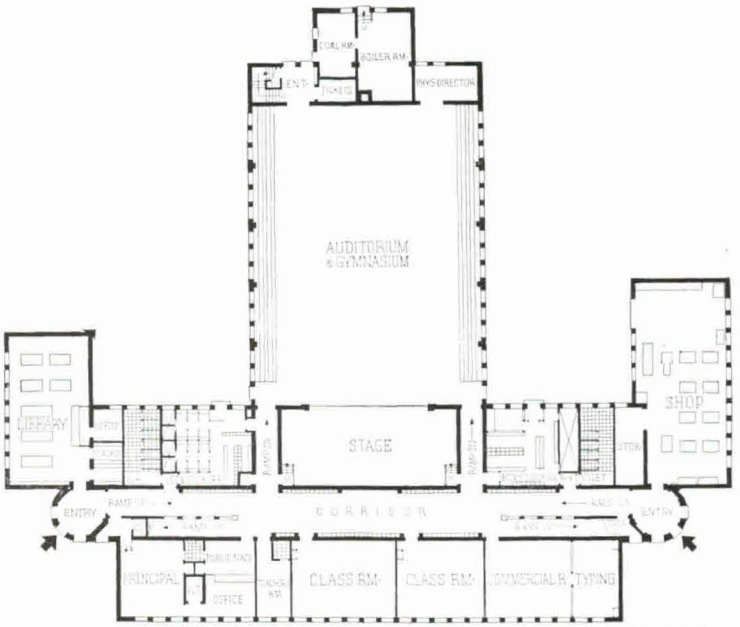
T. H. BUELL & CO., ARCHITECTS



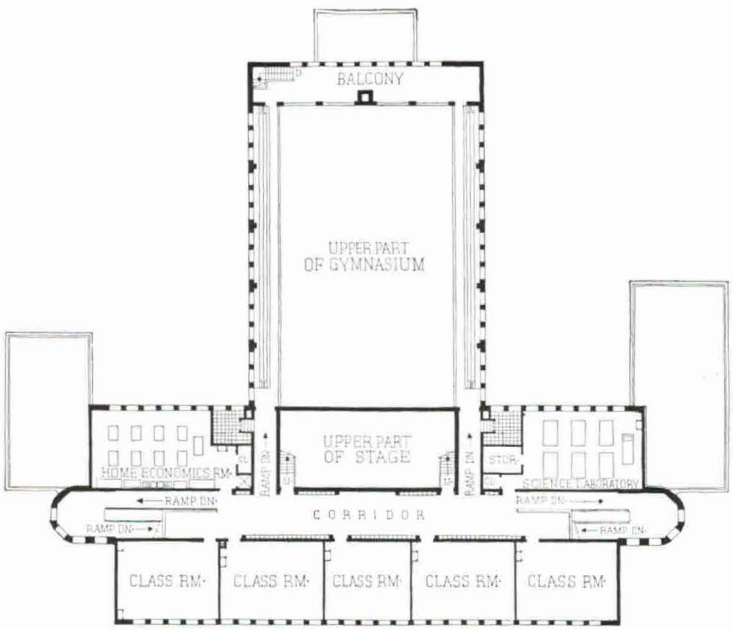
GYMNASIUM

HIGH SCHOOL, FRUITA, COLORADO

T. H. BUELL & CO., ARCHITECTS



FIRST FLOOR



SECOND FLOOR

CORRIDOR AND RAMP

CONSTRUCTION OUTLINE

FOUNDATIONS

Footings—reenforced concrete. Walls—concrete. Waterproofing—footings laid on waterproofing membrane and all concrete footings and walls covered with waterproofing.

STRUCTURE

Exterior walls—face brick outside backed with common brick from foundation to top, Montrose Brick Co. Interior partitions—hollow tile plastered. Structural steel—steel arch roof and column construction with cantilever balcony for gymnasium. Floor construction—bar joists, Colorado Building Supply Co. with 2 in. concrete slab, sleepers and maple floors. Ceiling—plaster on metal lath.

ROOF

Classroom section—bar joists, concrete slab and Genasco roll roofing. Gymnasium section—wood joists, sheathing and roll roofing, Barber Co.

SHEET METAL WORK

Flashing—galvanized iron.

INSULATION

Under side of gymnasium roof and ceiling of library covered with Celotex, Celotex Corp., forming ceiling treatment.

WINDOWS

Sash—wood. Glass—double strength, quality A, Libbey-Owens-Ford Glass Co.

RAMPS

Main travel by concrete ramps, 2¼ in. rise per ft. run.

FLOORS

Gymnasium floor—maple on sleepers over concrete slabs on ground. Corridors and ramps—reenforced concrete slab.

FLOOR COVERINGS

Corridors, toilet rooms, locker rooms and library—covered with Mastipave, Paraffine Companies.

HARDWARE

Interior and exterior—brass finish, Sargent & Co.

PAINTING

Floors—3 coats Floor Seal. Trim and sash—3 coats lead and oil.

ELECTRICAL INSTALLATION

Wiring system—conduit. Switches—brass, flush tumbler. Fixtures—semi-indirect. Special equipment—manual fire alarm (locally made), clock and bell system, Stromberg-Carlson Telephone Mfg. Corp.

PLUMBING

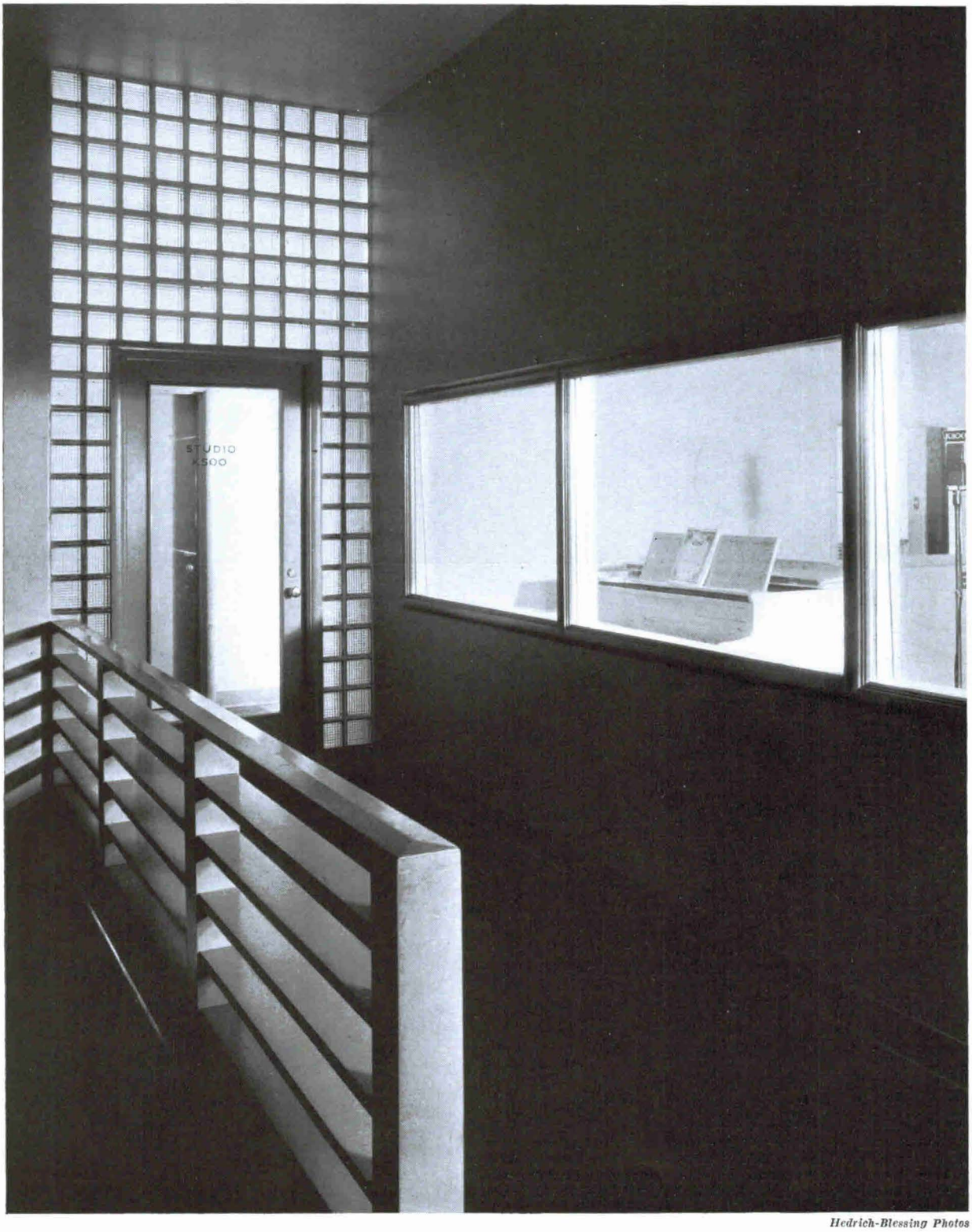
Fixtures—Crane Co. Pipes: Soil—extra heavy cast iron. Water supply—copper, Mueller Brass Co. Steel water tank, 525-gallon, with B. & G. heater, The Bell & Gossett Co.

HEATING

Low pressure steam, Unit heaters, American Blower Co. Boiler—Kewanee Boiler Corp. Coal fired boiler—Iron Fireman stoker, Iron Fireman Mfg. Co. Radiators—fin tube copper, Warren Webster & Co. Thermostats—Duostat for two zones and thermostats in gymnasium, Raymond Duostat Co.

BROADCASTING STUDIO, STATION KSOO, SIOUX FALLS, S. D.

HAROLD SPITZNAGEL, ARCHITECT

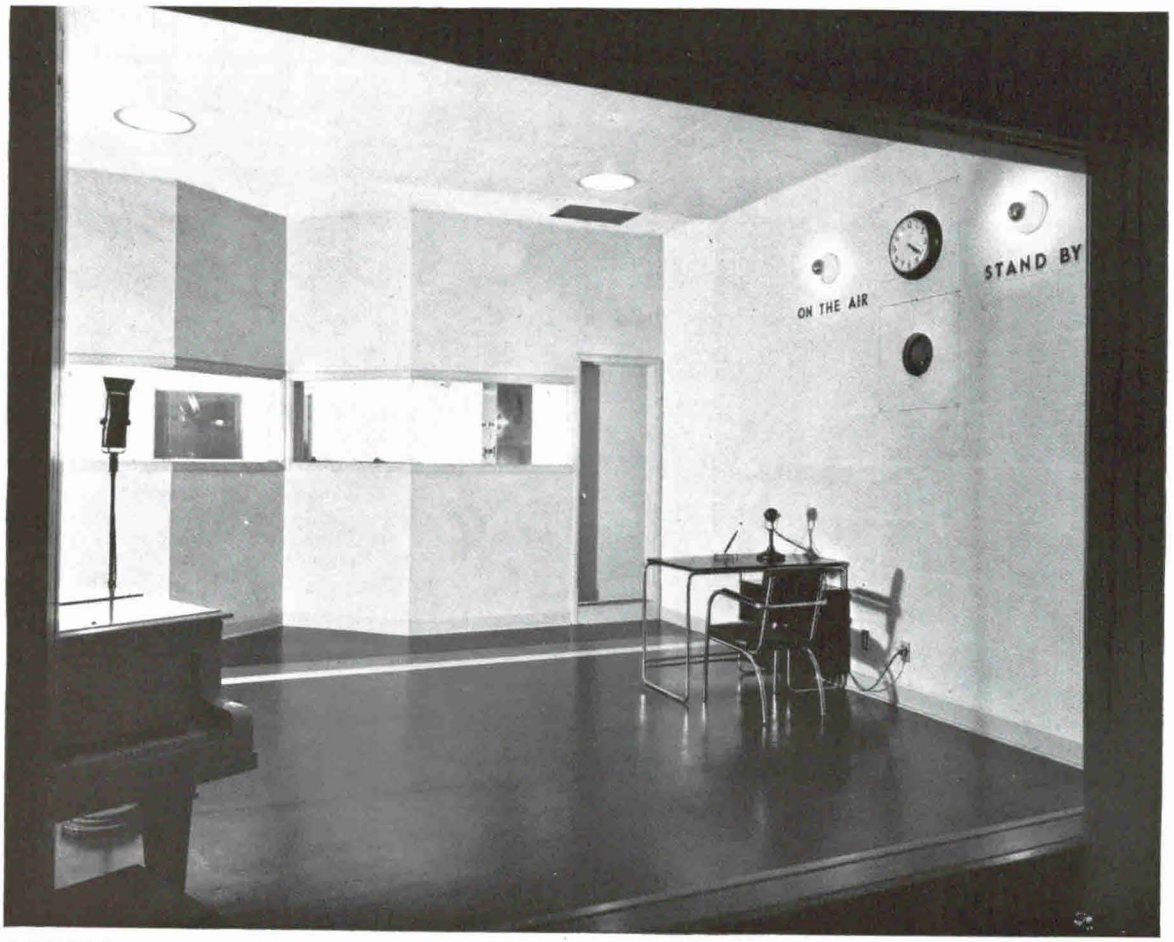


Hedrich-Blessing Photos

THE architect describes the studio as "a small job, interiors only, and as the requirements of the station were not those of the chain studio, the mechanical and acoustical equipment requirements were comparatively simple." Considering the modest program and correspondingly limited budget, the architect produced an excellent solution, clean and efficient in design, and one clearly indicating the special character of the enterprise to be housed.

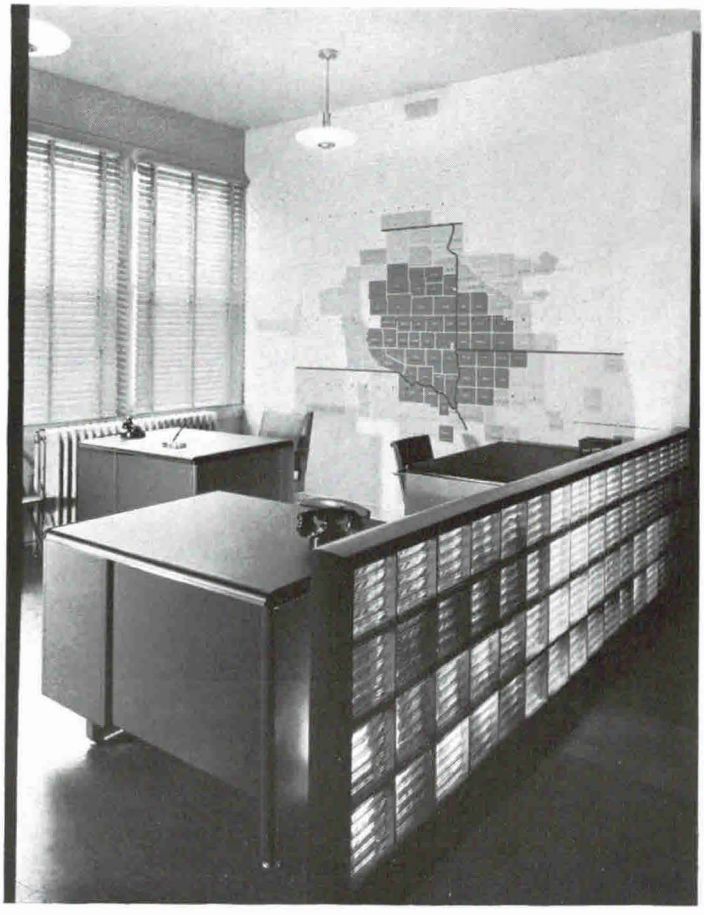
BROADCASTING STUDIO, SIOUX FALLS, S. D.

HAROLD SPITZNAGEL, ARCHITE



STUDIO A

GENERAL OFFICE

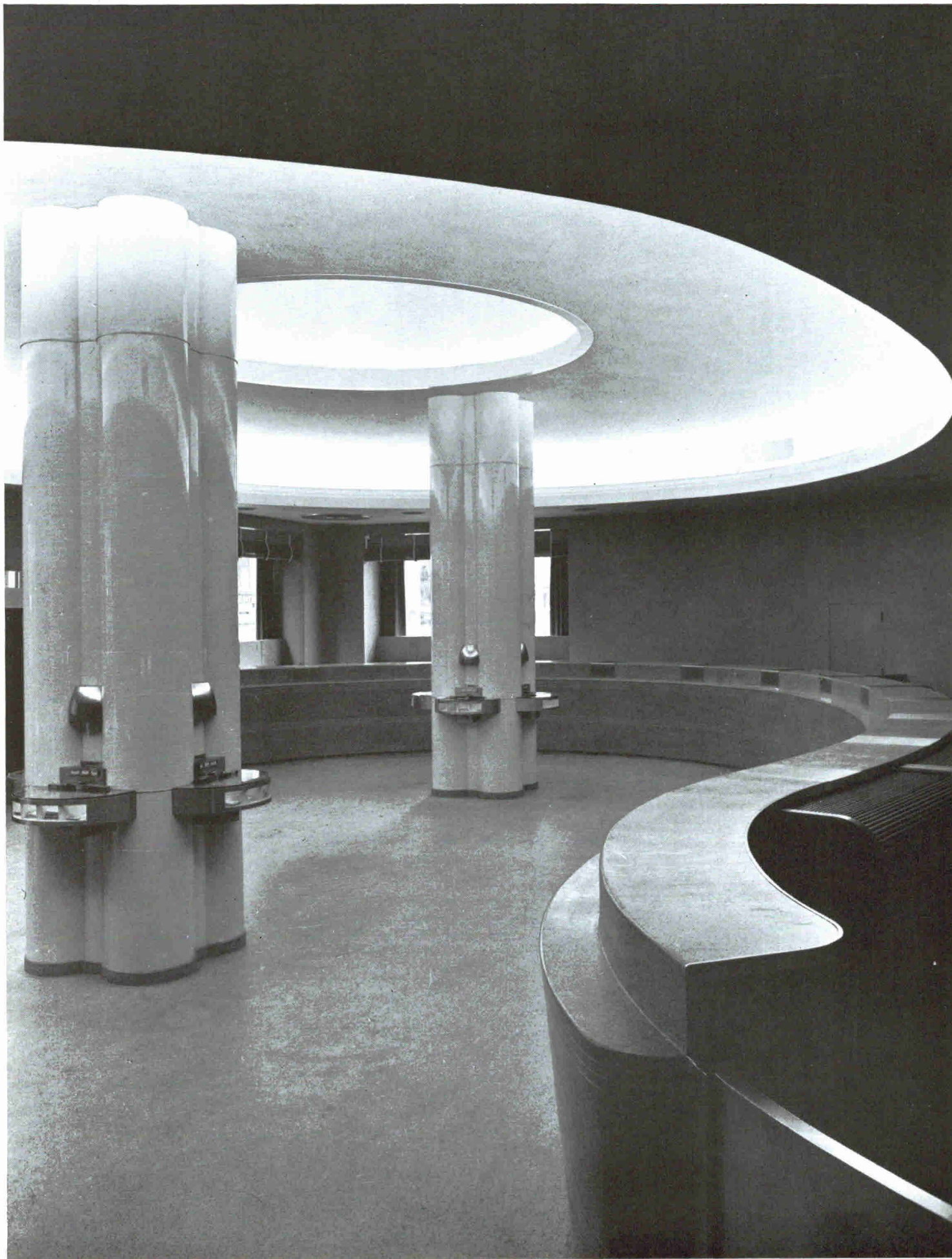


FINISHES AND EQUIPMENT

STRUCTURE—interior partitions—frame, 5 in. tile around studios and announcers' booths. GLASS BLOCK—Owens-Illinois Glass Co. Glass—¼ in. plate; observation windows double glazed, one side slopes to reduce reflection. FLOOR COVERINGS—Studios and announcers' booths—⅛ in. linoleum, Armstrong Cork Co. Corridors, business offices and public space—asphalt tile, Uvalde Rock Asphalt Co. WALL COVERINGS—Acousti-Celotex sound absorbing material and perforated sound insulating wall covering in studio, Celotex Corp. HARDWARE—Interior—satin finish chromium, Yale & Towne Mfg. Co. PAINTING—Interior: Walls and ceilings—flat paint stippled, Benjamin Moore Co. Trim—enamel egg shell. Auditorium—map painted by Palmer Eide, Artist. ELECTRICAL INSTALLATION—Wiring—steel tube and rigid conduit, Steel & Tubes, Inc. Sound equipment—Radio Corp. of America. PLUMBING—All fixtures by Standard Sanitary Mfg. Co.

BANKS

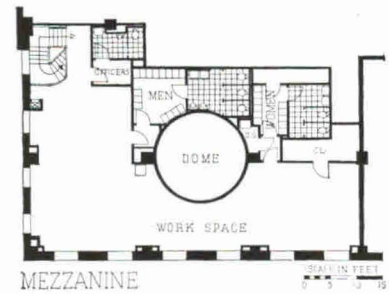
CHASE NATIONAL BANK, NO. 9 ROCKEFELLER PLAZA, REINHARD & HOFMEISTER, ARCHITECTS



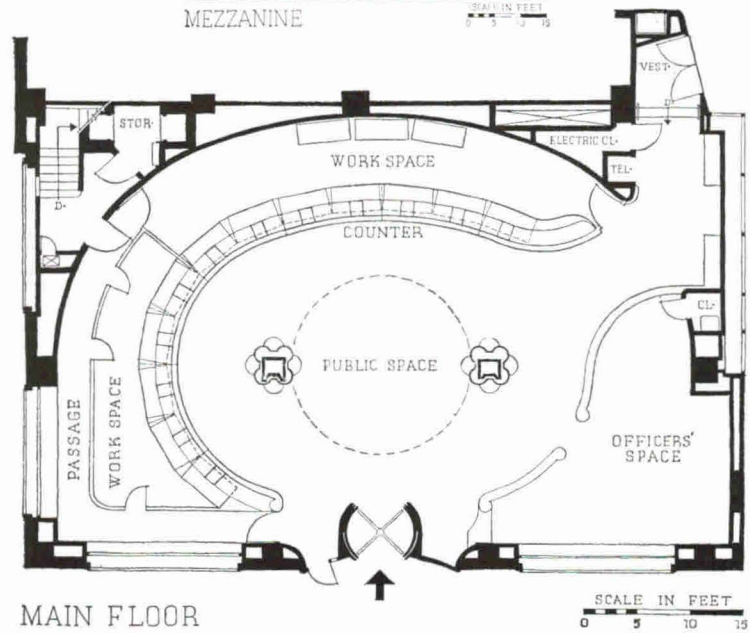
Samuel H. Gottscho Photos

TWO BRANCHES OF CHASE NATIONAL BANK AT ROCKEFELLER

BRANCH AT NO. 9 ROCKEFELLER PLAZA



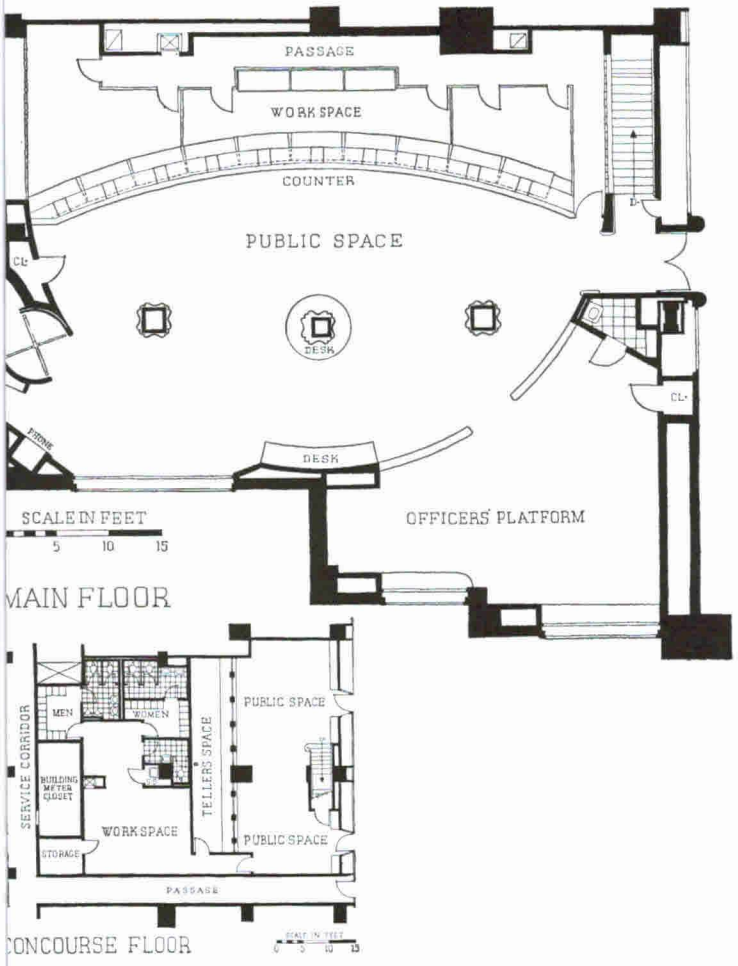
MEZZANINE



MAIN FLOOR

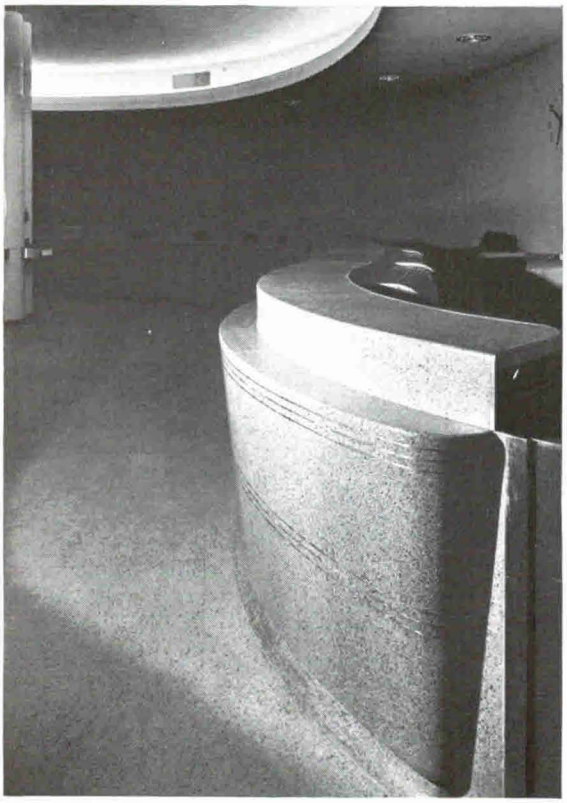
THE simultaneous establishment of two new service branches of the Chase National Bank in Rockefeller Center presented, among other problems, that of their design relationship. While recognition value is not as vital, obviously, as in the case of chain retail stores, it was considered sufficiently important for the architects to repeat a number of basic elements in their two unconventional and highly successful interiors. Among these elements are the following: terrazzo counters, with tellers' cages eliminated; porcelain enameled metal column shells; similar lighting schemes, color treatment, and entrance designs.

BRANCH AT NO. 45 ROCKEFELLER PLAZA

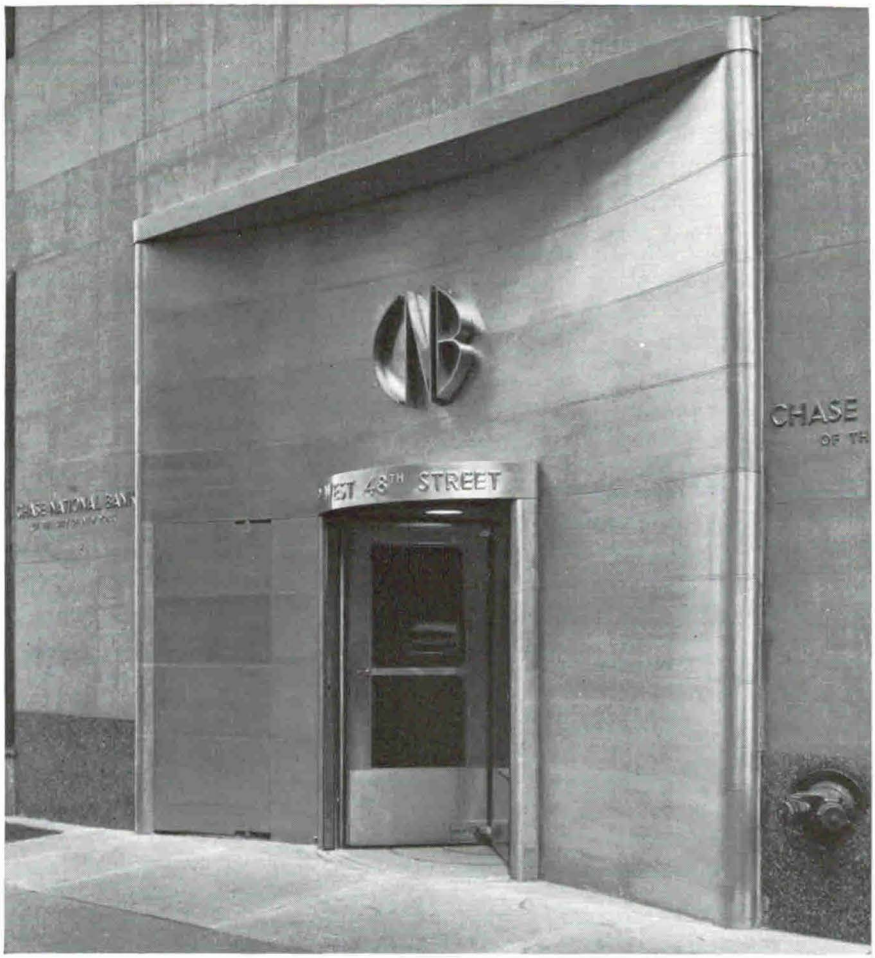


TWO BRANCHES FOR THE CHASE NATIONAL BANK

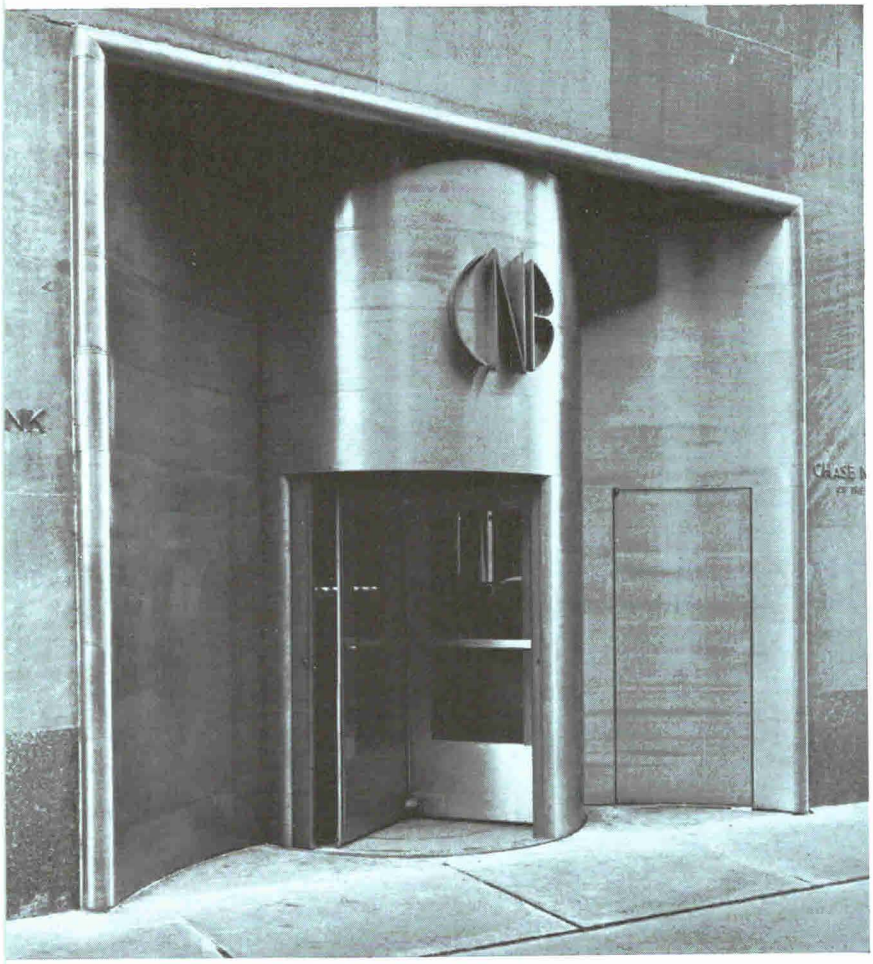
NO. 9 ROCKEFELLER PLAZA



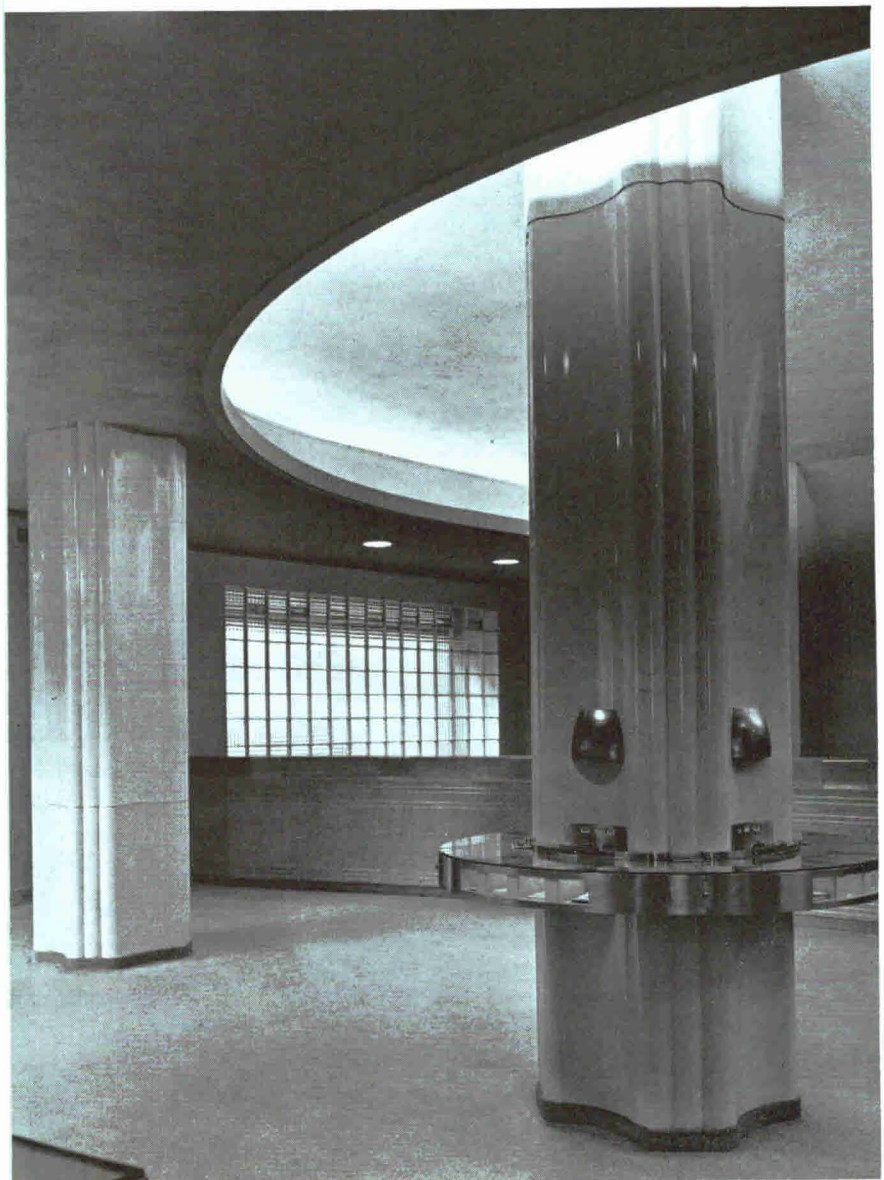
Samuel H. Gottscho Photos



WHILE the basic elements of the banks are similar, they are in no instance identical. Thus the street entrances, both niches in nickel-silver, give varying emphasis to the revolving doors. Slight variations in the decorative bands in the terrazzo counters are also noticeable. Most interesting, however, are the porcelain enameled metal columns, apparently a new use of this material. Better than masonry, these shells frankly express their non-structural character, and present a surface which can be kept spotless with a minimum of difficulty.



NO. 45 ROCKEFELLER PLAZA



FINISHES AND EQUIPMENT

Interior partitions—terra cotta block, National Fireproofing Corp. (No. 9 N. J. Terra Cotta Co.). Columns—Special steel casings porcelain finish, Ace Porcelain & Steel Corp. Insulation—Cabot's Quilt on walls, Samuel Cabot, Inc. Sound insulation for ceiling—Sabonite, U. S. Gypsum Corp. Windows: Interior glass screens, Modern Glass Construction Co. Glass—Libbey-Owens-Ford Glass Co., Blue Ridge Glass Division. Stairs—steel, Dixon Garber; risers and treads—terrazzo, De Paoli Co. Floors and counter fronts—terrazzo, De Paoli Co. and Atlas Cement. Toilet—tile floor and base, Architectural Tile Co. Floor coverings: Linoleum—Sloan-Blabon Corp.; rubber—Goodyear Rubber Co.; carpet—Alexander Smith & Co. Trim and doors—flush steel, Dahlstrom Metallic Door Co. Exterior doors—bronze, Superb Bronze Corp., American Brass Co., Ellison Door Co. and Van Tassell Revolving Door Co. Wood counter desks—maple, Miller & Friedlander Co. Office desks and furniture equipment—Mallin Furniture Co. Hardware—P. & F. Corbin. Interior painting: Walls—3 coats paint and stipple. Wall primer—Benjamin Moore Co. Finish—lead and oil. Ceilings—3 coats lithopone, Benjamin Moore Co. Trim—enamel, Pittsburgh Plate Glass Co. Electrical Installation: Wiring—3-wire Habirshal, Cable Wire Corp. Switches—Pass & Seymour. Ceiling fixtures—Concourse, Burchel Bros. and Westinghouse Electric & Mfg. Co. Cove Lighting—Frink Corp. Clocks—Warren Telechron Co. Plumbing: Toilet fixtures—Crane Co. Drinking fountains—General Electric Co. Soil pipes—Youngstown Sheet & Tube Co. Water pipes—brass, Revere Copper & Brass Co. Central Air Conditioning system: Air washers and fans—American Blower Corp. (No. 9, B. F. Sturtevant Co.). Motors—Crocker Wheeler Electric Mfg Co. Pumps—LeCourtenay Co. Pump controllers—Powers Regulator Co. Electric controllers—Clark Controller Co. Refrigerant Compressors—Carrier Corp. Special equipment: Venetian blinds—Swedish Venetian Blind Co. Safes—Mosler Safe Co. Dumbwaiters—Chelsea Dumbwaiter Co. Toilet stall partitions—Henry Weis Mfg. Co. Ornamental glass—Harriton Carved Glass, Inc.

TWO BRANCHES FOR THE CHASE NATIONAL BANK

REINHARD & HOFMEISTER
ARCHITECT

For the inside entrances to the banks, the architects took as their motive ancient coins from the Chase National Bank's collection. Enlarged many times and executed in a translucent, milky-white glass, the coin designs were set in double nickel-silver doors. Illuminated from behind, they suggest the character of the establishment in a dignified but highly arresting manner.

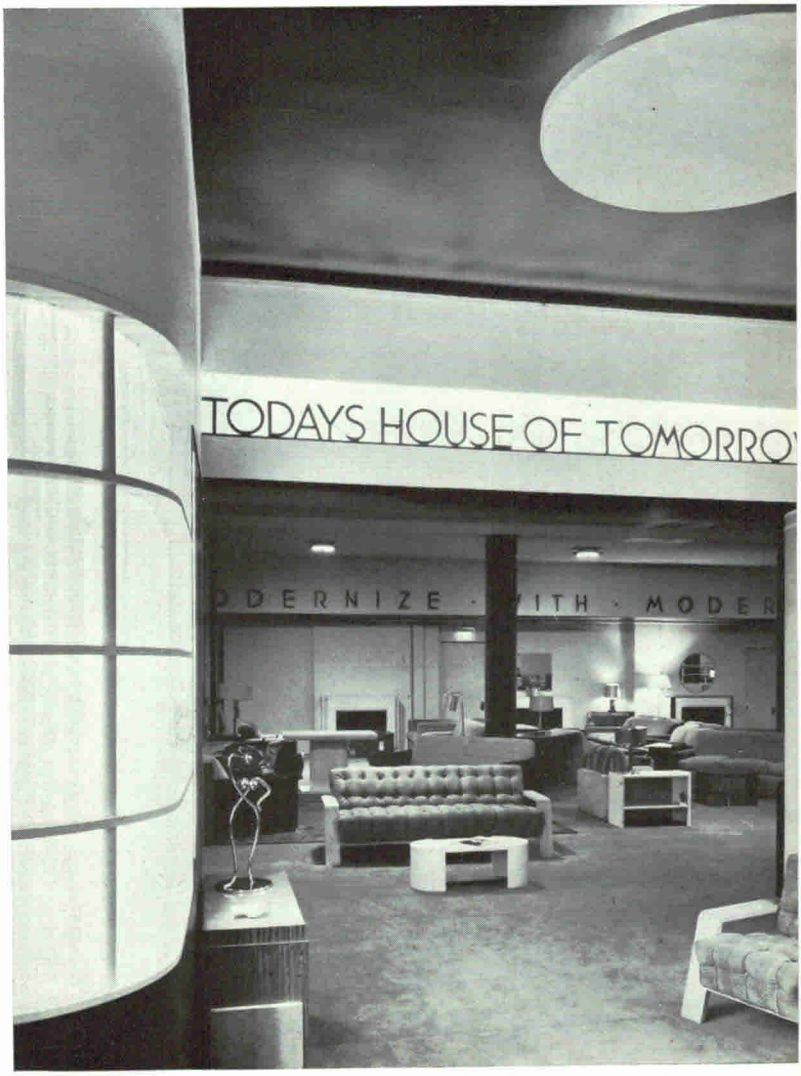
PLANNING TECHNIQUES

FOR NEW AND REMODELED BUILDINGS

The home furnishings business is brisk. Like most of the things people can put off buying for a year or two, furniture experienced an almost complete cessation of business during the worst years of the Depression, but its recovery has been therefore all the more striking. You can still find old-fashioned combination furniture stores and undertaking establishments in the more remote villages of New England and parts of the South, but elsewhere even the small town retail furniture outlet is currently undergoing profound changes.

Renewed activity has called for new merchandising methods, for during the years when the furniture business was marking time, its buying public changed its buying habits. Formerly content to buy almost at random, today's furniture buyer is extremely conscious of Ensemble. This has meant a need for better planned, more integrated display. In its most striking aspect, it has meant the phenomenon known as the Model Home: a separate building set up indoors and completely furnished from cellar to attic. But more generally and more importantly it has meant the need for planned backgrounds—model rooms in which entire lines of home furnishings can be displayed, complete to the draperies and knick-knacks. This, of course, has meant in turn the need for replanning and modernization, on a scale unapproached in any other branch of retail trade—for furniture, much more than other merchandise, is judged according to its background. And this refurbishing of furniture's shabby precincts has not been limited to the "quality" stores, nor to the larger cities. The small town furniture store does a large part of the total business, earns a lion's share of the profits, and manufacturers' associations have not been slow in apprizing their valued rural customers of what their city neighbors are doing. Nor, it should be added, have they been slow in adopting the new ideas once they have been convinced of their profit-making potentialities.

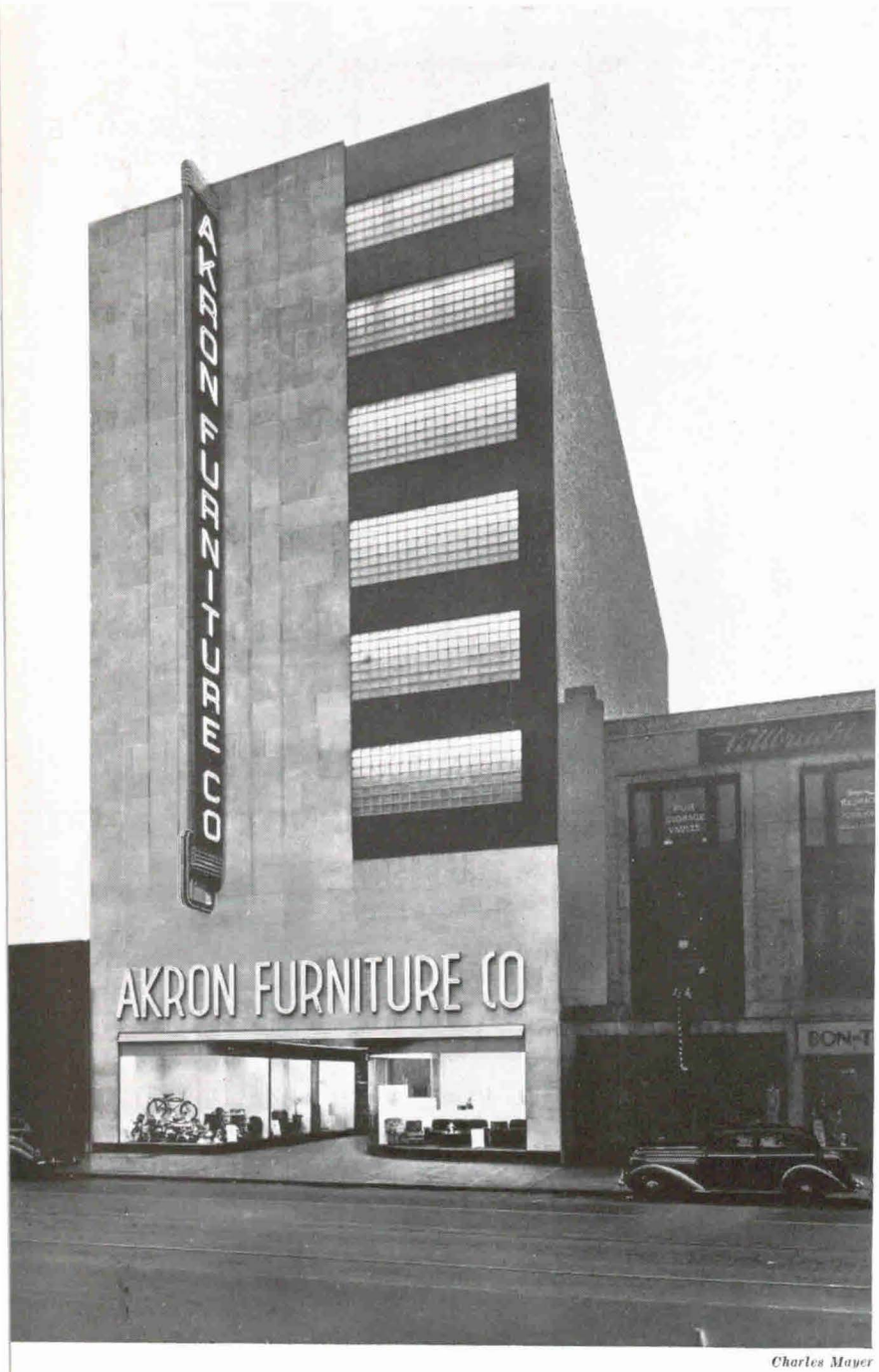
Retail furniture outlets are of two general types: 1) "quality" stores (few in number) and the home furniture divisions of department stores which usually carry quality lines, and 2) the much more numerous low-priced "borax" stores of various sizes, which are currently becoming larger, less plentiful. Because furniture sales per square foot of valued floor space are uniformly low, both types have much to gain from careful, expert planning.



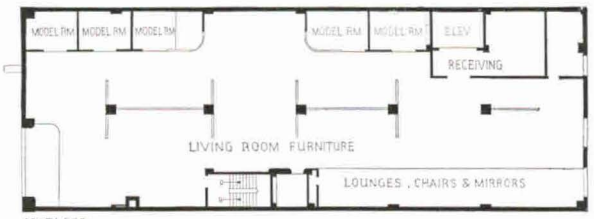
SPEAR & CO., NEW YORK, ROBERT HELLER, DESIGNER

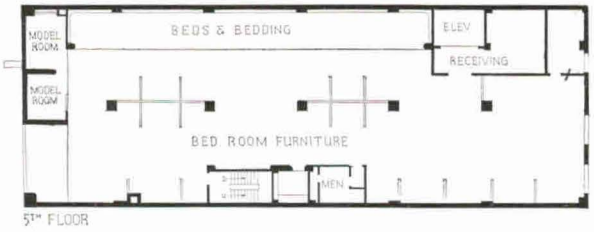
NO. 8. FURNITURE STORES

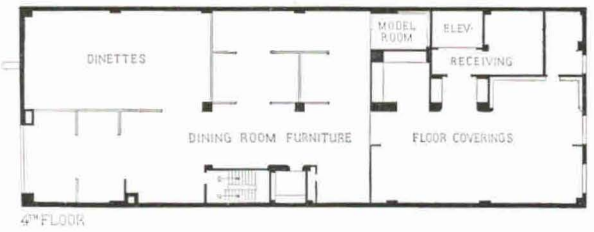
Previously published in this series: NO. 1 SERVICE STATIONS, February 1937; NO. 2, SHOE STORES, March 1937; NO. 3. CAFETERIAS AND LUNCHEONETTES, May 1937; NO. 4. WHOLESALE SHOWROOMS, June 1937; NO. 5. DRUG STORES, July 1937; NO. 6. BOOK STORES, September 1937; NO. 7. HOTEL AND RESTAURANT BARS, November 1937. Readers wishing specific detailed information on Furniture Stores and other subjects previously published are invited to address inquiries to the Forum's Editorial Research Department.

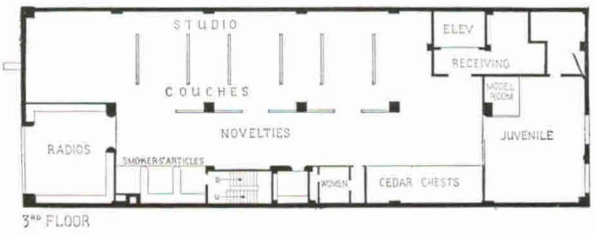


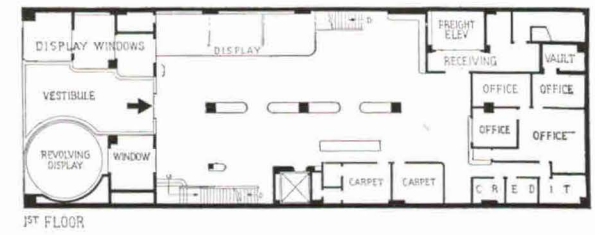
Charles Mayer

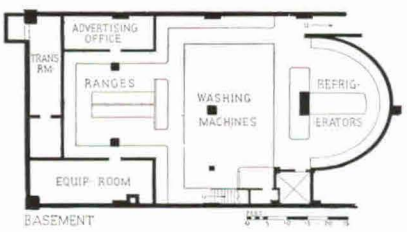








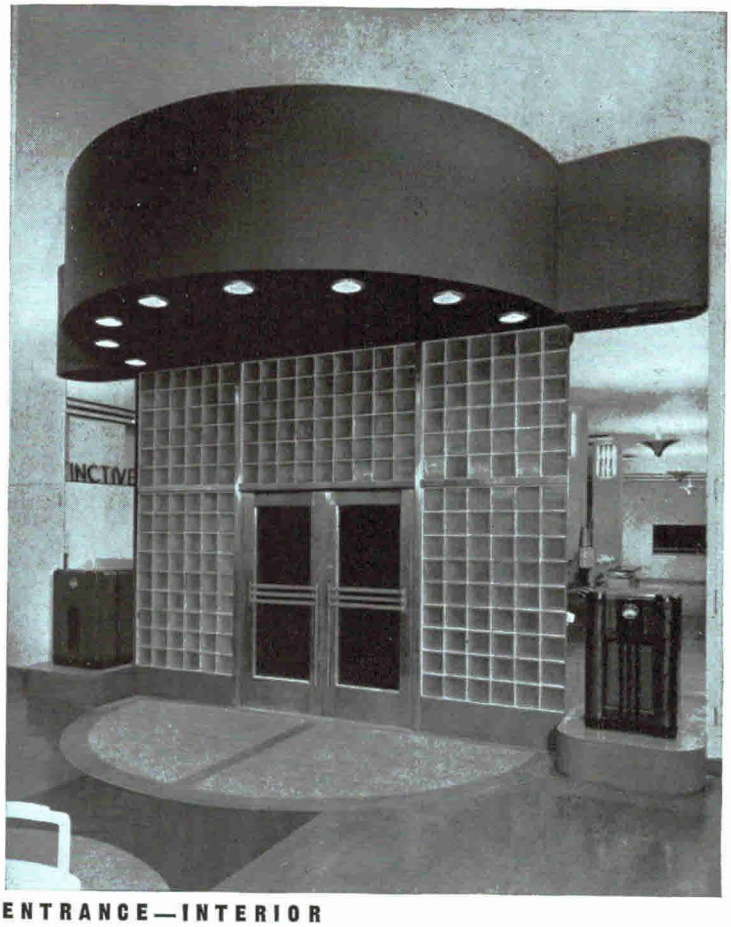




AKRON FURNITURE CO., AKRON, OHIO
ROBERT HELLER, DESIGNER

No feature of furniture store design is more important than the exterior, which has a definite function to perform in attracting customers, identifying and describing the store and its merchandise. This example is all that it should be: it is clearly labeled, suggests quality, dependability, and good taste. The exceptionally deep show window with its revolving stage solves the difficult problem of adequate street display for a large enough number of pieces without creating the effect of a jumble, serves as well to lead the customer off the street and into the store. The clearly differentiated departments in the interiors shown on the opposite page are equally indicative of the designer's understanding of the fundamental merchandising problem.

NTRANCE—EXTERIOR



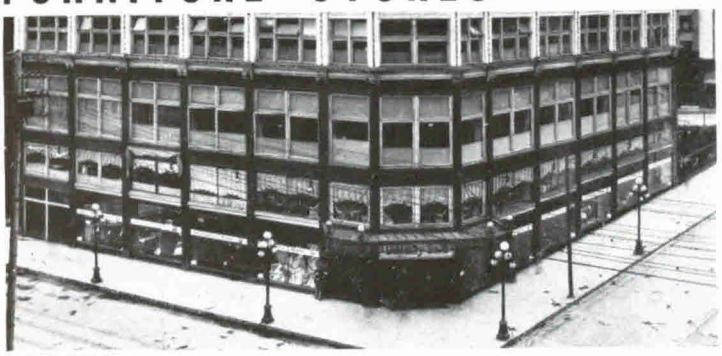
ENTRANCE—INTERIOR

UVENILE DEPARTMENT

BEDROOM DEPARTMENT

Charles Mayer Photos

FURNITURE STORES



BEFORE

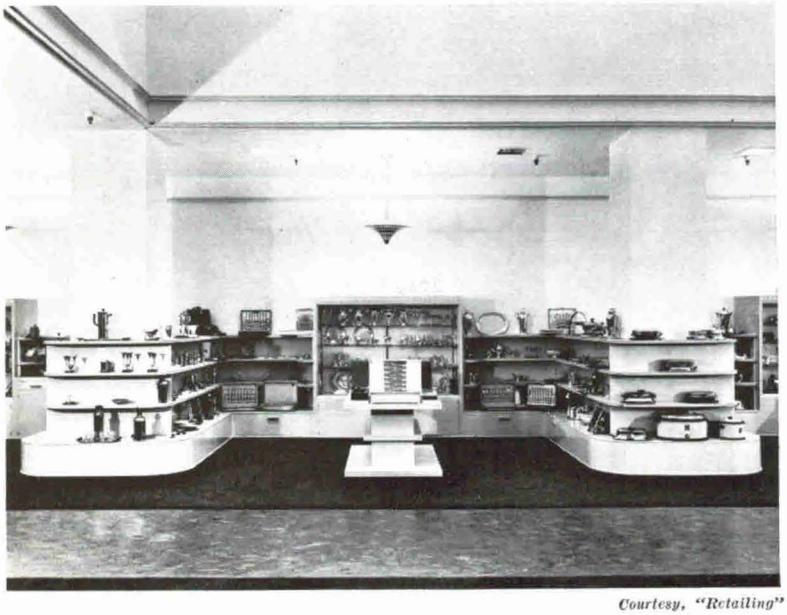
AFTER

Turner

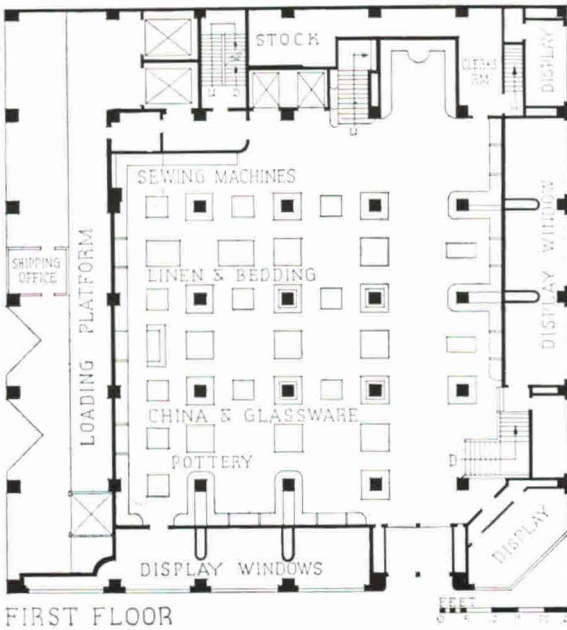
SCHOENFELD STANDARD FURNITURE CO., SEATTLE, WASH.

McCLELLAND & JONES, WILLIAM I. BAIN, ASSOCIATE ARCHITECTS

Proper display and departmentalization of home furnishings is not easily accomplished. In this well-planned remodeling job, utilization of pillars for vertical shelving, the strong lines of the display tables and the excellently handled side-wall alcoves prevent a cluttered effect and draw attention to the merchandise itself. Replacing the corner entrance with a cantilevered display window relieved interior congestion and the former blocking of basement stairs



Courtesy, "Retailing"



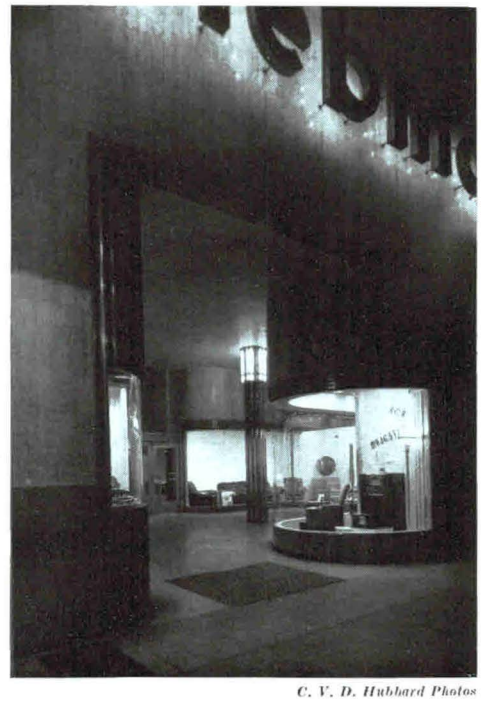
FIRST FLOOR

Snow

LANDKAMER BROS. FURNITURE STORE, MANKATO, MINN.
PASS & ROCKEY, ARCHITECTS

As both of the exteriors on this page indicate, interior wall space in the furniture store is regarded as more valuable than outside light, which, when mixed with artificial illumination, shows furniture to disadvantage. This provides the designer with an opportunity to contrast large masonry areas with the show windows and entrance feature, and furnishes an ideal background for the always-important sign, besides being a perfect medium for floodlighting at night. The Liebman store solves the problem of a narrow frontage by giving the show window maximum possible depth.

J. B. LIEBMAN CO., INC., PHILADELPHIA, PA.
ALFONS BACH, DESIGNER; EDWIN B. SILVERMAN, ABRAHAM LEVY, ASSOCIATE ARCHITECTS



C. V. D. Hubbard Photos

FURNITURE STORES

1.

GENERAL

The typical furniture store consists of selling departments (furniture, floor coverings, draperies, beds and bedding, lamps and gifts, kitchen, radios, appliances and juvenile and toys); credit offices, small rest rooms, and sometimes a small repair or retouch room.

It is debatable whether the first floor is a good selling area or better devoted to the heavy traffic center—the credit department. In the May-Stern store, **(1)** by transferring the credit department to the second floor, a huge first floor was made salable space by introducing three levels and departmentalizing. **(2)** Illustrates the possibilities of a long narrow corridor widened by means of plain wall surfaces and indirect lighting. In the strikingly simple credit department, **(3)** a column is used to good purpose as a writing desk for credit customers.

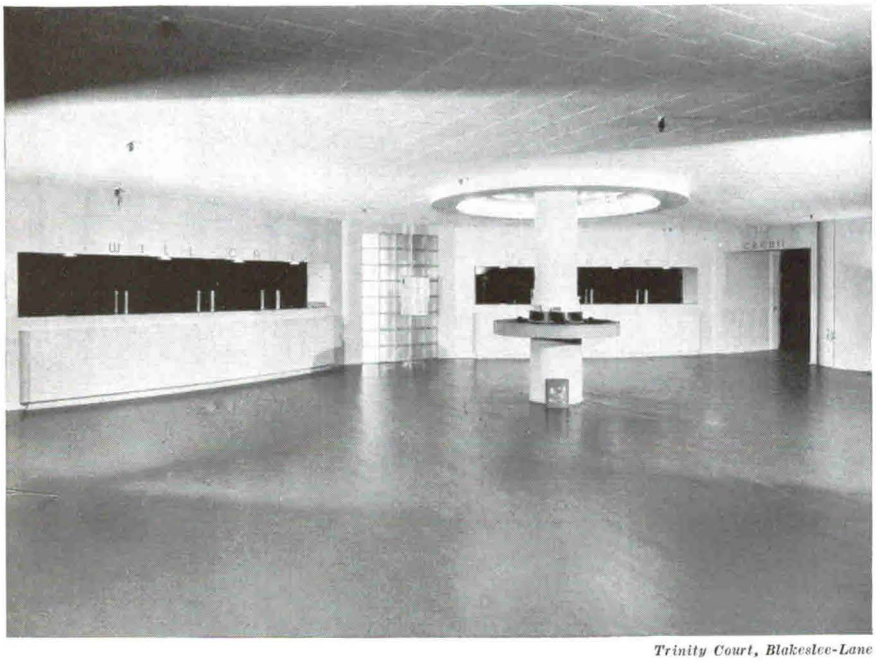
2.

FURNITURE DEPARTMENTS

Ensemble emphasis has increased the importance of the model room until it has become almost a requisite in every furniture department. Three-sided rooms with direct access to the selling floor have superseded the old series of four-sided rooms, making it possible to show good floor covering to advantage and permitting greater flexibility of exhibits. Where the width of the space prohibits use of the model room, a platform with dividers serves the same purpose, **(5)** This can also be used to offset the regimented appearance of lines of furniture, or to tie in huge floor areas, by its warm colored backgrounds and the variation of divider heights.

Lowered ceiling, concealed lighting, built-in windows to transmit subdued natural light are model room characteristics, **(6)** Grouping rooms by utilizing corner space **(7)** or building unglazed, window-like partitions **(8)** breaks up the monotony of a long row of rooms.

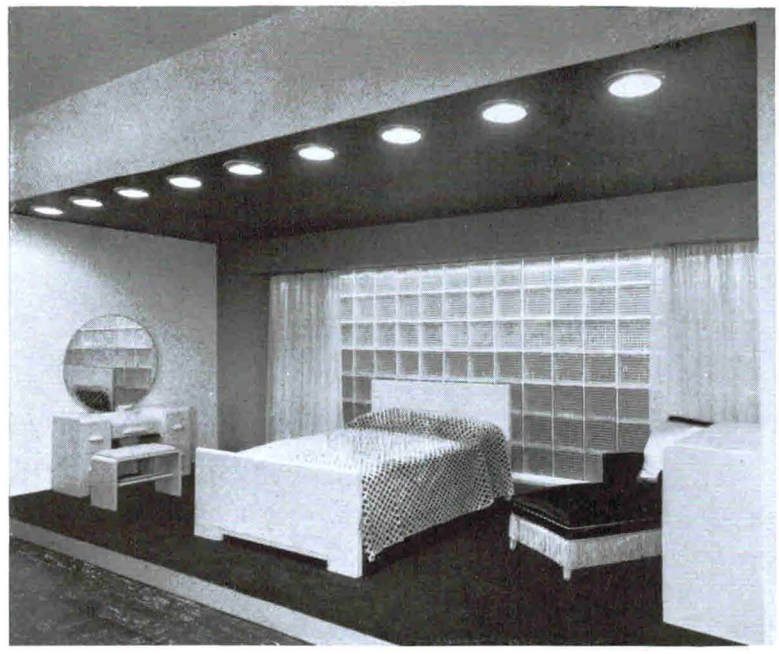
3.

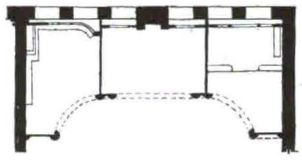


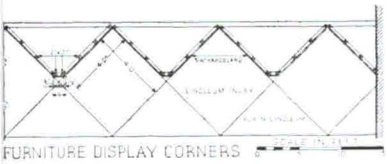
Trinity Court, Blakeslee-Lane

1, 7. May-Stern & Co., Pittsburgh, Pa., designed by Alfons Bach. **(2, 5)** Hecht Bros., Baltimore, Md. designed by Alfons Bach. **(3, 4)** Sibley, Lindsay Curr & Co., Rochester, N. Y., designed by Alfon Bach. **(6)** Akron Furniture Co., Akron, Ohio, se also pp. 156, 157, 164, designed by Robert Heller **(8)** L. Fish Furniture Co., Chicago, Ill.; see also pp 163, 164, designed by Robert Heller.

6.







FURNITURE DISPLAY CORNERS

7.

8.

Blakeslee-Lane

Charles Mayer, Trinity Court, Hedrich-Blessing

1.

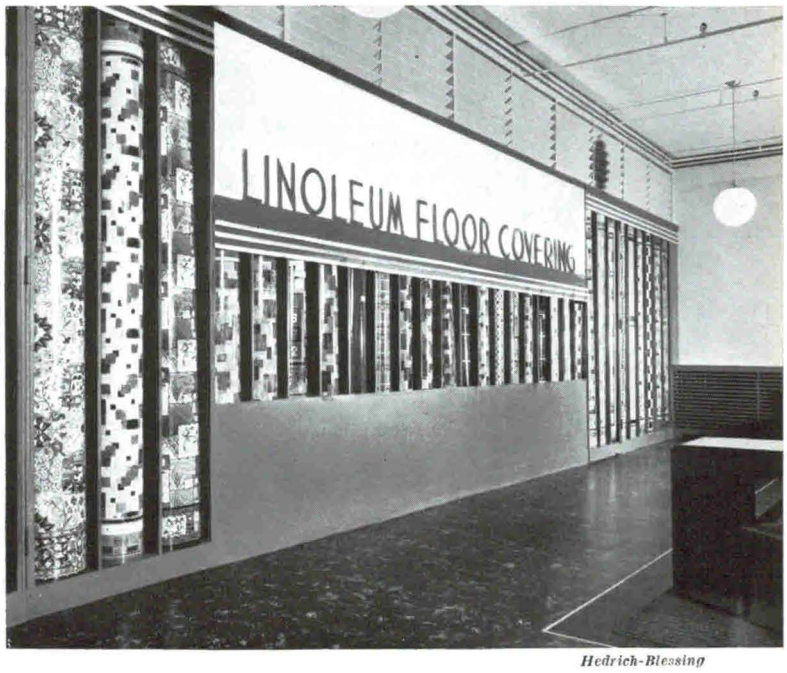
Hedrich-Blessing Photos

2.

3.

Courtesy, Institute of Carpet Mfgrs.

4.



Hedrich-Blessing

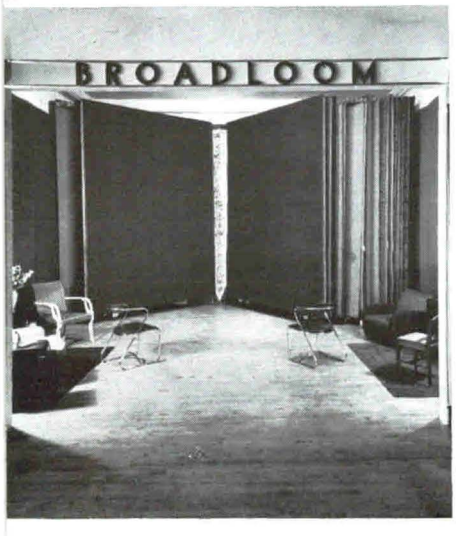
FLOOR COVERING DEPARTMENT

Departmentalization in the floor covering section, and the introduction of new ensemble display ideas have contributed largely toward making it the most profitable department in the housefurnishing group.

Because a rug must be hung vertically to attract attention, but must be seen on the floor to judge its appearance, the ensemble grouping on the right is especially popular. Built-in wall boxes of sample drapery and floor covering length are good solutions for corners and column treatment.

1, 2. Display ideas shown by Style Trend Council, Carpet Institute, at 1938 Furniture Mart, Chicago, designed by Robert Heller. **(3)** Carpet Institute exhibit, January 1937 Furniture Mart, Chicago. **(4)** L. Fish Furniture Co., Chicago; see also p. 160, 164; designed by Robert Heller. **(5, 6, 7)** Niss Furniture Store, Milwaukee, Wis., designed by Clarence Niss.

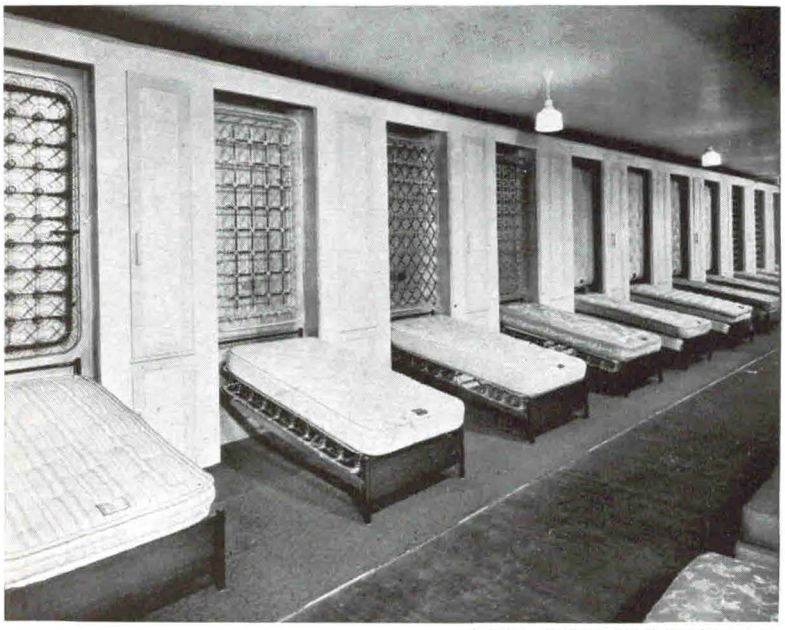
5.



6.

7.

Milwaukee Commercial Photos



1.

Courtesy, National Retail Furniture Assn.

2.

Hedrich-Blessing

3.

Charles Mayer

MISCELLANEOUS

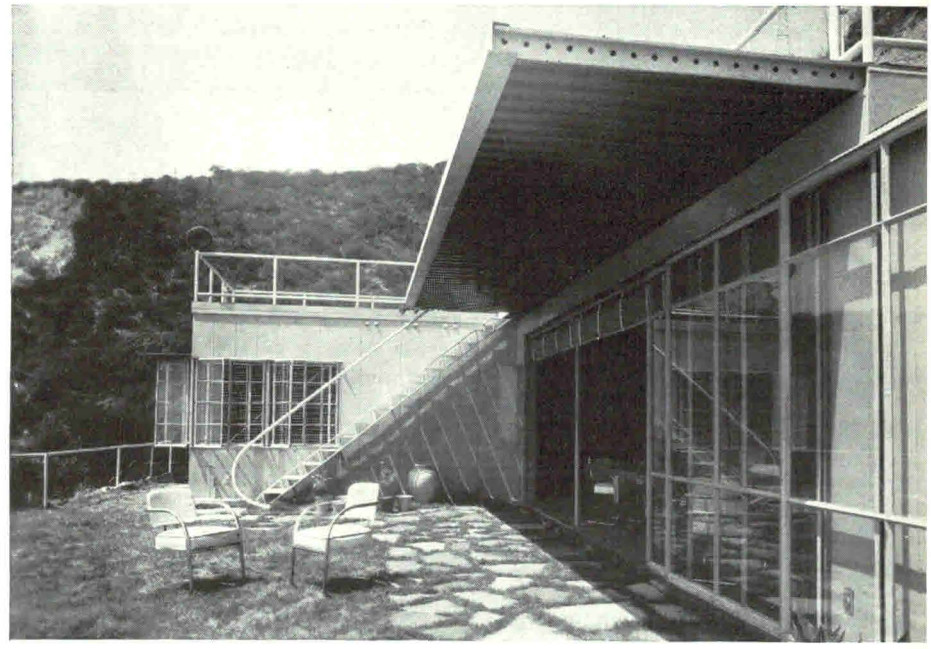
A novel and efficient idea for exhibiting springs and mattresses by combining visual customer attention with ease of testing, is shown at the top, although a less monotonous solution could be obtained by limiting the number.

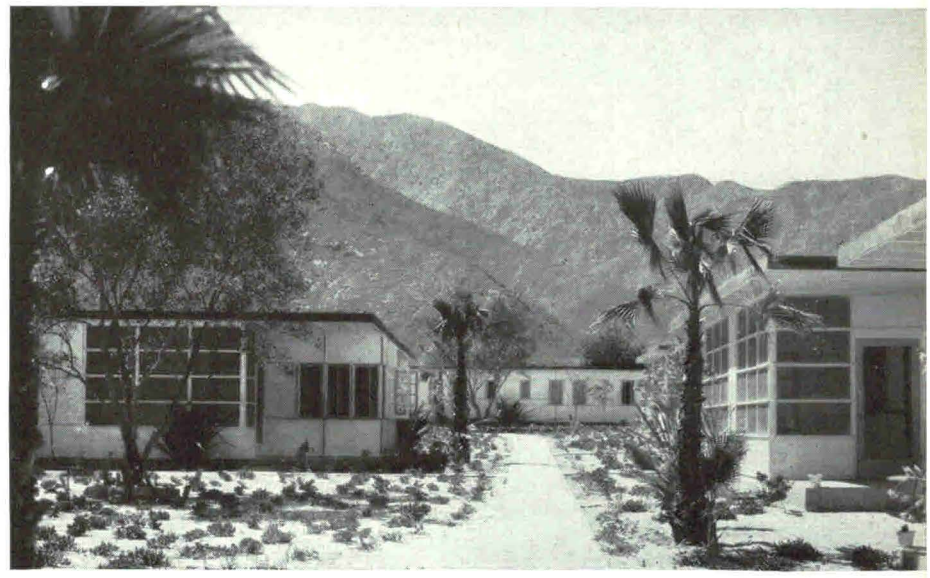
It is important that blankets and comforters be kept clean and fresh-looking. A built-in wall shelf at eye level with sliding glass doors accomplishes this.

A dramatic method of displaying refrigerator and laundry equipment is shown at the left.

1. New England Furniture & Carpet Co., Minneapolis, Minn. **(2)** L. Fish Furniture Co., Chicago, see also pp. 160, 163, designed by Robert Heller. **(3)** Akron Furniture Co., Akron, Ohio, see also pp. 156, 157, 160, designed by Robert Heller.

PRODUCTS AND PRACTICE





Photos, Luckhaus, Peters

Palmer Steel House, Vincent Palmer, architect; Desert Retreat, Palm Springs. Fabricated Houses, In

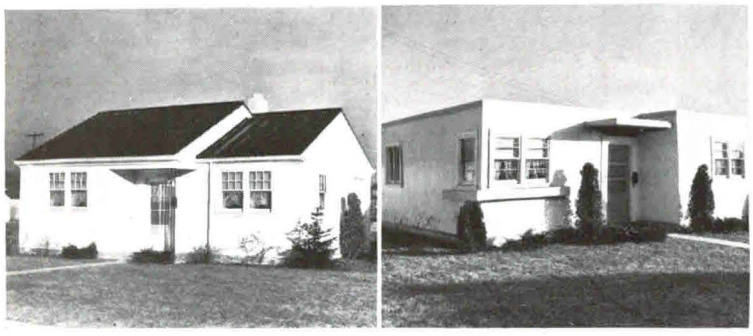
Prefabrication was the means of building more than a thousand houses last year. Not rolled off the production line of a fantastic factory but produced for the most part by builders, these houses marked the turning point of an idea. They have proved the major theorem of Prefabrication—that it is cheaper than traditional construction. They have also demonstrated that a new word is needed to describe the process that built them. The romanticism that pervaded the work of the early theorists has departed, some of them have grayed, and many left the ranks, but a healthy young industry is standing on its own feet and pushing forward, armed with a sales and distribution plan which goes back to fundamentals. In it there are places for the architect, local labor and material dealers.

PREFABRICATION cuts its coat to fit its cloth

DREAMS, discovery, enthusiasm, false starts, a step back, two forward. Thus have most new arts toddled to maturity. Less typical was Prefabrication, which has moved at the lugubrious pace of all building history. Mechanization of construction was gradual until the European war offered a pause in building during which groups of technicians and artistic sociologists found time to pool their ideas. Prefabrication assumed the proportions of a philosophy, became a part of the manifesto of the International Style, and found literary expression in the writings of LeCorbusier, whose housing projects of 1915 called for monolithic construction. Not long afterward the Jules Verne school of building began to propound its theories in this country. Another pause, the depression was a mixed blessing for the technologists. The experimental stage was protracted unduly by absorption with mechanical research at the expense of sound economic study and a clear statement of the problem. An indiscriminate use of steel, concrete, and other materials without study of their behavior under new conditions, and a grand disregard for freight costs and thermal conductivities naturally resulted from the lack of a real proving ground. Greatest single error was the notion that prefabrication of the shell of a house, whether it was by panel system, or monolithic construction, could markedly reduce the total cost of an isolated house. The first real jobs to get off paper were launched inopportunely during building's greatest slump, accompanied by publicity which caused the sponsors, and the theory in general, to suffer considerable embarrassment.

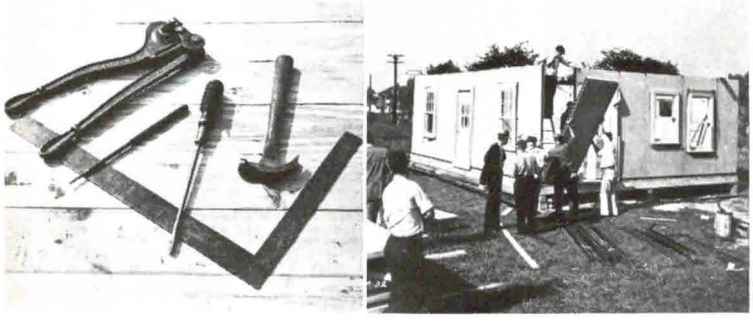
Two years ago, with much on paper and little on terra firma, the verbal battle of prefabrication was waged on these fronts:

FOR	AGAINST
IT *is logical to believe that shelter, like other commodities, can be produced in quantity with proportional savings in cost.*	SHELTER *is unlike other commodities, in its intimate association with climate, and the human needs of individuals.*
ENGINEERS *can reduce the physical problems of the production of commodities to their simplest terms. Write a program, establish a module, select a material, and the way is clear. The major structural parts of skyscrapers have been prefabricated for years. To apply skyscraper organization to dwelling construction should be very simple.*	THE *technical problems have been solved—well enough for the present. Unsolved is the big problem, merchandising, which is based on knowledge of markets. The housing market is undefined. A skyscraper is the product of a group, experienced in technique and in business management. The home builder is inexperienced, and his house is his castle, not a business enterprise.*
PREFABRICATION, *through its scientific approach, is a part of modern architecture. One justifies the other, and traditional design must bow to the logic of flat roofs and repetitive elements. Automobile history proves that mass produced articles become esthetically acceptable as the price diminishes.*	REASONABLE *or not, modern architecture is not for the masses. An automobile is good for a few seasons and achieves a single purpose—transportation. A house represents a life's savings and is a symbol of dignity—not a machine. There is no wisdom in building a logical house if it can't be sold.*
PREFABRICATION *implies controlled materials, which will be more durable, fire-resistant, salvable, and maintenance-free than natural materials, hence good security for building money.*	THE *appraiser must be alert to more than construction. He has discovered that the physical life of a building is often overshadowed by social or stylistic obsolescence.*



Flexibility demonstrated by reversing the plan and subtracting the roof. Two low cost houses by Steel Buildings Inc.

An arc-welded house on the way to its foundations. Plumbing is installed, walls painted, and shutters hung. The Hobart Bros. Co.



Tools required to assemble a Stran-Steel house, and the last wall panel being eased into place before roofing. Stran-Steel Div. Great Lakes Steel Corp.

Like most modern arguments, this one has been settled by action rather than words. Last year, with house building on the upswing, came the first taste of success for the prefabricators and with it the second disappointment: large scale developers were applying mass production methods. Just when the factory-built house began to compete in cost with the individually built house, along came the horizontal skyscraper. The site became the factory, the workmen a moving gang on a stationary production line. Standard materials were designed into the plans, and the Integrated House became more than an idea.

THEME

Manufacturers of prefabricated sections are now concentrating their sales effort on these large scale projects, for they would provide the major requisite of economical shop fabrication: a concentrated market. The average manufacturer prices his product F. O. B. the factory, and is necessarily restricted to competitive activity within a distance of about 100 miles from the plant. By means of large shipments, or even setting up a temporary plant at the site if the size of the order warrants it, this often fatal transportation charge can be absorbed. A partial solution to distribution problems was found by several manufacturers engaged in the production of a wide range of building products already stocked by dealers. However, despite missteps in marketing, stiff competition, and the failure of prefabrication to encompass the mechanical trades, over 1 per cent of last year's single family houses were constructed according to some regular scheme of prefabrication, and an unknown but much larger percentage contained structural elements partially or wholly factory-built. This, in a country of mainly rural population and decentralization of building, is progress.

VARIATIONS

The "assembled house," as it is more accurately called, is currently produced in three forms.

1. The complete, or mobile house, assembled in the factory with services and decorated, is propelled to the site on a specially constructed truck.
2. The panel house. Walls, floors, partitions, roofs, finished in varying degrees, are shipped to the site and assembled. Finish roofing, decoration, and mechanical work is completed on the job.
3. The factory moves to the job. Not true prefabrication, but mass production at least.

The first method is of course limited to operations within short distances of the plant, and involves special permits for use of highways, and difficulties with overhead wires and trees.

The necessity for extreme rigidity and light weight almost dictates the use of steel or processed wood products for the structure. For employe housing, R. G. LeTourneau Inc.* fabricated several such houses of arc welded steel entirely in their factory, which is normally devoted to the construction of heavy grading equipment. The Copper Mobile House* of Architect John J. Whelan consists of smaller units, a number of which form the finished house. The Hobart Brothers Co., makers of arc welding equipment, have produced arc welded steel houses experimentally in this manner, but the size of the plant, the storage space required, and the Egyptian proportions of the delivery job restrict the one-piece house to specialized applications at the present time.

The second type of operation offers the most flexible arrangements within the structure of existing building practice. The construction and storage of large numbers of identical panels require relatively normal production methods and floor space. Many manufacturers who launched themselves into the market with full-fledged systems a few years ago have proved to themselves the limitations, both technical and economic, of the packaged house, and are now concentrating on the product they can best handle—sections for the shell of the house. Rather than buck the mechanical trades unions and the local dealers, the producers have set up the local builders as distributors and often the lumber dealer becomes a branch fabricator. This is the method employed by the Homasote Co., and a recent widening of the policy to include steel shapes in the dealers' stocks was inaugurated by the Stran-Steel Division of the Great Lakes Steel Corporation,† who arrange with the dealer to sell steel like lumber, aided by a construction and merchandising plan and a few simple tools. American Houses, General Houses, Gunnison, Steel Buildings, Incorporated, National Houses, Incorporated, and others, distribute their panels through local builders, and roofing, siding (if any is used), paint, masonry, plumbing and heating equipment, and electrical installation are supplied locally. With this list of labor and material "by others," it is not surprising that the value of the parts prefabricated usually represents less than a third of the cost of the house, often drops to one-tenth.

MATERIALS

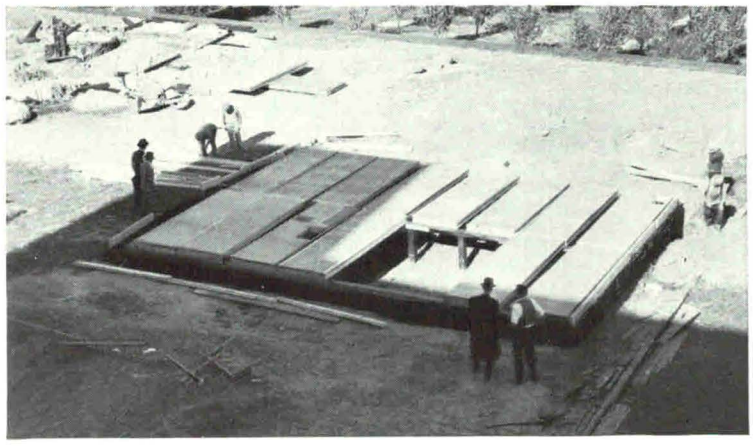
Structural techniques for realization of the first category of houses range from existing conventional shop welding and vibrated concrete technique to the extreme of the "cocoon" trailer shell, wound over deflatable rubber forms, as proposed by Corwin Willson. Several manufacturers who now confine themselves to smaller panels first attempted to fabricate whole sides of houses, with windows, doors, and ornament, in concrete. The savings due to shop procedure were more than balanced by the cost of erection. Certain monolithic effects are, of course, unobtainable by other methods. Welding, at first glance the logical mass production tool for steel work, has proved itself suitable for shop production, but in the field the omnipresent overhead, slack periods, and confusion have thus far prevented any signal demonstration of true economy over bolting, clamping, or other existing means of attachment.

STEEL

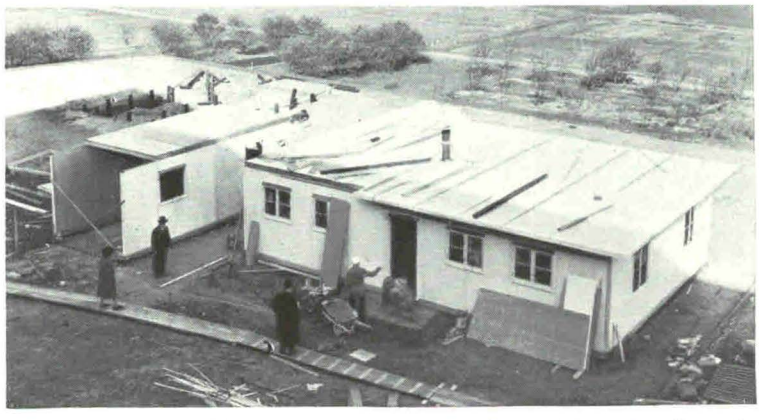
Despite the high capitalization required for steel fabrication, and the unfamiliarity of building labor with the erection of steel, that material is used as the structural basis of most of the panel schemes in Group 2. The problems of attaching other materials

*See Arch. Forum, July, 1937, p. 53.

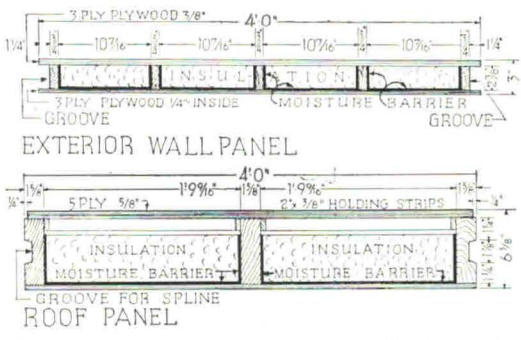
†See Arch. Forum, January, 1938, p. 107.

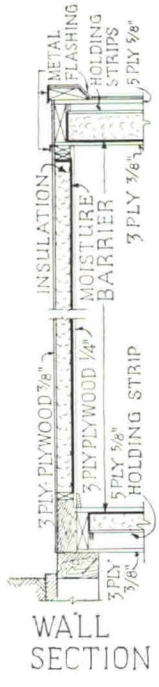


Floor panels, with ⅛ in. hardwood veneer for wearing surface, ready to be fitted together with splines. Experimental house, Forest Products Laboratory.

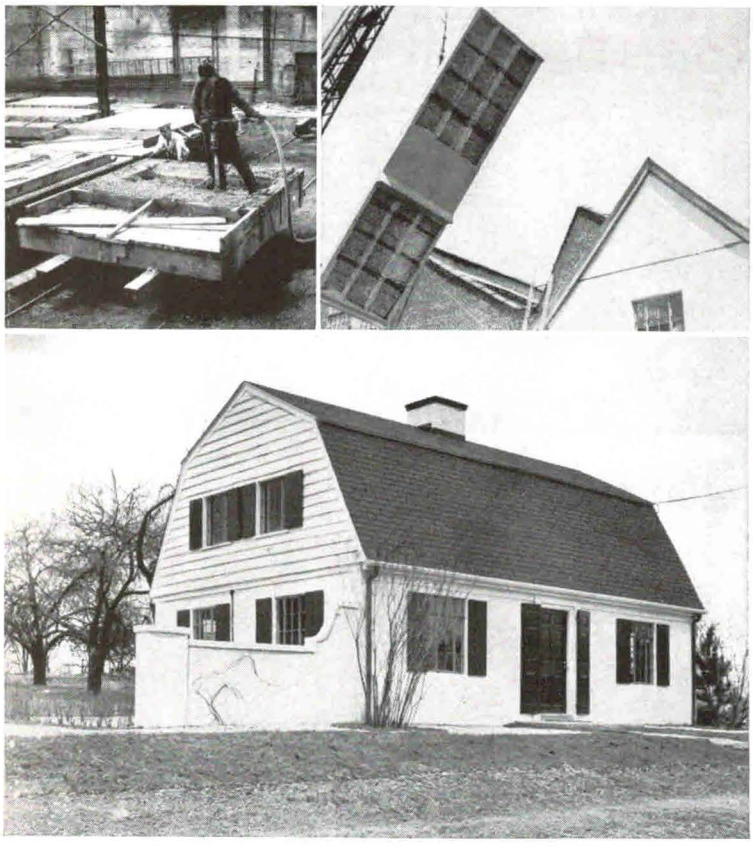


House panels assembled and garage nearing completion. Tops of wall panels are grooved to lock with strips on roof panels, tying them together.





The completed house, and details of the "stressed-skin" panel construction of resin-bonded plywood. Great care was taken to make the paper moisture barrier tight at joints, reducing the possibilities of condensation.



Upper left: vibrating concrete wall panel with window inserted; right: lifting precast roof panel into place, and a house completed by this method. Connecticut Precast Building Corp.

Harvey Patteson Photos

Three stages in the erection of a house by the Makeco System. Precast panels ready for erection are lifted in place, joints are poured and the house is ready for painting or stucco. Mathews & Kenan, engineers.

to steel, and avoiding through conducting members in exterior wall sections have been solved generally. It is significant that those systems using steel sections which have been developed for commercial buildings and are in regular production regardless of the demands of the residential market have been most successful, from the point of view of sales. Steel fabricators in this category, Palmer Steel Buildings, Incorporated, using the shapes of the H. H. Robertson Co. for walls, occasionally for floors and roofs, are operating in the Pacific Southwest. Foundations, plumbing, heating, and interior finish are let to local contractors, and local labor erects the house under supervision. Eleven models of house are listed at from $6,500 to $18,000, although the flexibility of the construction, in 12 in. hollow cells spot-welded to flat steel sheet, lends itself to any plan, with slight changes. Movies of construction and finished jobs are used in merchandising the system. The "Unibilt" System by means of which the Soulé Steel Co. has erected numerous commercial structures on the Pacific Coast, consists of large wall sections shop fabricated from light open web steel studs and joists. After erection on the site by electric welding, stucco on welded fabric is applied to the exteriors, and plaster on metal lath to the interiors. Framing members, deformed by a nail-holding slot, are the basis of the Stran-Steel system. Obviously, the sheathing material and interior finish may be chosen at will, but in Stran-Steel's merchandising plan, local lumber yards apply insulation board, millwork, and assemble complete panels which are erected by the builder.

The "Steelox" and "Frameless Steel" systems, product of Steel Buildings, Incorporated (which took over the business of the Insulated Steel Construction Co. on December 1) utilize formed panels of Armco Paint-Grip steel. Local builders supply all or part of the additional requirements. A choice of plywood, plaster, insulation board, or other materials is offered for interior finish. With prices F. O. B. Middletown, Ohio, a territory of about 300 miles radius is served, although large jobs have extended this distance at times. National Houses, Incorporated, uses steel panels the edges of which are bent at right angles to the face for insertion in steel studs at the site. Expanded vermiculite between the exterior and interior steel surfaces provides insulation, and the same material, mixed on the job with an asphalt binder, becomes roof insulation and base for built-up roofing.

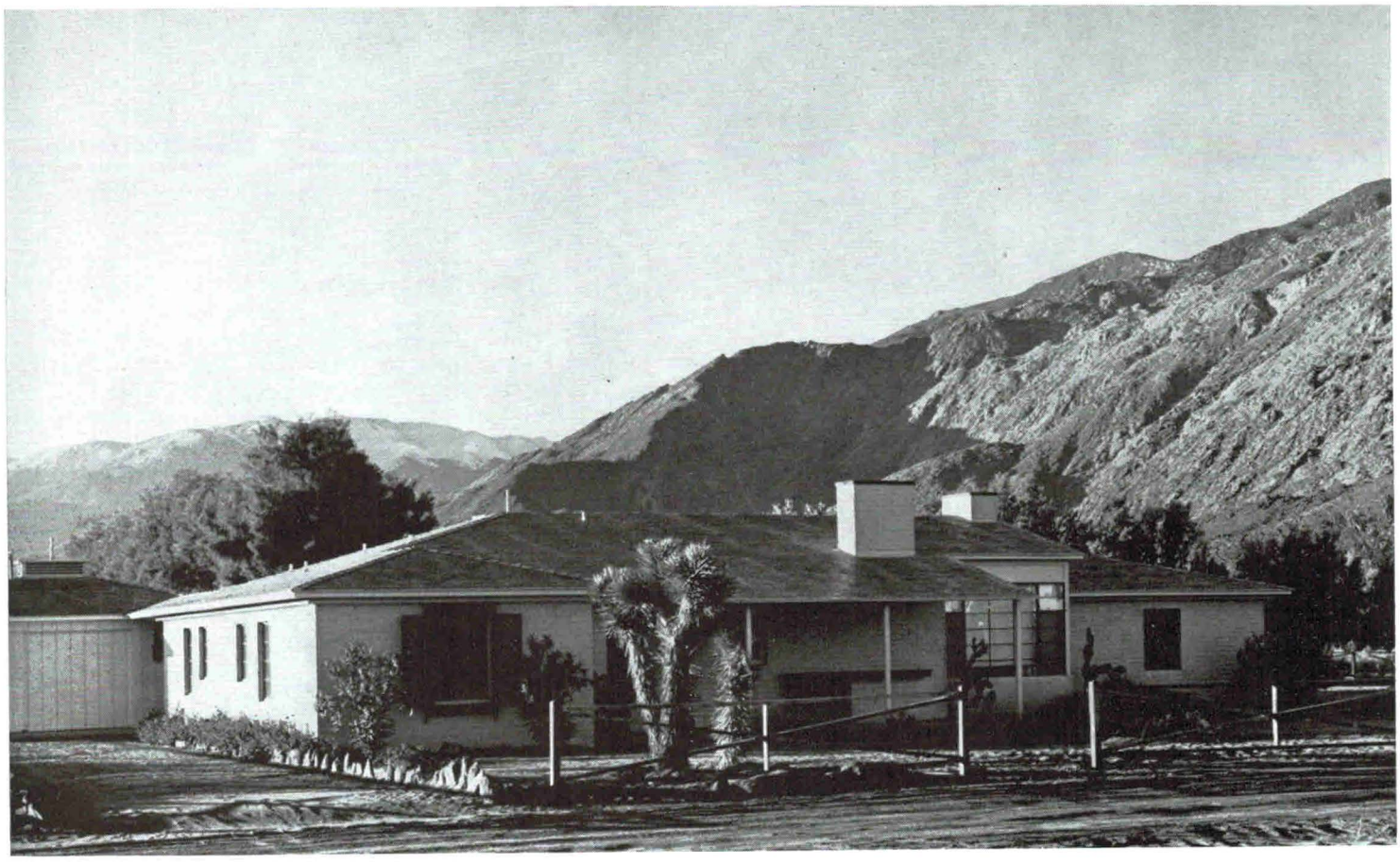
The Lea Steel house, produced in Los Angeles by W. C. Lea, Incorporated, consists of a steel channel frame, slotted at intervals to hold horizontal framing and sheets of steel-covered insulation board. Floor framing is of double channels, and openings and other details are rigidly standardized. Fifteen of these houses, grouped around a large court and centrally heated, compose a successful rental project in Reno, Nevada. New American Homes, Incorporated, operating in the vicinity of Chicago, employ a steel frame of miniature I-beams of 16 gauge steel. A double shell wall of Thermax panels 2 in. thick is produced by locking slots in the edges of the insulating board over the flanges of the studs. The Ferrocon Corporation offers a steel frame and flooring system composed of rolled interlocking solid web joists and studs. Metal lath is attached to the two sides, and appropriate concrete floor or stucco, brick veneer, or other finish, is applied. The Columbian Steel Tank Co., having produced thousands of service stations, is venturing into the small house field with a light sectional system similar to their regular product.

PLYWOOD

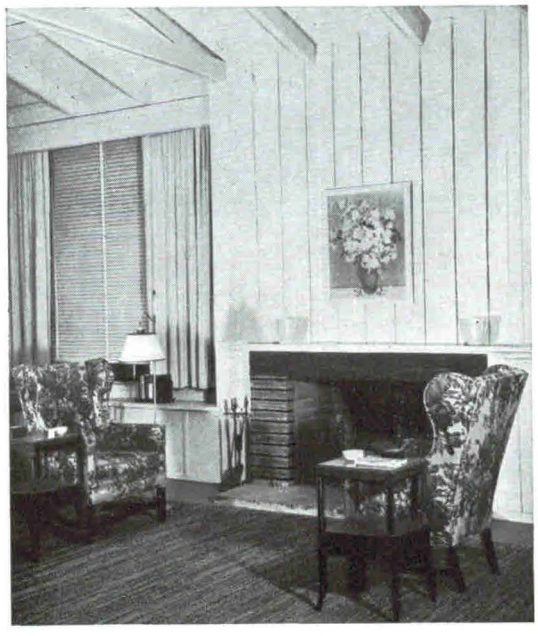
As predicted, there has been widespread recognition of the value of resin bonded waterproof plywood as a basic panel

(Continued on page 62)

HOUSE FOR R. R. BUSH, PALM SPRINGS, CALIFORNIA



FLOOR PLAN



ROBERT H. AINSWORTH, ARCHITECT

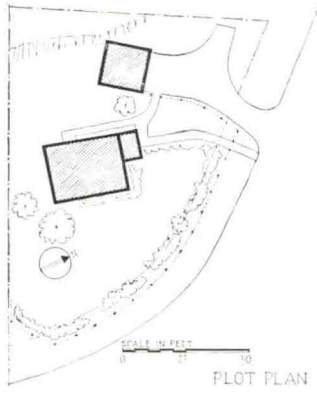
Most of the characteristics of the pleasing southern California house are exhibited in this residence at Palm Springs: the combination of native and modern influences on the design, the spread-out plan on one level, the liberal use of sheltered out-of-door living spaces, the low roofs. With its long horizontal lines the house fits unobtrusively into the rugged landscape. Cubage 32,300. Cost: $12,500 at about 39 cents per cubic foot.

CONSTRUCTION OUTLINE

FOUNDATION: Cement slab.
STRUCTURE: Exterior walls—precast hollow cement.
ROOF: Covered with red cedar shingles.
WINDOWS: Sash—steel casement, Truscon Steel Co.
FLOORS: Asbestos tile over concrete, Tile-Tex Co.
HARDWARE: Polished brass, Schlage Co.
ELECTRICAL INSTALLATION: Wiring system—thin wall conduit. Switches—Despard, Pass & Seymour.
KITCHEN EQUIPMENT: Range—General Electric Co. Refrigerator—Frigidaire Corp.
BATHROOM EQUIPMENT: All fixtures by Standard Sanitary Mfg. Co. Cabinet—Hallenscheid & McDonald.
HEATING: Gas-fired warm air furnace. Hot water heater—automatic storage, Thermador Electric Co.

HOUSE FOR JULIA S. BERRALL, MONTCLAIR, N. J.

Daniel Reynolds Merrill Photos



CONSIDERING the effectiveness of dark painted siding it is strange that this treatment is not more frequently employed. In this example the use of color seems particularly appropriate: the dark green walls, relieved by oyster white accents, relate the house more closely to its country surroundings, and emphasize the part of the fence in the composition. The plan is unusual in its subordination of the service area to the living room, a practical arrangement for the small house. A steeply pitched roof permitted two bedrooms of good size on the third floor. Cubage: 28,800. Cost: $9,400 at 32.6 cents per cubic foot.

SECOND FLOOR

THIRD FLOOR

BASEMENT

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—red cedar clapboards, tarred building paper, pine sheathing, studs with Johns-Manville, Inc. 3 in. rock wool, U. S. Gypsum Co. rock lath, and white plaster. Floor construction—all framing lumber, No. 1 fir.

ROOF: Construction—wood rafters, sheathing, felt, covered with weathered gray slate.

CHIMNEY: Lining—terra cotta. Damper—H. W. Covert Co.

SHEET METAL WORK: Flashing and leaders—16 oz. copper, Chase Brass & Copper Co. Gutters—fir and copper.

INSULATION: Outside walls—3 in. rock wool bats; roof—4 in. rock wool bats, Johns-Manville, Inc.

WINDOWS: Sash—double hung, wood. Storm sash for all windows with felt weatherstrips. Glass—quality A, double thick, Pittsburgh Plate Glass Co.

STAIRS: Treads—first quality white oak. Risers and stringers—white pine.

FLOORS: Living room, bedrooms and halls—first quality white oak. Kitchens and bathrooms—Sealex Veltone, Congoleum-Nairn, Inc.

WALL COVERINGS: Main rooms—wallpaper, W. H. S. Lloyd Co. Bathrooms—linoleum, Congoleum-Nairn, Inc.

HARDWARE: Knobs—solid brass, P. & F. Corbin. Wrought iron by The Craftsmen.

PAINTING: All paint materials by Pittsburgh Plate Glass Co.

ELECTRICAL INSTALLATION: Wiring system—General Electric Co. Fixtures—Bronze Art Fixture Co.

KITCHEN EQUIPMENT: Range—R. H. Macy Co. Refrigerator flat top, General Electric Co. Sink—Standard Sanitary Mfg. Co. Cabinet—Elgin Stove & Oven Co.

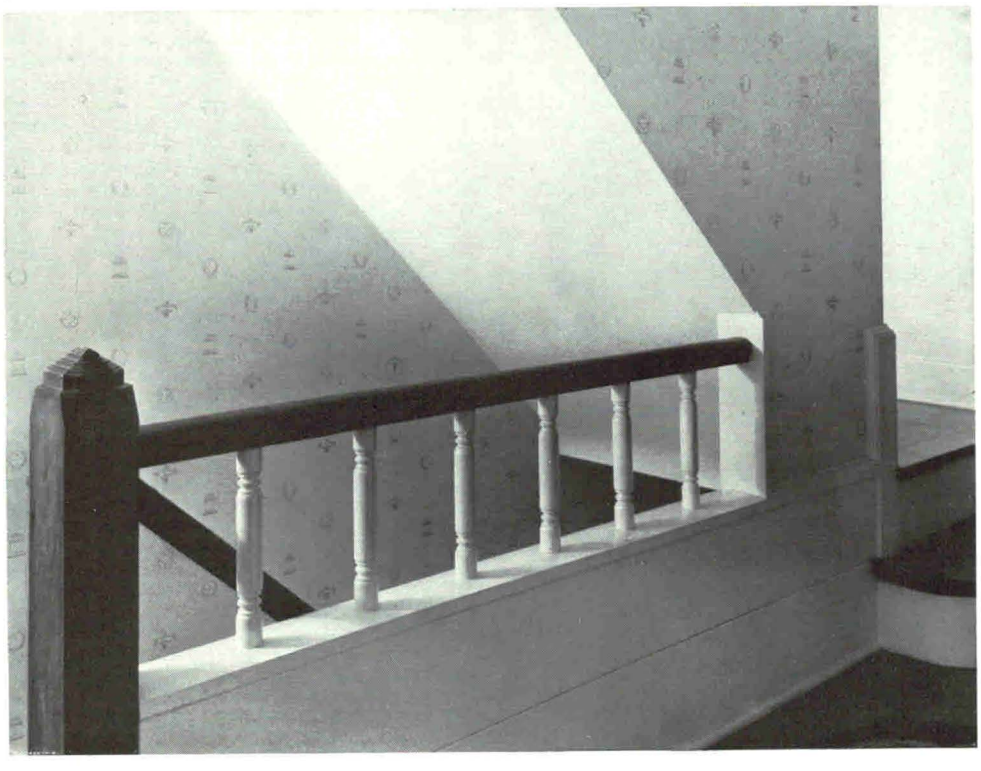
LAUNDRY SINK: Enameled iron, Standard Sanitary Mfg. Co.

BATHROOM EQUIPMENT: All fixtures by Standard Sanitary Mfg. Co. Cabinet—chrome frame, Miami Cabinet Div. of Philip Carey Co.

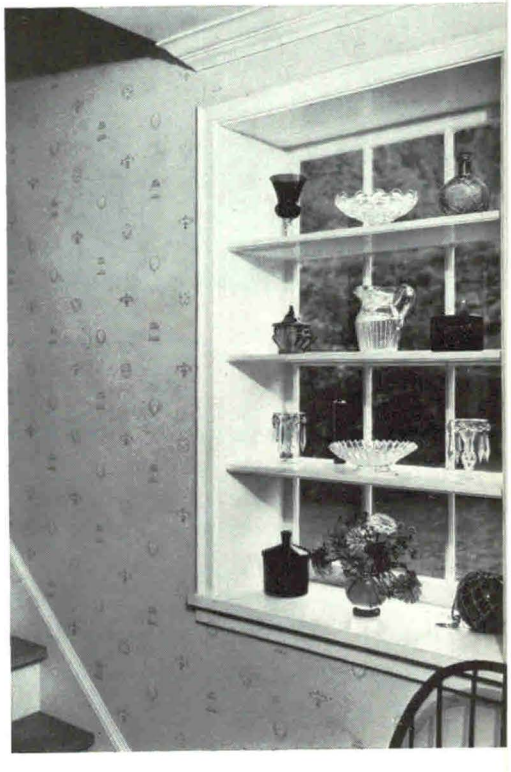
PLUMBING: Soil pipes—extra heavy cast iron. Waste and vent pipes—2 in. galvanized iron. Water pipes—¾ in. copper tubing.

HEATING AND AIR CONDITIONING: Bryant gas-fired winter air conditioning unit with heating, moistening and filtering, Bryant Heater Co. Thermostat—Minneapolis-Honeywell Regulator Co. Hot water heater—Rex automatic gas, Cleveland Heater Co.

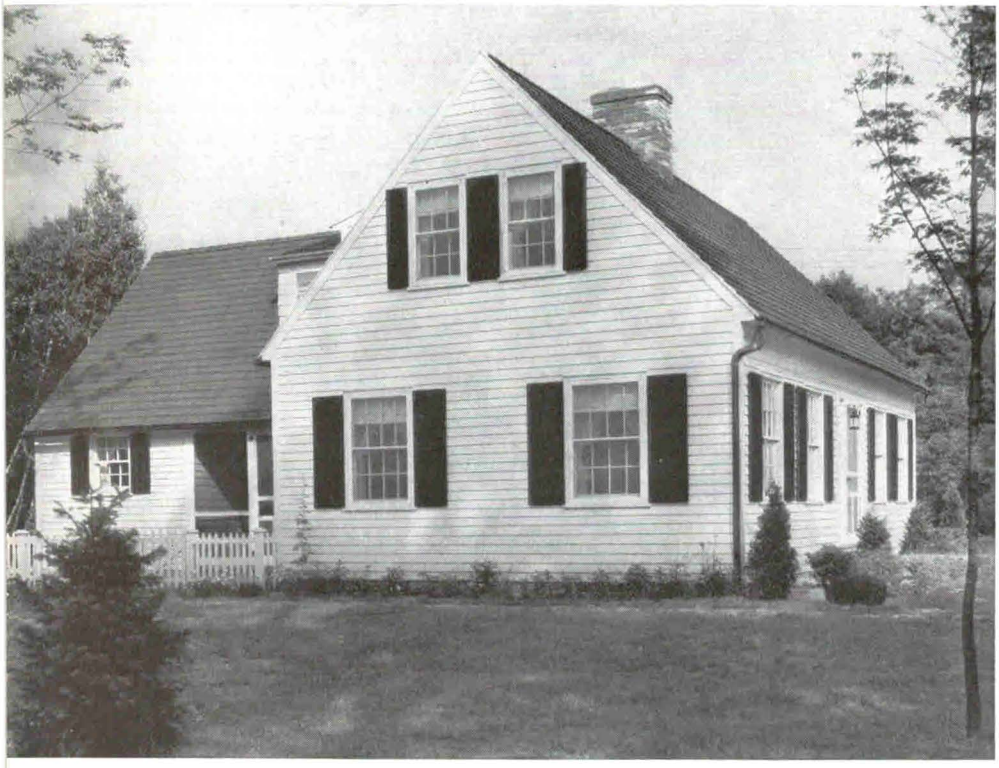
STAIR DETAIL

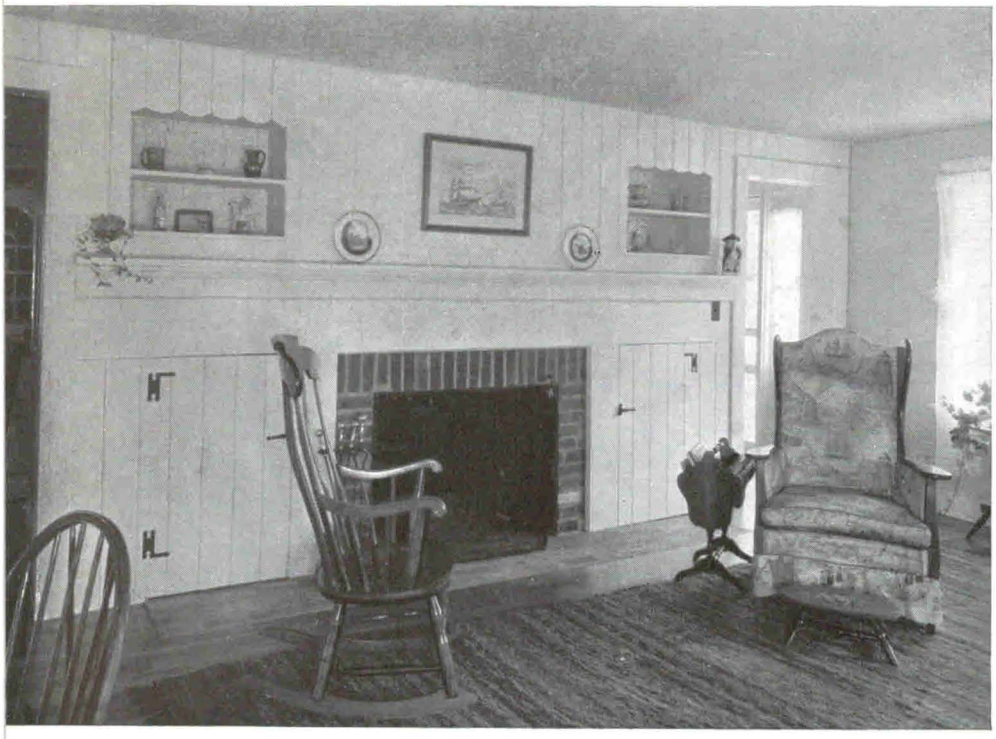


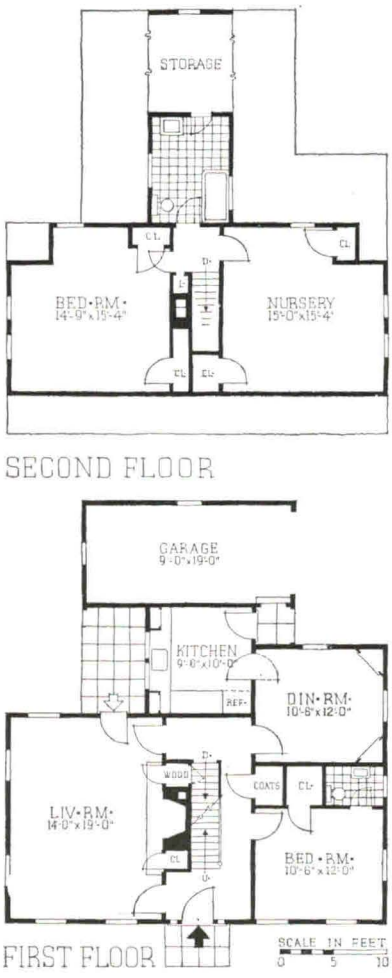
WINDOW IN STAIR HALL



HOUSE FOR H. R. Le SIEUR, MORRIS PLAINS, N. J.







SETH H. ELY, JR., ARCHITECT

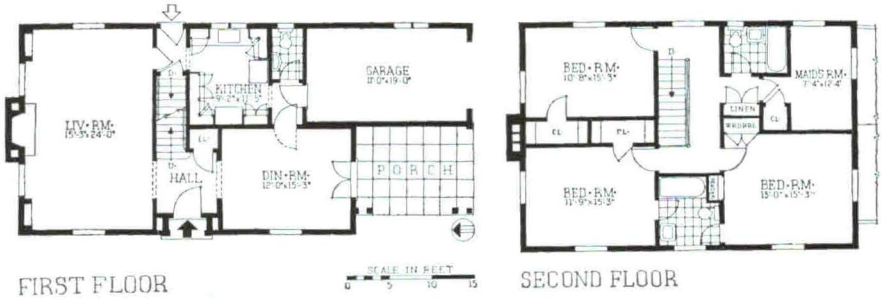
A CAREFULLY studied plan has here produced a one and a half story house with all rooms cross- or through-ventilated, bedrooms on two levels, and a compactly arranged kitchen well located for service. Stylistic precedent has been carefully followed in both exterior and interior treatment, with the result that the scale of early Colonial small houses has been maintained. Cubage: 23,700. Cost: $6,800, at about 29 cents per cubic foot.

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—clear red cedar siding, building paper, shiplap, studs, U. S. Gypsum Co. rock wool insulation and rock lath, 3 coats plaster, lime finish.
ROOF: Royal clear red cedar shingles and 4 in. U. S. Gypsum Co. Red Top rock wool.
CHIMNEY: Damper—H. W. Covert Co.
SHEET METAL WORK: Flashing, gutters and leaders—Anaconda copper, American Brass Co.
WINDOWS: Sash—double hung, wood, Andersen Frame Corp. Glass—double thick, quality A, Lustra, American Window Glass Co. Weatherstripping—Chamberlin Metal Weather Strip Co.
FLOOR COVERINGS: Kitchen—linoleum, Armstrong Cork Co. Bathrooms—tile.
WALL COVERINGS: Living room, bedrooms and halls—wallpaper, Imperial Paper & Color Corp.
WOODWORK: Trim—white pine. Interior and exterior doors—6-panel, Farley & Loetscher.
HARDWARE: Interior and exterior—McKinney Mfg. Co.
PAINTING: Interior: Floors—Minwax Co. Trim and sash—3 coats Dutch Boy, National Lead Co.
ELECTRICAL INSTALLATION: Wiring system—Rome wire, General Cable Corp. Switches—General Electric Co.
KITCHEN EQUIPMENT: Range—Westinghouse Electric & Mfg. Co. Refrigerator—Coldspot, Sears, Roebuck Co. Sink—linoleum countershelf, chrome edging, Standard Sanitary Mfg. Corp.
BATHROOM EQUIPMENT: Lavatory, tub and shower—Standard Sanitary Mfg. Co. Toilet—T/N, W. A. Case & Son Mfg. Co. Seat—C. F. Church Mfg. Co. Cabinet—United Metal Box Co.
PLUMBING: Soil pipes—extra heavy cast iron, Bethlehem Steel Co. Water pipes—copper tubing, Anaconda American Brass Co.
HEATING AND AIR CONDITIONING: System by Delco-Frigidaire Conditioning Corp. Radiators—American Radiator Co. Valves—packless, American Radiator Co. Thermostat—Minneapolis-Honeywell Regulator Co. Hot water heater—built-in, Taco Heaters, Inc.

HOUSE IN WILMETTE, ILLINOIS

BERESFORD BECK, ARCHITECT



FIRST FLOOR

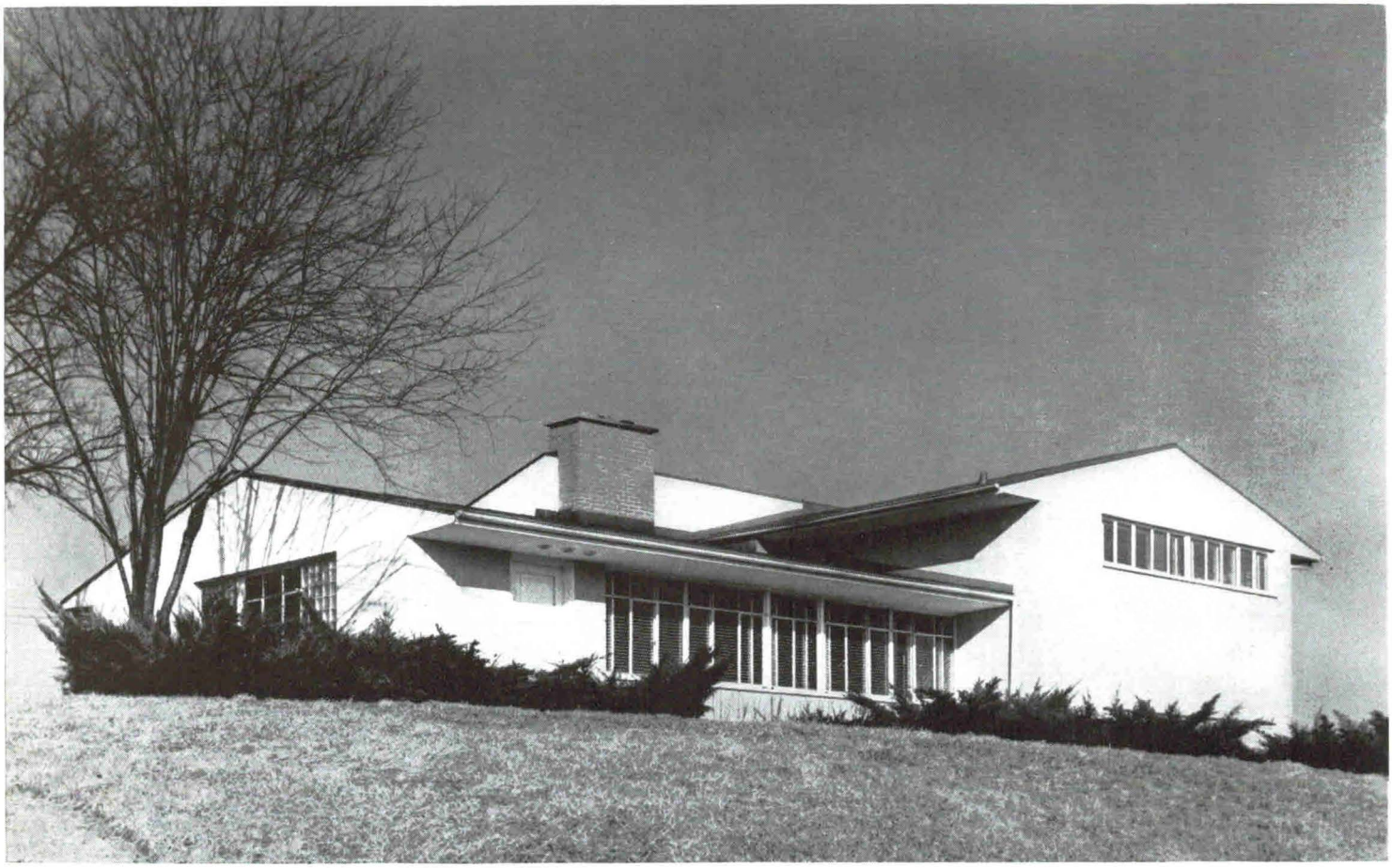
SECOND FLOOR

CONSTRUCTION OUTLINE

STRUCTURE: Exterior walls—siding, 1 in. air space, Neponset waterproof paper, Bird & Son, sheathing, studs, 4 in. rock wool insulation, Philip Carey Co.
ROOF: Asbestos shingles, Philip Carey Co.
SHEET METAL WORK: Flashing—20 oz. copper. Gutters and leaders—Toncan, Republic Steel Corp.
WINDOWS: Sash—double hung, wood, weather-stripped, Monarch Metal Weatherstrip Co. Glass—⅛ in. plate, Libbey-Owens-Ford Glass Co.
STAIRS: Treads—oak. Risers—birch. Stringers—yellow pine. Attic stair—Bessler Disappearing Stairway Co.
FLOORS: Living room, bedrooms and halls—13/16. in. clear red oak. Kitchen and bathrooms—medium gauge linoleum, Congoleum-Nairn, Inc.
WALL COVERINGS: Living room and halls—canvas, Sanitas, Standard Textile Products Co., Inc. Bedrooms—wall paper, Imperial Paper & Color Corp. Bathrooms—standard gauge linoleum, Congoleum-Nairn, Inc.
HARDWARE: Polished brass, Sargent & Co.
PAINTING: Interior: Walls and ceilings—lead and oil, white lead by National Lead Co. Floors—varnish, Pratt & Lambert Co., 3 coats wax. Exterior: Walls—3 coats Colonial white on prime coat, Samuel Cabot, Inc.
KITCHEN EQUIPMENT: Range—gas, 4 burner table top, George D. Roper Corp. Refrigerator—gas, Electrolux Refrigerator Sales Div., Servel, Inc. Sink—flat rim, Standard Sanitary Mfg. Co.
BATHROOM EQUIPMENT: Fixtures by Standard Sanitary Mfg. Co. Shower and all fittings—Chicago Faucet Co. Cabinet—Excel Metal Cabinet Co.
HEATING AND AIR CONDITIONING: Including filtering and humidifying. Boiler—gas fired, L. J. Mueller Furnace Co. controls—Minneapolis-Honeywell Regulator Co. Hot water heater—30 gallon, Ruud Mfg. Co.

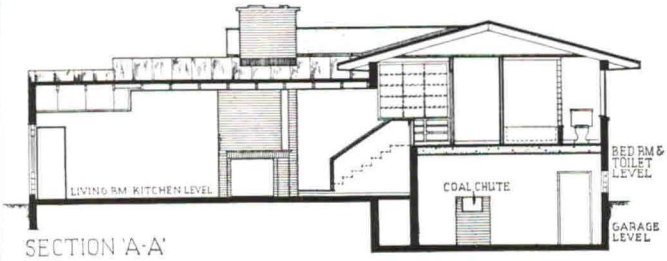
An unpretentious treatment of the conventional Colonial house, interesting for the unusual manner in which the garage has been incorporated in the mass of the dwelling. By the simple expedient of combining porch and garage in a one-story wing, this frequently troublesome element has been made accessible but inconspicuous, and is conveniently placed for the use of the occupants. A thoughtful provision, and one making for economy of installation, is the lavatory between garage and kitchen. Cubage: 33,034. Cost: $13,200, at about 40 cents per cubic foot.

HOUSE FOR FAIRFAX HOUSING CORP., COLUMBUS, OHIO



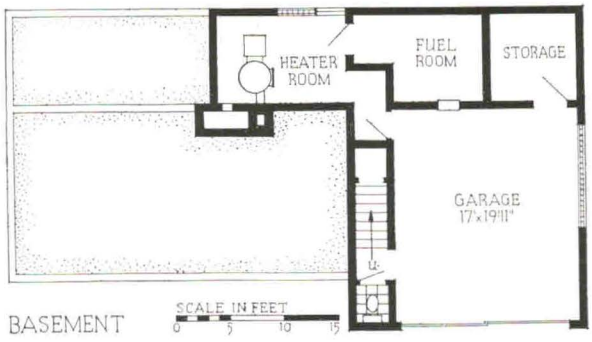
Everett Wood Photos

T. W. BROOKS, ARCHITECT

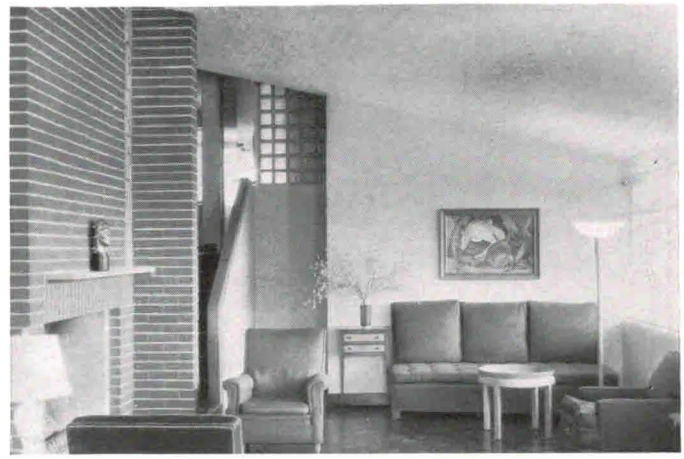


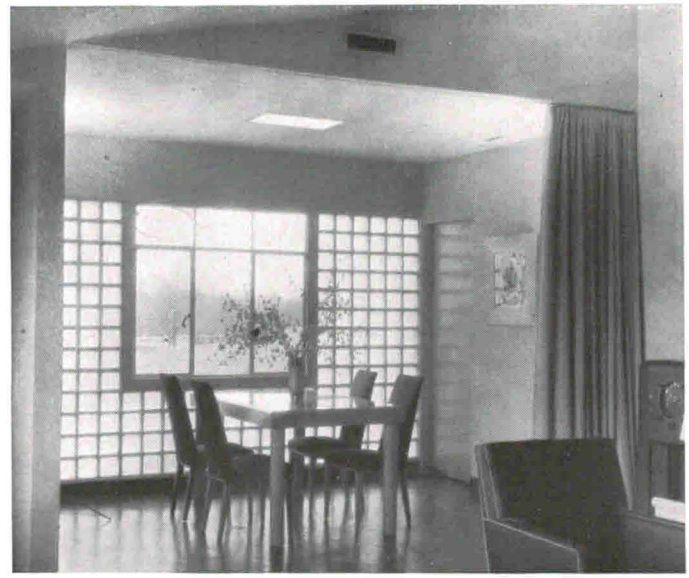
SECTION 'A-A'

FIRST FLOOR



BASEMENT


LIVING ROOM


DINING ROOM

CONSTRUCTION OUTLINE

FOUNDATION: Walls—10 in. Monolithic concrete.
STRUCTURE: Exterior walls—special precast concrete masonry, 8 in. thick, with air space. Partitions—hollow, Thermax with steel spacer clips, Celotex Corp. Floors—precast concrete joist and precast slabs. Basement—5 in. concrete slab. Roof—wood rafters and sheathing.
ROOF: Armco galvanized steel with double locked standing seams, American Rolling Mill Co.
CHIMNEY: Brick with terra cotta lining.
SHEET METAL WORK: Flashing—26 gauge Armco galvanized iron, American Rolling Mill Co.
INSULATION: Roof—4 in. Red Top wool, U. S. Gypsum Co.
WINDOWS: Sash—Fenestra steel casement. Detroit Steel Products Co. Screens—16 mesh copper fabric. Glass block—Owens-Illinois Glass Co.
FLOORS: Living room, bedrooms, halls, kitchen, and bathrooms—8 in. Accotile, Armstrong Cork Co.
WOODWORK: Doors and Cabinets—white pine. Garage doors—redwood sliding on overhead track.
HARDWARE: Modern design, Sargent & Co.
PAINTING: Interior—lead and oil. Exterior—lead and reducing oil. Paint materials by Dean & Barry.
ELECTRICAL INSTALLATION: Wiring—General Electric Co. Special recessed lighting fixtures—Macbeth-Evans prism glass, Illuminating Optical Division Corning Glass Works.
KITCHEN EQUIPMENT: Range—Standard Electric Mfg Co. Refrigerator—Leonard Division of Nash Kelvinator Co.
BATHROOM EQUIPMENT: Fixtures by Kohler Co.
PLUMBING: Galvanized steel pipe, Republic Steel Co.
HEATING AND AIR CONDITIONING: Forced warm air system, Williamson Heater Co.; spun glass filters, Owens-Illinois Glass Co.; humidity control, Automatic Humidifier Co.

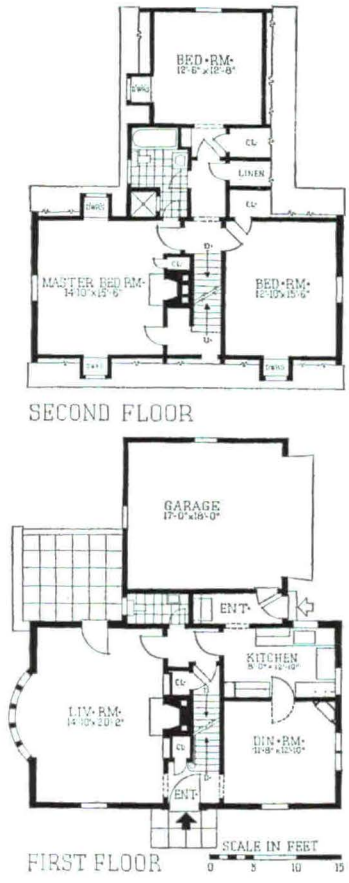
If the fact that the flat roof is not inevitably a part of the modern house has not already been made sufficiently clear, here is an interesting case in point. Of concrete block construction, the house has a textural richness in agreeable contrast with the usual stucco finish. The use of two levels has permitted the placing of all required elements with a minimum of excavation and has produced an interesting variety of levels within. Cubage: 22,000. Cost: $10,500, at about 48 cents per cubic foot.

HOUSE FOR EDWARD R. DEVEREUX, MANHASSET, N. Y.

A CONVENTIONAL small house plan handled with skill and discrimination. The square dining room is a good shape for convenient service; the lavatory is well placed, as is the garage adjacent. Three bedrooms are provided on the second floor, one of unusual size. The single bathroom seems quite ample for the requirements of a house of this size, and is located for maximum economy. Cubage: 29,000. Cost: $8,365.

REINHARD M. BISCHOFF, ARCHITECT

LIVING ROOM



ENTRANCE DETAIL

CONSTRUCTION OUTLINE

FOUNDATION
Walls and cellar floor—poured concrete, continuous. Waterproofing—paste, Truscon Steel Co.

STRUCTURE
Exterior walls—brick veneer, building paper, siding, studs, Reynolds Corp. Ecod metal lath, 3 coats plaster.

ROOF
Construction—wood beams, 6 in. roofers; covered with slate, North Bangor Slate Co. Insulation—metallation, Reynolds Corp.

CHIMNEY
Lining—clay flue. Damper—H. W. Covert Co.

SHEET METAL WORK
Flashing, gutters and leaders — Anaconda copper, American Brass Co.

WINDOWS
Sash—double hung, wood. Glass—single strength, Libbey-Owens-Ford Glass Co.

FLOORS
Living room, bedrooms and halls—oak. Kitchen—pine, Armstrong Cork Co. linoleum. Bathrooms—tile, Architectural & National Tile Co.

WALL COVERINGS
All rooms—wallpaper, Imperial Paper & Color Corp.

HARDWARE
Interior and exterior—Schlage Lock Co.

PAINTING
Interior and exterior walls—Samuel Cabot, Inc. Ceilings—Sherwin-Williams Co., Inc. Floors—wax, S. C. Johnson & Son, Inc.

ELECTRICAL INSTALLATION
Wiring system—BX. Switches—Harvey-Hubbell, Inc.

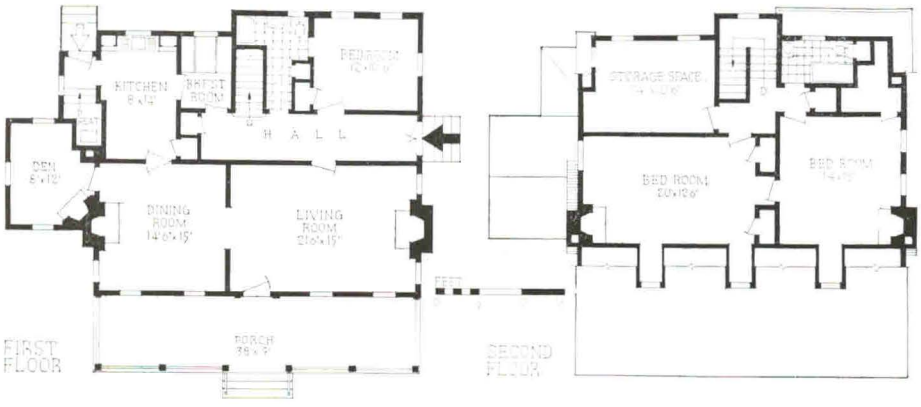
KITCHEN EQUIPMENT
Range—Magic Chef, American Stove Co. Refrigerator—General Electric Co. Sink—Monel Metal, International Nickel Co.

BATHROOM EQUIPMENT
Fixtures by Standard Sanitary Mfg. Co. Seat—C. F. Church Mfg. Co.

PLUMBING
Pipes—red brass.

HEATING AND AIR CONDITIONING
Steam system. Boiler—Red Flash, American Radiator Co. Oil burner. Radiators—Richvar Co. Valves—Hoffman Specialty Co. Regulators—Minneapolis-Honeywell Regulator Co.

HOUSE FOR MRS. V. W. HAYDEN, AUGUSTA, GEORGIA



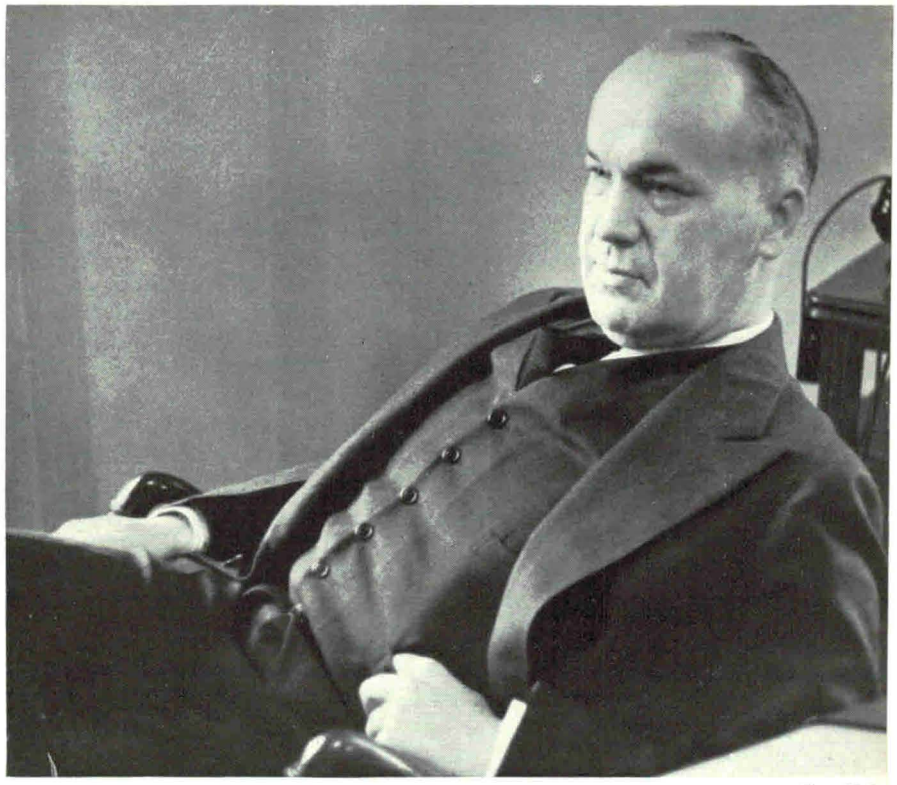
W. D. EVE, ARCHITECT

WHILE the exterior design of this house represents a modification of local traditional architecture, the plan recognizes present-day requirements by placing the main entrance directly off the driveway. The lack of a basement, common in Southern residences, has resulted in the location of storage space on the second floor. Other characteristic features are the large hall, useful for ventilation in summer, and the porch which extends the full width of the house. Cost: $6,650.

CONSTRUCTION OUTLINE

FOUNDATION: Brick curtain walls, 4 in.; brick piers.
STRUCTURE: Exterior walls—wood studs, storm sheathing, building paper and siding; beaded shiplap on front. Interior partitions—wood and plaster, Gold Bond, National Gypsum Co.
ROOF: Construction—wood rafters, sheathing, slater's felt. Covered with—composition asphalt strip shingles, Bird & Son.
SHEET METAL WORK: Flashing—30 lb. tin. Gutters and leaders—galvanized iron.
INSULATION: Attic floor—4 in. rock wool bats, Johns-Manville, Inc.
WINDOWS: Sash—double hung, yellow pine. Glass—single strength, quality A, Libbey-Owens-Ford Glass Co. Screens—galvanized mesh.
FLOORS: Living room and halls—yellow pine, random widths, 13/16 in. Bedrooms and kitchen—Bungalow pine. Bathrooms—1 in. sq. tile, coved tile base.
FLOOR COVERINGS: Kitchen—linoleum, Armstrong Cork Co.
PAINTING: All paint and shellac—Sherwin-Williams Co. Floor wax—S. C. Johnson & Son, Inc.
ELECTRICAL INSTALLATION: Wiring system—BX concealed. Switches—tumbler type, General Electric Co. Fixtures—Lightolier Co.
KITCHEN EQUIPMENT: Refrigerator—Frigidaire Corp. Sink—Crane Co.
BATHROOM EQUIPMENT: All fixtures by Crane Co.
PLUMBING: Soil pipes—cast iron, Charlotte Foundry Co. Water pipes—galvanized iron, National Tube Co.
HEATING: Two pipe steam, Crane Co. Boiler, radiators and valves—Crane Co. Hot water heater—high low gas, Penfield, John Wood Mfg. Co., Inc.

CONTENTS:



Director Fergus

Thos. McAvo

SEARCHLIGHTS FOR LENDERS

An interim report on the mortgage lending surveys of the FHLBB in 239 cities reveals an old method hitting a new high in performance. Director Fergus at the wheel.

NEXT month in Washington a small group of men working under the Federal Home Loan Bank Board will complete a survey of urban real estate which is undoubtedly the most important statistical contribution to Building since the Department of Labor began the collection of building permits seventeen years ago. This survey consists of detailed and highly professional credit reports on the real estate and the mortgage lending markets of 239 major cities in the U. S.

Unnumbered surveys of these twin markets have already been made; no self-respecting mortgage lender considers his office complete without a filing cabinet of data, a map of the city, and a man with a long memory to help him judge his loans. Trouble has been that the general standard of these aids to good lending has been so low that only a handful of lenders have ever bothered to develop this technique of market analysis beyond the squint & hunch stage to a really effective level. In 239 cities the FHLBB is now giving a splendid demonstration of what can be done and how to do it. Nothing on the building horizon is worth closer inspection.

Genesis. The FHLBB survey was begun about thirty months ago when it became apparent that the Home Owners Loan Corporation was being forced to assume a real estate problem of unprecedented dimensions. So far the HOLC has refinanced better than 1,000,000 home mortgages totaling more than $3 billion; had on November 1, 1937, about 900,000 mortgage investments with unpaid balances of approximately $2.4 billion; about 58,000 parcels of residential real estate with a book value of about $290,000,000; and nearly $200,000,000 invested in Federal Savings and Loan Associations. Obviously, there was required some basic system for foreclosing and selling, managing and rehabilitating this enormous agglomeration of holdings. Equally obvious was the conclusion that whatever facts and figures were gathered for this purpose would have to be local rather than national in dimension; nationwide realty indices have little or no significance when applied to local problems.

With so much established, the job of devising such a basic system was turned over without further instruction to Corwin Fergus. Now in his forties, Director Fergus had been thoroughly equipped by his experience to take over the work. A real estate broker in Columbus since 1919, he made the local real estate board rub its eyes in 1929 when he turned the conventional vacancy survey which that body made annually into one of the most thoroughgoing market analyses any of them had ever seen; and then repeated the performance by unanimous request the following year. In 1931 he was elected president of the local board; took over, two years later, the task of liquidating some $76,000,000 worth of building and loan assets in Dayton at the request of the State Director of Commerce. In 1935 he came to Washington as a member of the Mortgagee Rehabilitation Committee of

the HOLC, stepped from there to take charge of the FHLBB's Division of Research and Statistics, which now has charge of the survey.

As first assistant Director Fergus immediately picked his old friend, C. C Boyd, at that time in charge of one of the larger wholesale offices of the HOLC. Boyd had been in charge of the sales department of a Columbus real estate firm in 1929 when Fergus had chosen him as his assistant in the Columbus surveys of 1929-1930, had left that town early in the life of the HOLC to go to Washington.

Their first step was to organize and assign a crew of field agents, one to each HOLC region in the country. The program got under way September, 1935.

Methods and Maps. Conceiving that the main function of the reports from his 239 cities was to guide the FHLBB in making decisions about its real estate and mortgage holdings, Director Fergus set out to uncover all the relevant facts he could along three broad fronts: 1) economic background and prospects; 2) the real estate market; and 3) the mortgage lending market. To get this information gathered in a uniform manner he sent each of his field agents an outline report containing no less than 81 headings. A typical summary of the report resulting from this outline is illustrated on page 182.

Indispensable companion piece to each of these reports is a security area map of the city. On this map is shown not the price, age, or type of construction, but *the trend of security for long term mortgages by areas.* This criterion was chosen by the FHLBB on the theory that desirability in neighborhoods is a predominant factor in sound residential lending; that whereas in many neighborhoods prices and rents underwent the wildest kind of fluctuations during the depression, nevertheless the desirability of those neighborhoods changed much less and much more slowly.

Assuming that the 10-to-15 year amortized mortgage is to be accepted as a standard for residential financing, the security area map is given four gradations of value. In establishing these grades, typical factors taken into account were the intensity of sale and rental demand; percentage of home ownership; soundness of construction; age and type of building; economic stability of neighborhood; uniformity of area (by nationality and income); sufficiency of utilities; accessibility of schools, churches and business centers; topography; and local restrictions for the protection of the neighborhood.

First Grade Areas are the realty cream—areas which are not yet fully built up, in new and well-planned sections of the city. Here mortgage lenders are willing to make maximum loans.

Second Grade Areas are, as a rule, completely developed—still good, but not what the people who can afford to get into the first grade areas are buying. Here mortgage lenders have a tendency to hold their commitments from 10 to 15 per cent below the limit.

Third Grade Areas are characterized by age, obsolescence, and change of style; by expiring restrictions; by the infiltration of a lower grade of population; and by the presence of such adverse factors as inadequate transportation, heavy taxes, and "jerry" building.

Fourth Class Areas are those in which the influences at work in third grade areas have become well established. There is a low precentage of home ownership, very poor maintenance, frequent vandalism. Collections are difficult and the income

Assistant Director Boyd

of the residents is unstable. Fourth grade areas, however, must not be identified with what are usually called slum areas; the former are larger in extent. Here some mortgage lenders will not make loans at all; others on only a very conservative and selective basis.

The sample security area map on the next page shows that the cities contain many areas divided according to these classifications. Attached to each map is a detailed analysis of each area, giving all the relevant facts which were originally collected to determine its classification. Additionally, these maps serve as clothes-hangers for the facts presented in the regular reports, making it possible to apply general information to specific neighborhoods and properties.

Portents. The large number and identical form of these surveys will in time provide the FHLBB with the means for drawing some basic comparisons about real estate and mortgage problems on a national scale. Such comparisons have not as yet been formally undertaken, but the reports which have already been made yield even to the casual student some extremely interesting side-lights.

The most striking—and most obvious—fact is that recovery is far from uniform the country over; is in fact no less erratic within the sectors of a given city. HOLC mortgage holdings will vary in a given city from more than 50 per cent of all mortgages on owner-occupied homes in one neighborhood down to less than 10 per cent in the adjacent neighborhood. Also interesting is the fact that, in some cities, the HOLC loans spotted on the security maps in the third and fourth grade areas were as a general rule in just as good shape as those spotted on the first and second grade areas.

Comparison of two cities of equivalent size often yields telling contrasts. In one northern Michigan city where most of the industries are locally owned, the real estate situation was already well on the upgrade; in a neighboring community in the same population group it was badly crippled because its main industries were branches controlled by absentee capital, were therefore the first to be shut at the onset of the depression.

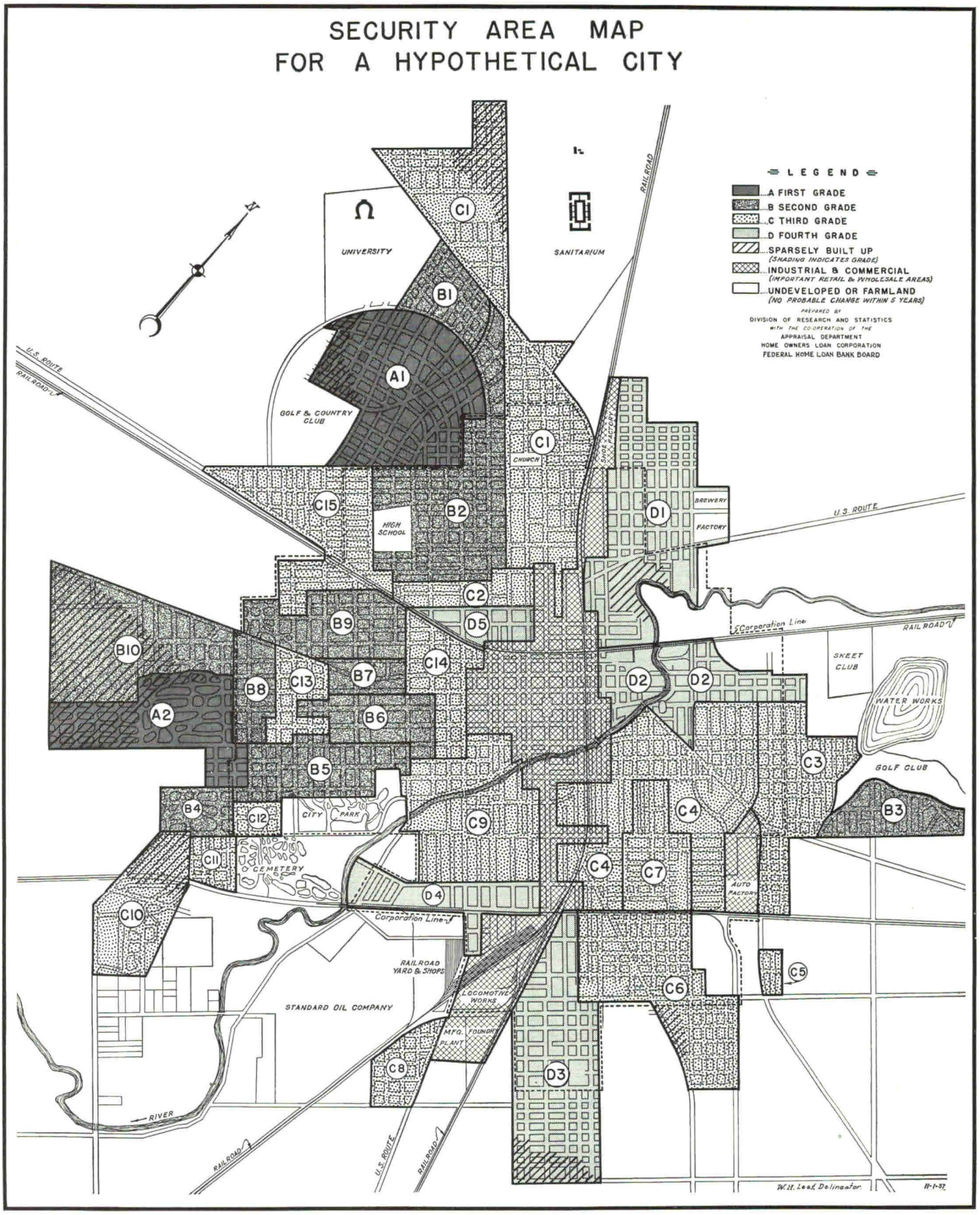
Again, there is a small city on the West Coast where the property tax has been declining—with extremely efficient collections—ever since 1929. Its total rate today is about $37.50 per $1,000 of assessed valuation, its effective rate about $18.75. Its bonded debt is about 5 per cent of the market value of its assessed property, and its total accumulated delinquency as of 1935 was only about $130,000.

In sharp contrast is a town of about the same population and industrial complexion on the eastern seaboard whose effective tax rate runs to $45, a bonded debt amounting to about 9 per cent of the total assessed valuation of property, and an accumulated delinquency of $1,000,000. Result: in the former, rents have topped their 1929 level and theirs is a substantial market for new low-priced homes; in the latter, families are moving outside the city limits to escape high taxes, rentals have dropped to between 50 and 80 per cent of the 1929 level, and the real estate market is almost motionless. Needless to say, factors other than taxation have contributed to this contrast, but the comparison is nevertheless instructive—and indicative of the type of information that a thoroughgoing study could yield.

1938. Currently the Division of Research and Statistics has completed its surveys in 223 out of the 239 cities on its schedule, hopes to have the lot finished within 30 to 60 days. Since the work has been in progress since the fall of 1935, some of the information collected is already out of date. To remedy this, the Division is bringing its earliest reports up to date and plans to keep them all reasonably current.

Meanwhile, however, it will let those with a legitimate curiosity take a peek at them. To those institutions who aided the Board in gathering its basic information

(Continued on page 46)



Not price, not age, but the trend of security for long-term mortgages is what this map shows. Bright with five colors, it is the most flamboyant item in the fat, brown portfolios which contain FHLBB reports. Not shown here, but marked on most such maps is the position of every piece of HOLC property in the town. The letters in the circles simply indicate the grade of the neighborhood. The numbers refer to detailed reports on each neighborhood included in the town's general folder. This map corresponds fairly closely to the report given on the next two pages; both are modifications of the map and summary report of an actual town in the Midwest. If you have a good reason, you can get a look at the map of your town by going to Washington.

SUMMARY OF TYPICAL FHLBB SURVEY

I. GENERAL CONDITIONS

Middletown, a wide awake semi-industrial midwestern county seat, located in central Illinois, was hit early and hard by the depression and did not begin to feel the effects of recovery until about 1936. Early in that year under the leadership of aggressive local civic bodies some new industries were obtained, the community spirit was rejuvenated and business has been good for the past fifteen months.

The city is widely known as the home of the ABC Works, the leading local industry. Another major industry, which moved here about a year ago, is the manufacture of radios by the XYZ Company. Many other plants, mostly small, make a variety of products such as cigars, steel castings, bus and hearse bodies, shoe soles and heels, neon and electric signs, enameled metal and Diesel parts.

Manufacturing activity in the city was severely affected during the depression, and employment in the ABC Works dropped sharply in spite of a sympathetic policy on the part of the management toward creating work. Recovery through 1935 was slow, but improved rapidly in 1936, when the radio plant began operations in the city. About that time the ABC Works began increasing production substantially, and it currently employs 1,700 workers, which is 25 per cent more than in 1929. Total wages paid in manufacturing, however, have not increased proportionately to employment, as the 1,400 employes of the radio company are mostly women in the lower wage brackets. Other local factories are operating at about 85 per cent of 1929. An element of uncertainty as to steady employment at the ABC Works is projected into the picture because orders on hand will be completed shortly, and unless further contracts are received, employment will probably be reduced from 1,700 to about 500.

The city is an important **retail trade** center for a surrounding farm area, there being no large community within a radius of about 70 miles. Retail establishments employ about half as many workers as manufacturing industries. Decline in employment, payrolls and sales during the depression was greater than the United States averages and recovery through 1935 was not as pronounced, reflecting in part the lagging recovery in manufacturing. Employment for 1935 was 97.5 per cent of 1929, payrolls 61.5 per cent, and sales 63 per cent. However, with the increase in industrial employment which began in 1936, retail trade improved considerably and sales are currently estimated to be at about 1929 volume.

Activity in **wholesale trade,** which employs less than 10 per cent as many workers as manufacturing, has been decidedly unfavorable. The decline from 1929 to 1933 was moderate, but from 1933 to 1935 a further decline occurred which was of substantial proportion, the 1935 level being well below the United States average. Employment during 1935 was only 57.7 per cent of 1929, payrolls 44.9 per cent and sales 57.1 per cent. Although recently improved business conditions have reversed the downward trend, the increase has been slight. A good portion of the wholesale business previously done locally has been transferred to (a nearby) city.

Local business barometers also reflect the recent recovery. Bank debits for the first seven months of 1937 exceed debits for the same period of 1936 and 1935 by 38 per cent and 66 per cent respectively as against a U. S. average increase of 13 per cent and 29 per cent over corresponding periods. Gross postal receipts are in excess of the previous peak. Telephone installations for the first seven months of 1937 exceed by 9 per cent the installations for the entire year 1936. Other local indices such as sales of electricity, net number of marriages, and deed and mortgage recordations indicate equally significant advances.

Population growth has been very small since 1920. Approximately 150 families were moved to the city when the aforementioned XYZ plant was established here about a year ago.

Native white persons represented 93.1 per cent of the population in 1930, foreign-born white 3.5 per cent and Negro 3.4 per cent; total families 11,446, of which 46 per cent were owner families and 54 per cent tenant. The Real Property Inventory of 1936, however, indicates that the owner-tenant ratio has changed to about 38 per cent and 62 per cent respectively. This is a drop of more than one-sixth in home-ownership during the six years following 1930 and indicates the severity of the depression locally.

The city has been practically free from strikes or other **labor** disturbances. An election under Federal supervision was recently held in the XYZ plant, but the vote was two to one against union affiliation. **Building craftsmen** are virtually 100 per cent unionized and practically all employed. Most of the work at present is repairing and remodeling. Union wage scales range from 95 cents per hour for carpenters to $1.25 for plasterers and bricklayers and closely approximate 1929 levels.

Direct **relief** cases decreased over 60 per cent from the 1935 high of 2,100 to 730 for 1936, concurrent with the increase in local employment. For the first seven months of 1937, these relief cases averaged 234 and were mostly unemployables. WPA construction is reported to be negligible.

Taxation: The total 1936 levy was 42 per cent below 1929, reflecting principally a heavy decline in assessed valuations since the tax rate showed little net change. The real estate tax rate for 1936 was $23.25 per $1,000 of assessed valuation. Legal basis of assessment is "true money value," but assessed values on a city-wide basis approximate 60 per cent of fair market values, indicating an effective 1936 rate of about $14. This is the lowest rate for any city in the State surveyed to date. A $3 per $1,000 levy for operating purposes outside the 12 mill statutory limitation was passed at a recent special election and will probably result in increasing the total tax rate by this amount. Total collections have improved considerably since 1933, but accumulated delinquency, although declining, was still 133 per cent of the year's levy at the close of 1936.

Proceeds from the 3 per cent retail sales tax are used by the State for old age pensions and poor relief, and distributions are also made to all political subdivisions and public schools.

Net bonded indebtedness of the city (including schools) as of December 31, 1936 ($3,941,800) was equal to 8.3 per cent of assessed valuation or $93 per capita and is within the 10 per cent legal limit. Including overlapping county debt, the per capita net debt was $128. The city defaulted on $19,000 of special assessment bonds in 1932, and on $45,000 of special assessments and $65,000 of general obligations in 1936. However, defaulted issues were subsequently refinanced at lower interest rates. Annual debt requirements have been reduced in recent years and no new bond issues are contemplated.

A **detrimental influence** in the city is the lack of zoning ordinances and adequate building restrictions. In many areas large and small houses are intermingled without regard to value. A committee of the Chamber of Commerce is working on these problems, and an early correction appears certain.

II. PRESENT REAL ESTATE CONDITIONS

Middletown is predominantly a city of single- and two-family frame dwellings. The best residential sections lie to the northwest where prevailing winds eliminate the smoke and gases from manufacturing plants. Real estate market values are currently about 80 per cent and 70 per cent of the 1929 level in A and B, and C and D areas respectively, having recovered from a low of approximately 50 per cent in 1933. Area A-2 which consists of modern medium-priced homes is the most stable section in the city, and values here declined to only about 60 per cent of the previous peak. Prices began to increase rapidly the latter part of 1936, but the bulk of the advance has occurred during 1937, reflecting the improved demand due largely to the establishment of the new XYZ plant.

Sales activity has been increasing and local brokers report it at about 60 per cent of 1929. Single-family houses ranging in price from $2,000 to $4,000 are selling best. High-priced homes have not yet begun to move in any real volume.

Investors have recently entered the market looking for large old houses in fair to good locations which can be converted into multi-family units for rent, and some purchases have been made. The uncertainty as to steady employment in the ABC Works, and the lack of sufficient down payment are retarding sales. Institutional sales during 1936 and the first seven months of 1937 amounted to $651,100, building and loan associations accounting for 49 per cent of the total. With the exception of the liquidating institutions, properties are generally offered on land contract at 10 per cent down with a monthly payment of 1 per cent, including interest at 6 per cent. Deed is usually given and a mortgage taken back on the same terms when the contract has been reduced 25 per cent. Provision for the payment monthly of insurance and taxes is infrequent.

The **overhang** of residential properties held by institutions ($2,085,500) is heavy and equals 39 per cent of their combined residential mortgage accounts. Principal holders are the savings and loan associations with 46 per cent of the total, followed by insurance companies and mutual savings banks with 20 per cent and 19 per cent respectively. This real estate is well held and there is no danger of dumping. Practically all properties, outside of a few held vacant for sale, are rented. In addition to the institutional overhang the HOLC has $354,700 of residential real estate. However, HOLC has not been pushing sales on its properties, due to the heavy overhang by financial institutions and because any undue selling pressure on the real estate market now might readily reverse the present upward trend and possibly offset much of the recent gain. **Potential acquisitions** amounting to $300,000 were reported.

Foreclosures for the county during 1936 were at approximately the same level as in 1935, and for the first seven months of 1937 were only slightly below the corresponding period of 1936. The recent volume is due to the policy of institutions deferring action as long as possible, and a number of HOLC cases. But the last three months were below the same months of 1936, and local authorities are of the opinion that the peak has been passed. Institutions also have acquired quite a few properties through voluntary deeds. The severity of the depression is again indicated by the fact that about half of the local mortgages in force in 1930 were either refinanced through HOLC, the properties acquired by the institutions or are reported as potential acquisitions. Foreclosures required about six months to complete and cost about $200 each. A mortgage foreclosure moratorium in effect until July, 1939, authorizes the court to postpone the sheriff's sale as long as one year, provided the borrower pays current interest, taxes and insurance premiums monthly.

Rents have increased to 85 per cent of the 1929 level from the depression low of 60 per cent. Prices have advanced about 25 per cent within the past six months. Further increases are expected, and lending institutions and brokers report waiting lists of prospective tenants. The demand is best for units renting up to $40 per month. **Occupancy** is virtually 100 per cent even in the poorer grade security areas, and a housing shortage exists.

Residential construction volume is relatively low and for the first seven months of 1937 was but slightly over the same period in 1936. Building activity in 1936 was about one-third of the peak year 1926, and the highest since 1927. The low volume is attributed locally to the uncertainty as to future employment, and the recent rapid increase in building costs without corresponding increases in family income. The new construction which is taking place is concentrated in security areas A-1, A-2, B-2 and B-5. In addition, considerable reconditioning is being done and a number of large old houses are being converted into apartments. Building costs are slightly above 1929, but as lots in this city can be purchased for less than in 1929, the total cost of the average new house is comparable to 1929 or a little lower.

III. MORTGAGE LENDING

Financial institutions suffered severely during the depression. Four of the five banks failed, two of the savings and loan associations restricted withdrawals for a while, and one mutual savings bank was absorbed by the other. Subsequently a new national bank was formed by taking over the assets and assuming deposit liability of one of the closed banks. While three banks are still in liquidation, public confidence has been restored in the open institutions and deposits and savings are increasing.

More than ample **mortgage funds** are available to meet any local demand. At present the demand is light and current lending is largely for refinancing or reconditioning. Institutions are willing to recast or reform existing mortgages, giving the borrower the advantage of reduced monthly payments, if equity and borrower's ability to pay warrant, and considerable recasting has been done. Predominating interest rates on loans are 5½-6 per cent with a commission up to 3 per cent in a few instances. This is a drop of 1 per cent in interest rates since 1929. See below for a recapitulation of recent activity by groups of mortgage lending institutions. (Lending terms omitted here.)

The three **savings and loan associations** are the dominant factor in the residential mortgage field. All three are aggressively seeking loans and during the first seven months of 1937 increased their proportion of total mortgage lending by all institutions from 45 per cent for 1936 to 58 per cent. They have 43 per cent of the residential mortgages held by all institutions combined. Title II loans total $46,000. All loans are made on the direct reduction monthly amortization basis. Over a million dollars is reported available for lending. This group is the largest holder of residential real estate and has been pushing sales. All are members of the Federal Home Loan Bank System and the Federal Savings & Loan Insurance Corporation. Private share investments have increased over $300,000 during the past six months. Dividend rate is 3½ per cent annually.

The two **banks and trust companies** prefer commercial to mortgage business and restrict their mortgage lending to a few of the better areas in the city, and principally to customers of long standing. Since the beginning of 1936 they have done 8 per cent of the residential mortgage lending by institutions, and hold 7 per cent of the combined residential mortgage account. Title II loans amount to $67,000. Real estate owned is negligible. Both are members of the Federal Reserve System and the Federal Deposit Insurance Corporation. Deposits increased $800,000 during the past six months. Savings deposits earn 2 per cent interest.

The one **mutual savings bank** has made 18 per cent of the residential mortgages written by institutions since the beginning of 1936, and holds 22 per cent of the combined institutional mortgage accounts. While it will lend up to 60 per cent of appraisal, most of its new loans are nearer 50 per cent, and therefore, although reporting $500,000 available for mortgage lending, it has not built up any substantial lending volume. Title II loans total $98,000. It has large real estate holdings, most of which were acquired when it absorbed the other local savings bank in 1934. It is not a member of the FDIC. Savings, which earn 3 per cent interest, are increasing, although the bank is not actively soliciting new funds.

The two **insurance companies,** with home offices in New York, are represented by local correspondents. They have 15 per cent of the residential mortgages held by all institutions, but during 1936 and the first seven months of 1937 did only 7 per cent of the institutional mortgage business. New loans are restricted to the better areas, and no Title II loans have been purchased. Another large national company is negotiating for a correspondent, and will begin making residential mortgages shortly. Insurance companies in this city have the best institutional reconditioning program, and their properties are in first class condition.

There are no local **mortgage companies,** and lending by **individuals** is negligible.

HOLC owns $4,127,200 in local mortgages, which is equal to about 77 per cent of the total held by institutions.

IV. DOMINANT FACTORS

A. Favorable

1. New industries recently attracted to the city
2. Employment far above 1929
3. Absence of labor disturbances
4. Substantial recovery in real estate values and rents
5. High occupancy ratio
6. Exceptionally low effective tax rate
7. Decrease in relief
8. Ample mortgage funds available

B. Adverse

1. Average annual wage per wage-earner relatively low
2. Feeling of uncertainty as to future employment
3. Heavy overhang of residential properties
4. Lack of zoning ordinances and building restrictions

RECAPITULATION OF RESIDENTIAL MORTGAGE AND REAL ESTATE ACTIVITY OF MORTGAGE LENDING INSTITUTIONS

	Residential Mortgages*			Residential Mortgages Made 1936, 7 Months 1937			Residential Real Estate*			Residential Sales 1936, 7 Months 1937		
INSTITUTIONS	Number	Amount★	% of Amt.	Number	Amount★	% of Amt.	Parcels	Amount★	% of Amt.	Parcels	Amount★	% of Amt.
3 SAVINGS AND LOANS	1,364	$2,323	43	270	$ 735	50	365	$ 950	46	127	$320	49
2 BANKS AND TRUST COS.	76	353	7	25	114	8	2	8	—**	0	0	0
1 MUTUAL SAVINGS	529	1,207	22	83	270	18	133	401	19	31	81	12
2 INSURANCE COS.	211	814	15	22	105	7	110	413	20	22	95	15
2 NON-RESIDENT INSTS.	203	603	11	87	250	17	0	0	0	0	0	0
3 INSTS. IN LIQUIDATION	27	108	2	0	0	0	159	313	15	70	155	24
TOTALS	2,410	$5,408	100	487	$1,474	100	769	$2,085	100	250	$651	100
H. O. L. C.	1,483	$4,127					107	$ 354		27	$ 84	

*As of August 1, 1937 **Less than ½ of 1% ★ 000's omitted

A LESSON IN REMODELING

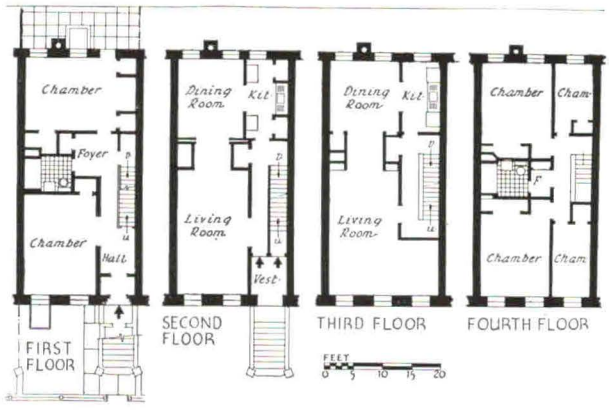
by a Brooklyn bank demonstrates six ways to solve one problem, provides a sliding scale of costs.

BROOKLYN is the most populous of New York City's five boroughs. Of the 250,000 structures now standing in Brooklyn, over 150,000 are in second-class condition or worse, 101,000 are more than 35 years old, 80,889 stand as one-family four-story brownstones. Year ago Herbert L. Carpenter, a civic-minded Brooklynite who served as chairman of the now defunct Brooklyn Better Housing Committee, added these statistics together, and decided that the way to save Brooklyn from developing large slum areas was to remodel it.

It was not a difficult decision for Mr. Carpenter to reach. He had been at one time Assistant to the Deputy FHAdministrator, had in that capacity supervised the insurance of $50,000,000 worth of modernization loans under FHA's Title I. He is currently chairman of the finance committee of the Brevoort Savings Bank, which along with other banks, insurance companies and building and loan associations, owns some 10 per cent of Brooklyn's real property. At a meeting of the Brevoort's directors, Finance Committee Chairman Carpenter pointed persuasively to the bank's books: $30,000,000 in total assets, a total mortgage portfolio of $14,803,000, and $4,411,000 in foreclosed mortgages. He used these figures to convince the directors that they should invest in the rehabilitation of one of their brownstones largely as an object lesson to other Brooklyn owners with neglected properties on their books.

The property chosen for Chairman Carpenter's remodeling is in a neighborhood once fashionable. One block away there is the station of a new subway. The property is surrounded on every side by the brownstones which Chairman Carpenter proposes should all be renovated. To make the contrast as vivid as possible, $15,000 was spent on the job. Before remodeling, the Brevoort had been realizing an income of $25 per month from the building; fully rented. The remodeled structure was last month bringing in $275 per month. Thus gross income is $3,300 per year. Taxes,

Brown into white in this Brooklyn side street meant red into black for the bank. Cornices, window ledges, stoop and railings have been eliminated. Right, three of six solutions to the floor planning. Plan 1 provides two units; plan 2, four units; plan 3, six units. The last plan was chosen here. Rents range from $35 to $67.50, unfurnished.



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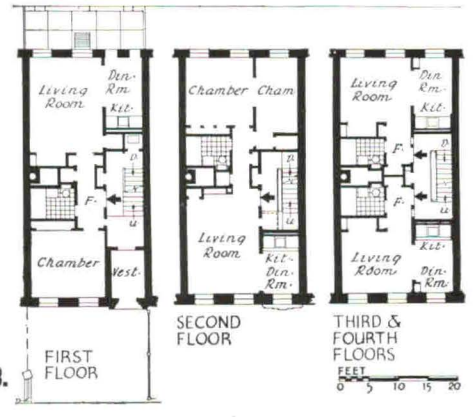


3.

water charges, insurance, and operating expenses work out at $1,336 per year. Figuring on a basis of 10 per cent vacancy deduction, this leaves an approximate spread of $1,600 per year for interest and profit on the total investment, which would in turn represent a substantial interest return and an annual profit of about $880. Thus the first purpose of any remodeling—to show that it makes money—is accomplished.

Primary reason for Chairman Carpenter's promotion of the remodeling and subsequent ballyhoo, however, was more general. He aimed most of his publicity at the owners of the surrounding buildings, rifled leaflets at them which in essence exhorted: "Come and see what can be done—don't give up the ship." The renovated brownstone was designed to be a model for Brooklyn owners to look enviously upon and an example for them to follow.

Included in the promotion was a leaflet which detailed exactly how much each step in the remodeling had cost (see table, col. 2), so that the prospective remodeler who would conceivably be frightened by the cost of the thorough job done on Chairman Carpenter's guinea pig might know how much, say, new bathrooms, a new paint job, and a new steel stairway would cost. If proper design and construction standards are followed, he himself figures that a remodeling for four families can be effected for as little as $8,000 with some but not all of such items as the metal stairways, new front, metal sash and frames. The leaflet also showed, on the basis of Carpenter's remodeling, how much could be accomplished on an investment of from $2,000 to $15,000.

Third purpose of Chairman Carpenter's Brooklyn remodeling is on a still longer term basis. From the example he has set, he hopes ultimately to organize a group of interested banks, manufacturers, merchants, and public utilities into an active body which would undertake the duties of promoting and agitating for more apartment house renovation on a borough-wide basis.

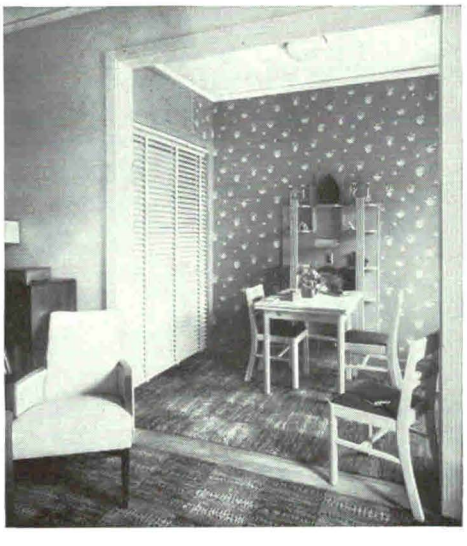
Costs. The Brevoort Savings Bank bore all the costs of the $15,000 remodeling, but in the undertaking the beginnings of cooperative action could be noticed. Manufacturers supplied new unit installments, calculated to cut down the eventual labor costs of installation or erection. Thus, with the idea of stimulating other future sales, General Electric sold to the Brevoort its new unit kitchen, first installation of the type in the metropolitan area. The steel staircase was installed as a separate unit.

Most fruitful source of cooperation, however, was the public utilities. As head of the Brooklyn Better Housing Committee, Carpenter had been able to induce Brooklyn Edison and the Brooklyn Union Gas Company to start modernization departments. Well aware at the time that their potential residential market was contracting, the two utilities immediately became active in the development of model plans for residential modernization that called for a generous supply of electrical wiring or gas outlets, for the use of those who were about to modernize locally. In the modernization of this particular brownstone, Brooklyn Edison went over the plans as drawn up by Architect Robert Helmer, arranged for the installation of scores of outlets and lighting effects without charge.

Demolition	$ 300
Brick, cement work	550
Stucco on front	450
New stone work and entrance	475
Lathing and plastering	1,800
Iron work, new steel stairs	480
Tile and marble work	500
Carpentry and trim	2,000
Steel sash and frames with glass	520
Roofing and sheet metal work	450
Hardware and nails	350
New 13/16 in. oak floors	400
Insulation to roof beams	80
Medicine cabinets, hampers	145
Painting	550
Plumbing	1,800
Steam	1,050
Sprinkler system	275
Electric work	1,125
Six electric kitchens	1,620

Plans. Architect Robert Helmer, in association with B. J. Smalley, prepared a set of six plans, equipping the building for two, four, or six families. As it stands today, it is planned for six families. On page 184 see one of three suggestions for the two-family house, one of two suggestions for the four-family house, and the plan of the actual six-family house which was remodeled. Shown in each case here are the more expensive types of modernization. A worthwhile saving in actual cash outlay can be achieved by retaining the original stoop leading to what is now labeled the second floor; it is, however, debatable whether this saving is in fact offset by the improvement in appearance gained by the elimination of this architectural bric-à-brac.

The success of the model remodeling was to some extent indicated by the attendance figures of the first week that the house was on view. Through the six-family home trooped more than 3,500 people, including the bankers whose aid Chairman Carpenter was so anxious to enlist in further remodeling. To them his slogan is: "Spend $50,000,000 now; save $150,000,000 later." And last month, while the Government by Presidential message and FHA pressure was demonstrating that the idea of resurrecting Title I was relevant to the drive for a building boom, Brooklynites began to look twice at Chairman Carpenter's shining example and to think twice about putting his "Save the Ship" slogan into effect.



MODERN IN DETROIT

makes quick money despite high costs. New construction tricks in air conditioned duplexes.

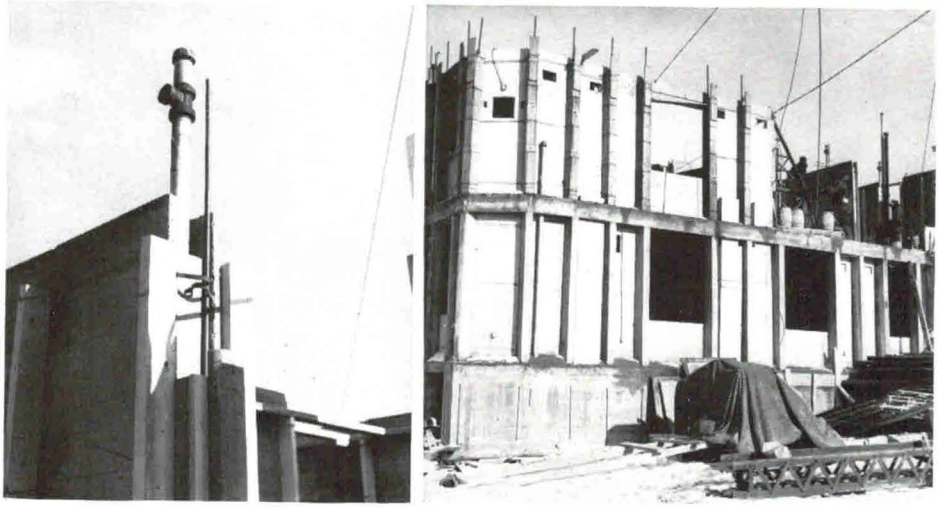
To building economists there was presented in Detroit last month the intriguing anomaly of a new apartment house which was making money by violating nearly every precept in the 1937 book of realty rules. Although built in the most extreme version of Modern yet seen in that city, it had obtained its money at 4½ per cent on a ten year mortgage. It had been built during 1937 in the smartest rise in prices since 1926. And in the face of a notoriously laggard rent scale the country over, it had fixed its own somewhat above the going rate for apartments of similar size in the same neighborhood. And still, two months after its opening, it could boast that twenty of its 24 units were rented, that it was already on a profitable basis.

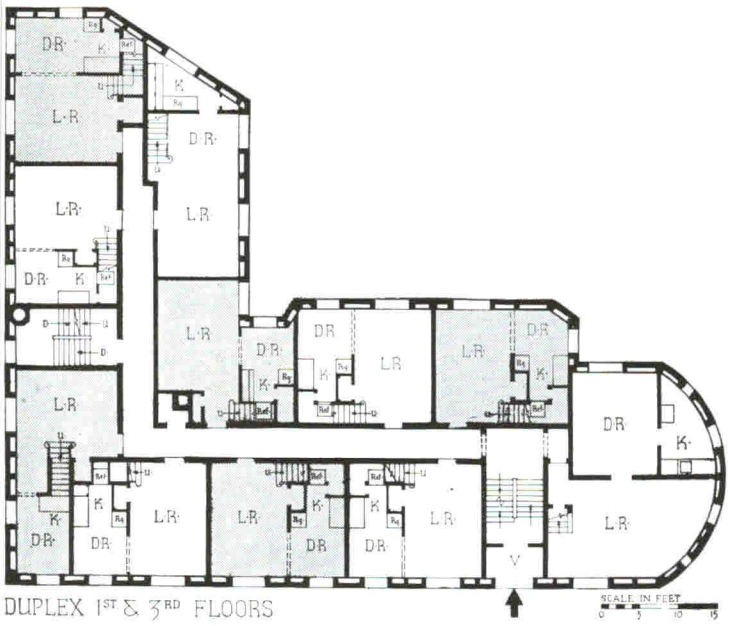
Called 999 Whitmore Road, this four-story apartment was the joint work of its Owner John B. Terns, his brother, Clyde E. Terns and Architect Talmage C. Hughes, and the news it made was architectural as well as economic: it embodies the first use in multi-family units of a new type of construction developed by Ralph C. Vokes. This structural system consists of reenforced concrete studs supporting precast slabs on the interior and insulating board and cement facing on the exterior. Such construction is proof against fire, vermin, and other destructive elements; the resultant hollow walls permit the concealing of pipes and air conditioning ducts, and provide additional insulation. Furthermore, the high degree of insulation is expected to reduce appreciably power and fuel costs. A patent covering this new construction method has been applied for by Lithocrete, Inc.

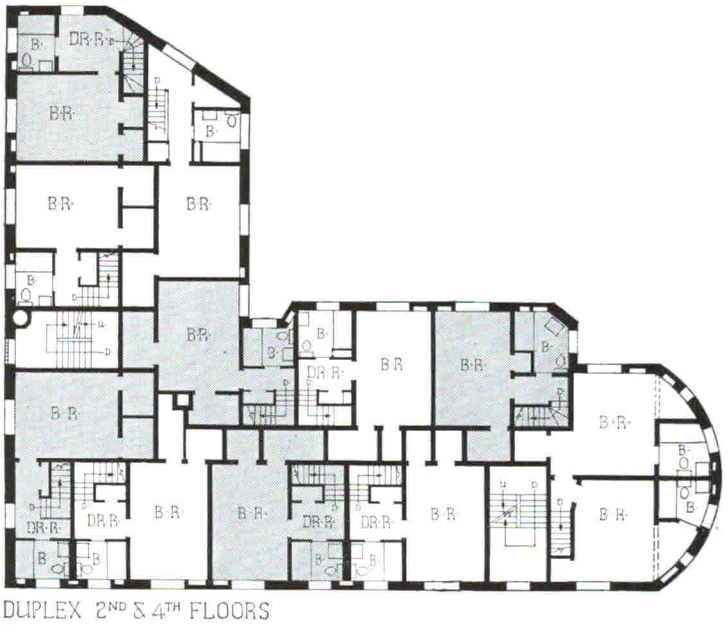
The units have been designed as duplexes, an arrangement which permits some interesting economies in a four-floor building. Here the architect has decided to eliminate the corridors on the second and fourth floors, and to dispense with the elevators which would have been indicated with apartment entrances on the fourth floor. A preliminary study showed that the additional expense of the duplex arrangement amounted to a moderate figure for the entire building; in return the architect was able to get not only an appreciably larger amount of living space out of his shell, but also to afford the cachet of producing Detroit's first duplex.

The duplexes have been built in both three- and five-room units, with the sleeping quarters in each case located on the upper floor. Both types are rented complete with carpeting, venetian blinds, and electricity for cooking, lighting and refrigeration included in all rents.

The sleek curves of 999 Whitmore Road are made sleeker by vertical panels of glass brick. Below, construction details illustrate the new Lithocrete method of wall construction. Reenforced concrete studs carry precast slabs on the interior, insulating board and cement facing on the exterior (right). This system provides a hollow space for plumbing, air conditioning ducts, wiring, insulation (left).







Twenty-three duplexes, the first ones of modern design to be built in Detroit, comprise 999 Whitmore Road. Of these one unit has five rooms, 22 have three. On the plans above the layout shown for the unit at the curved right end is correct for the first and second floors; on the third and fourth floor the plan has been bisected to form two three-room units. Not shown here are the twenty-fourth and twenty-fifth units in the building, one a four-room English basement apartment, the other a janitor's apartment also in the basement. The circulation in all plans is extremely simple. On the second and fourth floors the corridor has been entirely eliminated, the added space converted into closets for the bedrooms.

ENTRANCE STAIR HALL

ENTRANCE

CONSTRUCTION OUTLINE

General Contractor—Lithocrete Inc., Concrete Construction Co. Insulation—Celotex Corp. Windows and screens—Detroit Steel Products Co. Glass, glazing—Lustra, American Window Glass Co. Structural glass—Vitrolite, Libbey-Owens-Ford Glass Co. Glass block—Owens-Illinois Glass Co. Fire doors—Richmond Fireproof Door Co. Aluminum doors and marquise—The Howie Co. Hardware—Schlage Lock Co. Package receivers—Gabriel Steel Co. Linoleum—The Armstrong Cork Co. and Congoleum-Nairn, Inc. Carpets—Bigelow-Sanford Carpet Co., Inc. Electric kitchens—General Electric Co. Pureaire kitchens—The Parsons Co. Bathroom Accessories—Hallenscheid & McDonald. Medicine cabinets—Ideal Cabinet Corp. Plumbing fixtures—Briggs Mfg. Co. Heating, ventilating and air conditioning—Nelson Co. Humidistats—Minneapolis-Honeywell Regulator Co. Stoker for heating plant—Fairbanks-Morse & Co. Water heater and stoker—Master Stoker Corp.

PERCENTAGE LEASING

makes news and money with rising rents. A NAREB consensus of expert opinion on how, when and how much.

THE current business recession notwithstanding, it is obvious that rents are on an upward swing which will not be appreciably interrupted for the next five years at least; a survey conducted by THE FORUM month before last reveals that the general rental level now stands between 15 and 20 per cent higher than it did two years ago. Axiomatic in such a time is the value of the percentage form of lease for commercial properties. The property owner assures himself at all times of a steady income sufficient to meet taxes, insurance premiums and costs; and as times improve he will net more than he could possibly get from a straight lease signed today. It is on a declining market only that the straight base is preferable for the landlord.

Signalizing this fact, the NAREB last month released through its Brokers Division an analysis of percentage lease practice as encyclopædic as anything published on the subject in many a year. Comprising in the main a consensus of recognized authorities on the subject, it is the work of Realtor Frank S. Slosson, onetime chairman of the Property Management Division of the NAREB, onetime president of the National Association of Building Owners and Managers, currently partner of Chicago's Hooker and Slosson.

Form. Percentage leases may be divided into two categories: 1) those with an annual minimum guarantee and 2) those without one. The first type calls for two distinct rental payments, the monthly minimum guarantee plus a percentage of the tenant's gross income. The second type entails only the payment of a percentage of the tenant's income. Depending upon the desirability of the property and the size of the percentage, the guarantee in the first type may range anywhere from 75 to 90 per cent of the rental value of the premises. It is usually designed to cover the owner's fixed charges, and hence its omission is seldom justified. Contracts containing no minimum guarantee are advisable only in the case of short term month-to-month leases or one- or two-year leases with a short period recapture clause or cancellation notice.

Duration. To hold a percentage lease in a falling market is a poor form of investment. Its duration should be measured by the probable duration of general prosperity. Currently, the most advantageous length would seem to lie somewhere between five and seven years.

Recapture clauses are sometimes used, usually in lieu of a minimum guarantee. Their use, however, should be limited to lessees with unquestioned financial reputation, such as chain stores. And the elimination of the minimum guarantee in consideration of the recapture clause is usually justification for increasing the percentage payment by about 1 per cent. Accompanying the recapture clause is usually a provision stipulating a certain average volume of business which, if not produced by the tenant, is grounds for termination of the lease.

Accounting clause. In view of his profit-sharing interest in the business of his tenant, the landlord is entitled to full information concerning business originating upon his premises, much as the stockholder has access to the books of his corporation. To preserve this right it is necessary that a provision describing in detail accounting methods to be followed by the tenant be incorporated in all percentage lease contracts.

Acceleration clause. Another clause frequently included in the contract provides for the acceleration of the minimum guarantee or of the percentage, thus permitting the lessor to participate to a greater extent in improved business volume. Its value has been proved by depression experiences. Rental value of property may in the course of several years increase over that prevailing at the time the lease was negotiated, and the presence of a clause covering the acceleration of either type of payment may offer a satisfactory hedge against such development. Acceleration of percentages varies from about two to five points, depending upon the nature of the business transacted by the tenant. Millinery, where the percentage payment itself is high, is a typical example of a business wherein the five-point spread may exist.

Disadvantages. The disadvantages of the percentage lease are more theoretical than real and arise largely from unfamiliarity with the subject. Principal criticism comes from mortgage companies, insurance companies loaning on real estate and banks and trust companies. In committing itself to mortgage financing on any piece of business property, a loaning company naturally wants to know the potential income. The amount of money that will be made under a percentage lease is not readily ascertainable; and at the same time the minimum guarantee alone does not represent the true revenue-producing value of the property because percentage payments in excess of this amount will probably be made. Much financing which would have proved profitable has been overlooked because of the unwillingness of the loaning companies to accept as the owner's income anything except the minimum guarantee.

Further disapproval has been voiced by those who believe that under the percentage lease plan the tenant is paying out in prosperous times money which otherwise would be saved for harder times. The argument appears valid only upon the assumption that a reserve would be so established. In practice it generally is not.

Terms. The survey of the Brokers Division of the NAREB indicates graphically that the terms of percentage leases vary greatly among different industries and among the classifications of the same industry. It is therefore essential that both landlord and tenant avail themselves of all accurate information relating to their particular problem before signing the lease.

The tabulation (right) is a condensation of a composite table of percentage lease rates prepared and published by the NAREB to assist in the solving of such problems. It includes figures from twelve different sources on the percentage of total sales that 30 types of retail business have paid as rent. Besides indicating the range in rates during the period 1924-37, the tabulation shows the prevailing percentages for representative years, 1925-26, 1929, 1932 and 1937. Since factors determining the amount of rent that can properly be paid are many and vary under different circumstances, the accompanying figures are in no sense to be considered arbitrary. They offer, rather, a sound basis for preliminary calculations.

Numbers correspond to those at heads of columns in tabulation opposite.

1. BUILDING MANAGERS' ASSOCIATION OF CHICAGO
2. STANLEY ROE OF MARK LEVY REALTY CO., CHICAGO
3. HARRY S. CAMPBELL OF DOUGLAS VOUGHT & CO., NEW YORK
4. A. R. FRIEDMAN, BOSTON
5. GEORGE J. BEGGS OF NORRIS, BEGGS & SIMPSON, PORTLAND, ORE.
6. FRANK S. SLOSSON OF HOOKER & SLOSSON, CHICAGO
7. STANLEY ROE OF MARK LEVY REALTY CO., CHICAGO
8. BUILDING OWNERS AND MANAGERS ASSOCIATION OF SEATTLE, WASH.
9. FRANK S. SLOSSON OF HOOKER & SLOSSON, CHICAGO
10. HAMILTON STYRON OF MERLIS REAL ESTATE CO., NEW YORK
11. U.S. DEPARTMENT OF COMMERCE
12. IRVING L. W. SAPERSTON, BUFFALO
13. MARK LEVY, CHICAGO
14. THOMAS P. DANAHEY, DETROIT

PERCENTAGE LEASE RATES

TYPE OF BUSINESS	1924-1937 Range	1937						1932				1929			1925-26
		B. M. A. Chicago 1.	Roe 2.	Campbell 3.	Friedman 4.	Beggs 5.	Slosson 6.	Roe 7.	B. O. & M. Seattle 8.	Slosson 9.	Styron 10.	Dept. of Comm. 11.	Saperston 12.	Levy 13.	Danahey 14.
		For description of sources see table opposite.													
ART SHOPS (GIFT)	8.6-12.5	10							10-12.5			11.65		10-12.5	10-12.5
AUTOMOBILE ACCESSORIES	2.5-10		6-8	8-10	10		10	8-10	10		8-10			10	10
AUTOMOBILE AGENCIES	1.5-5	5	1.5-2.5	2-2.5	2			1.5-2	2.5		1.5-2	1.76		2	2
BEAUTY SHOPS (SERVICE)	10-25	15	12.5-15		25	10-13	15-20	15						15-25	25
BOOKS AND STATIONERY	8-15				8-10	10	10-12		10	10-12				10	10
CANDY	5.5-15	10-12	7-10	10-12	8-10	10-15		8-10			8-10				
CIGARS AND TOBACCO	4.6-10	8	5-6	5-7	6-10	6-7		6-8	7-10		6-8			7-10	7-10
DEPARTMENT STORES	2-6		3-4	3-4	3-4	to 4		3-4	2.5-4	2.5-4	3-4		3-4	3-4	3-4
DRUGS	3.8-10	8		8-10		5-8		8-10	8-10		8-10		8-12		
5, 10, 25c TO $2 STORES	5-8		5-7	5-7		5-7	5-8	5-7	5-7	5-8		6.22		5-8	5-8
FLORISTS	5-20	8	10-15	10-15	10-15	8-10	10-12	10-15	12-15	10-12	10-15	8.08	12-15	10-15	10-15
FURNITURE	5-12	5		6-8		5-6	8	5-7			5-7	4.99	5-12		
FURS AND FURRIERS	6.8-12		8-10	10-12	10	8	8-10		7-10			6.68		10	10
GROCERIES	3-10			6-8		5-7		7-8	3-4		2.5-4			5-6	10
GROCERIES (CHAIN)	2.5-7		2.5-4	4-5	3	2.5-3	4.5	2.5-4		4.5					
HABERDASHERIES	6-10	10	8-10	10	8-10	7.5-9		10	10		10			6-10	6-10
HARDWARE	4-10		5-7	6-9	4-6	5-7	6-8	6-8	7-9	8-10	6-8	4.40	8-9	6-9	3.8-6
HOSIERY AND KNIT GOODS	6-10		8-10	10		7-10	8-10	10	8-10		10			10	10
JEWELRY	5.4-20		8-10	10-12	10-15	8-10		8-10	8-10		8-10	7.07	15-20	8-12.5	5.4
MEAT MARKETS	2-8		5-7			5		4-6			4-6			4-6	
MEN'S CLOTHING	5-8		6-8	6-8		6-8	6-8	6-8	6-8	6-8	6-8			5-7	6-8
MEN'S HATS	6-12		8-10	8-10	10-12	7-9	10-12	6-8	8-10		6-8		8	8	8
MEN'S SHOES	6-10.2	8-10	7-9	8-10		6-8	7-10			7-10		10.17			
MILLINERY	8-15	12.5-15	10-15	10-15	10-15	12.5-15	12-15	10-12	10-15	8-10	10-12		12-15	10-15	10-12
PIANOS, PHONOGRAPHS AND MUSICAL INSTRUMENTS	6-15		6-8		12-15	6		6-8						7-8	15
RESTAURANTS	4.2-12	8	8-10	8-10	8-10	5-10	8-10	8-10	8-10	10-12	8-10	6.93	12	8-10	10-12
RESTAURANTS (CAFETERIAS)	5-9		5-7	7-9	7-8	7-8	7-8	5-6	7-8		5-6	6.86		5-6	
SPORTING GOODS	5-10	7-10	6-8	8-10	8-10	6	8-10	5-7	7-10		5-7			5-10	5
TRUNKS AND LEATHER GOODS	8-12	10		10	10-12	10	8-10	10-12	10		10-12	10.75		10-12	10-12
WOMEN'S SHOES	6-10	8-10	7-10		8-10	6.5-8	8-10			8-10		8.43			

SMALL HOUSE COST INDEX

Federal Home Loan Bank Board records reveal general stability.

December cubic foot costs up 1.8 cents on the dollar from 1936.

DESPITE some retrenchment by labor and verbal attempts by business and government to lower prices, wages and material costs at year-end had shown but little decline from the high levels of late summer.

Costs of the Federal Home Loan Bank Board's base house for December in about half of the 27 reporting cities were approximately the same as those recorded for September. Substantial declines were offset, in part, by contra-seasonal advances elsewhere. Thus, the net effect of six cost decreases of $200 or more was lessened by two corresponding increases. The house at Salisbury, N. C., suffering the greatest decline, cost $304, or 6.3 per cent less to build in December than in September; while Roanoke's house cost $538, or 10.3 per cent more. Second largest decrease, 5.8 per cent took place at Atlanta; second largest increase, 4.8 per cent at Richmond. Notable is the fact that these extremes all existed in the Winston-Salem district.

In the Chicago and Topeka districts where prices are the highest, the trend was especially steady, no bids returned from these centers having fluctuated more than $180 since the September sampling. Prices in the Boston district were generally lower.

Interesting too is the year-to-year comparison of cubic foot costs in the four reporting FHLBB districts. With two exceptions figures from all cities were higher than those of December 1936. In New Haven the cubic foot cost was unchanged; in Baltimore it was $0.008 lower.

Substantiating evidence of the steadiness of building costs is the latest survey of the Northwestern National Life Insurance Company. Based on prices in sixteen major cities as of December 1, it shows average construction costs for a "modest" home nearly 3 per cent lower than in September. Declines were registered in all of the sixteen centers except Seattle and New Orleans. In five cities—Cincinnati, Minneapolis, Pittsburgh, San Francisco, and Seattle—residential construction costs actually exceeded the 1926-1929 average for those communities.

A frame house which could be built in the reporting cities for $4,000 at average wage and material levels of 1936 and which reached a peak of $4,680 in September 1937, would have cost $4,548 as of December 1. This is 13.7 per cent above the December 1936 figure but 5.6 per cent below the 1926-1929 average of $4,818.

The House on Which Costs Are Reported is a detached 6-room house of 24,000 cubic feet volume. Living room, dining room, kitchen, and lavatory on first floor; 3 bedrooms and bath on second floor. Exterior is wide-board siding with brick and stucco as features of design. Best quality materials and workmanship are used.

The house is *not* completed ready for occupancy. It includes all fundamental structural elements, an attached 1-car garage, an unfinished cellar, an unfinished attic, a fireplace, essential heating, plumbing, and electric wiring equipment, and complete insulation. It does *not* include wall-paper nor other wall nor ceiling finish on interior plastered surfaces, lighting fixtures, refrigerators, water heaters, ranges, screens, weather stripping, nor window shades.

Reported costs include, in addition to material and labor costs, compensation insurance, an allowance for contractor's overhead and transportation of materials, plus 10 per cent for builder's profit.

Reported costs do *not* include the cost of land nor of surveying the land, the cost of planting the lot, nor of providing walks and driveways; they do not include architect's fee, cost of building permit, financing charges, nor sales costs.

In figuring costs, current prices on the same building materials list are obtained every three months from the same dealers, and current wage rates are obtained from the same reputable contractors and operative builders.

FEDERAL HOME LOAN BANK DISTRICTS, STATES, AND CITIES	CUBIC-FOOT COST		TOTAL BUILDING COST								
	DEC. 1937	DEC. 1936	DEC. 1937	SEPT. 1937	JUNE 1937	MAR. 1937	DEC. 1936	SEPT. 1936	JUNE 1936	MAR. 1936	DEC. 1935
NO. 1—BOSTON:											
CONNECTICUT:											
HARTFORD	$0.254	$0.240	$6,101	$6,355	$6,365	$6,132	$5,768	$5,589	$5,657	$5,647	$5,655
NEW HAVEN	.235	.235	5,632	5,933	5,933	5,804	5,636	5,503	5,544	5,509	....
MAINE:											
PORTLAND	.240	.219	5,756	5,792	5,916	5,252	5,252	5,245	5,132	5,124	5,103
MASSACHUSETTS:											
BOSTON	.273	.241	6,543	6,596	6,487	6,275	5,781	5,876	5,773	5,779	5,699
NEW HAMPSHIRE:											
MANCHESTER	.234	.231	5,611	5,904	5,888	5,641	5,545	5,467	5,462	5,416	5,467
RHODE ISLAND:											
PROVIDENCE	.250	.235	6,004	5,933	5,932	5,768	5,633	5,577	5,496	5,478	5,574
VERMONT:											
RUTLAND	.242	.221	5,815	5,714	5,710	5,696	5,305	5,305	5,329	5,329	5,337
NO. 4—WINSTON-SALEM:											
ALABAMA:											
BIRMINGHAM	.254	...	6,089	6,089	6,077	....	....	5,073	5,013	5,059	5,002
DISTRICT OF COLUMBIA:											
WASHINGTON	.262	.232	6,286	6,286	6,234	5,907	5,569	5,150	4,973	4,918	4,850
FLORIDA:											
TAMPA	.234	.229	5,621	5,728	5,716	5,619	5,500	5,483	5,360	5,379	....
WEST PALM BEACH	.266	.252	6,382	6,405	6,411	6,367	6,038	5,974	5,911	5,889	5,895
GEORGIA:											
ATLANTA	.222	.215	5,323	5,653	5,410	5,228	5,150	4,897	4,889	4,854	4,849
MARYLAND:											
BALTIMORE	.217	.225	5,211	5,495	5,402	5,388	5,401	4,899	4,908	4,427	4,543
CUMBERLAND	.235	.229	5,643	5,696	5,732	5,659	5,491	5,482	5,424	5,419	5,358
NORTH CAROLINA:											
ASHEVILLE	.221	.198	5,300	....	4,968	....	4,762	....	4,768	4,778	4,791
RALEIGH	.231	.217	5,534	5,656	5,580	5,443	5,197	5,148	5,061	5,070	4,967
SALISBURY	.190	...	4,551	4,855	4,746	....	....	....	....	....	....
SOUTH CAROLINA:											
COLUMBIA	.206	.200	4,932	4,932	4,886	4,674	4,804	4,697	4,712	4,634	4,505
VIRGINIA:											
RICHMOND	.227	.203	5,452	5,203	5,248	5,207	4,870	5,026	5,026	4,964	5,062
ROANOKE	.240	.209	5,766	5,228	5,391	5,331	5,014	4,760	4,843	4,566	4,491
NO. 7—CHICAGO:											
ILLINOIS:											
CHICAGO	.301	.284	7,226	7,178	7,260	7,081	6,825	6,745	6,639	6,555	6,498
PEORIA	.279	.263	6,686	6,760	6,833	6,585	6,312	6,331	6,420	6,212	....
WISCONSIN:											
MILWAUKEE	.286	.253	6,852	6,840	6,780	6,701	6,081	5,838	5,540	5,386	....
OSHKOSH	.253	.231	6,082	6,200	6,087	5,576	5,555	5,658	5,612	5,502	5,357
NO. 10—TOPEKA:											
COLORADO:											
DENVER	.275	.254	6,606	6,786	6,712	6,250	6,105	6,133	6,047	6,098	....
NEBRASKA:											
OMAHA	.248	.233	5,950	6,116	5,969	6,008	5,601	5,578	5,582	5,582	5,554
OKLAHOMA:											
OKLAHOMA CITY	.244	.229	5,861	5,838	5,823	5,816	5,486	5,449	5,561	5,282	5,215